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# Ghana Numeracy Pilot Impact Evaluation 2017 Baseline Report

**Final version March 2018**

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# **GHANA NUMERACY PILOT IMPACT EVALUATION**

## **2017 BASELINE REPORT**

Final version March 2018

Cover photo courtesy of Mohammed Dawuda. Taken with consent, October 2017.

### **DISCLAIMER**

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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test is administered orally with the aid of stimulus sheets and covers the knowledge domains, subtasks, and skills outlined below in Table 5.<sup>20</sup>

**Table 5: Domains, Subtasks, and Skills Assessed by the Early Grade Math Assessment**

Domain		
Procedural knowledge	Number identification	The ability to identify written number symbols.
	Addition and subtraction	Knowledge, confidence, and fluency/automaticity with basic addition and subtraction.
Conceptual (applied) knowledge	Quantity discrimination	The ability to make judgements about differences by comparing quantities represented by numbers.
	Missing number	The ability to discern and complete number patterns.
	Word problems	The ability to interpret a situation (presented orally to the pupil), make a plan and solve the problem.

The evaluation team used item banks from the 2013 and 2015 Ghana EGMA in both paper and Tangerine (electronic) format for training and data collection, respectively. P1 and P2 pupils were tested in all six subtasks in the language of instruction of their school. To minimize leakage risk and avoid learning of the test, two equated versions of the test were used. The version to be administered at a given school was randomized at baseline, and the other version of the test will be used at endline. Approaches for ensuring reliability are discussed in the Data Quality Assurance sub-section below.

### **Ghana Early Numeracy Assessment (GENA)**

The GENA was developed by STS in order to test a broader set of skills than those measured by the EGMA tool. The GENA tool is aligned with the performance standards established by the numeracy pilot curriculum and therefore measures several skills and domains that are not presently covered by EGMA, emphasizing conceptual understanding of place value and number sense, mental math, and mathematical reasoning and communication. The GENA test is administered orally, with the aid of manipulatives for certain subtasks, and covers the knowledge domains, subtasks, and skills in Table 6.

**Table 6: Domains, Subtasks, and Skills Assessed by the Ghana Early Numeracy Assessment**

Domain		
Procedural knowledge	Oral counting	Ability and automaticity in counting from 1 to 100.

<sup>20</sup> Kochetkova, E. & Brombacher, A. (2014). Ghana 2013 Early Grade Reading Assessment and Early Grade Mathematics Assessment: Report of Findings. Retrieved from [http://pdf.usaid.gov/pdf\\_docs/PA00MHMS.pdf](http://pdf.usaid.gov/pdf_docs/PA00MHMS.pdf).

Conceptual (applied) knowledge	Skip counting	Number sense, as measured by the ability to skip count forwards and backwards using even intervals (e.g., 2, 5, 10).
	Mental mathematics*	Mental mathematics operations, as measured by the ability to identify numeric combinations quickly and accurately as well as complete mental arithmetic and simple multiplication (doubles).
	Place value and numeric deconstruction using bundles*	Knowledge of place value and numeric deconstruction, as measured by the ability to represent numbers using 100s, 10s, and 1s.
	Pattern recognition	Ability to recognize patterns and predict the next item in a sequence.
Mathematical reasoning and communication	Equals operations	Describe equals sign, apply knowledge of operation to numeric and pictorial representations, and verbally describe process for equalizing uneven quantities.
	Describing quantities in multiple ways*	Ability to think fluidly about numbers and their relationship to one another by describing quantities in different ways (e.g., using different arithmetic combinations, placement on a number line, etc.)

\* Indicates that subtest was randomly administered to one half of the sample (to reduce test duration)

STS piloted the tool in pre-pilot schools prior to the rollout of the intervention to verify the validity and reliability of these subtasks.

To ensure total time per pupil (assessment and interview) did not exceed 30 minutes, the evaluation team consulted with USAID/Ghana, E3’s Office of Education, and STS to determine which subtests were most important for measuring skills not captured by the “Core” EGMA subtests and which could be dropped to reduce the length of the assessment. Based on these discussions, subtasks marked with an asterisk in Table 6 were retained. Following a period of pre-testing, however, it was noted that the assessment was still exceeding 30 minutes per pupil. As such, the evaluation team again consulted with key stakeholders to determine which of the retained subtests—i.e., place value and numeric deconstruction using bundles, describing quantities in multiple ways, and equals operations—should be administered to the entire population of pupils and which could be randomized to half of the population, thus capturing data on all subtests but with a reduced sample for some. Based on both subtest-specific power analysis and the relative weight of importance placed on each subtest by the evaluation team and the implementer, it was decided to administer describing numbers to the entire sample and administer either the place value/number deconstruction or the number operations subtests to half of the sample. The Core EGMA, combined with these selected GEMA subtests, will henceforth be referred to as “EGMA+.”

The interview and structured observation protocols were developed in close consultation with *Learning* to ensure they were aligned with the updated program design and built upon the monitoring and evaluation resources being developed both as a part of *Learning’s* own fidelity of implementation activities. All tools were vetted with USAID and pre-tested in a field setting prior to the launch of data collection.

Complete data collection tools and assessment instruments are included in Annex III.

## ANNEX III – DATA COLLECTION TOOLS AND CONSENT FORMS

### Head Teacher Questionnaire

#### General Background Information

Team name:

Enumerator ID:

Today's date (DD-MM-YY):  -  -

Start time (HH:MM):  :

School name:

School ID:

Region:

District:

Circuit:

Circuit code:

Locality:

Locality type:  Urban (more than 5,000 people living in community/locality)  
 Rural (less than 5,000 people living in community/locality)

School address:

Was the consent form administered and signed?  Yes  
 No (DO NOT PROCEED)

#### Head Teacher Identifying Information

First name:

Last name:

Sex:  Male  
 Female

Telephone:

#### A. Head Teacher Background Information

I. How long have you been the Head Teacher at this school?

Years:   Months:

2. How long have you been a Head Teacher overall?

Years:   Months:

3. How long have you been in the teaching profession overall?

Years:   Months:

4. Have you completed teacher training college?

- Yes
- No
- Decline to answer

5. What is the highest level of education that you have completed? (select one) [Do not read options]

- |                                                     |                                                          |
|-----------------------------------------------------|----------------------------------------------------------|
| <input type="radio"/> Middle School                 | <input type="radio"/> Bachelor of Education (B.Ed)       |
| <input type="radio"/> Senior High School            | <input type="radio"/> Other Bachelor Degrees             |
| <input type="radio"/> Ordinary Level                | <input type="radio"/> Post Graduate Diploma in Education |
| <input type="radio"/> Advance Level                 | <input type="radio"/> Masters of Education (M.Ed)        |
| <input type="radio"/> Certificate A                 | <input type="radio"/> Other Master's Degree              |
| <input type="radio"/> Diploma in Basic Education    | <input type="radio"/> Ph.D.                              |
| <input type="radio"/> Higher National Diploma (HND) | <input type="radio"/> Decline to answer                  |
| <input type="radio"/> Technical/Vocational (NVTI)   | <input type="radio"/> Other (specify): _____.            |

6. Does your school have more than one Head Teacher?

- Yes
- No → skip to A8
- Decline to answer

7. Which class(es) are you responsible for as Head Teacher? (select all)

- |                              |                             |
|------------------------------|-----------------------------|
| <input type="checkbox"/> KG1 | <input type="checkbox"/> P3 |
| <input type="checkbox"/> KG2 | <input type="checkbox"/> P4 |
| <input type="checkbox"/> P1  | <input type="checkbox"/> P5 |
| <input type="checkbox"/> P2  | <input type="checkbox"/> P6 |

8. In addition to your duties as Head Teacher, do you teach classes at this school?

- Yes
- No → skip to A10
- Decline to answer → skip to A10

9. [If yes to A8] In a typical week, approximately what percentage of your work time is spent teaching classes?

10. Were you absent any days during the most recent completed school week (Monday thru Friday)?

- Yes
- No → skip to B1
- Don't know → skip to B1
- Decline to answer → skip to B1

11. For how many days last week were you absent?

## B. School Background

[READ] I will begin by collecting some basic information on this school, including the number of teachers, trained

1. In total, how many KGI-P3 teachers are there at this school?

2. For each KG and lower primary grade present at this school, please specify a) how many shifts this school has, b) how many streams the school has, c) how many teachers teach that grade level, and d) total current enrollments in that grade for each gender (across all streams/classes and shifts):

<u>Grade</u>	<u>Present?</u>	<u>Number of shifts</u>	<u>Number of streams</u>	<u>Number of teachers</u>	<u>Girls enrolled</u>	<u>Boys enrolled</u>
KG1	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
KG2	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
P1	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
P2	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
P3	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

3. Are any of the KGI-P3 classes in this school combined?

- Yes
- No → skip to B5
- Don't know → skip to B5
- Decline to answer → skip to B5

4. [If yes to B3] Which grades are combined?

5. How many hours and minutes do P1 learners spend at this school each day (length of school day)?

Hours:   Minutes:

6. In a typical 5-day school week, on how many days do P1 learners receive a maths lesson?

7. What is the typical duration of a maths lesson for P1 learners?

Hours:   Minutes:

8. How many P1 teachers teach maths at this school?

9. Of the P1 teachers that teach maths, how many are female? [Enter 0 if none are female]

10. How many hours and minutes do P2 learners spend at this school each day (length of school day)?

Hours:  Minutes:

11. In a typical 5-day school week, on how many days do P2 learners receive a maths lesson?

12. What is the typical duration of a maths lesson for P2 learners?

Hours:  Minutes:

13. How many P2 teachers teach maths at this school?

14. Of the P2 teachers that teach maths, how many are female? [Enter 0 if none are female]

15. Was the P1 teacher selected for this study absent on any days during the most recent completed school week (Monday thru Friday)?

- Yes
- No → skip to B17
- Don't know → skip to B17
- Decline to answer → skip to B17

16. [If yes to B15] For how many days last week was he or she absent?

17. Was the P2 teacher selected for this study absent on any days during the most recent completed school week (Monday thru Friday)?

- Yes
- No → skip to B19
- Don't know → skip to B19
- Decline to answer → skip to B19

18. [If yes to B17] For how many days last week was he or she absent?

19. For each KG and lower primary grade level, please indicate the number of pupils that have dropped out in the most recent school year (2016/17). Please do not include students who have transferred/relocated or that have died in these figures. [If no one has dropped out from the school, → skip to B22]

<u>Grade</u>	<u>Girl dropouts</u>	<u>Boy dropouts</u>
KG1	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
KG2	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
P1	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
P2	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
P3	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

20. Are these students who dropped out counted in the enrollment figures you gave me earlier (question B2)?

- Yes, they are counted in the enrollment figures I provided
- No, they have already been subtracted from the enrollment figures I provided
- Don't know
- Decline to answer

21. What are the main reasons pupils at this school drop out? [Enumerator: if the Head Teacher mentions transfers or deaths, please remind him/her that dropouts should not include transfers or deaths and go back to question B19 and make any necessary corrections]

22. For each KG and lower primary grade level, please indicate the number of pupils that are repeaters (i.e., were in the same grade level last year): [If no one has repeated, → skip to C1]

<u>Grade</u>	<u>Girl repeaters</u>	<u>Boy repeaters</u>
KG1	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
KG2	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
P1	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
P2	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
P3	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

23. What are the main reasons pupils at this school repeat grades?

### C. Language Background

[READ] I will now ask you some questions about the use of different languages in this school. The purpose of this

1. For each of the following languages, please state whether you speak the language fluently, partially, or not at all [Enumerator: Please name each language and ask for an answer for that language before moving on. You must read out all of the languages]

<u>Language</u>	<u>Fluently</u>	<u>Partially</u>	<u>Not at all</u>
Akuapim Twi	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asante Twi	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dagaare	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dagbani	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dangme	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
English	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ewe	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fante	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ga	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gonja	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gurene	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kasem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kusaal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nzema	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (specify): _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. What language(s) do children in your school speak on the playground? (select all) [Do not prompt, record any relevant answers]

- |                                      |                                                  |
|--------------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Akuapim Twi | <input type="checkbox"/> Gonja                   |
| <input type="checkbox"/> Asante Twi  | <input type="checkbox"/> Gurene                  |
| <input type="checkbox"/> Dagaare     | <input type="checkbox"/> Kasem                   |
| <input type="checkbox"/> Dagbani     | <input type="checkbox"/> Kusaal                  |
| <input type="checkbox"/> Dangme      | <input type="checkbox"/> Nzema                   |
| <input type="checkbox"/> English     | <input type="checkbox"/> Decline to answer       |
| <input type="checkbox"/> Ewe         | <input type="checkbox"/> Don't know              |
| <input type="checkbox"/> Fante       | <input type="checkbox"/> Other (specify): _____. |
| <input type="checkbox"/> Ga          |                                                  |

3. What is the GES-approved Ghanaian language of instruction for lower primary at this school? (select one) [Do not prompt]

- |                                   |                                               |
|-----------------------------------|-----------------------------------------------|
| <input type="radio"/> Akuapim Twi | <input type="radio"/> Gonja                   |
| <input type="radio"/> Asante Twi  | <input type="radio"/> Gurene                  |
| <input type="radio"/> Dagaare     | <input type="radio"/> Kasem                   |
| <input type="radio"/> Dagbani     | <input type="radio"/> Kusaal                  |
| <input type="radio"/> Dangme      | <input type="radio"/> Nzema                   |
| <input type="radio"/> Ewe         | <input type="radio"/> Decline to answer       |
| <input type="radio"/> Fante       | <input type="radio"/> Don't know              |
| <input type="radio"/> Ga          | <input type="radio"/> Other (specify): _____. |

4. How many lower primary teachers (KG1-P3) at this school use the GES-approved Ghanaian language of instruction when teaching maths?

5. Of these, how many teach comfortably in the GES-approved Ghanaian language of instruction?

6. What other languages besides the GES-approved Ghanaian language of instruction do KG and lower primary teachers (KG1-P3) use to teach at this school? (select all) [Do not prompt, record any relevant answers]

- |                                      |                                                  |
|--------------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Akuapim Twi | <input type="checkbox"/> Gonja                   |
| <input type="checkbox"/> Asante Twi  | <input type="checkbox"/> Gurene                  |
| <input type="checkbox"/> Dagaare     | <input type="checkbox"/> Kasem                   |
| <input type="checkbox"/> Dagbani     | <input type="checkbox"/> Kusaal                  |
| <input type="checkbox"/> Dangme      | <input type="checkbox"/> Nzema                   |
| <input type="checkbox"/> English     | <input type="checkbox"/> Decline to answer       |
| <input type="checkbox"/> Ewe         | <input type="checkbox"/> Don't know              |
| <input type="checkbox"/> Fante       | <input type="checkbox"/> Other (specify): _____. |
| <input type="checkbox"/> Ga          |                                                  |

7. Is your school facing any challenges in using the GES-approved Ghanaian language as the medium of instruction?

- Yes
- No → skip to C11
- Don't know → skip to C11
- Decline to answer → skip to C11

8. [If yes in question C8] Please describe the challenges your school faces in using the GES-approved Ghanaian language as the medium of instruction:

9. In this school, at what level is English used as the primary medium of instruction for mathematics? (select all) [Do not prompt, record any relevant answers]

- |                              |                             |
|------------------------------|-----------------------------|
| <input type="checkbox"/> KG1 | <input type="checkbox"/> P3 |
| <input type="checkbox"/> KG2 | <input type="checkbox"/> P4 |
| <input type="checkbox"/> P1  | <input type="checkbox"/> P5 |
| <input type="checkbox"/> P2  | <input type="checkbox"/> P6 |

## D. School Resources

1. School resources roster: [Enumerator: Please name each resource and ask for an answer for that resource before moving on. You must read all out all of the resources listed here]

<u>Resource</u>	<u>Don't have</u>	<u>Have, and regularly functioning</u>	<u>Have, but sometimes not functioning</u>	<u>Have, but rarely or never functioning</u>
Electricity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pipe-borne water	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other water (well, borehole, reservoir)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vehicle access road (paved)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vehicle access road (unpaved)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Toilets for pupils	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Separate toilets for girls	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Separate toilets for teachers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
School playground	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
School library	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Free meals scheme - breakfast	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Free meals scheme - lunch	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
School Management Committee	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parent Teacher Association	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Does this school have an approved School Performance Improvement Plan for this 2016/2017 academic year?

- Yes
- No
- Don't know
- Decline to answer

3. Does this school have a trained Curriculum Leader?

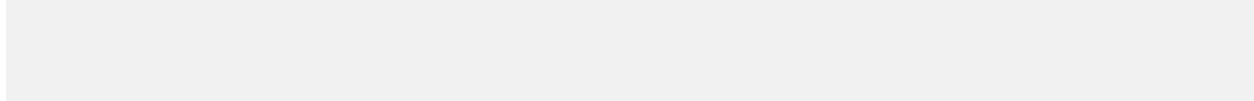
- Yes
- No
- Don't know
- Decline to answer

4. How often does a Circuit Supervisor visit this school? (select one)

- At least monthly
- Twice or more a term
- Once a term
- Once a year
- Hardly ever

- To my knowledge, a Circuit Supervisor has never visited this school
- Don't know
- Decline to answer

**E. Numeracy Resources**



1. What mathematics teaching and learning materials does your school have available? (select all) [Read each option and record relevant answers]

- |                                                                                                           |                                                                                       |
|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <input type="checkbox"/> Teacher's Guide or Teacher Resource Guide                                        | <input type="checkbox"/> Addition and/or subtraction mats/charts                      |
| <input type="checkbox"/> Scripted/step-by-step lesson plans                                               | <input type="checkbox"/> Counters (bottle caps, stones, sticks)                       |
| <input type="checkbox"/> Unscripted/generalized lesson plans                                              | <input type="checkbox"/> Bundles (straws, sticks)                                     |
| <input type="checkbox"/> Lesson notes                                                                     | <input type="checkbox"/> Abacus                                                       |
| <input type="checkbox"/> Weekly schemes of work (day-by-day description of teaching plans and activities) | <input type="checkbox"/> 2D shapes or pattern blocks                                  |
| <input type="checkbox"/> Pupil textbooks                                                                  | <input type="checkbox"/> 3D shapes or blocks                                          |
| <input type="checkbox"/> Pupil workbooks                                                                  | <input type="checkbox"/> Material for teacher-made teaching aids/improvised resources |
| <input type="checkbox"/> Flash cards                                                                      | <input type="checkbox"/> Other (specify)_____.                                        |
| <input type="checkbox"/> Place value chart                                                                |                                                                                       |

2. Are the teaching and learning materials that you have sufficient to enable effective teaching of early grade mathematics?

- Yes → skip to E4
- No
- Don't know → skip to E4
- Decline to answer → skip to E4

3. [If no in question E2 above] Why are the teaching and learning materials not sufficient? (select all)

- There are not enough materials for every pupil
- There are not enough materials for every teacher or class
- The materials are outdated
- The materials are damaged
- Other (specify): \_\_\_\_\_.

4. What additional resources do you feel your school needs to improve early grade math performance?

## F. In-Service Training and Professional Development

[READ] This next module will focus on any in-service training and professional development (including coaching)

1. During the current school year, have you attended any in-service training or professional development sessions on early grade mathematics?

- Yes
- No → skip to F3
- Don't know → skip to F3
- Decline to answer → skip to F3

2. About how many training days did you receive in the current school year?

--	--	--

3. Have teachers in this school attended any in-service training or professional development sessions on early grade mathematics in the current school year?

- Yes
- No → skip to F7
- Don't know → skip to F7
- Decline to answer → skip to F7

4. About how many training days did they receive each (average) in the current school year?

--	--	--

5. Please specify the training provider or providers: (select all)

- GES Master Trainer
- NGO Master Trainer
- Circuit Supervisor
- Math Coach
- Other (specify): \_\_\_\_\_

6. Do you feel this training was enough for them to be able to use these methods correctly in the classroom?

- Yes
- No
- Don't know
- Decline to answer

7. Do you feel they need more training?

- Yes
- No → skip to F9
- Don't know → skip to F9
- Decline to answer → skip to F9

8. [If yes in question F7] In which topics would you like them to receive more training? (select all)

9. Have teachers in your school ever received training in assessing pupils' mathematics understanding?

- Yes
- No
- Don't know
- Decline to answer

10. During the current school year, have teachers in this school received any mentoring, coaching, or structured feedback in teaching mathematics?

- Yes
- No → skip to F18
- Don't know → skip to F19
- Decline to answer → skip to F19

11. [If yes in question F10 above] Who in the current school year provided them with mentoring, coaching, or structured feedback in teaching mathematics? (select all) [Read each option and record relevant answers]

- Head Teacher
- Curriculum Lead
- Circuit Supervisor
- Maths Coach
- Other Teacher(s) at this school
- Other Teacher(s) at nearby schools
- Someone from GES / MOE
- An NGO
- Other (specify): \_\_\_\_\_.

12. [If Head Teacher is selected in question F11 above] What types of mentoring, coaching, or structured feedback did you provide? (select all) [Do not prompt, record any relevant answers]

- Weekly training or coaching session at the school
- Monthly training or coaching session at the school
- Help with lesson planning
- Coaching based on observed lesson
- Other (specify): \_\_\_\_\_.

13. [If coaching is selected in question F12 above] Did teachers change how they teach maths in response to the feedback you provided?

- Yes
- No → skip to F15
- Don't know → skip to F16
- Decline to answer → skip to F16

14. [If yes in question F13 above] In what ways did teachers change how they teach maths in response to your feedback? [Do not prompt, record any relevant answers]

- Better lesson planning
- Provide equal opportunities to students
- Group assessment
- Individual assessment
- Asked more challenging questions
- Encouraged pupils to communicate their thinking/reasoning
- Made class more interactive
- Better use of manipulatives
- Better use of positive reinforcement
- Other (specify): \_\_\_\_\_.

15. [If no in question F13 above] Why did the teachers not change their teaching in response to your feedback?

- Lack of skill
- Lack of teaching materials
- Lack of understanding of the feedback
- Difference in beliefs on effective teaching
- Other (specify): \_\_\_\_\_.

16. Do you feel this feedback was positively received by the teachers?

- Yes → skip to F19
- No
- Don't know → skip to F19
- Decline to answer → skip to F19

17. [If no in question F16 above] Why was this feedback not received positively? → skip to F19

18. [If Head Teacher was NOT selected in question F11] What are the main reasons you do not provide mentoring, coaching, or structured feedback to your teachers in teaching maths?

- I am too busy with administrative responsibilities
- I am too busy teaching
- Providing mentoring or coaching is not my responsibility
- I don't have the training or knowledge to provide support
- I do not want to
- The teachers do not listen to me when I provide support
- Other (specify): \_\_\_\_\_.

19. Does your school regularly dismiss pupils early so that teachers can participate in school-based in-service training (SBI)?

- Yes
- No → skip to G1
- Don't know → skip to G1
- Decline to answer → skip to G1

20. Approximately how many hours per week, on average, are pupils dismissed from normal instructional hours so that teachers can participate in SBI?

--	--	--

## G. Head Teacher Beliefs on Numeracy Instructional Leadership

*[READ] I will now read a few statements on roles and responsibilities in building success in early grade numeracy*

1. Teachers alone are responsible for ensuring sufficient class time is devoted to mathematics each week:

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

2. Observing maths lessons and providing coaching and feedback to teachers on their instructional practice is part of my regular duties as Head Teacher:

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

3. It is NOT the Head Teacher's responsibility to communicate numeracy standards and expectations to parents and pupils:

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

*The next three questions will ask for your opinion on the relative importance of a number of activities related to*

4. How important is it for Head Teachers to be involved in monitoring pupil absenteeism?

- Very important
- Important
- Somewhat important
- Not very important
- Not at all important

5. How important of a role do Head Teachers play in making sure maths are taught well at their school?

- Very important
- Important
- Somewhat important
- Not very important
- Not at all important

6. How important is it that teachers at this school have a clear and shared understanding of effective numeracy teaching?

- Very important
- Important
- Somewhat important
- Not very important
- Not at all important

## H. Pupil Performance and Evaluation

[READ] I will now ask a few questions about pupil performance and assessment in your school. The purpose of

1. Do you believe KG and lower primary pupils (KG1-P3) in this school are on track to become proficient in early grade mathematics?

- Yes → skip to H3
- No
- Don't know → skip to H4
- Decline to answer → skip to H4

2. [If no in question H1 above] Why do you think lower primary pupils are not on track to become proficient in maths? (select all) [Do not prompt, record any relevant answers]

- They don't come to class often enough
- They don't come to class on time
- They don't pay attention during class
- Their parents do not support their learning at home
- They are too hungry to concentrate
- They don't care about school
- They are not able to understand the language of instruction
- The class is too large for teachers to provide good instruction
- The lessons are too short
- Teachers don't always teach the lessons because they are doing other things
- Teachers don't show up for work
- Teachers don't speak the language of instruction
- The teachers don't do a good job teaching
- There are not enough teachers at this school
- Teachers vacate their postings too often
- We don't have the teaching resources we need to teach them well
- We don't have the training we need to teach them well
- The pupils don't have enough books
- The pupils don't have access to learning materials other than books (e.g., manipulatives)
- The pupils are not confident in math
- Other (specify)\_\_\_\_\_.

3. How do you know whether they are on track to become proficient in maths? (select all) [Do not prompt, record any relevant answers]

- We assess them regularly
- Teachers tell me they are doing OK
- They seem to be doing OK when I observe them in class
- I don't know
- Other (specify)\_\_\_\_\_.

4. For each of the following methods of pupil numeracy evaluation or assessment, please state whether lower primary teachers at this school employ it daily, weekly, monthly, quarterly, annually, or not at all:

<u>Method</u>	<u>Daily</u>	<u>Weekly</u>	<u>Monthly</u>	<u>Quarterly</u>	<u>Annually</u>	<u>Not at all</u>
Written assessment	<input type="radio"/>					
Individual learner oral assessment	<input type="radio"/>					
Other (specify): _____.	<input type="radio"/>					

5. Please describe any standardized oral or written assessments that you are currently using at this school to assess lower primary pupils in mathematics: [A standardized assessment is an assessment which uses the same questions across schools and has a standard scoring system]

*Thank you! That completes the Head Teacher questionnaire.*

End Time (HH:MM):        :

**Ghana Numeracy Pilot Impact Evaluation  
Teacher Questionnaire**

**General Background Information**

Team name:

Enumerator ID:

Today's date (DD-MM-YY):  -  -

Start time (HH:MM):  :

School name:

School ID:

Region:

District:

Locality:

School address:

Was the consent form  Yes  
administered and signed?  No (DO NOT PROCEED)

**Teacher Identifying Information**

First name:

Last name:

Sex:  Male  
 Female

Telephone:

Teacher Identification Number

## I. Teacher Background Information

12. How long have you been a teacher at this school?

Years:   Months:

13. How long have you been a teacher overall?

Years:   Months:

14. Have you completed teacher training college?

- Yes
- No
- Decline to answer

15. What is the highest level of education that you have completed? (select one) [Do not read options]

- |                                                     |                                                          |
|-----------------------------------------------------|----------------------------------------------------------|
| <input type="radio"/> Middle School Leaving         | <input type="radio"/> Bachelor of Education (B.Ed)       |
| <input type="radio"/> Senior High School            | <input type="radio"/> Other Bachelor Degrees             |
| <input type="radio"/> GCE Ordinary Level            | <input type="radio"/> Post Graduate Diploma in Education |
| <input type="radio"/> GCE Advance Level             | <input type="radio"/> Masters of Education (M.Ed)        |
| <input type="radio"/> Certificate A                 | <input type="radio"/> Other Master's Degree              |
| <input type="radio"/> Diploma in Basic Education    | <input type="radio"/> Ph.D.                              |
| <input type="radio"/> Higher National Diploma (HND) | <input type="radio"/> Decline to answer                  |
| <input type="radio"/> Technical/Vocational          | <input type="radio"/> Other (specify): _____.            |

16. What is your current rank? [Do not read options]

- |                                                |                                                   |
|------------------------------------------------|---------------------------------------------------|
| <input type="radio"/> Deputy Director          | <input type="radio"/> Superintendent II           |
| <input type="radio"/> Assistant Director I     | <input type="radio"/> Pupil Teacher (WASSCE/SSCE) |
| <input type="radio"/> Assistant Director II    | <input type="radio"/> Not applicable              |
| <input type="radio"/> Principal Superintendent | <input type="radio"/> Don't know                  |
| <input type="radio"/> Senior Superintendent I  | <input type="radio"/> Decline to answer           |
| <input type="radio"/> Senior Superintendent II | <input type="radio"/> Other (specify): _____.     |
| <input type="radio"/> Superintendent I         |                                                   |

17. Which grades do you teach? (select all that apply)

- |                              |                             |
|------------------------------|-----------------------------|
| <input type="checkbox"/> KG1 | <input type="checkbox"/> P3 |
| <input type="checkbox"/> KG2 | <input type="checkbox"/> P4 |
| <input type="checkbox"/> P1  | <input type="checkbox"/> P5 |
| <input type="checkbox"/> P2  | <input type="checkbox"/> P6 |

18. Were you absent any days during the most recent completed school week (Monday thru Friday)?

- Yes
- No → skip to B1
- Don't know → skip to B1
- Decline to answer → skip to B1

19. For how many days last week were you absent?

## J. Language Background

[READ] I will now ask you some questions about your language background and skills as well as the use of

10. For each of the following languages, please state whether you speak the language fluently, partially, or not at all [Enumerator: Please name each language and ask for an answer for that language before moving on. You must read out all of the languages]

<u>Language</u>	<u>Fluently</u>	<u>Partially</u>	<u>Not at all</u>
Akuapim Twi	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asante Twi	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dagaare	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dagbani	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dangme	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
English	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ewe	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fante	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ga	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gonja	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gurene	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kasem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kusaal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nzema	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (specify):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. What language(s) do children in your maths class speak on the playground? (select all that apply)  
[Do not prompt, record any relevant answers]

- |                                      |                                                  |
|--------------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Akuapim Twi | <input type="checkbox"/> Gonja                   |
| <input type="checkbox"/> Asante Twi  | <input type="checkbox"/> Gurene                  |
| <input type="checkbox"/> Dagaare     | <input type="checkbox"/> Kasem                   |
| <input type="checkbox"/> Dagbani     | <input type="checkbox"/> Kusaal                  |
| <input type="checkbox"/> Dangme      | <input type="checkbox"/> Nzema                   |
| <input type="checkbox"/> English     | <input type="checkbox"/> Decline to answer       |
| <input type="checkbox"/> Ewe         | <input type="checkbox"/> Don't know              |
| <input type="checkbox"/> Fante       | <input type="checkbox"/> Other (specify): _____. |
| <input type="checkbox"/> Ga          |                                                  |

12. [If more than one language is selected in question B2 above] Approximately what percentage of pupils in your maths class speak and understand each of the playground languages you specified in the previous question?

- |                      |             |                      |                         |
|----------------------|-------------|----------------------|-------------------------|
| <input type="text"/> | Akuapim Twi | <input type="text"/> | Gonja                   |
| <input type="text"/> | Asante Twi  | <input type="text"/> | Gurene                  |
| <input type="text"/> | Dagaare     | <input type="text"/> | Kasem                   |
| <input type="text"/> | Dagbani     | <input type="text"/> | Kusaal                  |
| <input type="text"/> | Dangme      | <input type="text"/> | Nzema                   |
| <input type="text"/> | English     | <input type="text"/> | Decline to answer       |
| <input type="text"/> | Ewe         | <input type="text"/> | Don't know              |
| <input type="text"/> | Fante       | <input type="text"/> | Other (specify): _____. |
| <input type="text"/> | Ga          |                      |                         |

13. What language(s) do you use to teach mathematics to the pupils? (select all that apply) [Do not prompt, record any relevant answers]

- |                          |             |                          |                         |
|--------------------------|-------------|--------------------------|-------------------------|
| <input type="checkbox"/> | Akuapim Twi | <input type="checkbox"/> | Ga                      |
| <input type="checkbox"/> | Asante Twi  | <input type="checkbox"/> | Gonja                   |
| <input type="checkbox"/> | Dagaare     | <input type="checkbox"/> | Gurene                  |
| <input type="checkbox"/> | Dagbani     | <input type="checkbox"/> | Kasem                   |
| <input type="checkbox"/> | Dangme      | <input type="checkbox"/> | Kusaal                  |
| <input type="checkbox"/> | English     | <input type="checkbox"/> | Nzema                   |
| <input type="checkbox"/> | Ewe         | <input type="checkbox"/> | Decline to answer       |
| <input type="checkbox"/> | Fante       | <input type="checkbox"/> | Other (specify): _____. |

14. In what language(s) are mathematics exams given to your pupils? (select all that apply) [Do not prompt, record any relevant answers]

- |                          |             |                          |                         |
|--------------------------|-------------|--------------------------|-------------------------|
| <input type="checkbox"/> | Akuapim Twi | <input type="checkbox"/> | Ga                      |
| <input type="checkbox"/> | Asante Twi  | <input type="checkbox"/> | Gonja                   |
| <input type="checkbox"/> | Dagaare     | <input type="checkbox"/> | Gurene                  |
| <input type="checkbox"/> | Dagbani     | <input type="checkbox"/> | Kasem                   |
| <input type="checkbox"/> | Dangme      | <input type="checkbox"/> | Kusaal                  |
| <input type="checkbox"/> | English     | <input type="checkbox"/> | Nzema                   |
| <input type="checkbox"/> | Ewe         | <input type="checkbox"/> | Decline to answer       |
| <input type="checkbox"/> | Fante       | <input type="checkbox"/> | Other (specify): _____. |

15. What is the GES-approved Ghanaian language of instruction for lower primary at this school? (select one) [Do not prompt]

- |                       |             |                       |                         |
|-----------------------|-------------|-----------------------|-------------------------|
| <input type="radio"/> | Akuapim Twi | <input type="radio"/> | Gonja                   |
| <input type="radio"/> | Asante Twi  | <input type="radio"/> | Gurene                  |
| <input type="radio"/> | Dagaare     | <input type="radio"/> | Kasem                   |
| <input type="radio"/> | Dagbani     | <input type="radio"/> | Kusaal                  |
| <input type="radio"/> | Dangme      | <input type="radio"/> | Nzema                   |
| <input type="radio"/> | Ewe         | <input type="radio"/> | Decline to answer       |
| <input type="radio"/> | Fante       | <input type="radio"/> | Don't know              |
| <input type="radio"/> | Ga          | <input type="radio"/> | Other (specify): _____. |

16. Approximately what percentage of the pupils in your maths class speak the GES-approved Ghanaian language of  instruction?

17. How confident do you feel about speaking the GES-approved Ghanaian language of instruction?

- Very confident  
 Somewhat confident

- Not very confident
- Not at all confident

18. How confident do you feel about reading the GES-approved Ghanaian language of instruction?

- Very confident
- Somewhat confident
- Not very confident
- Not at all confident

19. Are you facing any challenge(s) in using the GES-approved Ghanaian language as the medium of instruction for your maths class?

- Yes
- No → skip to C1
- Don't know → skip to C1
- Decline to answer → skip to C1

20. [If yes to B10 above] Please describe the challenges you face in using the GES-approved Ghanaian language as the medium of instruction for your maths class:

## K. Classroom Enrollment and Attendance

[READ] I will now ask a few quick questions on pupil enrollment and attendance. Both class size and

1. How many boys are enrolled in your maths class?

2. How many girls are enrolled in your maths class?

3. Do you maintain an attendance register for this class?

Yes

No → skip to C5

Decline to answer → skip to C5

4. [If yes to C3 above, record the number of students marked as present on each of the following days for the most recent fully completed week]:

Day of the week:

Monday:	_____	Boys	_____	Girls
Tuesday:	_____	Boys	_____	Girls
Wednesday:	_____	Boys	_____	Girls
Thursday:	_____	Boys	_____	Girls
Friday:	_____	Boys	_____	Girls

5. Do you maintain a record of whether students are late and/or leave class early?

Yes

No → skip to C7

Decline to answer → skip to C7

6. [If yes to C5 above, record the number of students marked as late and/or leaving early on each of the following days for the most recent fully completed week]:

Day of the week:

Monday:	_____	Boys	_____	Girls
Tuesday:	_____	Boys	_____	Girls
Wednesday:	_____	Boys	_____	Girls
Thursday:	_____	Boys	_____	Girls
Friday:	_____	Boys	_____	Girls

7. On a typical day, can you estimate how many of your enrolled pupils miss more than 20 minutes of the maths class?

## L. Numeracy Resources

5. What mathematics teaching and learning materials do you have available? (select all that apply)  
[Read each option and record relevant answers]

- |                                                                                                           |                                                                                       |
|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <input type="checkbox"/> Teacher's Guide or Teacher Resource Guide                                        | <input type="checkbox"/> Addition and/or subtraction mats/charts                      |
| <input type="checkbox"/> Scripted/step-by-step lesson plans                                               | <input type="checkbox"/> Counters (bottle caps, stones, sticks)                       |
| <input type="checkbox"/> Unscripted/generalized lesson plans                                              | <input type="checkbox"/> Bundles (straws, sticks)                                     |
| <input type="checkbox"/> Lesson notes                                                                     | <input type="checkbox"/> Abacus                                                       |
| <input type="checkbox"/> Weekly schemes of work (day-by-day description of teaching plans and activities) | <input type="checkbox"/> Number line                                                  |
| <input type="checkbox"/> Pupil textbooks                                                                  | <input type="checkbox"/> 2D shapes or pattern blocks                                  |
| <input type="checkbox"/> Pupil workbooks                                                                  | <input type="checkbox"/> 3D shapes or blocks                                          |
| <input type="checkbox"/> Flash cards                                                                      | <input type="checkbox"/> Material for teacher-made teaching aids/improvised resources |
| <input type="checkbox"/> Place value chart                                                                | <input type="checkbox"/> Other (specify)_____.                                        |

6. For each of the materials you indicated having available in question D1, please specify whether you use it daily, weekly, monthly, termly, or rarely or never:

<u>Materials</u>	<u>Daily</u>	<u>Weekly</u>	<u>Monthly</u>	<u>Termly</u>	<u>Rarely / Never</u>	<u>Don't Have</u>
Teacher's Guide or Teacher Resource Guide	<input type="radio"/>	<input type="radio"/>				
Scripted/step-by-step lesson plans	<input type="radio"/>	<input type="radio"/>				
Unscripted/generalized lesson plans	<input type="radio"/>	<input type="radio"/>				
Lesson notes	<input type="radio"/>	<input type="radio"/>				
Weekly schemes of work	<input type="radio"/>	<input type="radio"/>				
Pupil textbooks	<input type="radio"/>	<input type="radio"/>				
Pupil workbooks	<input type="radio"/>	<input type="radio"/>				
Flash cards	<input type="radio"/>	<input type="radio"/>				
Place value chart	<input type="radio"/>	<input type="radio"/>				
Addition and/or subtraction mats/charts	<input type="radio"/>	<input type="radio"/>				
Counters (bottle caps, stones, sticks)	<input type="radio"/>	<input type="radio"/>				
Bundles (straws, sticks)	<input type="radio"/>	<input type="radio"/>				
Abacus	<input type="radio"/>	<input type="radio"/>				
Number line	<input type="radio"/>	<input type="radio"/>				
2D shapes or pattern blocks	<input type="radio"/>	<input type="radio"/>				
3D shapes or blocks	<input type="radio"/>	<input type="radio"/>				
Material for teacher-made teaching aids	<input type="radio"/>	<input type="radio"/>				
Other (specify)_____.	<input type="radio"/>	<input type="radio"/>				

7. [For materials reported in D2 as being used rarely or never] Why don't you regularly use the materials in the classroom? (select all that apply) [Do not prompt, record any relevant answers]

- There are not enough for everyone
- The children don't understand the language of the materials
- I am not comfortable teaching the language of the materials
- The children will damage or lose them
- The materials we have are already damaged
- The materials are not age or grade appropriate
- The content is dated or not effective
- Other (specify): \_\_\_\_\_.

8. In a typical 5-day school week, on how many days does your class receive a maths lesson?

9. What is the duration in minutes of a typical maths lesson for your class?

10. Are the teaching and learning materials that you have sufficient to enable effective teaching of early grade mathematics?

Yes → skip to E1

No

Don't know → skip to E1

Decline to answer → skip to E1

11. [If no to D6] Why are the teaching and learning materials not sufficient? (select all that apply)

- There are not enough materials for every pupil
- There are not enough materials for every teacher or class
- The materials are outdated
- The materials are damaged
- Other (specify): \_\_\_\_\_.

## M. In-Service Training and Professional Development

[READ] This next module will focus on any in-service training and professional development (including

20. Have you ever attended any in-service training or professional development sessions on early grade mathematics?

Yes

No → skip to E5

Don't know → skip to E5

Decline to answer → skip to E5

21. Have you attended any in-service training or professional development sessions on early grade mathematics in the current school year?

Yes

No → skip to E5

Don't know → skip to E5

Decline to answer → skip to E5

22. About how many early grade mathematics training days did you receive in total over the current school year?

<input type="text"/>	<input type="text"/>	<input type="text"/>
----------------------	----------------------	----------------------

23. Do you feel this training was enough for you to be able to use these methods correctly in your classroom?

Yes

No

Don't know

Decline to answer

24. Do you feel you need more training?

Yes

No → skip to E7

Don't know → skip to E7

Decline to answer → skip to E7

25. [If yes to E6] In which topics would you like to receive more training? [Do not prompt, record any relevant answers]

------------------------------------------

26. Have you ever received training in assessing pupils' mathematics understanding?

- Yes
- No
- Don't know
- Decline to answer

27. During the current school year, have you received any mentoring, coaching, or structured feedback in teaching mathematics?

- Yes
- No → skip to F1
- Don't know → skip to F1
- Decline to answer → skip to F1

28. [If yes to E8] Who in the current school year provided you with mentoring, coaching, or structured feedback in teaching mathematics? (select all that apply) [Read each option and record relevant answers]

- Head Teacher
- Curriculum Lead
- Circuit Supervisor
- Maths Coach
- Other Teacher(s) at this school
- Other Teacher(s) at nearby schools
- Someone from GES / MOE
- An NGO
- Other (specify): \_\_\_\_\_.

29. [If yes to E8] What types of mentoring, coaching, or structured feedback did you receive? (select all that apply) [Do not prompt, record any relevant answers]

- Weekly training or coaching session at the school
- Monthly training or coaching session at the school
- Help with lesson planning
- Coaching or feedback based on observed lesson
- Other (specify): \_\_\_\_\_.

30. I will now ask some questions about the amount of mentoring, coaching, or structured feedback that you have received as well as how helpful you found it to be. Of the following list of possible supervision and/or coaching providers, please estimate the approximate number of hours each provider supervised/coached you in the past two (2) years and in the last full term and then rate each coaching provider on a scale of 1-5 in accordance with the following scale: 1=very unhelpful, 2=somewhat unhelpful, 3=neither helpful nor unhelpful, 4=somewhat helpful, 5=very helpful:

<u>Coaching provider</u>	<u>DAYS in past 2 school years</u>	<u>HOURS in the last full term</u>	<u>Rating</u> (1=very unhelpful; 5=very helpful)
Head Teacher	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/>
Curriculum Lead	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/>
Circuit Supervisor	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/>
Math Coach	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/>
Other (specify): _____.	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/>

31. What were the most useful aspects of the coaching sessions?

32. What were the least useful aspects of the coaching sessions?

## N. Teacher Knowledge, Attitudes, and Practices

[READ] I will now read a number of statements about different approaches to teaching maths and ask you

7. It is important to explain things carefully to students to prevent them from making mistakes:

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

8. Students learn mathematics better when they work through problems or questions in a group:

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

9. In mathematics, there is usually one right way of doing something:

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

10. The way I was taught mathematics is the same approach I should use to teach my pupils:

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

11. Students like using objects (counters, straws, blocks, etc.,) but it doesn't help them to be better maths students:

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

12. It is important to allow students to make mistakes and to have them discuss their mistakes:

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

13. Students should feel free to use any method or way they want to solve a problem or a question:

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

14. I enjoy learning mathematics and solving maths problems:

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

15. Most people are better at mathematics than I am:

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

16. What you learn in mathematics class is useful outside of school:

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

17. Mathematics is easy for me:

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

18. Intelligent people don't have to work hard to do well in mathematics:

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

19. I dislike teaching mathematics:

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

20. How confident do you feel in teaching mathematics?

- Very confident
- Somewhat confident
- Not very confident
- Not at all confident

21. For each of the following practices, please state whether you engage in that practice during your maths lessons daily, weekly, monthly, rarely, or not at all: [Enumerator: Please name each practice and ask for an answer for that practice before moving on. You must read out all of the practices listed here]

<u>Practice</u>	<u>Daily</u>	<u>Weekly</u>	<u>Monthly</u>	<u>Rarely</u>	<u>Not at all</u>
Use a lesson plan/notes or scheme of work	<input type="radio"/>				
Engage students in mental maths exercises	<input type="radio"/>				
Use learning resources (counters, bundles of sticks and straws, place value charts, objects, shapes, etc.) to demonstrate or explain something	<input type="radio"/>				
Allow pupils to use learning resources (counters, bundles of sticks and straws, place value charts, objects, shapes, etc.) on their own or in groups	<input type="radio"/>				
Ask pupils to explain their thinking or how they arrived at an answer	<input type="radio"/>				
Ask pupils discuss with each other their approach to solving maths problems	<input type="radio"/>				
Have children use objects, models, and diagrams to develop or demonstrate their understanding of maths	<input type="radio"/>				
Encourage pupils to develop personal strategies for solving maths problems	<input type="radio"/>				
Engage pupils in games and activities to reinforce learning	<input type="radio"/>				
Encourage pupils to represent quantities of numbers in different ways	<input type="radio"/>				
Assess pupil learning	<input type="radio"/>				
Assess pupil learning against a benchmark or performance standard	<input type="radio"/>				

22. Which of the following methods do you use during your maths lessons to help teach number sense (fluidity and flexibility with numbers)? (select all that apply) [Read each option and record relevant answers]

- Identify numbers
- Count (e.g., 1 to 100)
- Skip count (e.g., 5, 10, 15)

- Identify larger and smaller numbers among of a set of numbers
- Represent a quantity in multiple ways
- Describe relationships between numbers
- Decompose numbers (e.g., into 1s, 10s, or 100s)
- Explain value of a digit in a given number
- Other (specify)\_\_\_\_\_.
- I don't teach this in my class

23. Which of the following methods do you use during your maths lessons to help teach number operations (calculations)? (select all that apply) [Read each option and record relevant answers]

- Create a story or problem for a given expression
- Use objects to represent a problem
- Use a variety of strategies to solve a problem
- Fill in missing numbers in a problem (e.g.,  $2 + \underline{\quad} = 4$ )
- Use a tens frame
- Use an addition/subtraction chart
- Other (specify)\_\_\_\_\_.
- I don't teach this in my class

24. Which of the following methods do you use during your maths lessons to improve computational fluency (fast and accurate problem solving)? (select all that apply) [Read each option and record relevant answers]

- Identify combinations of smaller numbers that produce a larger number
- Solve addition and subtraction problems mentally
- "Make tens" to solve problems
- Name doubles of a number
- Other (specify)\_\_\_\_\_.
- I don't teach this in my class

25. Which of the following methods do you use during your maths lessons to help teach patterns and relations? (select all that apply) [Read each option and record relevant answers]

- Identify and extend repeating element of a pattern sequence
- Explain equals symbol and justify its use
- Solve problems with an unknown value
- Identify errors and omissions in pattern sequences
- Other (specify)\_\_\_\_\_.
- I don't teach this in my class

26. Which of the following methods do you use during your maths lessons to help teach shape and space? (select all that apply) [Read each option and record relevant answers]

- Identify attributes of shapes
- Sort and order objects by their features (e.g., by length, number of faces/sides, etc.)
- Measure objects
- Other (specify)\_\_\_\_\_.
- I don't teach this in my class

## O. Pupil Performance and Evaluation

[READ] I will now ask a few questions about pupil performance and assessment in your class. The purpose

6. Do you believe your pupils are on track to become proficient in early grade mathematics?

Yes → G3

No

Don't know → G4

Decline to answer → G4

7. [If no to G1 above] Why do you think your pupils are not on track to become proficient? (select all that apply) [Do not prompt, record any relevant answers]

- They don't come to class often enough
- They don't come to class on time
- They don't pay attention during class
- They are not confident in maths
- Their parents do not support their learning at home
- They are too hungry to concentrate
- They don't care about school
- They are not able to understand the language of instruction
- The class is too large for me to provide good instruction
- The lessons are too short
- The teacher(s) they had before me did not do a good job
- I don't always teach the lessons because I am doing other things
- I don't have the teaching resources I need to teach them well
- I don't have the training I need to teach them well
- The pupils don't have enough learning books
- Other (specify) \_\_\_\_\_.

8. How do you know whether they are on track to become proficient in early grade mathematics? (select all that apply) [Do not prompt, record any relevant answers]

- I assess them regularly
- They seem to be doing OK when I observe them in class
- I don't know
- Other (specify) \_\_\_\_\_.

9. For each of the following methods of pupil evaluation or assessment, please state whether you employ it daily, weekly, monthly, quarterly, annually, or not at all: [Enumerator: Please name each method and ask for an answer for that method before moving on. You must read out all of the methods listed here]

Method	Daily	Weekly	Monthly	Quarterly	Annually	Not at all
Written assessments	<input type="radio"/>					
Individual oral assessments	<input type="radio"/>					
Group question and answer session	<input type="radio"/>					
Checking pupil exercise books	<input type="radio"/>					
Checking pupil homework	<input type="radio"/>					
Other (specify): _____	<input type="radio"/>					

10. Do you adjust your teaching based on the results of pupil evaluation or assessment?

Yes

No → skip to G7

Don't know → skip to G7

Decline to answer → skip to G7

11. [If yes to G5] In what ways do you adjust your teaching based on the results of pupil evaluation or assessment? (select all that apply) [Read each option and record relevant answers]

- I repeat previous lessons
- I make new lessons to teach difficult content in a different way
- I pay more attention to struggling learners in class
- I pay more attention to high performing learners in class
- I provide struggling learners with tutoring outside of class
- I arrange for others to provide struggling learners with tutoring outside of class
- I pair struggling learners with stronger ones during class
- If learners are doing well, I skip lessons that aren't useful
- If learners are doing well, I go through lessons more quickly
- Other (specify) \_\_\_\_\_.

12. Do you discipline pupils who score low or unsatisfactory marks on the assessment?

Yes

No → skip to G9

Don't know → skip to G9

Decline to answer → skip to G9

13. [If yes to G7] In what ways do you discipline pupils based on the results of pupil assessment? (select all that apply) [Do not prompt, record any relevant answers]

- Beat or cane them
- Make them sweep, clean, or pick rubbish
- Makes them hold an uncomfortable position (kneeling/squatting/hands over head)
- Verbal abuse or mockery
- Other (specify) \_\_\_\_\_.

Do you acknowledge or reward pupils who score high marks on the assessment?

- Yes
- No → skip to G11
- Don't know → skip to G11
- Decline to answer → skip to G11

14. [If yes to G9] In what ways do you acknowledge or reward pupils based on the results of pupil assessment? [Do not prompt, record any relevant answers]

- Food and drink (candies, biscuits, minerals, etc.)
- Gifts
- Stickers or stars
- Words of encouragement
- Giving them a special job
- Other (specify): \_\_\_\_\_.

15. Do you track your pupils' progress over time (e.g., termly)?

- Yes
- No
- Don't know
- Decline to answer

End Time (HH:MM):        :

*Thank you! That completes the teacher interview.*

**Ghana Numeracy Pilot Impact Evaluation  
Pupil Questionnaire**

**General Background Information**

Team name:

Enumerator ID:

Today's date (DD-MM-YY):  -  -

Start time (HH:MM):  :

School name:

School ID:

Region:

District:

Locality:

Pupil ID from tracking sheet:

[Read assent script. Does the  Yes  
child assent to participate?]  No (DO NOT PROCEED)

Pupil first name:  Pupil last name:

Name pupil goes by in household or community:

Sex:  Male  
 Female

## P. Pupil Background Information

*I will start by asking some questions about you as well as how often you come to school. If you don't know*

20. How old are you?

Age in years:

21. What class are you in?

P1  
P2

22. In what class were you last year?

KG1 → skip to A5  
KG2 → skip to A5  
P1  
P2

P3  
I was not in school last year  
Don't know  
Decline to answer

23. Did you go to nursery, pre-school, or KG before starting P1?

Yes  
No  
Don't know  
Decline to answer

24. Think back to last week, Monday through Friday. Were you absent from school on any days last week?

Yes  
No → skip to A7  
Don't know → skip to A7  
Decline to answer → skip to A7

25. How many days last week were you absent from school?

26. How often are you absent from school? [Do not prompt, record relevant answer]

I rarely or never miss school → skip to A9  
I sometimes miss school (but the days I attend are more than the days I miss)  
I regularly miss school (and the days I miss are more than the days I attend)  
I rarely come to school  
Don't know  
Decline to answer

27. What are the main reasons that you miss school? (select all) [Do not prompt, record any relevant answers]

- I am sick or hurt
- I am too tired to come
- It is too far to walk
- No transportation or money for transportation
- I have to help with household chores
- I have to babysit younger siblings
- I have to do work for the family
- I want to play instead
- I don't want to come because school is hard
- I don't want to come because school is boring
- I don't understand the language of the lessons
- Other kids tease or bully me
- My teacher is mean
- The weather is bad
- No working toilets at school
- No working water supply at school
- Other (specify): \_\_\_\_\_.

28. How often are you late to school? [Do not prompt, record relevant answer]

- I am rarely or never late to school → skip to A I I
- I am sometimes late (but the days I am on time are more than the days that I am late)
- I am regularly late to school (and the days I am late are more than the days I am on time)
- I rarely come to school on time
- Don't know → skip to A I I
- Decline to answer → skip to A I I

29. What are the main reasons you were late to school? (select all) [Do not prompt, record any relevant answers]

- I wake up late
- I have to walk a long time
- I have to help with household chores
- I have to babysit younger siblings
- I have to do work for the family
- The person who takes me to school is late in taking me
- I want to play
- The weather is bad
- The classes never start on time because all the other pupils are late
- The classes never start on time because the teachers are late
- Other (specify): \_\_\_\_\_.

30. Do you like coming to school or dislike coming to school?

- Like it
- Neutral
- Dislike it
- Don't know
- Decline to answer

31. Does your school provide you with meals?

- Yes

No  
Don't know  
Decline to answer

32. How often do you feel hungry when you first get to school in the morning: every day, some days, or rarely/never?

Every day  
Some days  
Rarely or never  
Don't know  
Decline to answer

## Q. Language Background

I will now ask some questions about the languages you speak at home and at school. I will also ask about

1. In which language(s) do your parents speak to you at home most of the time? (select all)

- |                                      |                                                  |
|--------------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Akuapim Twi | <input type="checkbox"/> Gonja                   |
| <input type="checkbox"/> Asante Twi  | <input type="checkbox"/> Gurene                  |
| <input type="checkbox"/> Dagaare     | <input type="checkbox"/> Kasem                   |
| <input type="checkbox"/> Dagbani     | <input type="checkbox"/> Kusaal                  |
| <input type="checkbox"/> Dangme      | <input type="checkbox"/> Nzema                   |
| <input type="checkbox"/> English     | <input type="checkbox"/> Decline to answer       |
| <input type="checkbox"/> Ewe         | <input type="checkbox"/> Don't know              |
| <input type="checkbox"/> Fante       | <input type="checkbox"/> Other (specify): _____. |
| <input type="checkbox"/> Ga          |                                                  |

2. Which language(s) do you use when playing with your friends on the playground at school? (select all)

- |                                      |                                                  |
|--------------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Akuapim Twi | <input type="checkbox"/> Gonja                   |
| <input type="checkbox"/> Asante Twi  | <input type="checkbox"/> Gurene                  |
| <input type="checkbox"/> Dagaare     | <input type="checkbox"/> Kasem                   |
| <input type="checkbox"/> Dagbani     | <input type="checkbox"/> Kusaal                  |
| <input type="checkbox"/> Dangme      | <input type="checkbox"/> Nzema                   |
| <input type="checkbox"/> English     | <input type="checkbox"/> Decline to answer       |
| <input type="checkbox"/> Ewe         | <input type="checkbox"/> Don't know              |
| <input type="checkbox"/> Fante       | <input type="checkbox"/> Other (specify): _____. |
| <input type="checkbox"/> Ga          |                                                  |

3. Which language(s) are used in teaching you at school? (select all)

- |                                      |                                                  |
|--------------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Akuapim Twi | <input type="checkbox"/> Gonja                   |
| <input type="checkbox"/> Asante Twi  | <input type="checkbox"/> Gurene                  |
| <input type="checkbox"/> Dagaare     | <input type="checkbox"/> Kasem                   |
| <input type="checkbox"/> Dagbani     | <input type="checkbox"/> Kusaal                  |
| <input type="checkbox"/> Dangme      | <input type="checkbox"/> Nzema                   |
| <input type="checkbox"/> English     | <input type="checkbox"/> Decline to answer       |
| <input type="checkbox"/> Ewe         | <input type="checkbox"/> Don't know              |
| <input type="checkbox"/> Fante       | <input type="checkbox"/> Other (specify): _____. |
| <input type="checkbox"/> Ga          |                                                  |

4. Which language is used most often in teaching you maths? (select one)

- |                                      |                                                  |
|--------------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Akuapim Twi | <input type="checkbox"/> Gonja                   |
| <input type="checkbox"/> Asante Twi  | <input type="checkbox"/> Gurene                  |
| <input type="checkbox"/> Dagaare     | <input type="checkbox"/> Kasem                   |
| <input type="checkbox"/> Dagbani     | <input type="checkbox"/> Kusaal                  |
| <input type="checkbox"/> Dangme      | <input type="checkbox"/> Nzema                   |
| <input type="checkbox"/> English     | <input type="checkbox"/> Decline to answer       |
| <input type="checkbox"/> Ewe         | <input type="checkbox"/> Don't know              |
| <input type="checkbox"/> Fante       | <input type="checkbox"/> Other (specify): _____. |
| <input type="checkbox"/> Ga          |                                                  |

5. Do you speak that language? Can you read that language?

- I can only speak it
- I can only read it
- I can speak and read it
- I can neither speak nor read it
- Don't know
- Decline to answer

## R. Maths Practices

*I am now going to ask a few questions about your mathematics practices in school and at home.*

1. In your maths class, does your teacher ask you to discuss math problems or solutions with your classmates?

Yes  
No  
Don't know  
Decline to answer

2. Do you use counters, stones, sticks, or other items during maths class?

Yes  
No  
Don't know  
Decline to answer

3. In your maths class, does your teacher ask you questions about math, like the answer to a problem or to show how you use counters?

Yes  
No  
Don't know  
Decline to answer

4. Does anyone at home help you do your maths homework?

Yes  
No  
Don't know  
Decline to answer

5. Do you like maths or dislike maths?

Like it  
Neutral  
Dislike it  
Don't know  
Decline to answer

6. How good are you at maths: very good, good, not very good, or bad?

Very good  
Good  
Not very good  
Bad  
Don't know  
Decline to answer

## S. Maths Assessment

Teachers can see how pupils are doing in many different ways. I will now ask you about some different ways

1. Does your teacher assess you orally?

- Yes
- No → skip to D3
- Don't know → skip to D3
- Decline to answer → skip to D3

2. [If yes to D1] How often does your teacher assess you orally?

- Every day
- Every week
- Every month
- Rarely
- Don't know
- Decline to answer

3. Does your teacher check your work book?

- Yes
- No → skip to D5
- Don't know → skip to D5
- Decline to answer → skip to D5

4. [If yes to D3] How often does your teacher check your work book?

- Every day
- Every week
- Every month
- Rarely
- Don't know
- Decline to answer

5. Does your teacher check your homework?

- Yes
- No → skip to D7
- Don't know → skip to D7
- Decline to answer → skip to D7

6. [If yes to D5] How often does your teacher check your homework?

- Every day
- Every week
- Every month
- Rarely
- Don't know
- Decline to answer

7. Does your maths teacher punish you if you do poorly?

Yes

No → skip to D9

Don't know → skip to D9

Decline to answer → skip to D9

8. [If yes to question D7] In what ways does your teacher punish you? [Do not prompt, record any relevant answers]

- Beats or canes me
- Makes me sweep, clean, or pick rubbish
- Makes me hold an uncomfortable position (kneeling/squatting/hands over head)
- Verbal abuse or mockery
- Other (specify): \_\_\_\_\_.

9. Does your maths teacher reward you if you do well?

Yes

No → skip to E1

Don't know → skip to E1

Decline to answer → skip to E1

10. [If yes to question D9] In what ways does your teacher reward you? [Do not prompt, record any relevant answers]

- Food and drink (candies, biscuits, minerals, etc.)
- Gifts
- Clapping
- Encourages me with words
- Gives me a special job
- Other (specify): \_\_\_\_\_.

## T. Household Assets

*I will now ask some questions about the things you have in your house. [Enumerators: use stimulus sheet]*

1. Where do you normally get drinking water from at home?

- River or stream
- Well or borehole
- Communal tap
- Tap in the home
- Bottled or sachet water
- Other (specify): \_\_\_\_\_.
- Don't know
- Decline to answer

2. Does your home have electricity?

- Yes
- No
- Don't know
- Decline to answer

3. Where is food normally cooked at your home?

- Outside the house
- In a shed
- Inside the house
- Other (specify): \_\_\_\_\_.
- Don't know
- Decline to answer

4. How is food most often cooked at your home?

- Using firewood
- Using a coal pot
- Using a stove
- Using a cooker (including an oven)
- Other (specify): \_\_\_\_\_.
- Don't know
- Decline to answer

5. When you are at home, what type of toilet do you use?

- A pit toilet
- A shared toilet
- A communal toilet
- A flush toilet outside your house
- A flush toilet inside your house
- In the bush/free range
- Other (specify): \_\_\_\_\_.
- Don't know
- Decline to answer

6. Does your family have the following items in your home? (select all that apply) [Read options one by one and ask child for a yes/no answer]

<u>Item</u>	<u>Yes</u>	<u>No</u>	<u>Don't know</u>
Radio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Television	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Computer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Refrigerator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bicycle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Motorbike	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Car/truck	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Thank you! That completes the pupil questionnaire.*

End Time (HH:MM):        :

**Ghana Numeracy Pilot Impact Evaluation  
Structured Classroom Observation**

**General Background Information**

Team name:

Enumerator ID:

Today's date (DD-MM-YY):  -  -

Lesson start time (HH:MM):  :

School name:

School ID:

District:

Teacher ID from tracking sheet:

Was the teacher consent form administered and signed?  Yes  
 No (DO NOT PROCEED)

**Teacher Identifying Information**

First name:  Last name:

Sex:  Male  
 Female

Please record the grade observed:

P1  
 P2

The subject of this lesson is:  Math  
 Other:

Was the observed mathematics lesson split across multiple sessions?

Yes  
 No

[If yes] Please enter the TOTAL duration of the observed sessions:

(HH:MM):  :

The purpose of this tool is to record the specific maths practices that the teacher engages in during the 60-

TEACHER PRACTICES OBSERVED	1 The practice is not done/observed at all or the opposite is done	2 The practice is done sometimes or partially	3 The practice is done very well and consistently where appropriate	4 Not Applicable
1. Teacher uses a <b>lesson plan</b>				
2. Teacher uses a <b>scripted</b> lesson plan				
3. Teacher introduces lesson by <b>connecting</b> to or <b>reinforcing</b> what learners have learned previously				
4. Teacher introduces lesson with a visual, game, puzzle, or problem-solving activity.				
5. Teacher actively minimizes classroom time that is off-task				
6. Teacher demonstrates effective <b>classroom management</b> (e.g., efficiently manages materials, transition(s) between activities, class start and finish, discipline)				
7. Teacher uses <b>learning resources</b> (counters, bundles of sticks and straws, place value charts, objects, shapes...) to explain concepts, answer questions, or solve problems				
8. Teacher constructively <b>engages</b> all students—not just some—in classroom activities				
9. Pupils have time to <b>practice</b> new learning – individually or with a partner--in their workbook, notebook, or jotter.				

10. Teacher engages learners in <b>cooperative learning</b> activities in pairs or groups (e.g., pupils lead maths activities, talk with each other about maths, solve maths problems together...)				
11. Teacher asks pupils to <b>explain</b> their thinking or how they arrived at an answer.				
12. Teacher provides opportunities for learners to develop <b>mathematical reasoning</b> (e.g., using existing math skills and knowledge to solve new or unfamiliar problems, explaining in own words how a math problem might be solved, encouraging multiple approaches to solving math problems...)				

<b>TEACHER PRACTICES OBSERVED</b>	<b>1</b> The practice is not done/observed at all or the opposite is done	<b>2</b> The practice is done sometimes or partially	<b>3</b> The practice is done very well and consistently where appropriate	<b>4</b> Not Applicable (practice is not relevant to the subject being taught)
13. Teacher uses multiple methods for <b>assessing the understanding</b> of learners (formal tests and quizzes, walking around class and checking students work, encouraging learners who get a problem wrong to seek assistance from other students...)				
14. Teacher avoids using language that favors one gender over another and/or reinforces gender stereotypes				
15. Teacher engages learners of all <b>ability levels</b>				
16. Teacher avoids using <b>abusive language</b>				
17. Teacher provides constructive, positive, and encouraging <b>feedback</b>				
18. Teacher communicates to pupils that they are all <b>capable</b> of being good math pupils.				

19. Teacher <b>intervenes</b> when learners use abusive or biased language with each other.				
20. All students (especially girls) have equal <b>access</b> to chairs and desks.				
21. All students (especially girls) have equal <b>access</b> to learning materials, such as books, pens/pencils, blocks, rulers, number charts, etc.				
22. Pupils spend more time using learning resources <b>on their own</b> than the teacher does using learning resources to explain something				
23. Teacher deliberately presents questions or problems that have <b>more than 1 possible answer</b> or that can be solved in more than 1 way				
24. Teacher encourages pupils to find and share different strategies for solving a problem or answering a question.				

Indicate if any of the following materials were used:	Not At All	A Little	Frequently	
25. Blackboard				
26. Textbook				
27. Student notebooks/exercise books/workbooks				
28. Fingers (to count)				
29. Number line				
30. Number chart				
31. Addition chart				
32. Multiplication chart				
33. Collection of shapes (or containers of different shapes – cylinders, boxes, etc.)				
34. Collections of counters (bottle tops, sticks, blocks, etc. for counting)				
35. Tens frame				
36. Addition frame				
37. Subtraction frame				
38. Place value chart				
<b>PUPIL BEHAVIOR</b>	<b>25% or less or N/A</b>	<b>About half</b>	<b>About 75%</b>	<b>Nearly 100%</b>
39. Approximate proportion of learners who are <b>paying attention</b> throughout the entire class period				
40. Approximate proportion of learners who are <b>actively engaged</b> in all lessons and class activities				
41. Approximate proportion of learners who are <b>participating</b> when working in small groups or pairs				

42. Which language(s) did the teacher use during the lesson?

- |                                      |                                                  |
|--------------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Akuapim Twi | <input type="checkbox"/> Gonja                   |
| <input type="checkbox"/> Asante Twi  | <input type="checkbox"/> Gurene                  |
| <input type="checkbox"/> Dagaare     | <input type="checkbox"/> Kasem                   |
| <input type="checkbox"/> Dagbani     | <input type="checkbox"/> Kusaal                  |
| <input type="checkbox"/> Dangme      | <input type="checkbox"/> Nzema                   |
| <input type="checkbox"/> English     | <input type="checkbox"/> Decline to answer       |
| <input type="checkbox"/> Ewe         | <input type="checkbox"/> Not applicable          |
| <input type="checkbox"/> Fante       | <input type="checkbox"/> Other (specify): _____. |
| <input type="checkbox"/> Ga          |                                                  |

43. Which language(s) did the pupils use during the lesson?

- |                                      |                                                  |
|--------------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Akuapim Twi | <input type="checkbox"/> Gonja                   |
| <input type="checkbox"/> Asante Twi  | <input type="checkbox"/> Gurene                  |
| <input type="checkbox"/> Dagaare     | <input type="checkbox"/> Kasem                   |
| <input type="checkbox"/> Dagbani     | <input type="checkbox"/> Kusaal                  |
| <input type="checkbox"/> Dangme      | <input type="checkbox"/> Nzema                   |
| <input type="checkbox"/> English     | <input type="checkbox"/> Decline to answer       |
| <input type="checkbox"/> Ewe         | <input type="checkbox"/> Not applicable          |
| <input type="checkbox"/> Fante       | <input type="checkbox"/> Other (specify): _____. |
| <input type="checkbox"/> Ga          |                                                  |

44. How confident did the teacher appear to be with the subject matter of the lesson?

- Very confident
- Somewhat confident
- Not very confident
- Not at all confident

45. At any time during the lesson, did the pupil use notebooks/workbooks/exercise books?

- Yes
- No → skip to 48

46. [If yes to 46] Were there enough notebooks/workbooks/exercise books for each pupil to have his/her own?

- Yes
- No

47. Is the classroom clean and organized?

- Yes
- No
- The class was held outside of a classroom environment

48. Is there sufficient work space at a desk or table for all the students?

- Yes
- No

49. Is there enough space in the class for the teacher to move about freely?

- Yes
- No

Lesson end time (HH:MM):   :

## TWI Assessor Protocol P1

<b>Task 7A: Bundles</b>		 FI	 
 	10 bundles 10s and 10 ones; tens mat		
	<p><b>Eyinom yε du kuw baako biako. Eyinom yε mmaako maako.</b> These are bundles of 10s. These are ones.</p> <p><i>[Point to number 42 (but do not say the number, since in local language when the you say the number, you give numbers of 10s and 1s in the number)]</i></p> <p><b>Mepe se wokyerε me du du kuw ne mmaako mmako ahe εwɔ nɔma yi mu. Fiase.</b> I want you to show me this number, using the bundles of 10s and ones. You can use the tens frame if you want. Go ahead and start.</p> <p>  <b>Ampa, eye. Afei kyere me. Du du kuw ahe a εwɔ aduanan abien (42) mu.</b> That's right. Now tell me, how many groups of 10s are there in the number?</p> <p><b>Du du kuw anann na εwɔ aduan abien (42) mu.</b> There are four groups of 10. <i>[count them out for the child]</i> one group of 10, two groups of 10, three groups of 10, four groups of 10.</p> <p><b>Afei mmaako mmaako ahe na εwɔ aduan abien (42) mu. Mmaako mmaako abien na εwɔ aduan abien (42) mu. Baako, abien.</b>   Now, how many ones are in the number? <i>[give the child time to answer]</i>. There are 2 ones in the number. One, two.</p> <p><b>Metumi de du du kuw anan ne mmaako mmaako abien agyina hɔ ama aduan abien (42). Du du kuw anan ne mmaako mmaako abien na εyε aduan abien (42).</b>  I can represent the number with four groups of 10 and two ones. <i>[count out and place four bundles of 10 and 2 ones in front of the child, using the tens mat].</i></p>		<p> • If child makes two errors, one right after the other</p> <p>• If child cannot answer first 2 questions</p> <p> Give the child up to 15 seconds to respond to a question. If they don't give an answer in 15 seconds, point to next number and say, "Can you show me this number?"</p>

<p><b>Afie wubetu de du kuw ne mmaako mmako no akyerε me nɔma no?</b>  <i>[Point to first number on stimulus sheet (12)]</i> Now can you show me this number, using your bundles of 10s and 1s?</p>		
	<p>(✓) 1 = Correct  (✓) 0 = Incorrect or no response</p> <p>12    <input type="checkbox"/> 1   <input type="checkbox"/> 0</p> <p>25    <input type="checkbox"/> 1   <input type="checkbox"/> 0</p> <p>34    <input type="checkbox"/> 1   <input type="checkbox"/> 0</p> <p>87    <input type="checkbox"/> 1   <input type="checkbox"/> 0</p>	
<p> What language(s) did the child use for this activity? [check all that apply]</p> <p> <input type="checkbox"/> Akuapem Twi   <input type="checkbox"/> Asante Twi   <input type="checkbox"/> Dagaare   <input type="checkbox"/> Dagbani   <input type="checkbox"/> Dangme   <input type="checkbox"/> Ewe   <input type="checkbox"/> Fante   <input type="checkbox"/> Ga   <input type="checkbox"/> Gonja  <input type="checkbox"/> Kasem   <input type="checkbox"/> Nzema   <input type="checkbox"/> English   <input type="checkbox"/> Other </p>		

<p><b>Task 7B: Bundles Bonus</b>     F2     </p>		
<p>  10 bundles 10s and 10 ones; five bundles of 100</p>		
<p><i>[Now put the five bundles of 100 on table]</i></p> <p> <b>Eyinom yε ɔha ɔha kuw. Afie wubetu de ɔha ɔha kuw, ne dudu kuw ne maako maako no akyerε me nɔma yi.</b>  These are bundles of 100. Can you use the bundles of 100 and the other bundles to show me this number?</p>		<p></p> <ul style="list-style-type: none"> <li>• If child did not score 4/4 on Bundles.</li> </ul>
	<p>(✓) 1 = Correct  (✓) 0 = Incorrect</p> <p>243    <input type="checkbox"/> 1   <input type="checkbox"/> 0</p>	



What language(s) did the child use for this activity? [check all that apply]

Akuapem Twi
  Asante Twi
  Dagaare
  Dagbani
  Dangme
  Ewe
  Fante
  Ga
  Gonja  
 Kasem
  Nzema
  English
  Other

**Task 8A: Number Deconstruction**



**Ma tsɔɔ mo nɔma kome. Ma suɔ ne o de mi nyɔngmanyɔngma ke kakaaka abɔ ne nge nɔma fɛɛ nɔma mi ne o ko kane tso aloo kantesi ne a fi ɔme.**  
 I am going to show you other numbers. This time I want you to tell me the number of tens and ones in each number, without using the bundles and sticks.

**Mepɛ sɛ wokyerɛ me du du kuw ne mmaako mmako ahe a ɛwɔ nɔma yi mu. Fi ase.**  
 Look at this number [point to example, 12]. How many tens are there in this number?



**Du du kuw baako na ɛwɔ nɔma no mu. Afei kyere me, mmaako maako ahe na ɛwɔ nɔma no mu.**  
 There is one group of ten in the number. Now tell me, how many 1s are in the number?

**Mmaako mmaako abien na ɛwɔ nɔma no mu . Nɔma no wɔ du du kuw baako.**  
 There are two ones in the number. This number has one ten and two ones.

**Du du kuw ne mmaako mmako dodow a ɛwɔ nɔma yi mu?**  
 [Point to next number, 26, but do not say the name of the number]  
 How many tens and ones are in this number?



- If child makes two errors, one right after the other
- If child cannot answer first 2 questions



If they don't give an answer in 10 seconds, point to next number and say, "Can tell me how many tens and ones in this number?"



(✓) 1 = Correct  
 (✓) 0 = Incorrect

26	<input type="checkbox"/> 1	<input type="checkbox"/> 0	
38	<input type="checkbox"/> 1	<input type="checkbox"/> 0	
61	<input type="checkbox"/> 1	<input type="checkbox"/> 0	
97	<input type="checkbox"/> 1	<input type="checkbox"/> 0	
<p> What language(s) did the child use for this activity? [check all that apply]</p> <p> <input type="checkbox"/> Akuapem Twi   <input type="checkbox"/> Asante Twi   <input type="checkbox"/> Dagaare   <input type="checkbox"/> Dagbani   <input type="checkbox"/> Dangme   <input type="checkbox"/> Ewe   <input type="checkbox"/> Fante   <input type="checkbox"/> Ga   <input type="checkbox"/> Gonja  <input type="checkbox"/> Kasem   <input type="checkbox"/> Nzema   <input type="checkbox"/> English   <input type="checkbox"/> Other </p>			

<b>Task 8B: Number Deconstruction Bonus</b>		 G2	 
	<p>[Now point to 352]</p> <p><b>Afie wubetu akyerɛ me ɔha ɔha kuw, du du kuw ne mmaako mmako dodow a εwɔ nɔmayi mu?</b>  Can you tell me how many 100s, 10s, and 1s there are in this number?</p>	<p></p> <ul style="list-style-type: none"> <li>• If child did not score 4/4 on Number Deconstruction.</li> </ul>	
	<p>(✓) 1 = Correct  (✓) 0 = Incorrect</p> <p>352   <input type="checkbox"/> 1   <input type="checkbox"/> 0</p>		
<p> What language(s) did the child use for this activity? [check all that apply]</p> <p> <input type="checkbox"/> Akuapem Twi   <input type="checkbox"/> Asante Twi   <input type="checkbox"/> Dagaare   <input type="checkbox"/> Dagbani   <input type="checkbox"/> Dangme   <input type="checkbox"/> Ewe   <input type="checkbox"/> Fante   <input type="checkbox"/> Ga   <input type="checkbox"/> Gonja  <input type="checkbox"/> Kasem   <input type="checkbox"/> Nzema   <input type="checkbox"/> English   <input type="checkbox"/> Other </p>			

Task 9A: Describing Numbers		 HI	 25 seconds for <u>EACH</u> question
	<p><i>[Place stimulus sheet with cover sheet in front of child and reveal example, 7]</i></p> <p><b>Nɔma ason (7) ni. Mɛtumi akyerɛ sɛ ɛso sɛn asia (6) baako pɛ. Na ɛsua nso sɛn akron (9) abien pɛ. Mɛtumi aka sɛ nɔma bɛn so no, asia (6) ba ansa na ason (7) aba. Anaasɛ metumi aka sɛ abiesa (3) wode anan (4) ka ho a, wubenya (7) ason. Wobetumi akyerɛ ɔkwan baako a wode bekyerɛkyerɛ ason (7) mu?</b></p> <p>This is 7. I could describe 7 as...one more than 6. Or two less than 9. I could say 7 is next to 6 on the number line. Or I could say it is the same as 3 + 4. There are many, many different ways to describe 7. Can you tell me one of the ways I described 7?</p> <p><i>[Wait for child to answer]</i></p> <p><b>Ampa, metumi akyerɛ sɛ ɛso sen asia (6) baako pɛ. Na ɛsua nso sen akron (9). Metumi aka sɛ nɔma bɛn so no, (6) asia ba ansa na ason (7) aba. Anaasɛ metumi aka sɛ abiesa (3) wode anan (4) ka ho a, wubenya (7) ason.</b></p> <p>I can describe 7 as one more than 6. Or two less than 9. I could say 7 is next to 6 on the number line. Or I could say it is the same as 3 + 4.</p> <p><i>[Show first number, 4]</i></p> <p><b>Afei, adu wo so. Fa akwan ahorow abiesa so kyerɛkyerɛ anan (4) mu kyerɛ me.</b></p> <p>Now it's your turn. Describe 4 to me in three different ways.</p>	 <ul style="list-style-type: none"> <li>• If child cannot say anything about the first two numbers</li> </ul>  <p>If child says nothing within 10 seconds, say “Can you describe this number in I different way?”</p> <p>If child still does not begin describing number, after full 25 seconds have expired, move on to next number.</p>	
	<p>Specify TOTAL number of CORRECT responses and total number of INCORRECT responses for each item (each box should contain a number between 0 and 3, and total across boxes should not exceed 3. Non-response should be considered 0).</p> <p>4      #      <input type="checkbox"/> Correct:      <input type="checkbox"/> # Incorrect:</p>		

9	#	<input type="checkbox"/>	Correct:	<input type="checkbox"/>	# Incorrect:
12	#	<input type="checkbox"/>	Correct:	<input type="checkbox"/>	# Incorrect:
16	#	<input type="checkbox"/>	Correct:	<input type="checkbox"/>	# Incorrect:

 What language(s) did the child use for this activity? [check all that apply]

Akuapem Twi	Asante Twi	Dagaare	Dagbani	Dangme	Ewe	Fante	Ga	Gonja
Kasem	Nzema	English	Other					

<b>Task 9B: Describing Numbers Bonus</b>		 H2	 25 seconds		
	<b>Afei fa akwan abiesa so kyerekyerε me 50 mu?</b> Now can you describe 50 for me in three different ways.		 • If child did not score 12/12 correct on Describing Numbers subtask.		
	Specify TOTAL number of CORRECT responses and total number of INCORRECT responses (each box should contain a number between 0 and 3, and total across boxes should not exceed 3. Non-response should be considered 0).				
50	#	<input type="checkbox"/>	Correct:	<input type="checkbox"/>	# Incorrect:

 What language(s) did the child use for this activity? [check all that apply]

Akuapem Twi	Asante Twi	Dagaare	Dagbani	Dangme	Ewe	Fante	Ga	Gonja
Kasem	Nzema	English	Other					

**Task 10A: Number Operations**



**Yerebedi agoru bi. Meka nɔma bi. Mepɛ sɛ wokyerɛ me dodow a mede ka saa nɔma no ho a, menya anum (5). Sɛ ebia, meka anan (4) a, ɛsɛ sɛ woka baako (1) ntɛmntɛm, efisɛ yede baako (1) ka anan ho a, yena anum (5). Wubetumi de wo ankasa nsam akyerɛ agoru a yerebedi no?**

We are going to play a game. I am going to say a number. I want you to tell me how much you would have to add to that number to get 5. For example, if I say 4, you need to say 1 as quickly as you can, because if we add 1 to 4, we get 5. Can you describe, in your own words, the game we are going to play?



*[If child cannot describe, go over example of 4 again]*

**Ma yemfi ase. Meka no ntɛmntɛm, enti wo nso ma wo mmuae no ntɛmntɛm.**

Let's start...I am going to go quickly, so give me the answer as quickly as you can.



- If child makes three ERRORS
- If child does not answer three consecutive questions



Give the child up to 3 seconds to come up with an answer before moving on to next number



(✓) 1 = Correct

(✓) 0 = Incorrect

2 (Correct answer is 3)      1    0

1 (Correct answer is 4)      1    0

3 (Correct answer is 2)      1    0

4 (Correct answer is 1)      1    0

0 (Correct answer is 5)      1    0



What language(s) did the child use for this activity? [check all that apply]

- Akuapem Twi  
  Asante Twi  
  Dagaare  
  Dagbani  
  Dangme  
  Ewe  
  Fante  
  Ga  
  Gonja  
 Kasem  
 Nzema  
 English  
 Other

**Task 10B: Number Operations**



**Yerebedi agoru no bio. Mprempren deε, se meka noma bi a, wode noma bi beka ho na woanya du (10). Se ebia, me ka anan (4) a, wobeka asia (6), efise asia (6) koka anan (4) ho a, eye du (10). Wubetumi de woankasa nsem akyerε agoru a yerebedi no?**

We are going to play the game again, only this time when I say a number. I want you to tell me how much you would have to add to that number to get 10. For example, if I say 4, you need to say 6, because if we add 6 to 4, we get 10. Can you describe, in your own words, the game we are going to play?



*[If child cannot describe, go over example of 4 again]*



**Ma yemfi ase. Meka no ntemntem, enti wo nso ma wo mmuae no ntemntem.**

Let's start...I am going to go quickly, so give me the answer as quickly as you can.



- If child makes three ERRORS
- If child does not answer three consecutive questions



Give the child up to 3 seconds to come up with an answer before moving on to next number



( ) I = Correct  
(

1 0

1 0

1 0

1 0

1 0



What language(s) did the child use for this activity? [check all that apply]

Akuapem Twi

Asante Twi

Dagaare

Dagbani

Dangme

Ewe

Fante

Ga

Gonja

Kasem

Nzema

English

Other

**Task 10C: Number Operations Bonus**



**Yerebede aguro no bio. Eyi de se meka no ma no a mepɛ se wokyerɛ me ne mmɔho abien . Te se, se meka abien (2) a na woaka anan (4) efise (2) mmɔho abien ye anan. Ma yɛmfi ase. Meka no ntɛmntɛm, enti wo nso ma wo mmuae no ntɛmntɛm.**

We are going to play the game again, only this time when I say a number. I want you to tell me the double of that number. For example, if I say 2, you say 4, because the double of 2 is 4. Let's start...



• If child did not score 5/5 on Number Operations 10A AND 10B.



Give child no more than 3 seconds to respond, then move on to next question.



(✓) 1 = Correct  
(✓) 0 = Incorrect

6 (Correct answer is 12)      1     0

7 (Correct answer is 14)      1     0



What language(s) did the child use for this activity? [check all that apply]

 Akuapem Twi

 Asante Twi

 Dagaare

 Dagbani

 Dangme

 Ewe

 Fante

 Ga

 Gonja

 Kasem

 Nzema

 English

 Other

## TWI Assessor Protocol P2

Task 7A: Bundles		FI	⌚ ✕
 	10 bundles 10s and 10 ones; tens mat		
	<p><i>[Point to number 26 (but do not say the number, since in local language when the you say the number, you give numbers of 10s and 1s in the number)]</i></p> <p> <b>Merebɛkrɛ nɔma bi, te sɛeyi. Mɛpɛ sɛwode duawaa kuw du du ne mmaako mmaako yɛ saa nɔma no. Kɔsi, hyɛ ase.</b> I am going to point to a number, like this one. I want you to make that number, using the bundles of 10s and ones. Go ahead and start.</p> <p>  <b>Eye Afie kyɛɛ.me, du du kuw ahe na ɛwɔ nɔma no mu?</b> That's right. Now tell me, how many groups of 10s are in the number?</p> <p><b>Du du kuw abien na ɛwɔ mu. Afie mmaako mmaako ahe na ɛwɔ mu? Mmaako mmaako asia na ɛwɔ mu. baako, abien, abiesa, anan, anum, asia.</b> There are two groups of 10. Now, how many ones are in the number? There are six ones. One, two, three, four, five, six.</p> <p>  <b>Metumi de du du kuw abien (2)ne mmaako mmaako asia (6) agyina hɔ ama no.</b> I can represent the number with two groups of 10 and six ones</p> <p><i>[Count out and place two bundles of 10 and 6 ones in front of the child, using the tens mat]</i></p> <p> <b>Du du kuw abien ne mmaako mmaako asia na ɛwɔ mu . Merebɛkrɛ wo foro.</b> There are two groups of 10 and six ones in the number.</p> <p><b>Mɛpɛ sɛ wankasa wode du du kuw ne mmaako mmaako yɛ.</b></p>	<p></p> <ul style="list-style-type: none"> <li>• If child makes two errors, one right after the other</li> <li>• If child cannot answer first 2 questions</li> </ul> <p></p> <p>Give the child up to 15 seconds to respond to a question. If they don't give an answer in 15 seconds, point to next number and say, "Can you show me this number?"</p>	

I am going to show you other numbers. I want you to make each one, using the bundles of 10s and ones.		
	<p>(✓) 1 = Correct (✓) 0 = Incorrect or no response</p> <p>43    <input type="checkbox"/> 1   <input type="checkbox"/> 0</p> <p>81    <input type="checkbox"/> 1   <input type="checkbox"/> 0</p> <p>35    <input type="checkbox"/> 1   <input type="checkbox"/> 0</p> <p>97    <input type="checkbox"/> 1   <input type="checkbox"/> 0</p> <p>60    <input type="checkbox"/> 1   <input type="checkbox"/> 0</p>	
<p> What language(s) did the child use for this activity? [check all that apply]</p> <p> <input type="checkbox"/> Akuapem Twi   <input type="checkbox"/> Asante Twi   <input type="checkbox"/> Dagaare   <input type="checkbox"/> Dagbani   <input type="checkbox"/> Dangme   <input type="checkbox"/> Ewe   <input type="checkbox"/> Fante   <input type="checkbox"/> Ga   <input type="checkbox"/> Gonja  <input type="checkbox"/> Kasem   <input type="checkbox"/> Nzema   <input type="checkbox"/> English   <input type="checkbox"/> Other </p>		

<b>Task 7B: Bundles Bonus</b>		 F2	 
 	10 bundles 10s and 10 ones; five bundles of 100		
	<p><i>[Now put the five bundles of 100 on table]</i></p> <p><b>Yɛwɔ ɔha ɔha. Wobetumi de ɔha ɔha kuw ne duowaa kuw horow a kyerɛme nɔma yi?</b>  These are bundles of 100. Can you use the bundles of 100 and the other bundles to show me this number?</p>	<p></p> <ul style="list-style-type: none"> <li>• If child did not score 5/5 on Bundles.</li> </ul>	
	<p>(✓) 1 = Correct (✓) 0 = Incorrect</p> <p>234    <input type="checkbox"/> 1   <input type="checkbox"/> 0</p>		
<p> What language(s) did the child use for this activity? [check all that apply]</p> <p> <input type="checkbox"/> Akuapem Twi   <input type="checkbox"/> Asante Twi   <input type="checkbox"/> Dagaare   <input type="checkbox"/> Dagbani   <input type="checkbox"/> Dangme   <input type="checkbox"/> Ewe   <input type="checkbox"/> Fante   <input type="checkbox"/> Ga   <input type="checkbox"/> Gonja  <input type="checkbox"/> Kasem   <input type="checkbox"/> Nzema   <input type="checkbox"/> English   <input type="checkbox"/> Other </p>			

**Task 8A: Number Deconstruction**

GI



**Merebɛkyɛ wo nɔma horo foro . Eyi de mɛpɛ sɛ wokyerɛme du du kuw ne mmaako mmaako a ɛwɔ mu.a womfa duawaa kuw ne mmabaa biara nyɛ.**

I am going to show you other numbers. This time I want you to tell me the number of tens and ones in each number, without using the bundles and sticks.

**Hwɛsaa nɔma yi Du du ne mmaako mmaako sɛn na ɛwɔ mu.**

Look at this number [*point to example, 32*]. How many tens and how many ones are there in this number?



**Du du abiesa ne mmaako mmaako abien no ɛwɔ nɔma yi mu. Afie merebɛkyɛ nɔma foro..mɛpɛ sɛ wokyerɛ me du du ne mmaako mmaako kuw ahe no ɛwɔ mu.**

There are three tens and two ones in this number. Now, I am going to point to other numbers. I want you to tell me how many tens and how many ones are in each number.



- If child makes two errors, one right after the other
- If child cannot answer first 2 questions



If they don't give an answer in 10 seconds, point to next number and say, "Can tell me how many tens and ones in this number?"



(✓) 1 = Correct  
(✓) 0 = Incorrect

17   

35   

53   

64   

90   



What language(s) did the child use for this activity? [check all that apply]

Akuapem Twi

Asante Twi

Dagaare

Dagbani

Dangme

Ewe

Fante

Ga

Gonja

Kasem

Nzema

English

Other

Task 8B: Number Deconstruction Bonus		G2	
<p>[Now point to 342]</p> <p> <b>O ma nye ma de lafalafa ke nyɔngmanyɔɔma ke kakaaka abɔ nɛ nge nɔma nɔ mi lo?</b> Can you tell me how many 100s, 10s, and 1s there are in this number?</p>		<p></p> <ul style="list-style-type: none"> <li>• If child did not score 5/5 on Number Deconstruction.</li> </ul>	
<p></p> <p>(✓) 1 = Correct (✓) 0 = Incorrect</p> <p>342    <input type="text" value="1"/>    <input type="text" value="0"/></p>			
<p> What language(s) did the child use for this activity? [check all that apply]</p> <p> <input type="checkbox"/> Akuapem Twi    <input type="checkbox"/> Asante Twi    <input type="checkbox"/> Dagaare    <input type="checkbox"/> Dagbani    <input type="checkbox"/> Dangme    <input type="checkbox"/> Ewe    <input type="checkbox"/> Fante    <input type="checkbox"/> Ga    <input type="checkbox"/> Gonja  <input type="checkbox"/> Kasem    <input type="checkbox"/> Nzema    <input type="checkbox"/> English    <input type="checkbox"/> Other </p>			

Task 9A: Describing Numbers		 HI	 25 seconds for <u>EACH</u> question
	<p><i>[Place stimulus sheet with cover sheet in front of child and reveal example, 16]</i></p> <p><b>Nɔma dunsia (16) ni. Metumi akyerɛ 16 sɛ ɛso sen dunum baako pɛ. Anaa esua sen dunwɔtwe abien pɛ Metumi aka sɛ wufiri dunsia (16) a na worekɔ dunson (17) wɔ nɔma bɛn no so. .Anaa mentumi aka sɛ ɛne nsia (6) a wode aka du ho yɛ pɛ, anaa aduonu(20) a woatew a an firi mu yɛ pɛ. Akwaa horo pii wɔ hɔ a wɔde kyerɛ dunsia (16). Wubetumi a kyerɛ me ɔkwan baako a mefaa so kyerɛdunsia (16)?</b></p> <p>This is 16. I could describe 16 as...one more than 15. Or two less than 18. I could say 16 is next to 17 on the number line. Or I could say it is the same as 10 + 6 or 20-4. There are many, many, different ways to describe 16. Can you tell me one of the ways I described 16?</p> <p><i>[Wait for child to answer]</i></p> <p><b>Yiw. metumi akyerɛ dunsia sɛ ɛso sen dunum (15) baako pɛ anaa esua sen dunwɔtwe (18) abien (2) pɛ. Metumi aka sɛ wu firi dunsia (16) a na worekɔdunson (17) wɔ numa laen no so. Akwaa horow pii wɔ hɔ wɔde kyerɛ mu.</b></p> <p>I can describe 16 as one more than 15. Or two less than 18. I could say 16 is next to 17 on the number line. There are many different ways to describe 16.</p> <p><i>[Show first number, 40]</i></p> <p><b>Fa akwaa horow so kyerɛkyerɛ adunan(40)mu kyerɛ me.</b></p> <p>Describe 40 for me in three different ways</p>	 <ul style="list-style-type: none"> <li>• If child cannot say anything about the first two numbers</li> </ul>  <p>If child says nothing within 10 seconds, say “Can you describe this number in I different way?”</p> <p>If child still does not begin describing number, after full 25 seconds have expired, move on to next number.</p>	
	<p>Specify TOTAL number of CORRECT responses and total number of INCORRECT responses for each item (each box should contain a number between 0 and 3, and total across boxes should not exceed 3. Non-response should be considered 0).</p>		

40	#	<input type="checkbox"/>	Correct:	<input type="checkbox"/>	# Incorrect:
25	#	<input type="checkbox"/>	Correct:	<input type="checkbox"/>	# Incorrect:
36	#	<input type="checkbox"/>	Correct:	<input type="checkbox"/>	# Incorrect:
98	#	<input type="checkbox"/>	Correct:	<input type="checkbox"/>	# Incorrect:

 What language(s) did the child use for this activity? [check all that apply]

Akuapem Twi
  Asante Twi
  Dagaare
  Dagbani
  Dangme
  Ewe
  Fante
  Ga
  Gonja
  Kasem
  Nzema
  English
  Other

**Task 9B: Describing Numbers Bonus**  H2  25 seconds

	<p><b>Fa akwaa horow so kyerekyere zha aduawotwe abiesa (183) mu kyere me.</b> Describe 183 for me in three different ways.</p>	 <ul style="list-style-type: none"> <li>• If child did not score 12/12 correct on Describing Numbers subtask.</li> </ul>
	<p>Specify TOTAL number of CORRECT responses and total number of INCORRECT responses (each box should contain a number between 0 and 3, and total across boxes should not exceed 3. Non-response should be considered 0).</p> <p>183 # <input type="checkbox"/> Correct: <input type="checkbox"/> # Incorrect:</p>	

 What language(s) did the child use for this activity? [check all that apply]

Akuapem Twi
  Asante Twi
  Dagaare
  Dagbani
  Dangme
  Ewe
  Fante
  Ga
  Gonja
  Kasem
  Nzema
  English
  Other

Task 10A: Number Operations		 x	 x
 <p><b>Yereba be di agoro bi. Meka noma bi. Mepɛ se woka noma a ɛboro so mmɔhommɔho du. Te se, se meka anan a ɛse se woka duannan ntemtem senea wobetumi. Wobetumi akyerɛkyere me senea wote agoro no ase.</b></p> <p>We are going to play a game. I am going to say a number. I want you to say the number that is 10 more than that number. For example, if I say 4, you need to say 14 as quickly as you can, because 10 more than 4 is 14. Can you describe, in your own words, the game we are going to play?</p>	 <ul style="list-style-type: none"> <li>• If child makes three ERRORS</li> <li>• If child does not answer three consecutive questions</li> </ul>		
 <p><i>[If child cannot describe, go over example of 4 again]</i></p>			
 <p><b>Afei mayɛnhyɛ ase...Merebeko ntemtem enti ma me emuayɛ nte mntem se nea wobetumi.</b></p> <p>Let's start...I am going to go quickly, so give me the answer as quickly as you can.</p>	 <p>Give the child up to 3 seconds to come up with an answer before moving on to next number</p>		
 <p>(✓) 1 = Correct (✓) 0 = Incorrect</p> <p>30 (Correct answer is <input type="checkbox"/> 1 <input type="checkbox"/> 0 40)</p> <p>41 (Correct answer is <input type="checkbox"/> 1 <input type="checkbox"/> 0 51)</p> <p>26 (Correct answer is <input type="checkbox"/> 1 <input type="checkbox"/> 0 36)</p> <p>65 (Correct answer is <input type="checkbox"/> 1 <input type="checkbox"/> 0 75)</p> <p>82 (Correct answer is <input type="checkbox"/> 1 <input type="checkbox"/> 0 92)</p>			
 <p>What language(s) did the child use for this activity? [check all that apply]</p> <p> <input type="checkbox"/> Akuapem Twi         <input type="checkbox"/> Asante Twi         <input type="checkbox"/> Dagaare         <input type="checkbox"/> Dagbani         <input type="checkbox"/> Dangme         <input type="checkbox"/> Ewe         <input type="checkbox"/> Fante         <input type="checkbox"/> Ga         <input type="checkbox"/> Gonja         <input type="checkbox"/> Kasem         <input type="checkbox"/> Nzema         <input type="checkbox"/> English         <input type="checkbox"/> Other       </p>			

Task 10B: Number Operations Bonus		 x	 x
 <p><b>Wobetumi akyerɛ me du (10) a ɛboro zha ne aduanum asia (156)?</b></p> <p>Can you tell me what is 10 more than 156?</p>	 <ul style="list-style-type: none"> <li>• If child did not score 5/5 on</li> </ul>		

	<p>(✓) 1 = Correct (✓) 0 = Incorrect</p> <p>156 (Correct answer is <input type="text" value="1"/> <input type="text" value="0"/> 166)</p>	<p>Number Operations.</p>  <p>Give the child up to 5 seconds to answer.</p>
<p> What language(s) did the child use for this activity? [check all that apply]</p> <p> <input type="checkbox"/> Akuapem Twi   <input type="checkbox"/> Asante Twi   <input type="checkbox"/> Dagaare   <input type="checkbox"/> Dagbani   <input type="checkbox"/> Dangme   <input type="checkbox"/> Ewe   <input type="checkbox"/> Fante   <input type="checkbox"/> Ga   <input type="checkbox"/> Gonja  <input type="checkbox"/> Kasem   <input type="checkbox"/> Nzema   <input type="checkbox"/> English   <input type="checkbox"/> Other </p>		

Task 11A: Doubles		 x	 x
	<p><b>Yerebedi agɔɔ bi na afie sɛ meka nɔma bia mepɛ sɛ woka saa nɔma no mmɔho abien. Fa no sɛ sɛ mereka annan (4) a ɛɛ sɛ wokasɛ awɔtwe ɛfirisɛ anan mmɔho abien yɛ awɔtwe. Wubetumi akyrɛkyerɛ mu sɛ nea wote agorɔ yrebedi yi ase?</b>  We are going to play the game again, this time when I say a number, I want you to say the double of that number. For example, if I say 4, you need to say 8, because the double of 4 is 8. Can you describe, in your own words, the game we are going to play?</p> <p><i>[If child cannot describe, go over example of 4 again]</i></p> <p><b>Mayɛnhɛ ase...</b>  Let's start...I am going to go quickly, so give me the answer as quickly as you can.</p>	 <ul style="list-style-type: none"> <li>• If child makes three ERRORS</li> <li>• If child does not answer three consecutive questions</li> </ul>  <p>Give the child up to 3 seconds to come up with an answer before moving on to next number</p>	
	<p>(✓) 1 = Correct (✓) 0 = Incorrect</p> <p>5 (Correct answer is 10)   <input type="text" value="1"/> <input type="text" value="0"/></p> <p>10 (Correct answer is <input type="text" value="1"/> <input type="text" value="0"/> 20)</p> <p>3 (Correct answer is 6)   <input type="text" value="1"/> <input type="text" value="0"/></p> <p>8 (Correct answer is 16)   <input type="text" value="1"/> <input type="text" value="0"/></p>		

	30 (Correct answer is <input type="text" value="1"/> <input type="text" value="0"/> 60)	
	What language(s) did the child use for this activity? [check all that apply]	
	<input type="checkbox"/> Akuapem Twi <input type="checkbox"/> Asante Twi <input type="checkbox"/> Dagaare <input type="checkbox"/> Dagbani <input type="checkbox"/> Dangme <input type="checkbox"/> Ewe <input type="checkbox"/> Fante <input type="checkbox"/> Ga <input type="checkbox"/> Gonja <input type="checkbox"/> Kasem <input type="checkbox"/> Nzema <input type="checkbox"/> English <input type="checkbox"/> Other	

Task IIB: Doubles Bonus		 x	 x
	<b>Wubetumi akyerɛ me du annum (15) mmɔho abien?</b> Can you tell me what the double of 15 is?		 <ul style="list-style-type: none"> <li>If child did not score 5/5 on Doubles.</li> </ul>
	(✓) 1 = Correct (✓) 0 = Incorrect  15 (Correct answer is 30) <input type="text" value="1"/> <input type="text" value="0"/>		 Give the child up to 5 seconds to answer.
	What language(s) did the child use for this activity? [check all that apply]		
	<input type="checkbox"/> Akuapem Twi <input type="checkbox"/> Asante Twi <input type="checkbox"/> Dagaare <input type="checkbox"/> Dagbani <input type="checkbox"/> Dangme <input type="checkbox"/> Ewe <input type="checkbox"/> Fante <input type="checkbox"/> Ga <input type="checkbox"/> Gonja <input type="checkbox"/> Kasem <input type="checkbox"/> Nzema <input type="checkbox"/> English <input type="checkbox"/> Other		

<b>Task 1: Number Identification</b>	A	60 seconds																				
<p><b>👁️ Nɔma ahorow bi ni. Mepɛ sɛ wode wo nsa si nɔma biara so na bɔ din. Mɛkyerɛ wo bere a yɛde befi ase ne bere a yebeɣyae.</b></p> <p>Here are some numbers. I want you to point to each number and tell me what the number is. I will tell you when to begin and when to stop.</p> <p>- <b>Fi ase wɔ ha. Woayɛ krado? Fi ase.</b></p> <p>- [point to first number] Start here. Are you ready? . . . Start.</p> <p>- <b>Nɔma bɛn ni?</b></p> <p>- What number is this?</p>		<p></p> <ul style="list-style-type: none"> <li>• If the time on the stopwatch runs out (60 seconds).</li> </ul> <p></p> <ul style="list-style-type: none"> <li>• If a child stops on an item for <u>5</u> <b>SECONDS.</b></li> </ul>																				
<p> ( / ) Incorrect or no response ( ) After the last number read</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td>5</td><td>9</td><td>0</td><td>12</td><td>30</td></tr> <tr><td>22</td><td>54</td><td>39</td><td>23</td><td>48</td></tr> <tr><td>91</td><td>33</td><td>70</td><td>87</td><td>65</td></tr> <tr><td>108</td><td>245</td><td>587</td><td>671</td><td>989</td></tr> </table>		5	9	0	12	30	22	54	39	23	48	91	33	70	87	65	108	245	587	671	989	
5	9	0	12	30																		
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<p> What language(s) did the child use for this activity? [check all that apply]</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 2px;">Akuapem Twi</td> <td style="border: 1px solid black; padding: 2px;">Asante Twi</td> <td style="border: 1px solid black; padding: 2px;">Dagaare</td> <td style="border: 1px solid black; padding: 2px;">Dagbani</td> <td style="border: 1px solid black; padding: 2px;">Dangme</td> <td style="border: 1px solid black; padding: 2px;">Ewe</td> <td style="border: 1px solid black; padding: 2px;">Fante</td> <td style="border: 1px solid black; padding: 2px;">Ga</td> <td style="border: 1px solid black; padding: 2px;">Gonja</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">Kasem</td> <td style="border: 1px solid black; padding: 2px;">Nzema</td> <td style="border: 1px solid black; padding: 2px;">English</td> <td style="border: 1px solid black; padding: 2px;">Other</td> <td colspan="5"></td> </tr> </table>			Akuapem Twi	Asante Twi	Dagaare	Dagbani	Dangme	Ewe	Fante	Ga	Gonja	Kasem	Nzema	English	Other							
Akuapem Twi	Asante Twi	Dagaare	Dagbani	Dangme	Ewe	Fante	Ga	Gonja														
Kasem	Nzema	English	Other																			

Task 2: Number Discrimination - Practice		B1	x
<p><b>P1:</b></p> <p> <b>Hwε nɔma ahorow yi. Ka nea εso wɔ mu kyerε me.</b> Look at these numbers. Tell me which number is bigger. 8 4</p> <p>✓  <b>Eye/Woatwa. Awotwe (8) na εso pa ara. Ma yεnyε baako.</b> That’s correct, 8 is bigger. Let’s do another one.</p> <p>✗  <b>Nɔma a εso ne awotwe (8). Eyi yε awotwe (8). Eyi yε anan (4). Awotwe (8) so sen anan (4). Yεnyε baako bi.</b> The bigger number is 8. [Point to 8] This is 8. [Point to 4] This is 4. 8 is bigger than 4. Let’s do another one.</p>			x
<p><b>P2:</b></p> <p> <b>Hwε nɔma ahorow yi. Ka nea εso wɔ mu kyerε me.</b> Look at these numbers. Tell me which number is bigger. 10 12</p> <p>✓  <b>Eye. Dumien (12) so. Yεntoa so.</b> That’s right, 12 is bigger. Let’s continue.</p> <p>✗  <b>Nɔma a εso no ne dumien (12). Nɔma yi yε du (10). Eyi yε dumien (12). Dumien so sen du (10). Yεntoa so.</b> The bigger number is 12. [Point to 10] This number is 10. [Point to 12] This is 12. 12 is bigger than 10. Let’s continue.</p>			

Task 2: Number Discrimination		B2 & B3	x																																																		
<p> <b>Hwε nɔma ahorow yi. Ka nea εso wɔ mu kyerε me.</b> Look at these numbers. Tell me which number is bigger. [Repeat for each item]</p>																																																					
<p> (✓) 1 = Correct. (✓) 0 = Incorrect or no response.</p> <table border="1"> <tbody> <tr> <td>7</td><td>5</td><td><u>7</u></td><td>1</td><td>0</td> <td>94</td><td>78</td><td><u>94</u></td><td>1</td><td>0</td> </tr> <tr> <td>11</td><td>24</td><td><u>24</u></td><td>1</td><td>0</td> <td>146</td><td>153</td><td><u>153</u></td><td>1</td><td>0</td> </tr> <tr> <td>47</td><td>34</td><td><u>47</u></td><td>1</td><td>0</td> <td>287</td><td>534</td><td><u>534</u></td><td>1</td><td>0</td> </tr> <tr> <td>58</td><td>49</td><td><u>58</u></td><td>1</td><td>0</td> <td>623</td><td>632</td><td><u>632</u></td><td>1</td><td>0</td> </tr> <tr> <td>65</td><td>67</td><td><u>67</u></td><td>1</td><td>0</td> <td>967</td><td>965</td><td><u>967</u></td><td>1</td><td>0</td> </tr> </tbody> </table>		7	5	<u>7</u>	1	0	94	78	<u>94</u>	1	0	11	24	<u>24</u>	1	0	146	153	<u>153</u>	1	0	47	34	<u>47</u>	1	0	287	534	<u>534</u>	1	0	58	49	<u>58</u>	1	0	623	632	<u>632</u>	1	0	65	67	<u>67</u>	1	0	967	965	<u>967</u>	1	0		<ul style="list-style-type: none"> <li>• If the child makes 4 successive errors</li> <li>➡</li> <li>• If the child doesn’t respond after <u>5 SECONDS</u>.</li> </ul>
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Task 3: Missing number - Practice	C1	⌚ x								
<p><b>P1</b></p> <p>👤 <b>Nɔma ahorow bi ni. Baako (1), abien (2) ne anan (4). Nɔma bɛn na ɛba ha?</b></p> <p>Here are some numbers. 1, 2, and 4, what number goes here?</p> <table border="1"> <tr> <td>1</td> <td>2</td> <td>(3)</td> <td>4</td> </tr> </table> <p>✓ 👤 <b>Woaɛwa (3) abiɛsa. Ma yɛnyɛ baako bio.</b> That's correct, 3. Let's do another one.</p> <p>✗ 👤 <b>Abiɛsa (3) na ɛba ansa. Wo ne me nka nɔma ahorow yi. Baako, abien, abiɛsa, anan. Abiɛsa (3) na ɛhyɛ ha. Yɛnyɛ baako nso nka ho.</b> The number 3 goes here. Say the numbers with me. [Point to each number] 1, 2, 3, 4. 3 goes here. Let's do another one.</p> <p><b>P2:</b></p> <p>👤 <b>Nɔma ahorow bi ni. Anum (5), du (10 ) ne dunum (15). Nɔma bɛn na ɛba ha.</b></p> <p>Here are some numbers. 5, 10, and 15, what number goes here?</p> <table border="1"> <tr> <td>5</td> <td>10</td> <td>15</td> <td>(20)</td> </tr> </table> <p>✓ 👤 <b>Ɛyɛ aduonu (20) woaɛwa.</b> That's correct, 20. Let's do some more.</p> <p>✗ 👤 <b>Aduonu (20) na ɛba. Wo ne me nka nɔma ahorow yi.. anum (5), du (10), dunum (15), aduonu (20). Aduonu (20) na ɛba ha. Ma yɛnyɛ bebreɛ nka ho.</b> The number 20 goes here. Say the numbers with me. [Point to each number] 5, 10, 15, 20. 20 goes here. Let's do some more.</p>	1	2	(3)	4	5	10	15	(20)		<p>👤 x</p> <p>👤 x</p> <p>👤 x</p>
1	2	(3)	4							
5	10	15	(20)							

C2 & C3	x																																																																																								
<p><b>🗣️ Nɔma ahorow bi nso ni. Nɔma bɛn na ɛhyɛ ha?</b>                  Here are some more numbers. [Point to the box] What number goes here? [Repeat for each item]</p> <p><b>🗣️ (✓) 1 = Correct.                  (✓) 0 = Incorrect or no response.</b></p> <p><b>1</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;"> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="border: 1px solid black; width: 25px; height: 20px; text-align: center;">5</td><td style="border: 1px solid black; width: 25px; height: 20px; text-align: center;">6</td><td style="border: 1px solid black; width: 25px; height: 20px; text-align: center;">7</td><td style="border: 1px solid black; width: 25px; height: 20px; text-align: center;">(8)</td></tr> </table> </td> <td style="width: 50%; text-align: center;"> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="border: 1px solid black; width: 25px; height: 20px; text-align: center;">1</td><td style="border: 1px solid black; width: 25px; height: 20px; text-align: center;">0</td></tr> </table> </td> </tr> <tr> <td style="width: 50%; text-align: center;"> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="border: 1px solid black; 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<table style="width: 100%; border-collapse: collapse;"> <tr><td style="border: 1px solid black; width: 25px; height: 20px; text-align: center;">320</td><td style="border: 1px solid black; width: 25px; height: 20px; text-align: center;">310</td><td style="border: 1px solid black; width: 25px; height: 20px; text-align: center;">300</td><td style="border: 1px solid black; width: 25px; height: 20px; text-align: center;">(90)</td></tr> </table>	320	310	300	(90)	<table style="width: 100%; border-collapse: collapse;"> <tr><td style="border: 1px solid black; width: 25px; height: 20px; text-align: center;">1</td><td style="border: 1px solid black; width: 25px; height: 20px; text-align: center;">0</td></tr> </table>	1	0																																																																																		
320	310	300	(90)																																																																																						
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<p><b>🗣️</b> What language(s) did the child use for this activity? [check all that apply]</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 2px;">Akuapem Twi</td> <td style="border: 1px solid black; padding: 2px;">Asante Twi</td> <td style="border: 1px solid black; padding: 2px;">Dagaare</td> <td style="border: 1px solid black; padding: 2px;">Dagbani</td> <td style="border: 1px solid black; padding: 2px;">Dangme</td> <td style="border: 1px solid black; padding: 2px;">Ewe</td> <td style="border: 1px solid black; padding: 2px;">Fante</td> <td style="border: 1px solid black; padding: 2px;">Ga</td> <td style="border: 1px solid black; padding: 2px;">Gonja</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">Kasem</td> <td style="border: 1px solid black; padding: 2px;">Nzema</td> <td style="border: 1px solid black; padding: 2px;">English</td> <td style="border: 1px solid black; padding: 2px;">Other</td> <td colspan="5"></td> </tr> </table>		Akuapem Twi	Asante Twi	Dagaare	Dagbani	Dangme	Ewe	Fante	Ga	Gonja	Kasem	Nzema	English	Other																																																																											
Akuapem Twi	Asante Twi	Dagaare	Dagbani	Dangme	Ewe	Fante	Ga	Gonja																																																																																	
Kasem	Nzema	English	Other																																																																																						

**Task 4A: Addition: Level 1**  D1 & D2  60 seconds

 **Nkekaho dwumadi bi nso ni.**  
**Mɛkyerɛ wo bere a wubefi ase ne bere a wubegyae. Ka dwumadi biara mmuae. Sɛ wunnim mmuae no a, kɔ nea edi so no so. Woayɛ krado?**  
**Fi ase wɔ ha.**  
 Here are some addition problems *[glide hand from top to bottom]*. I will tell you when to start and when to stop. Say the answer for each problem. If you don't know an answer, move to the next problem. Are you ready?  
 Start here *[point to first problem]*.

-  • If the time on the stopwatch runs out (60 seconds).
-  • If a child stops on an item for 5 SECONDS.

 ( / ) Incorrect or no response  
 ( ) After last problem attempted

$1 + 3 = (4)$	$11 + 3 = (14)$
$3 + 2 = (5)$	$13 + 4 = (17)$
$6 + 2 = (8)$	$16 + 3 = (19)$
$4 + 5 = (9)$	$8 + 5 = (13)$
$4 + 4 = (8)$	$7 + 8 = (15)$
$8 + 1 = (9)$	$9 + 7 = (16)$
$7 + 3 = (10)$	$8 + 8 = (16)$
$2 + 7 = (9)$	$1 + 14 = (15)$
$5 + 5 = (10)$	$10 + 2 = (12)$
$3 + 7 = (10)$	$8 + 10 = (18)$

 Time left (seconds):

 What language(s) did the child use for this activity? [check all that apply]

- Akuapem Twi
  Asante Twi
  Dagaare
  Dagbani
  Dangme
  Ewe
  Fante
  Ga
  Gonja
  Kasem
  Nzema
  English
  Other

Task 4B: Addition: Level 2		📖 D3	🕒 ✖
✎ ❖ Paper and pencil.			
<p>🧠 <b>Nkekaho dwumadi bi nso ni.</b>  <b>Sɛ wopɛ a, wubetumi de krataa ne pɛnsere ayɛ. Wopɛ nso a, wubegyae.</b>  <b>Fi ase wɔ ha.</b>                  Here are more addition problems.                  You may use this paper and pencil if you want to. You do not have to do so.                  Start here [point to first problem].</p>		<p>👉</p> <ul style="list-style-type: none"> <li>• If the child did not answer any Level 1 question correctly.</li> <li>• If the child makes 4 consecutive errors.</li> </ul> <p>🔄</p> <ul style="list-style-type: none"> <li>• If the child uses an inefficient strategy (e.g., tick marks), ask the child “Do you know another way to solve the problem?”</li> <li>• If a child continues to use an inefficient strategy or stops on an item for 5 SECONDS.</li> </ul>	
<p>✎ (✓) 1 = Correct.                  (✓) 0 = Incorrect or no response.</p> <p>13 + 6 = (19)      <input type="checkbox"/> 1   <input type="checkbox"/> 0</p> <p>18 + 7 = (25)      <input type="checkbox"/> 1   <input type="checkbox"/> 0</p> <p>14 + 25 = (39)     <input type="checkbox"/> 1   <input type="checkbox"/> 0</p> <p>22 + 37 = (59)     <input type="checkbox"/> 1   <input type="checkbox"/> 0</p> <p>38 + 26 = (64)     <input type="checkbox"/> 1   <input type="checkbox"/> 0</p> <p>The child:      <input type="checkbox"/> used fingers/tick marks,                                      <input type="checkbox"/> used paper &amp; pencil,                                      <input type="checkbox"/> solved the problem(s) in his/her head</p>			
<p>✎ What language(s) did the child use for this activity? [check all that apply]</p> <p><input type="checkbox"/> Akuapem Twi   <input type="checkbox"/> Asante Twi   <input type="checkbox"/> Dagaare   <input type="checkbox"/> Dagbani   <input type="checkbox"/> Dangme   <input type="checkbox"/> Ewe   <input type="checkbox"/> Fante   <input type="checkbox"/> Ga   <input type="checkbox"/> Gonja</p> <p><input type="checkbox"/> Kasem   <input type="checkbox"/> Nzema   <input type="checkbox"/> English   <input type="checkbox"/> Other</p>			

**Task 5A: Subtraction: Level 1**  E1 & E2  60 seconds

 **Nyifim dwumadi bi nso ni.**  
**Mɛkyerɛ wo bere a wubefi ase ne bere a wubegyae. Ka dwumadi biara mmuae. Sɛ wunnim mmuae no a, kɔ nea edi so no so. Woayɛ krado?**  
**Fi ase wɔ ha.**  
 Here are some subtraction problems [*glide hand from top to bottom*].  
 I will tell you when to start and when to stop. Say the answer for each problem. If you don't know an answer, move to the next problem. Are you ready?  
 Start here [*point to first problem*].

-  • If the time on the stopwatch runs out (60 seconds).
-  • If a child stops on an item for 5 SECONDS.

 ( / ) Incorrect or no response  
 ( ) After last problem attempted

$4 - 1 = (3)$	$14 - 3 = (11)$
$5 - 2 = (3)$	$17 - 4 = (13)$
$9 - 3 = (6)$	$19 - 3 = (16)$
$9 - 5 = (4)$	$15 - 6 = (9)$
$6 - 3 = (3)$	$15 - 7 = (8)$
$9 - 1 = (8)$	$16 - 9 = (7)$
$10 - 3 = (7)$	$16 - 8 = (8)$
$9 - 6 = (3)$	$14 - 12 = (2)$
$10 - 5 = (5)$	$12 - 2 = (10)$
$10 - 8 = (2)$	$18 - 10 = (8)$

 Time left (seconds):

 What language(s) did the child use for this activity? [check all that apply]

- Akuapem Twi
  Asante Twi
  Dagaare
  Dagbani
  Dangme
  Ewe
  Fante
  Ga
  Gonja  
 Kasem
  Nzema
  English
  Other

Task 5B: Subtraction: Level 2		📖 E3	🕒 ✖
✎ ❖ Paper and pencil.			
<p>🧠 <b>Nyifim dwumadi bi nso ni.</b>  <b>Sɛ wopɛ a, wubetumi de krataa ne pɛnsere ayɛ. Wopɛ nso a, wubegyae.</b>  <b>Fi ase wɔ ha.</b>                  Here are more subtraction problems.                  You may use this paper and pencil if you want to. You do not have to do so.                  Start here [point to first problem].</p>		<p>👉</p> <ul style="list-style-type: none"> <li>• If the child did not answer any Level 1 question correctly.</li> <li>• If the child makes 4 consecutive errors.</li> </ul> <p>🔄</p> <ul style="list-style-type: none"> <li>• If the child uses an inefficient strategy (e.g., tick marks), ask the child “Do you know another way to solve the problem?”</li> <li>• If a child continues to use an inefficient strategy or stops on an item for 5 SECONDS.</li> </ul>	
<p>✎ (✓) 1 = Correct.                  (✓) 0 = Incorrect or no response.</p> <p>19 – 6 = (13)     <input type="checkbox"/> 1   <input type="checkbox"/> 0</p> <p>25 – 7 = (18)     <input type="checkbox"/> 1   <input type="checkbox"/> 0</p> <p>39 – 14 = (25)    <input type="checkbox"/> 1   <input type="checkbox"/> 0</p> <p>59 – 37 = (22)    <input type="checkbox"/> 1   <input type="checkbox"/> 0</p> <p>64 – 26 = (38)    <input type="checkbox"/> 1   <input type="checkbox"/> 0</p> <p>The child:     <input type="checkbox"/> used fingers/tick marks,                                    <input type="checkbox"/> used paper &amp; pencil,                                    <input type="checkbox"/> solved the problem(s) in his/her head</p>			
<p>✎ What language(s) did the child use for this activity? [check all that apply]</p> <p><input type="checkbox"/> Akuapem Twi   <input type="checkbox"/> Asante Twi   <input type="checkbox"/> Dagaare   <input type="checkbox"/> Dagbani   <input type="checkbox"/> Dangme   <input type="checkbox"/> Ewe   <input type="checkbox"/> Fante   <input type="checkbox"/> Ga   <input type="checkbox"/> Gonja</p> <p><input type="checkbox"/> Kasem   <input type="checkbox"/> Nzema   <input type="checkbox"/> English   <input type="checkbox"/> Other</p>			

<b>Task 6: Word Problems – Practice</b>	 x	 x
 ❖ Counters, paper and pencil.		
<p> <b>Mewɔ dwumadi bi a mepɛ sɛ woyɛ ma me.</b>  <b>Nneɛma bi a ebetumi aboa wo ni. Sɛ wuhia a, wubetumi de ayɛ. Wunɛhia nso a, gyae.</b>  <b>Tie asɛmmisa biara yiye. Sɛ wopɛ a, meti mu bio ama wo. Eye.</b>  <b>Ma yemfi ase.</b>                  I have some problems that I am going to ask you to solve for me. Here are some things to help you. You can use them if you need them, but you don't have to use them.                  Listen very carefully to each problem. If you need, I will repeat problem for you. Okay, let's get started.</p> <p> <b>Mmofra baasa te bɔɔso mu. [pause and check]</b>  <b>Abofra baako asi fam. [pause and check]</b>  <b>Mmofra baahe na aka wɔ bɔɔso no mu?</b>                  There are three children on the bus. <i>[pause and check]</i>                  One child gets off the bus. <i>[pause and check]</i>                  How many children are left on the bus?</p> <p>✓  <b>Eye. Aka mmofra baanu wɔ bɔɔso no mu. Ma yɛnyɛ bi nka ho.</b>                  That's right. There are two children left on the bus. Let's do some more.</p> <p>✗  <b>Fa no sɛ mmofra no yɛ adekande (counters).</b>  <b>Kan mmofra baasa. Saa mmofra yi te bɔɔso no mu.</b>  <b>Abofra baako asi afi bɔɔso no mu. Adekandɛ baako kyerɛ abofra baako a ɔresi fam no.</b>  <b>Aka mmofra baahe wɔ bɔɔso no mu?</b>  <b>Eye. Mmofra baanu (2) na aka wɔ bɔɔso no mu. Ma yɛnyɛ bi nka ho.</b>                  Pretend these counters are children.                  Count out three children. These children are on the bus.                  One child gets off the bus. Show me one child getting off the bus with the counters.                  How many children are left on the bus?                  That's right. There are two children left on the bus. Let's do some more.</p>	 x	

<b>Task 6: Word Problems</b>		x	x
❖ Counters, paper and pencil.			
<p> <b>Afei mewɔ dwumadi bebree ma wo.</b> Now I have some more problems for you.</p>		<p> • If the child makes 4 successive errors</p>	
<p> (✓) 1 = Correct. (✓) 0 = Incorrect or no response.</p>		<p> • If a child stops on an item for <u>5 SECONDS</u>. (and does not attempt to use counters, fingers, paper, or pencil)</p> <p>OR</p> <p>• If the child doesn't respond to a question after one minute.</p> <p><b>Comment:</b> The "[pause and check]s" in each problem indicate that you should be certain that the child understands what you have said before continuing. You may want to ask, "Do you understand?"</p>	
<p><u>Problem 1</u></p> <p> <b>Mmofra baanum (5) te bɔɔso no mu. [pause and check]</b></p> <p><b>Mmofra baanu (2) asi fam. [pause and check]</b></p> <p><b>Mmofra baahe na mpɔmpɔren aka wɔ bɔɔso no mu?</b></p> <p>There are 5 children on the bus. [<i>pause and check</i>] 2 children get off the bus. [<i>pause and check</i>] How many children are there on the bus now?</p>	(3) <input style="width: 20px; border: 1px solid black;" type="text" value="1"/> <input style="width: 20px; border: 1px solid black;" type="text" value="0"/>		
<p><u>Problem 2</u></p> <p> <b>Mmarimaa baasa (3) te bɔɔso mu. [pause and check]</b></p> <p><b>Mmeawa baanan (4) nso wɔ bɔɔso no mu. [pause and check]</b></p> <p><b>Mmofra dodow ahe na wɔwɔ bɔɔso no mu?</b></p> <p>There are 3 boys on the bus. [<i>pause and check</i>] There are 4 girls on the same bus. [<i>pause and check</i>] How many children are there on the bus altogether?</p>	(7) <input style="width: 20px; border: 1px solid black;" type="text" value="1"/> <input style="width: 20px; border: 1px solid black;" type="text" value="0"/>		
<p><u>Problem 3</u></p> <p> <b>Akutu abien (2) gu Kofi kɛntɛn mu. [Gyae kakra na hwɛ.]</b></p> <p><b>Akutu ason (7) gu Amma kɛntɛn mu. [Gyae kakra na hwɛ.]</b></p> <p><b>Akutu ahe na ɛsɛ sɛ woyi fi Amma kɛntɛn no mu ma akutu a ɛwɔ nkɛntɛn abien no mu ayɛ pɛ?</b></p> <p>There are 2 oranges in Kofi's basket. [<i>pause and check</i>] There are 7 oranges in Ama's basket. [<i>pause and check</i>] How many oranges must be taken from Ama's basket so that both baskets have the same number of oranges?</p>	(5) <input style="width: 20px; border: 1px solid black;" type="text" value="1"/> <input style="width: 20px; border: 1px solid black;" type="text" value="0"/>		
<p><u>Problem 4</u></p> <p> <b>Mmofra bi te bɔɔso bi mu. [pause and check]</b></p> <p><b>Mmofra baanu (2) bi nso kɔtena bɔɔso no mu. [pause and check]</b></p>	(7) <input style="width: 20px; border: 1px solid black;" type="text" value="1"/> <input style="width: 20px; border: 1px solid black;" type="text" value="0"/>		

<p><b>Mprempren mmofra baakron (9) na wɔte bɔɔso no mu. [pause and check]</b></p> <p><b>Mfiase no na mmofra baahe na na wɔte bɔɔso no mu?</b></p> <p>There is a bus with some children. [pause and check]                  2 more children get on the bus. [pause and check]                  Now there are 9 children on the bus. [pause and check]                  How many children were on the bus to begin with?</p>		
<p><u>Problem 5</u></p> <p><b>🧠 Tɔfe dumien (12) gu hɔ [pause and check]</b></p> <p><b>Mmfra baanan kyɛ tɔfe no pɛpɛɛpɛ. [pause and check]</b></p> <p><b>Abofra biara benya tɔfe ahe?</b></p> <p>There are 12 toffees. [pause and check]                  4 children share the toffees equally. [pause and check]                  How many toffees does each child get?</p>	<p><input type="text"/> (3) <input type="text"/> 1 0</p>	
<p><u>Problem 6</u></p> <p><b>🧠 Nkongua anum (5) wɔ bɔɔso bi mu. [pause and check]</b></p> <p><b>Mmfra baanu (2) te akongua baako biara so. [pause and check]</b></p> <p><b>Mmfra baahe na wɔte bɔɔso no mu?</b></p> <p>There are 5 seats on a bus. [pause and check]                  There are 2 children on each seat. [pause and check]                  How many children are on the bus altogether?</p>	<p><input type="text"/> (10) <input type="text"/> 1 <input type="text"/> 0</p>	
<p>The child: <input type="checkbox"/> used fingers/tick marks/counters,  <input type="checkbox"/> used paper &amp; pencil,  <input type="checkbox"/> solved the problem(s) in his/her head</p>		
<p><input checked="" type="checkbox"/> What language(s) did the child use for this activity? [check all that apply]</p> <p><input type="checkbox"/> Akuapem <input type="checkbox"/> Twi <input type="checkbox"/> Asante Twi <input type="checkbox"/> Dagaare <input type="checkbox"/> Dagbani <input type="checkbox"/> Dangme <input type="checkbox"/> Ewe <input type="checkbox"/> Fante <input type="checkbox"/> Ga <input type="checkbox"/> Gonja <input type="checkbox"/> Kasem <input type="checkbox"/> Nzema <input type="checkbox"/> English <input type="checkbox"/> Other</p>		

# **Ghana Numeracy Pilot Impact Evaluation**

## **PI EGMA+ Stimulus Sheets**

**Version 2 (2015)**

**A**

<b>5</b>	<b>9</b>	<b>0</b>	<b>12</b>	<b>30</b>
<b>22</b>	<b>54</b>	<b>39</b>	<b>23</b>	<b>48</b>
<b>91</b>	<b>33</b>	<b>70</b>	<b>87</b>	<b>65</b>
<b>108</b>	<b>245</b>	<b>587</b>	<b>671</b>	<b>989</b>

Practice:

**BI**

**8**

**4**

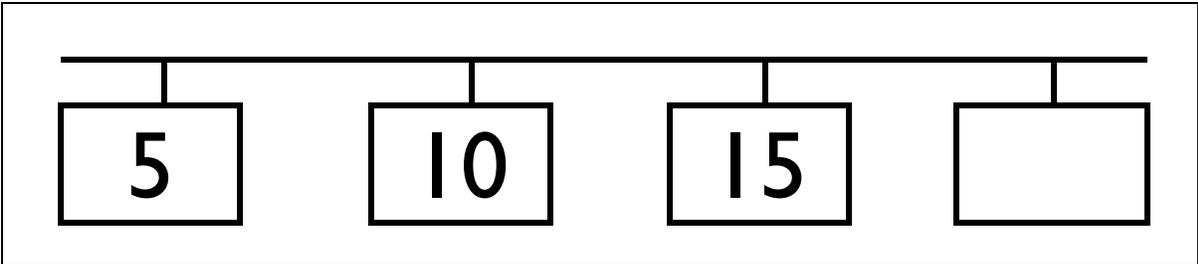
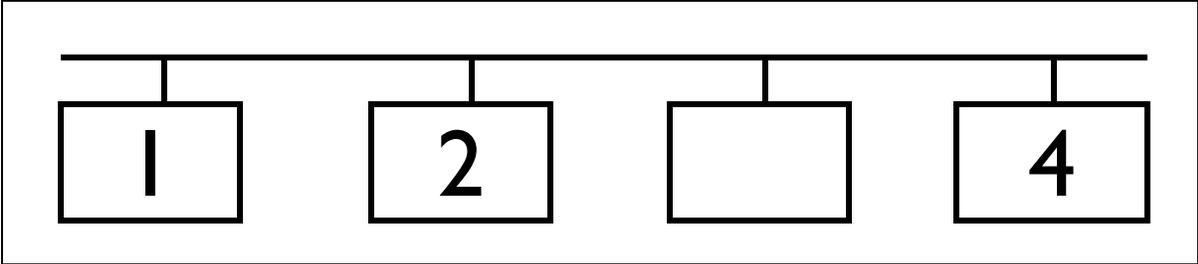
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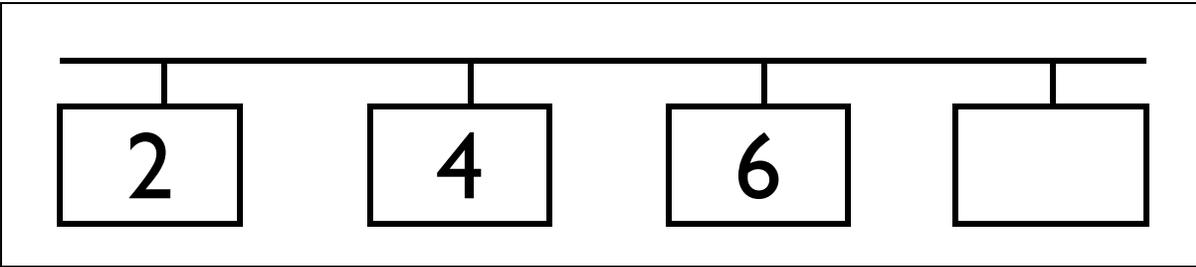
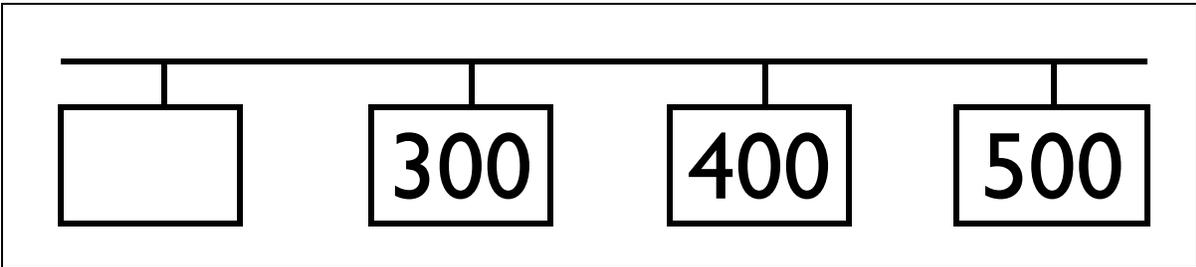
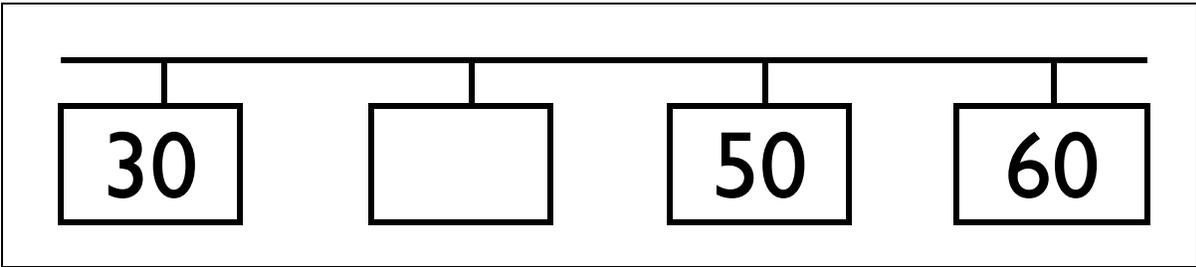
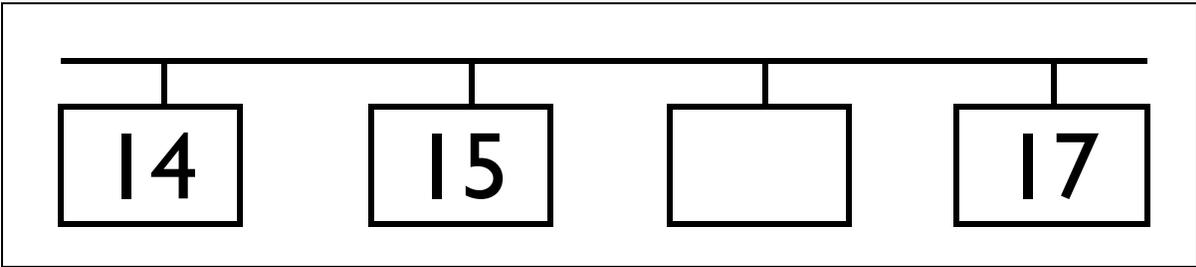
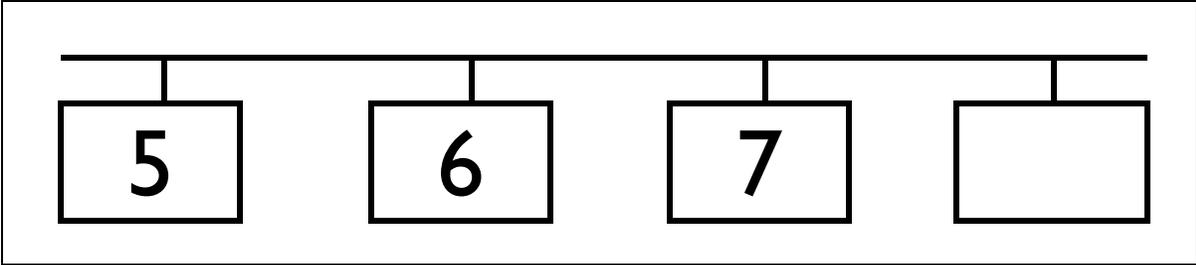
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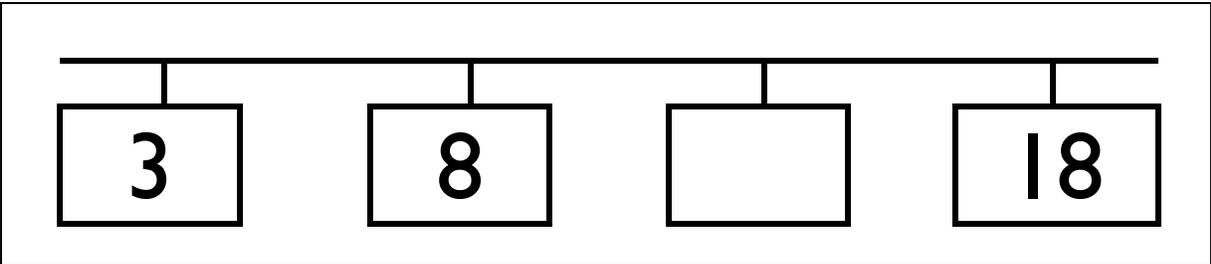
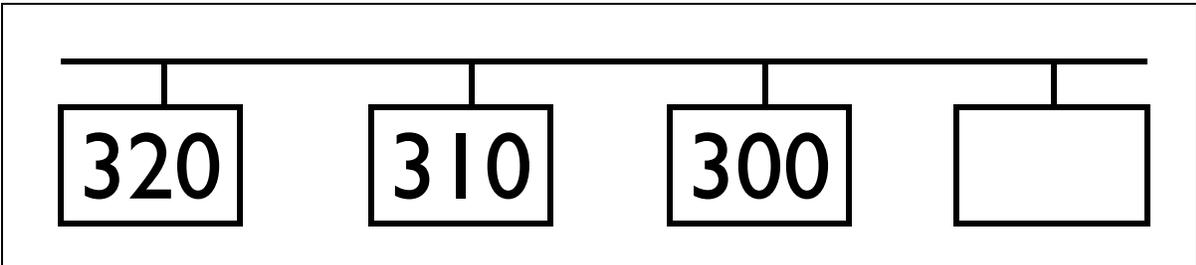
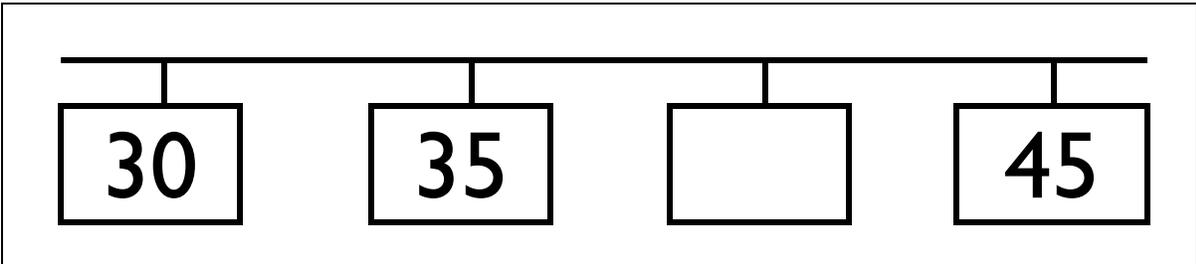
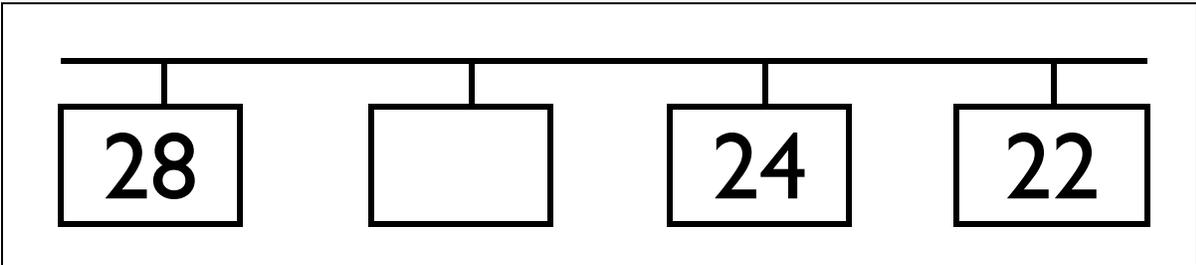
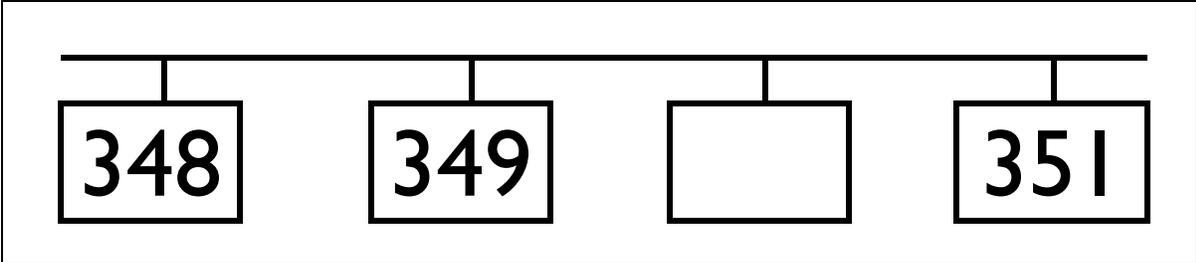
<b>7</b>	<b>5</b>
<b>11</b>	<b>24</b>
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<b>58</b>	<b>49</b>
<b>65</b>	<b>67</b>

<b>94</b>	<b>78</b>
<b>146</b>	<b>153</b>
<b>287</b>	<b>534</b>
<b>623</b>	<b>632</b>
<b>967</b>	<b>965</b>

Practice:







$1 + 3 = \square$

$3 + 2 = \square$

$6 + 2 = \square$

$4 + 5 = \square$

$4 + 4 = \square$

$8 + 1 = \square$

$7 + 3 = \square$

$2 + 7 = \square$

$5 + 5 = \square$

$3 + 7 = \square$

$11 + 3 = \square$

$13 + 4 = \square$

$16 + 3 = \square$

$8 + 5 = \square$

$7 + 8 = \square$

$9 + 7 = \square$

$8 + 8 = \square$

$1 + 14 = \square$

$10 + 2 = \square$

$8 + 10 = \square$

$$13 + 6 = \square$$

$$18 + 7 = \square$$

$$14 + 25 = \square$$

$$22 + 37 = \square$$

$$38 + 26 = \square$$

$4 - 1 = \square$

$5 - 2 = \square$

$9 - 3 = \square$

$9 - 5 = \square$

$6 - 3 = \square$

$9 - 1 = \square$

$10 - 3 = \square$

$9 - 6 = \square$

$10 - 5 = \square$

$10 - 8 = \square$

$$14 - 3 = \square$$

$$17 - 4 = \square$$

$$19 - 3 = \square$$

$$15 - 6 = \square$$

$$15 - 7 = \square$$

$$16 - 9 = \square$$

$$16 - 8 = \square$$

$$14 - 12 = \square$$

$$12 - 2 = \square$$

$$18 - 10 = \square$$

$$19 - 6 = \square$$

$$25 - 7 = \square$$

$$39 - 14 = \square$$

$$59 - 37 = \square$$

$$64 - 26 = \square$$

Practice:



42

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12

25

34

87

**F2**

**243**

Practice:



12

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26

38

61

97



352

Practice:



7

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4

9

12

16

**H2**

**50**

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**Version 2 (2015)**

**A**

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<b>22</b>	<b>54</b>	<b>39</b>	<b>23</b>	<b>48</b>
<b>91</b>	<b>33</b>	<b>70</b>	<b>87</b>	<b>65</b>
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Practice:

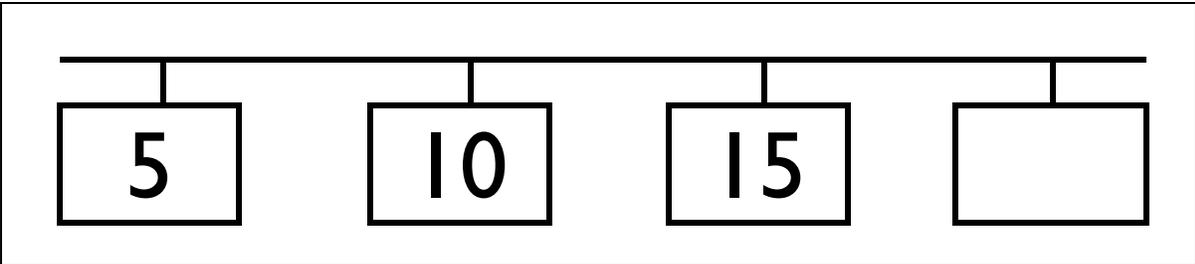
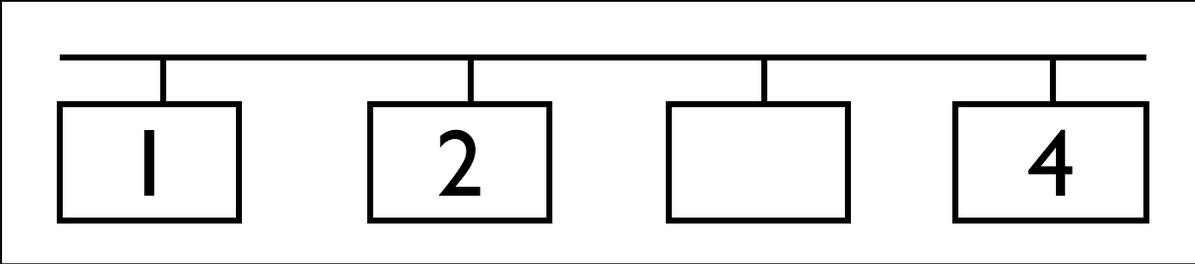
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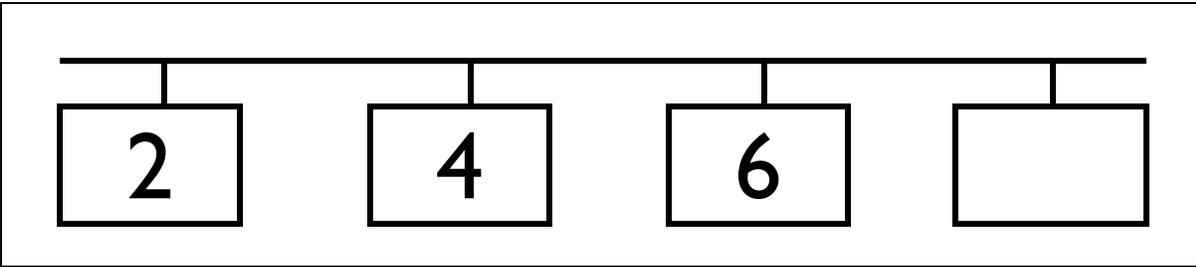
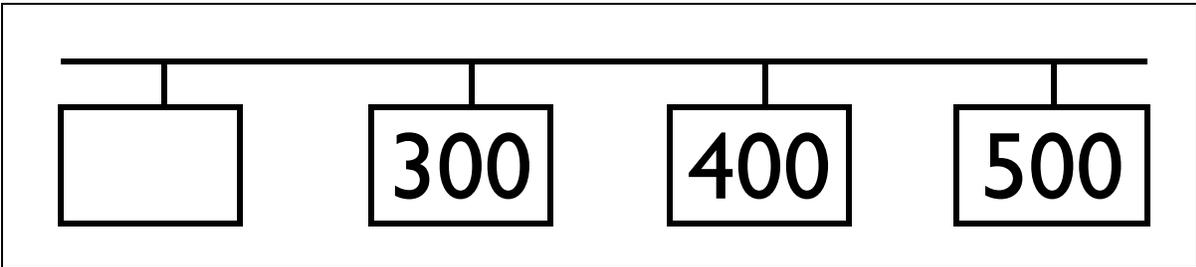
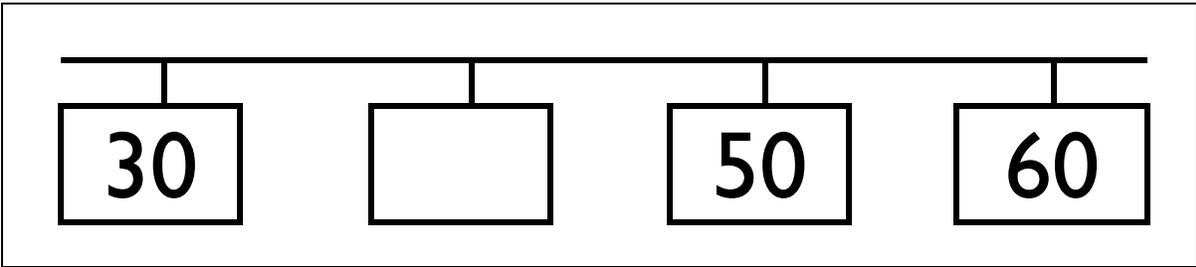
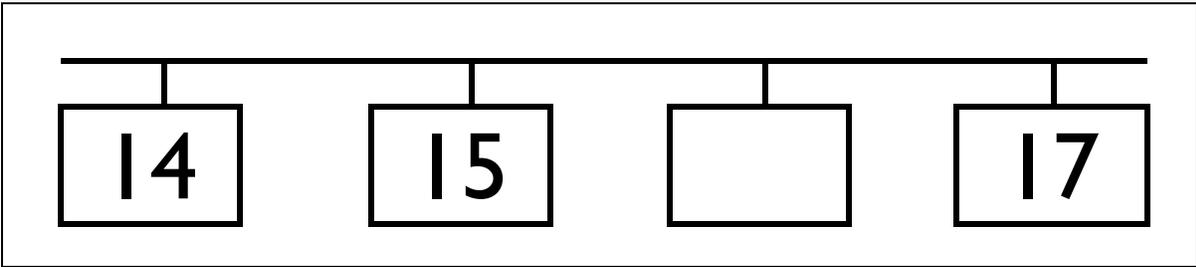
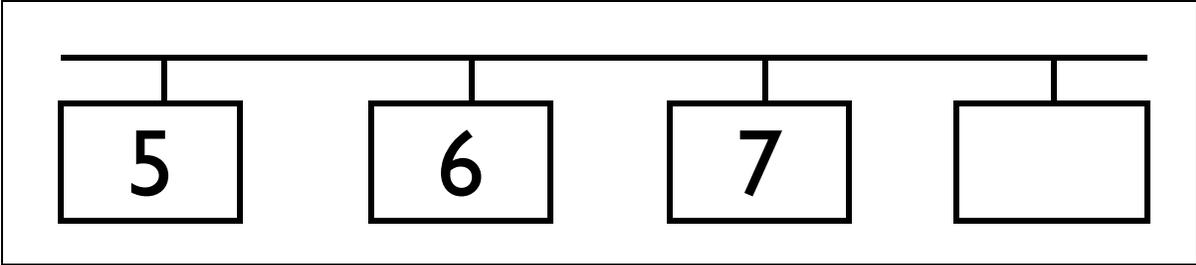
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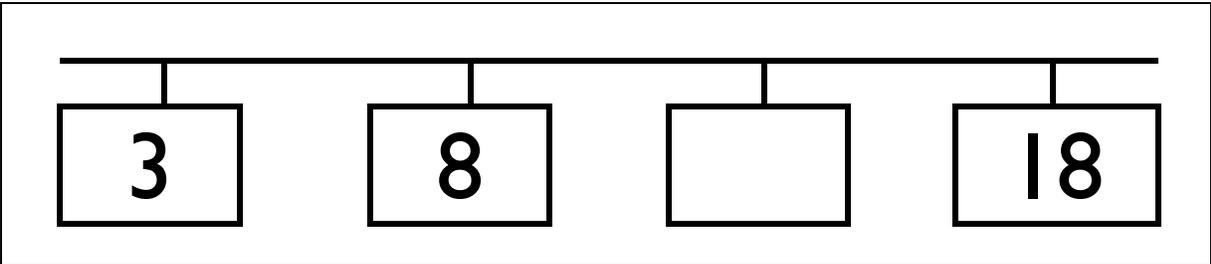
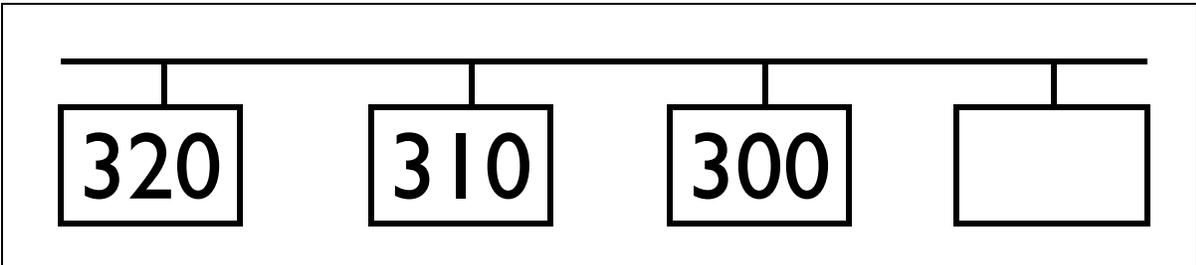
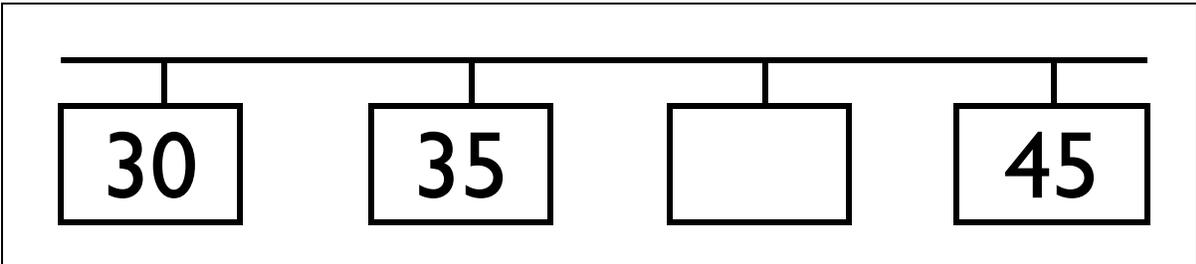
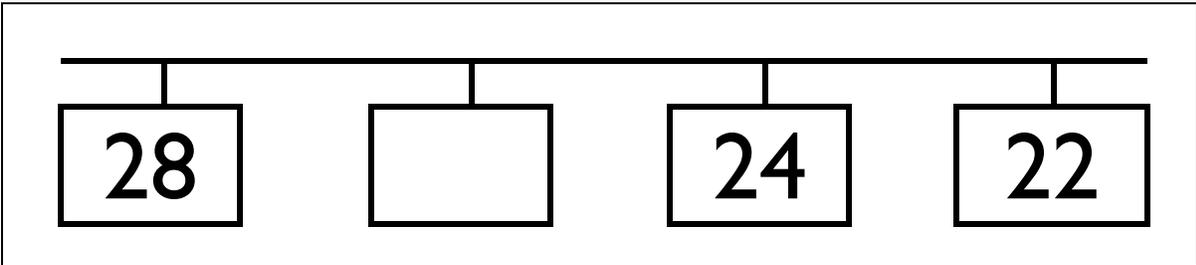
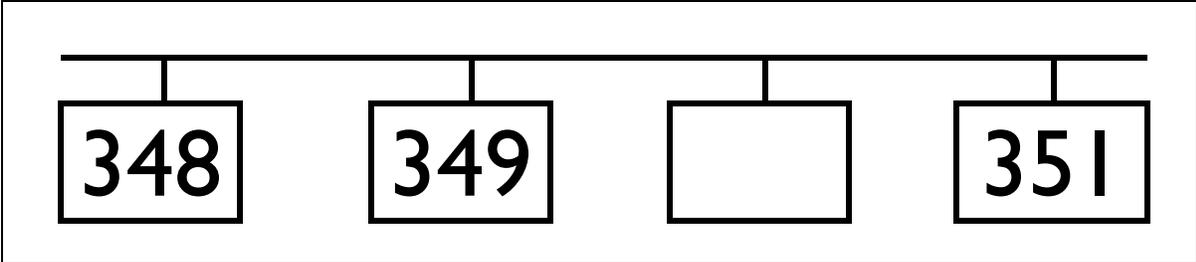
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<b>967</b>	<b>965</b>

Practice:







$1 + 3 = \square$

$3 + 2 = \square$

$6 + 2 = \square$

$4 + 5 = \square$

$4 + 4 = \square$

$8 + 1 = \square$

$7 + 3 = \square$

$2 + 7 = \square$

$5 + 5 = \square$

$3 + 7 = \square$

$$11 + 3 = \square$$

$$13 + 4 = \square$$

$$16 + 3 = \square$$

$$8 + 5 = \square$$

$$7 + 8 = \square$$

$$9 + 7 = \square$$

$$8 + 8 = \square$$

$$1 + 14 = \square$$

$$10 + 2 = \square$$

$$8 + 10 = \square$$

$$13 + 6 = \square$$

$$18 + 7 = \square$$

$$14 + 25 = \square$$

$$22 + 37 = \square$$

$$38 + 26 = \square$$

$$4 - 1 = \square$$

$$5 - 2 = \square$$

$$9 - 3 = \square$$

$$9 - 5 = \square$$

$$6 - 3 = \square$$

$$9 - 1 = \square$$

$$10 - 3 = \square$$

$$9 - 6 = \square$$

$$10 - 5 = \square$$

$$10 - 8 = \square$$

**E2**

$$14 - 3 = \square$$

$$17 - 4 = \square$$

$$19 - 3 = \square$$

$$15 - 6 = \square$$

$$15 - 7 = \square$$

$$16 - 9 = \square$$

$$16 - 8 = \square$$

$$14 - 12 = \square$$

$$12 - 2 = \square$$

$$18 - 10 = \square$$

**E3**

$$19 - 6 = \square$$

$$25 - 7 = \square$$

$$39 - 14 = \square$$

$$59 - 37 = \square$$

$$64 - 26 = \square$$

Practice:



42

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12

25

34

87

**F2**

**243**

Practice:



12

---

26

38

61

97



352

Practice:



7

---

4

9

12

16

50

**CONSENT FORM:** Head Teacher interview consent  
**STUDY TITLE:** Ghana Numeracy Pilot Impact Evaluation  
**PRINCIPLE INVESTIGATOR:** Erika Keaveney, Senior Program Manager, Impact Evaluation Social Impact, Inc.  
**ADDRESS:** BLK 07, Section 017, Obenesu Crescent, East Cantonments, Accra

### ***General Information About Research***

As previously mentioned, I am \_\_\_\_\_ from Ivy League Consultants (ILC) Africa, an independent data collection firm working with USAID and Social Impact.

We are conducting a research study to assess the impact of a new Early Grade Numeracy Pilot program which will be piloted in a randomly selected subsample of 60 schools in Shai Osudoku and New Juabeng districts. The Numeracy Pilot project will revise the primary school mathematics curriculum and train teachers to use the new curriculum. The revised curriculum is designed to bring the national mathematics syllabus in line with international trends in primary mathematics education, with a focus on topic depth over breadth and greater emphasis on building mathematical reasoning. The purpose of this study is to evaluate the extent to which this pilot curriculum improves pupils' learning outcomes in mathematics relative to the current national curriculum.

As Head Teacher of this school, we would like to interview you one-on-one to get some information that will be useful for this study, including administrative data on pupils and teachers, teacher instructional practices in this school, your experiences with coaching teachers in mathematics instruction, and your beliefs on current models of instruction for improving early grade mathematics. The interview will last approximately 45 minutes. We will also return to this school at the end of school year in 2018 to repeat the same procedures.

### ***Possible Risks and Discomforts***

There are no known risks or discomforts associated with participating in this study.

### ***Possible Benefits***

There are no direct benefits to you for participating in the study, however, information collected in this study may benefit this and other schools in the future by improving early grade mathematics programming.

### ***Confidentiality***

If you choose to participate, your responses will be strictly confidential. Your responses will be combined with those from other schools in the study and presented in the form of summary tables. Neither you nor your school will be individually identified or named in any reports.

In order to keep the information you provide safe, each member of the research staff has signed a confidentiality agreement prior to conducting any data collection tasks. Any papers or electronic data with personal identifying information will be stored on password-protected electronic devices or in a locked room and no person outside of the research team will have access to this information. Upon conclusion of the study, all personal identifying information will be destroyed.

### ***Compensation***

There is no monetary compensation provided for participating in this study.

**Voluntary Participation and Right to Leave the Research**

You can choose not to participate at all or to leave the study at any time, without penalty. Regardless of your decision to participate in the research or not, there will be no negative consequences.

**Contacts for Additional Information**

If you have any questions regarding this interview or this research project in general, please contact the ILC Africa Program Manager Jennifer Pierre at +233-(0)-508-809672 or Kerry Bruce from Social Impact at +001-703-465-1884.

**Your Rights as a Participant**

This research has been reviewed and approved by the Radiological and Medical Sciences Research Institute (RAMSRI-ERC). If you have any questions about your rights as a research participant you can contact the ERC Office between the hours of 8:30 am-4:30 pm at email addresses: ramsrierc@yahoo.com or the ERC Administrator on tishjon@yahoo.com and on telephone numbers: 0303-968-932 or 0200402735.

Do you have any questions? Do you agree to participate?

**VOLUNTEER AGREEMENT:**

The above document describing the benefits, risks and procedures for the research titled “Ghana Numeracy Pilot Impact Evaluation” has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

Head Teacher Name	Head Teacher Signature	Date
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**STATEMENT OF PERSON OBTAINING INFORMED CONSENT:**

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

Name of Person Obtaining Informed Consent	Signature of Person Obtaining Informed Consent	Date
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*Please provide one signed copy of this form to the Head Teacher and retain one copy for ILC Africa’s records.*

**CONSENT FORM:** Teacher interview consent  
**STUDY TITLE:** Ghana Numeracy Pilot Impact Evaluation  
**PRINCIPLE INVESTIGATOR:** Erika Keaveney, Senior Program Manager, Impact Evaluation Social Impact, Inc.  
**ADDRESS:** BLK 07, Section 017, Obenesu Crescent, East Cantonments, Accra

**General Information About Research**

Good morning or afternoon. My name is \_\_\_\_\_, and I am from Ivy League Consultants (ILC) Africa, an independent data collection firm working with the United States Agency for International Development (USAID)'s mission in Ghana and Social Impact, Inc., a research firm based in the Washington D.C. area in the United States of America. We are conducting a research study to assess the impact of a new Early Grade Numeracy Pilot program which will be piloted in a randomly selected subsample of 60 schools in Shai Osudoku and New Juabeng districts. The Numeracy Pilot will revise the primary school mathematics curriculum and train teachers to use the new curriculum. The revised curriculum is designed to bring the national mathematics syllabus in line with international trends in primary mathematics education, with a focus topic depth over breadth and greater emphasis on building mathematical reasoning. The purpose of this study is to evaluate the extent to which this pilot curriculum improves pupils' learning outcomes in mathematics relative to the current national curriculum.

Within this school, you and your mathematics class have been selected to be included in the study. This will involve observing a mathematics lesson followed by a 45-minute one-on-one interview with you. The purpose of the classroom observation is to document what teachers and pupils are doing during mathematics lessons as well as learn about teacher approaches to teaching mathematics. Please note that you are not being assessed or evaluated on your teaching performance and all the data collected will be used for statistical and research purposes only. As such, your mathematics lesson should proceed as if today were an ordinary day and you were not being observed. The 45-minute one-on-one interview will help us learn how teachers plan mathematics lessons, what materials and textbooks they use, how they go about assessing learners, and beliefs on effective methods for teaching mathematics. We will also return to this school at the end of school year in 2018 to repeat the same procedures with you and your classroom.

**Possible Risks and Discomforts**

There are no known risks or discomforts associated with participating in this study.

**Possible Benefits**

There are no direct benefits to you for participating in the study, however, information collected in this study may benefit this and other schools in the future by improving early grade mathematics programming.

**Confidentiality**

If you choose to participate, your responses will be strictly confidential. Your responses will be combined with those from other schools in the study and presented in the form of summary tables. Neither you nor your school will be individually identified or named in any reports.

In order to keep the information, you provide safe, each member of the research staff has signed a confidentiality agreement prior to conducting any data collection tasks. Any papers or electronic data with personal identifying information will be stored on password-protected electronic devices or in a



**CONSENT FORM:** Pupil assent script  
**STUDY TITLE:** Ghana Numeracy Pilot Impact Evaluation  
**PRINCIPLE INVESTIGATOR:** Erika Keaveney, Senior Program Manager, Impact Evaluation  
Social Impact, Inc.  
**ADDRESS:** BLK 07, Section 017, Obenesu Crescent, East Cantonments,  
Accra

My name is \_\_\_\_\_. I am working with a study for the Ghana Education Service. We are trying to understand how children learn mathematics in the early grades. Yours is one of the schools we have chosen to help us. We would like your help in this process too. However, you do not have to participate in the study if you do not want to. You can also choose to leave the study at any time without penalty.

I will be asking you different questions about numbers as well as present you with some maths problems. This assessment can be in [GHANAIAN LANGUAGE OF INSTRUCTION] or English, whichever you prefer. This is NOT a test and it will not affect your marks in class. Nobody at your school will know your performance in this assessment.

I will also ask some questions about which languages you use and some things that your family has at home. This should take 30 minutes or less.

We will NEVER share your name or your answers with anyone who is not participating in the study. If there are any questions you do not want to answer after we have already started, you can choose not to answer them. Can we start?

**CONSENT FORM:** *In loco parentis* Head Teacher consent for school participation in the study including consent for participation of minors under his/her care

**STUDY TITLE:** Ghana Numeracy Pilot Impact Evaluation

**PRINCIPLE INVESTIGATOR:** Erika Keaveney, Senior Program Manager, Impact Evaluation Social Impact, Inc.

**ADDRESS:** BLK 07, Section 017, Obenesu Crescent, East Cantonments, Accra

### **General Information About Research**

Hi, my name is \_\_\_\_\_, and I am from Ivy League Consultants (ILC) Africa, an independent data collection firm working with the United States Agency for International Development (USAID)'s mission in Ghana and Social Impact, Inc., a research firm based in the Washington D.C. area in the United States of America. We are conducting a research study to assess the impact of a new Numeracy Pilot program which will be piloted in a randomly selected subsample of 60 schools in Shai Osudoku and New Juabeng districts. The numeracy pilot will focus on improving the mathematics curriculum of primary schools. The purpose of the evaluation is to determine if the pilot curriculum can improve pupil math performance relative to the current national curriculum.

The results of this study will be used by the Ghana Education Service and USAID to inform future programs aimed at helping children in Ghana to effectively learn mathematics in primary schools. All 121 public primary schools in the Shai Osudoku and New Juabeng Municipal districts have been selected to take part in this study.

Should you agree for your school to participate, this will involve an interview with you, an interview with one P1 and one P2 mathematics teacher, observation of these teachers' maths lessons, and learning assessments and interviews with a group of P1 and P2 pupils. Specifically, twenty pupils (10 boys and 10 girls) per grade in P1 and P2 are to be randomly selected from a randomly selected class for each grade.

Since children in this school are under your care during school hours, we are asking for your consent for their participation, on behalf of the children's parents. If you agree to allow the children to participate, they will be asked to take a mathematics assessment in the Ghanaian language of instruction or English (whichever they prefer). The learning assessments will provide us with information on their numeracy abilities. In addition, we will ask some questions about attendance, languages spoken, math practices at school and home, and household assets. The assessment and interview should take about 30 minutes per pupil to complete and will take place at school during regular school hours as the school schedule allows. All data collection activities at this school should be completed within the school day. We will also return to this school at the end of school year in 2018 to repeat the same procedures, with the same sample of teachers and pupils.

### **Possible Risks and Discomforts**

There are no known risks associated with this study, other than time lost from the classroom, which is expected to be no more than 30 minutes per pupil. To ease the disruption of class time that this might cause, the team will try to engage students for the assessments at a time convenient with their class schedules.

### **Possible Benefits**

There are no direct benefits to yourself, students, teachers, or the school for participating in the study, however, information collected in this study may benefit this and other schools in the future by improving early grade mathematics programming.

**Confidentiality**

Every effort will be made to keep any information collected about yourself, children, teachers, and this school strictly confidential. To keep information about participants safe, each member of the research staff has signed a confidentiality agreement prior to conducting any data collection tasks. Any papers or electronic data with personal identifying information will be stored on password-protected electronic devices or in a locked room and no person outside of the research team will have access to this information. Upon conclusion of the study, all personal identifying information will be destroyed.

**Compensation**

There is no monetary compensation provided for participating in this study.

**Voluntary Participation and Right to Leave the Research**

You and each of the teachers and children involved can choose not to participate at all or to leave the study at any time, without penalty. In addition, we will provide the pupils with a Parent Information Sheet to take home, which provides information on the study and describes the parent/guardian’s right to withdraw their child from participating at any time, for any reason. Regardless of your or any teacher, child, or parent’s decision to participate in the research or not, there will be no negative consequences.

**Contacts for Additional Information**

If you, the teachers, the children, or their parents have any questions regarding the data collection tools or this research project in general, please contact the ILC Africa Program Manager Jennifer Pierre at +233-(0)-508-809672 or Kerry Bruce from Social Impact at +001-703-465-1884.

**Your Rights as a Participant**

This research has been reviewed and approved by the Radiological and Medical Sciences Research Institute (RAMSRI-ERC). If you have any questions about your rights as a research participant you can contact the ERC Office between the hours of 8:30 am-4:30 pm at email addresses: ramsrierc@yahoo.com or the ERC Administrator on tishjon@yahoo.com and on telephone numbers: 0303-968-932 or 0200402735.

Do you have any questions? Do you agree for your school to participate?

**VOLUNTEER AGREEMENT:**

The above document describing the benefits, risks, and procedures for the research titled “Ghana Numeracy Pilot Impact Evaluation” has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I voluntarily agree to allow the children in my school to participate in this study provided they verbally assent to do so.

Head Teacher Name	Head Teacher Signature	Date
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**STATEMENT OF PERSON OBTAINING INFORMED CONSENT:**

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

Name of Person Obtaining Informed Consent	Signature of Person Obtaining Informed Consent	Date
-------------------------------------------	------------------------------------------------	------

Please provide one signed copy of this form to the Head Teacher and retain one copy for ILC Africa's records.

**Parent Information Sheet**  
**Ghana Numeracy Pilot Impact Evaluation**

Today's date: \_\_\_\_\_

Dear Parent or Guardian,

The Ministry of Education, Ghana Education Service (GES), and United States Agency for International Development (USAID)/Ghana are jointly implementing an Early Grade Numeracy Pilot project aimed at improving teaching and learning of mathematics in Ghanaian primary schools. The Numeracy Pilot project will be rolled out in 60 schools in Shai Osudoku and New Juabeng districts and involves revising the primary school mathematics curriculum and training teachers to use the new curriculum.

USAID/Ghana has contracted Social Impact to conduct an evaluation to see whether the new pilot curriculum improves pupil math performance as compared to the existing national curriculum. The results of the study will be used by the Ghana Education Service and USAID to inform future programs aimed at helping children in Ghana to learn mathematics. Your child was randomly selected among other children in their school to participate in this study. Our data collection team led by ILC Africa, a local data collection firm, administered an oral mathematics assessment and a pupil questionnaire to your child and intends to do so again toward the end of the school year in 2018. Since children in school are under the care of the Head Teacher during school hours, consent to assess and interview your child was obtained from the Head Teacher of the school. This information sheet is intended to provide you information about your child's participation in the study.

**Risks and Benefits:** You are assured that there are no known risks associated with participating in this study, other than time lost from the classroom, which is anticipated to be no more than 30 minutes per pupil. To ease the disruption of class time that this might cause, the team worked to engage pupils for the assessments at times convenient with their class schedules. Additionally, there are no direct benefits to you or your child for participating in the study. However, information collected in this study may help the GES improve mathematics instruction in your child's school as well as other primary schools in Ghana.

**Confidentiality:** Any information collected about your child will be kept strictly confidential and will not appear in any part of the study report nor will it be shared with anyone outside of the study team, including anyone at his or her school. To ensure confidentiality, each member of the research staff has signed a confidentiality agreement prior to conducting any data collection tasks. Any papers or electronic data with personal identifying information will be stored on password-protected devices or in a locked room and no person outside of the research team will have access to this information. Upon conclusion of the study in 2019, all information that could be used to potentially identify your child will be destroyed.

**Voluntary Participation:** Your child was given the option to choose not to participate at all or to leave the study at any time, without penalty. Similarly, you as his/her parent or guardian have the option to withdraw your child from the study. If you wish to do so, please contact the ILC Africa Program Manager at the number below.

**Contacts for Additional Information:** If you have any questions regarding this research kindly contact the ILC Africa Program Manager **Jennifer Pierre** at +233-(0)-508-809672 or Kerry Bruce from Social Impact at +001-703-465-1884.