Academic Recovery and Accessible Learning

ARAL PROGRAM

TUTOR'S GUIDE

MATH

GRADE 1

ARAL-Mathematics Tutor's Guide
Key Stage 1 – Grade 1

This material is intended solely for tutors' use in the Academic Recovery and Accessible Learning (ARAL) Program. It is designed to support the delivery of curriculum content, learning standards, and lesson objectives.

Every care has been taken to ensure the accuracy of the information provided in this material. For inquiries or feedback, please call the Office of the Director of the Bureau of Learning Resources via telephone numbers (02) 8634-1072 and 8631-6922 or send an email to blr.od@deped.gov.ph.

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Table of Contents

Guidelines for Conducting ARAL Math Sessions

The ARAL Math remediation sessions will follow a practice-based, self-learning approach designed to build a strong foundation in mathematics from the earliest stages. The approach emphasizes independent learning, where students progress through carefully structured worksheets that gradually increase in difficulty. Each new concept is introduced in small, manageable increments, allowing learners to connect new ideas to previously mastered skills.

A central goal of this approach is to identify the point when learners began to have misconceptions or understand concepts poorly so that the gaps can be addressed. Thus, while the worksheets are guided by the Revised K-10 Curriculum, these are not grade-level specific. The gaps in the learners' understanding of mathematics concepts may have occurred in earlier grade levels and it is crucial to address these. Intervention is focused; misconceptions are corrected through guided personal discovery on the part of learners rather than direct explanation from the tutor.

Tutors act as **facilitators** rather than direct instructors. They do not give lectures on various topics or discuss lessons as a class; instead, they guide learners with hints and questions when difficulties arise, encouraging problem-solving and resilience. This approach cultivates both **academic competence** and **self-learning skills**, helping students develop confidence, discipline, and independence.

By combining repetition for mastery, self-paced progression, guided intervention, and targeted correction of misconceptions, this approach for ARAL Math is envisioned to help learners not only excel in mathematics but also acquire

lifelong learning habits that extend beyond the learning area.

Important: This is not remediation by reteaching specific lessons. Thus, the tutor will NOT reteach specific lessons. The tutor will simply supervise the learners while working on the worksheets, and intervene only when the learners get stuck in a particular worksheet.

Important Principles:

A. Start with the Basics

The worksheets begin with the most fundamental skills as it is important to ensure that learners master these before moving forward. The worksheets begin with the following fundamental skills:

1. counting and number recognition – learners should confidently recognize numbers, count objects, and understand the concept of quantity
2. basic addition and subtraction – simple operations beginning with small numbers help learners grasp the idea of combining and separating quantities
3. place value awareness – understanding place value lays the groundwork for handling operations on larger numbers
4. patterns and sequencing – recognizing simple patterns builds logical thinking and prepares learners for multiplication, fractions and rations, algebra, geometry, and other topics.
5. shapes and measurement – identifying basic shapes and comparing lengths or sizes develops spatial and comparative reasoning.

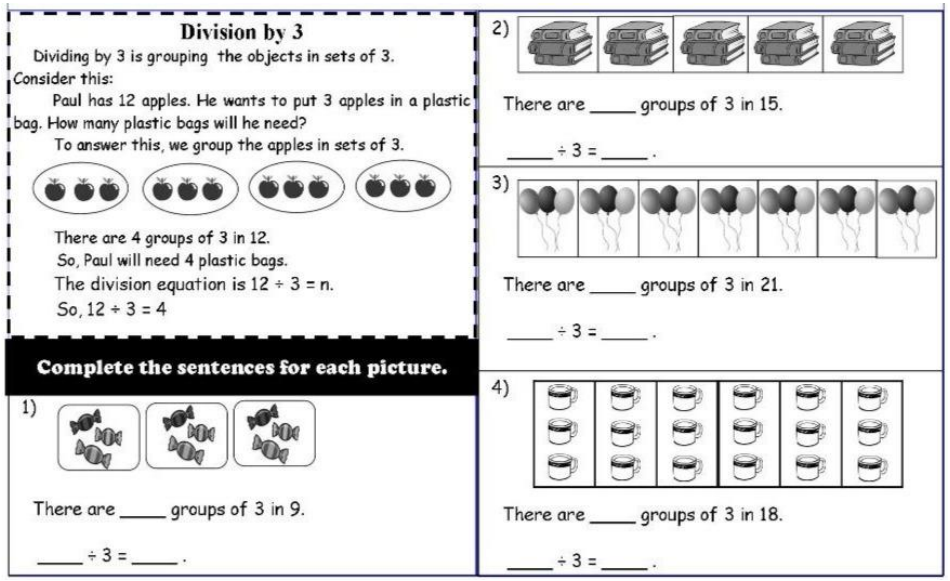
B. Incremental Progression

1. Structured worksheets are the main learning tool. These worksheets have been made available to the Department

of Education through the One Small Step Forward Foundation.

2. The structured worksheets gradually increase in difficulty in very small steps. Each worksheet introduces only a slight increase in difficulty.
3. New concepts are always linked to what learners have already mastered, preventing gaps in understanding.
4. Structured worksheets provide consistent practice and a clear path of progression.
5. Learners must demonstrate speed and accuracy before progressing, ensuring a solid foundation.
6. Misconceptions are identified early, and tutors guide learners back to simple problems to rebuild understanding.
7. Success at each level motivates learners to persist, reinforcing the belief that effort leads to progress.

Sample worksheets:



Division by 3

Dividing by 3 is grouping the objects in sets of 3.

Consider this:

Paul has 12 apples. He wants to put 3 apples in a plastic bag. How many plastic bags will he need?

To answer this, we group the apples in sets of 3.

There are 4 groups of 3 in 12.
So, Paul will need 4 plastic bags.
The division equation is 12 ÷ 3 = n.
So, 12 ÷ 3 = 4

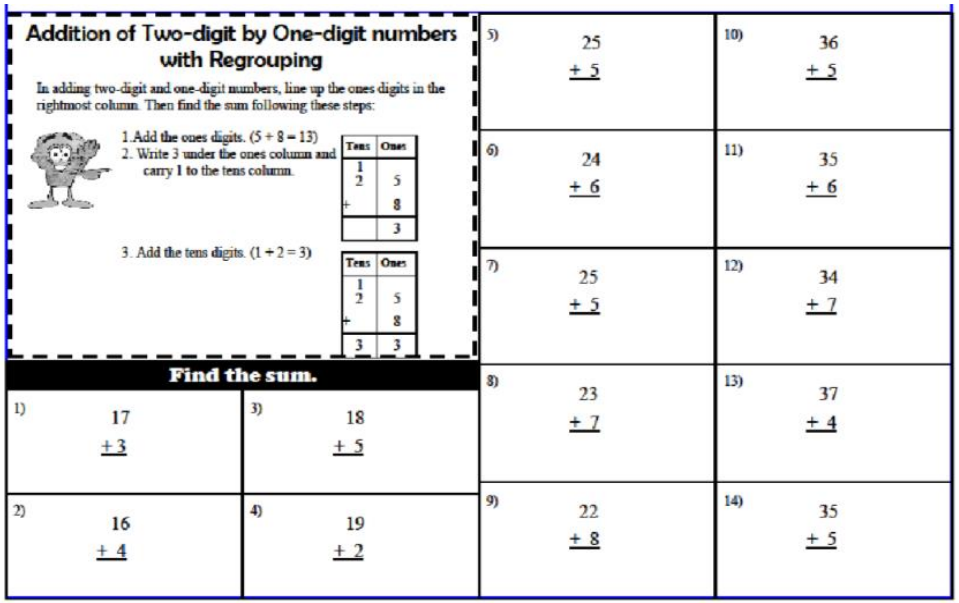
Complete the sentences for each picture.

1) There are ____ groups of 3 in 9.
____ ÷ 3 = ____ .

2) There are ____ groups of 3 in 15.
____ ÷ 3 = ____ .

3) There are ____ groups of 3 in 21.
____ ÷ 3 = ____ .

4) There are ____ groups of 3 in 18.
____ ÷ 3 = ____ .



Addition of Two-digit by One-digit numbers with Regrouping

In adding two-digit and one-digit numbers, line up the ones digits in the rightmost column. Then find the sum following these steps:

1. Add the ones digits. (5 + 8 = 13)
2. Write 3 under the ones column and carry 1 to the tens column.

Tens	Ones
1	5
+ 2	8
	3

3. Add the tens digits. (1 + 2 = 3)

Tens	Ones
1	5
+ 2	8
3	3

Find the sum.

1) 17 + 3

2) 16 + 4

3) 18 + 5

4) 19 + 2

5) 25 + 5

6) 24 + 6

7) 25 + 5

8) 23 + 7

9) 22 + 8

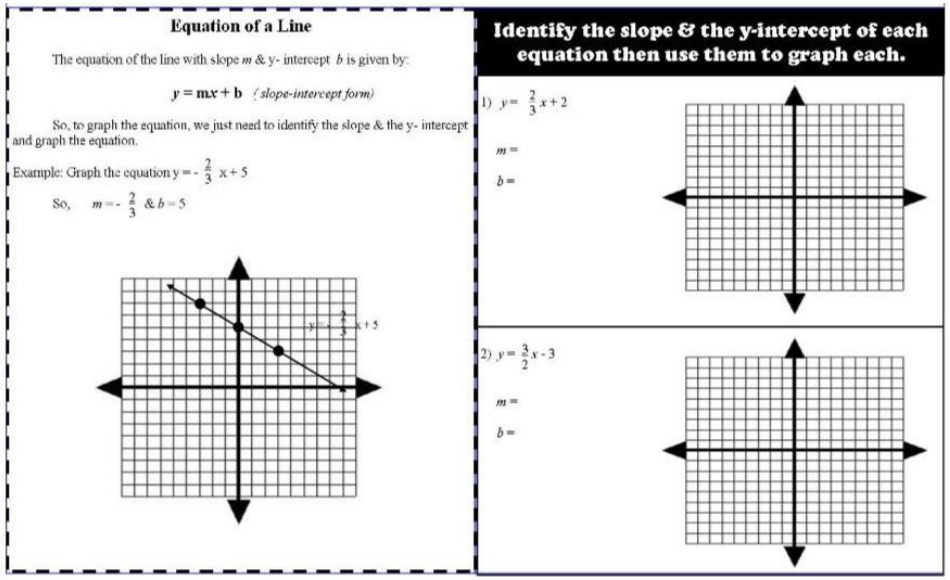
10) 36 + 5

11) 35 + 6

12) 34 + 7

13) 37 + 4

14) 35 + 5



Equation of a Line

The equation of the line with slope m & y- intercept b is given by:

$y = mx + b$ *(slope-intercept form)*

So, to graph the equation, we just need to identify the slope & the y- intercept and graph the equation.

Example: Graph the equation $y = -\frac{2}{3}x + 5$

So, $m = -\frac{2}{3}$ & $b = 5$

Identify the slope & the y-intercept of each equation then use them to graph each.

1) $y = \frac{2}{3}x + 2$

$m =$

$b =$

2) $y = \frac{3}{2}x - 3$

$m =$

$b =$

C. Self-paced and Independent Work

1. Learners work on the worksheets individually, discovering solutions and strategies independently.
2. Working on tasks without immediate tutor input builds resilience and belief in the learners' own ability. Learners learn to spot mistakes themselves, which deepens understanding and prevents misconceptions.
3. Self-paced independent work without immediate tutor input develops self-learning habits and confidence in the learners.
4. Learners do not become dependent on tutors for solutions or confirmation of correct answers, which strengthens their confidence in tackling challenges.
5. By working through problems without immediate explanations, learners

connect new ideas to prior knowledge more meaningfully.

6. As this approach is self-paced, the tutor should allow a learner to complete as many worksheets as he or she can during a session. Note that a learner can only advance to the next worksheet if all items on the worksheet he or she is currently working on are completed correctly.

D. Repetition for Mastery

1. Repeated practice until learners achieve speed and accuracy is important. Mastery of each level is required before moving to the next. Mastery through repetition guarantees readiness for the next incremental step.
2. Repetition matters because regular practice helps learners store concepts in long-term memory. Consistent practice ensures learners do not fall back into incorrect methods.
3. Repetition builds fluency which allows learners to instantly recall basic facts without counting or hesitation. This develops speed and accuracy, which are essential for tackling more complex problems later.
4. Success through repeated attempts boosts self-belief and reduces math anxiety.

E. Tutor as Facilitator

1. The approach that is being adopted for ARAL Math is not remediation by reteaching, where tutors reteach certain lessons in the ARAL Math sessions.
2. Tutors do not lecture or provide answers. Instead, they allow learners to discover solutions through practice and reasoning.

3. Struggles and errors highlight where learners have weak understanding or misconceptions, giving tutors a clear point for guided intervention. When learners get stuck, tutors intervene only by asking guiding questions, giving hints or prompts, or pointing learners back to previously mastered concepts, never direct answers.
4. Keen observation by tutors is important. Tutors need to watch for signs of struggle such as repeated errors, hesitation, or frustration.
5. Tutors need to reinforce persistence and effort among learners, motivating them to keep trying until they succeed.

Illustration of Guided Intervention

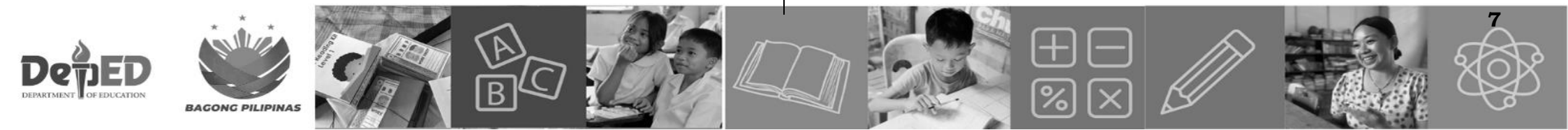
A. Example 1: 47 – 29 =?

A learner is working on a worksheet involving 2-digit subtraction. The learner is unable to do "47-29" and becomes stuck because he or she has not yet fully grasped the concept of borrowing or regrouping.

When does the tutor intervene? When the tutor notices a learner repeatedly hesitating or making the same error (e.g. 7 – 9 = 2), this signals that the learner is struggling to connect the new concept with previously mastered skills.

How can the tutor intervene effectively? Instead of explaining the full borrowing or regrouping process, the tutor can ask guiding questions:

- *Can you subtract 9 from 7 directly?*
- *What happens when the top number is smaller than the bigger number?*



- *Do you remember what we did when subtracting 13 – 8?* [The tutor may point the learner back to the worksheet where "13 – 8" was covered, to help him or her recall the idea of regrouping.

Expected outcome: Through these prompts, the learner connects the present challenge to prior knowledge covered by previous worksheets. Through this intervention, the learner recalls the need to borrow and solves the problem independently. **It is important to note that the tutor's role is not to supply the solution but to nudge the learner toward recall or rediscovery and self-correction.**

This kind of intervention preserves the independence of the learner while ensuring that they do not get stuck in frustration. It is important to strike the balance between providing support and self-learning, which is central to the ARAL Math approach.

B. Example 2: Adding similar fractions

A learner is working on a worksheet with the following problem: *"Maria ate 3/8 of a cake. Juan ate 2/8 of the same cake. How much of the cake did they eat together?"*

When does the tutor intervene? When the tutor notices that a learner writes the answer as 5/16, this signals that the learner has a misconception – that the denominators should be added.

How can the tutor intervene effectively? The tutor should not explain the rule directly. Instead, the tutor can ask guiding questions:

- In a fraction, what does the denominator represent?

- Can you think of a simpler example, like 1/4 + 2/4? [The tutor may point the learner back to the worksheet where 1/4 + 2/ was tackled].
- If Maria ate 3 pieces and Juan ate 2 pieces, how many pieces did they eat altogether?
- Does the denominator change when we add fractions of the same whole?
- Why do we keep the denominator the same?

Expected outcome: Through these prompts, the learner realizes that the denominator stays the same when adding fractions with the same denominators, and corrects the answer to 5/8.

C. Example 3: Ratios

A learner is working on a worksheet with the following problem: "A recipe needs 2 cups of sugar for every 3 cups of flour. If you have 6 cups of flour, how much sugar do you need?"

When does the tutor intervene? When the tutor notices that a learner incorrectly multiplies 6 x 2 = 12, this signals that the learner has not fully grasped ratios.

How can the tutor intervene effectively? The tutor should not explain the rule directly. Instead, the tutor can ask guiding questions:

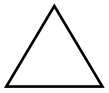
- What does the ratio 2:3 mean?
- If 3 cups of flour need 2 cups of sugar, what happens if we double the flour to 6 cups?
- Can you write the proportion as a fraction: sugar/flour = 2/3?

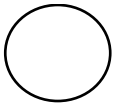
Expected outcome: The learner connects the ratio to proportional reasoning, calculates correctly, and finds that 6 cups of flour need 4 cups of sugar.

How to Check the Worksheets

1. In this Tutor's Guide, the answer key to each worksheet is provided.
2. The tutor is directed to use three (3) shapes when going over and marking:

a.  (star) - draw a star at the TOP of a worksheet if ALL items in the worksheet have been answered correctly. A star means the learner got a perfect score; there is no need to place a check mark on every item.

b.  (triangle) - draw a triangle on a SPECIFIC ITEM if the item has been partially answered correctly (e.g. incomplete answer, wrong spelling, no answer, or not following instructions). At the top of the worksheet, the tutor needs to indicate the number of △s.

c.  (circle) - draw a circle on a SPECIFIC ITEM if the answer is WRONG. At the top of the worksheet, the tutor needs to indicate the number of ○s.

3. The Answer Key is to be used for marking the answers of the learners as CORRECT,

PARTIALLY CORRECT, or WRONG. Please note the following:

a. Always take a look at the numbering of items in the worksheets and the Answer Key to make sure that these correspond.

b. Not all answers indicated in the Answer Key must be taken literally. Tutors need to do some analysis based on the questions on the worksheet. For example, if the answer on the Answer Key is 5 centimeters and the learner answered 5 cm, the learner's answer can be considered correct.

   Such analysis is important especially in higher level worksheets. You may seek advice from the school's Master Teachers or get in touch with the ARAL Secretariat for any questions in this regard.

4. The learners must be asked to redo the items that have been marked with △s and ○s.

5. When re-checking the learner's work, CROSS-OUT the circle or triangle that was initially placed on specific items if the learner has already corrected the answer. Cross out the score as well once the learner has answered all the items on the worksheet correctly.

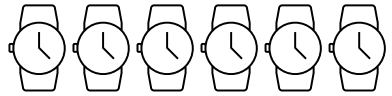
   Please note that all items marked with circles and triangles must be done again by the learner until these are answered correctly.

   When needed, the tutor should intervene without giving the answer or delivering a lecture.

ARAL Math Grade 1 Worksheet 1
Counting Objects

1. 5
2. 3
3. 2
4. 6
5. 4
6. 8
7. 10
8. 7
9. 1
10. 9
11. There are eighteen dogs.
12. There are fourteen bananas.
13. There are fifteen trucks.
14. There are eleven chickens.
15. There are eighteen beach balls.
16. There are twelve carabaos.

ARAL Math Grade 1 Worksheet 2
Drawing the Number of Objects

1. 
2. 
3. 
4. 
5. 
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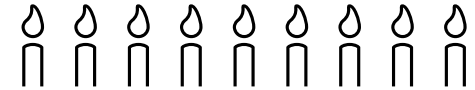
8. 
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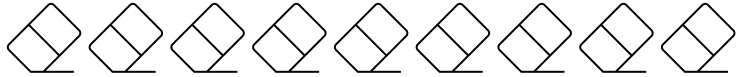
11. 
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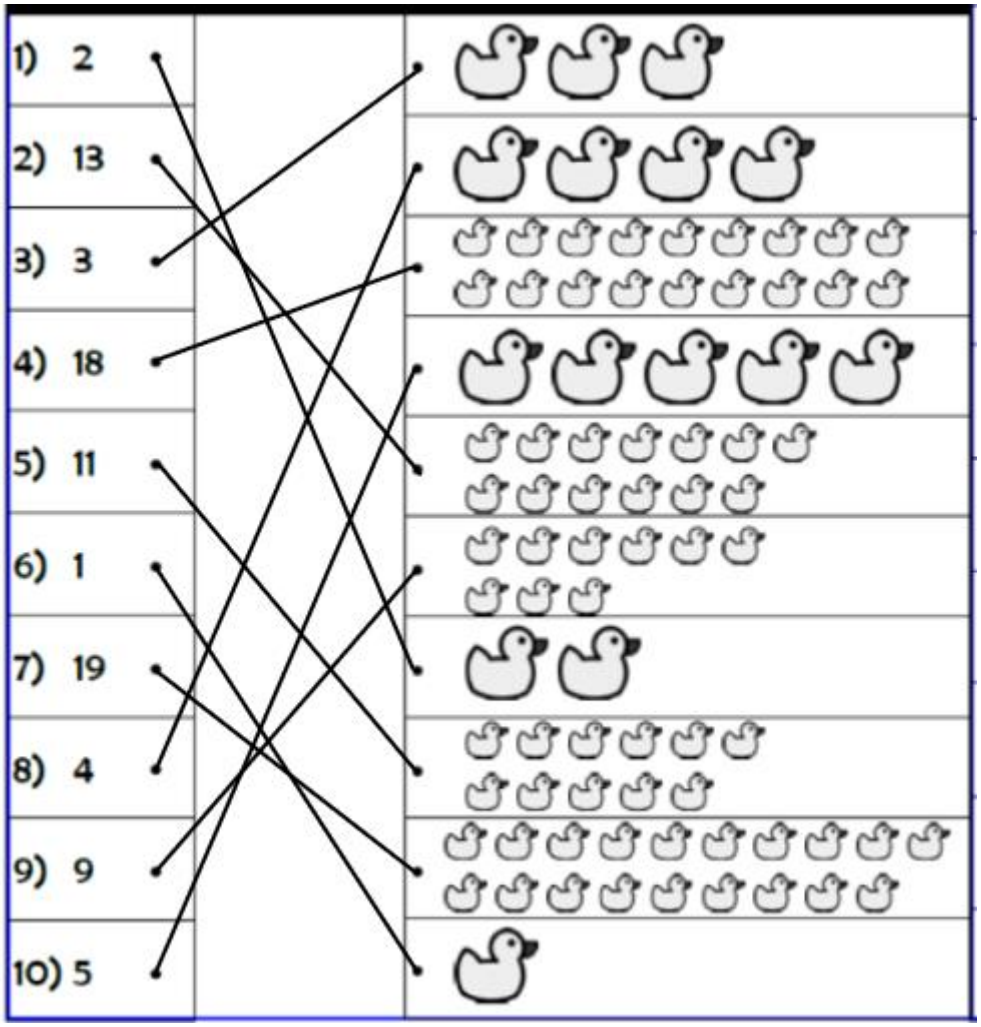
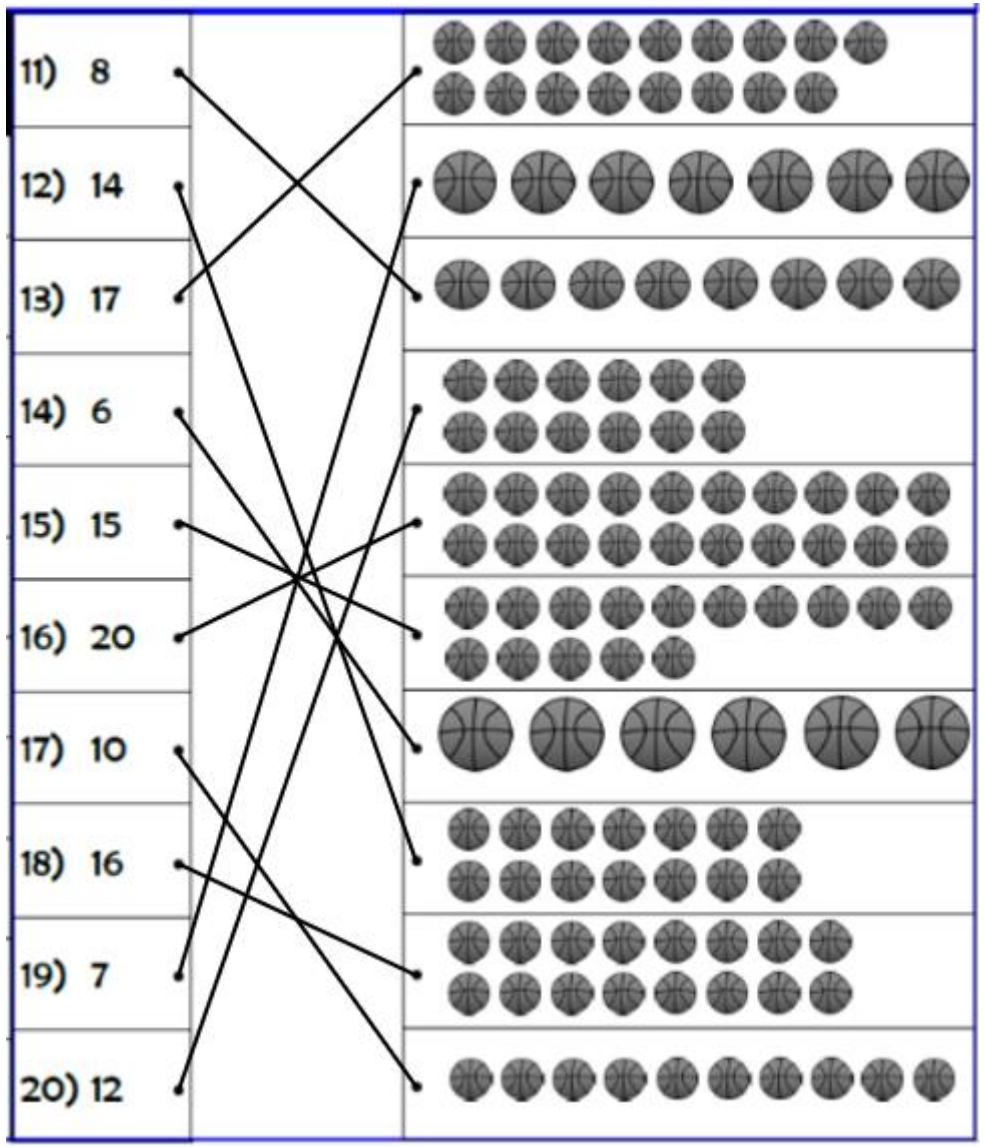
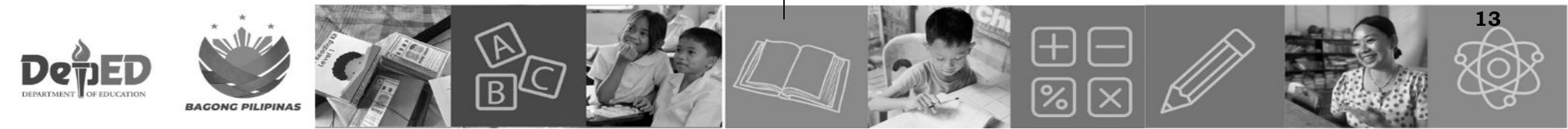
ARAL Math Grade 1 Worksheet 3
Matching Numbers to Objects







ARAL Math Grade 1 Worksheet 4
Counting Objects and Writing Numbers in Words

1. three
2. seven
3. seven
4. one
5. two
6. five
7. six
8. three
9. twelve
10. four
11. five
12. seven
13. four
14. three
15. two
16. three
17. five
18. one
19. four

ARAL Math Grade 1 Worksheet 5
Missing Numbers

1. 8, 10, 12
2. 6, 7, 9
3. 9, 12, 13
4. 12, 13, 15
5. 16, 18, 20
6. 8, 10, 11

7-18.

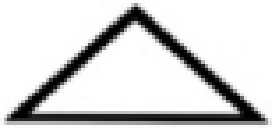
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20

19. 16, 18, 20
20. 18, 21, 23
21. 23, 25, 26
22. 26, 27, 30
23. 24, 26, 28
24. 20, 22, 23
25-36.

11	12	13	14
15	16	17	18
19	20	21	22
23	24	25	26
27	28	29	30

ARAL Math Grade 1 Worksheet 6
Ordinal Numbers

1. 
2. 
3. 
4. 
5. 
6. 
7. 

11. 
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13. 
14. 
15. 
16. 
17. 

8. 

9. 

10. 

18. 

19. 

20. 

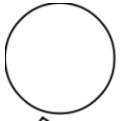
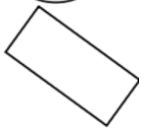
ARAL Math Grade 1 Worksheet 7
Illustrating Addition

1. 5
2. 9
3. 8
4. 6
5. 10

ARAL Math Grade 1 Worksheet 8
Naming Shapes: Circle, Square, Rectangle, and Triangle

1. Circle
2. Square
3. Rectangle
4. Triangle
5. Circle
6. Triangle
7. Square
8. Circle
9. Draw an object shaped like a Circle
10. Draw an object shaped like a Circle
11. Draw an object shaped like a Circle
12. Draw an object shaped like a Square
13. Draw an object shaped like a Square
14. Draw an object shaped like a Square
15. Draw an object shaped like a Rectangle
16. Draw an object shaped like a Rectangle
17. Draw an object shaped like a Rectangle
18. Draw an object shaped like a Triangle
19. Draw an object shaped like a Triangle
20. Draw an object shaped like a Triangle

ARAL Math Grade 1 Worksheet 9
Comparing Shapes

1. 
2. 
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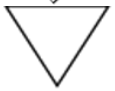
5. 
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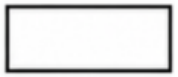
ARAL Math Grade 1 Worksheet 10
Patterns

1. 
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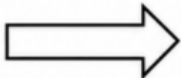
3. 
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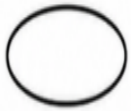
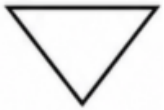
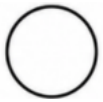
5. 
6. 
7. 
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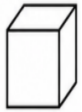
9. 
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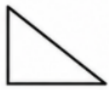
11. 
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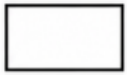
18. 

ARAL Math Grade 1 Worksheet 11
Days of the Week

1. Thursday
2. Wednesday
3. Tuesday
4. Wednesday
5. Saturday
6. Saturday
7. Sunday
8. Friday
9. Thursday
10. Wednesday
11. Tuesday
12. Monday
13. Friday
14. Sunday

ARAL Math Grade 1 Worksheet 12
Order of Months and Days

1. 8th
2. 6th
3. 9th
4. 2nd
5. 12th
6. 4th
7. 7th
8. 11th
9. 3rd
10. 5th
11. 10th
12. 1st
13. 3rd
14. 5th
15. 7th
16. 2nd
17. 6th
18. 4th
19. 1st

ARAL Math Grade 1 Worksheet 13
The Calendar

1. January
2. November
3. October
4. February
5. May
6. September
7. March
8. December
9. August
10. April
11. June
12. July

ARAL Math Grade 1 Worksheet 14
Reading a Calendar

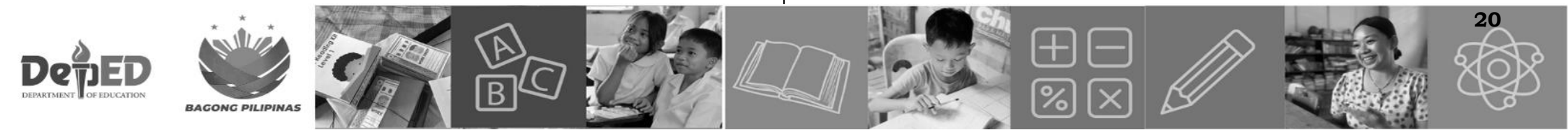
1. 30
2. Monday
3. 5
4. 4
5. Wednesday
6. April 8
7. 4
8. April 12

ARAL Math Grade 1 Worksheet 15
Finding the Sum

1. 6
2. 7
3. 2
4. 3
5. 5
6. 11
7. 12
8. 13
9. 8
10. 9
11. 10

ARAL Math Grade 1 Worksheet 16
Finding the Sum

1. 11
2. 7
3. 10
4. 12
5. 13
6. 14
7. 20
8. 21
9. 15
10. 16
11. 17
12. 19
13. 8
14. 9
15. 4
16. 5
17. 7
18. 6
19. 13
20. 14
21. 15
22. 10
23. 11
24. 12

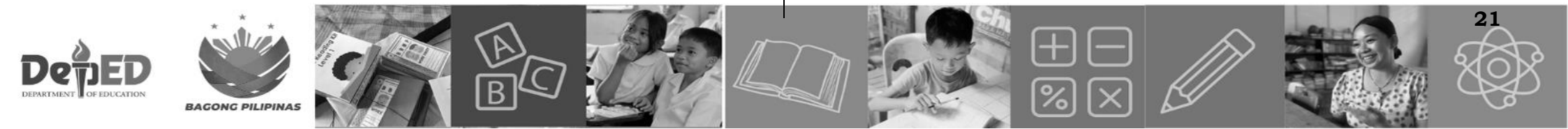


ARAL Math Grade 1 Worksheet 17
Finding the Sum

1. 13
2. 14
3. 11
4. 12
5. 10
6. 15
7. 19
8. 18
9. 16
10. 21
11. 18
12. 20
13. 10
14. 5
15. 9
16. 6
17. 8
18. 7
19. 12
20. 15
21. 14
22. 11
23. 16
24. 13

ARAL Math Grade 1 Worksheet 18
Finding the Sum

1. 9
2. 7
3. 12
4. 16
5. 20
6. 15
7. 14
8. 21
9. 23
10. 19
11. 17
12. 18
13. 11
14. 7
15. 9
16. 10
17. 8
18. 6
19. 16
20. 15
21. 12
22. 13
23. 17
24. 14



ARAL Math Grade 1 Worksheet 19
Finding the Sum

1. 12
2. 15
3. 17
4. 23
5. 19
6. 20
7. 13
8. 24
9. 22
10. 21
11. 18
12. 16
13. 8
14. 12
15. 9
16. 7
17. 11
18. 10
19. 14
20. 13
21. 16
22. 18
23. 15
24. 17

ARAL Math Grade 1 Worksheet 20
Finding the Sum

1. 13
2. 15
3. 17
4. 20
5. 19
6. 21
7. 16
8. 24
9. 22
10. 23
11. 25
12. 18
13. 12
14. 9
15. 10
16. 8
17. 11
18. 13
19. 15
20. 14
21. 17
22. 19
23. 16
24. 18

ARAL Math Grade 1 Worksheet 21
Finding the Sum

1. 13
2. 18
3. 10
4. 15
5. 8
6. 20
7. 17
8. 14
9. 19
10. 16
11. 25
12. 12
13. 10
14. 13
15. 11
16. 12
17. 15
18. 18
19. 19
20. 9
21. 14
22. 16
23. 20
24. 17

ARAL Math Grade 1 Worksheet 22
Finding the Sum

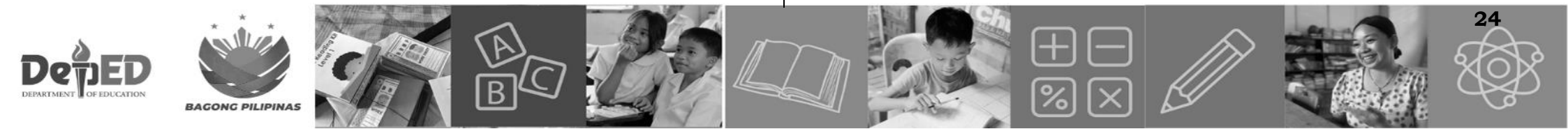
1. 11
2. 12
3. 18
4. 14
5. 20
6. 17
7. 22
8. 24
9. 23
10. 19
11. 27
12. 25
13. 13
14. 11
15. 16
16. 14
17. 15
18. 17
19. 10
20. 12
21. 19
22. 16
23. 18
24. 20

ARAL Math Grade 1 Worksheet 23
Finding the Sum

1. 17
2. 14
3. 19
4. 20
5. 28
6. 23
7. 21
8. 26
9. 22
10. 25
11. 24
12. 27
13. 13
14. 11
15. 15
16. 11
17. 20
18. 16
19. 19
20. 19
21. 23
22. 16
23. 20
24. 24

ARAL Math Grade 1 Worksheet 24
Writing Numbers in Words

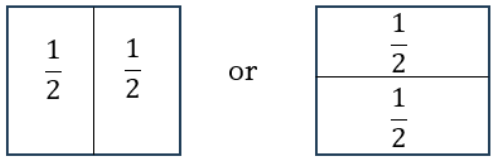
1. thirty-five
2. thirty-two
3. twenty-three
4. twelve
5. seven
6. eighteen
7. twenty-six
8. ninety-eight
9. seventy-six
10. forty-five
11. thirty-two
12. twenty-five
13. forty-seven
14. fifty-six
15. seventy-six
16. eighty-nine
17. ninety-three
18. forty-seven
19. ninety-nine
20. thirty-eight

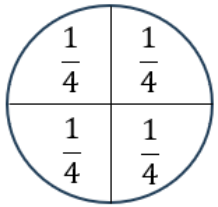


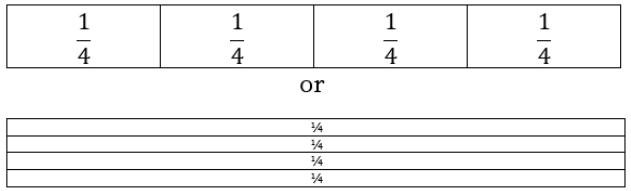
ARAL Math Grade 1 Worksheet 25
Writing Words into Numbers

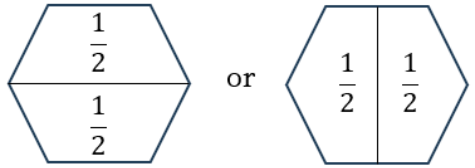
1. 54
2. 36
3. 28
4. 84
5. 43
6. 25
7. 47
8. 89
9. 77
10. 68
11. 72
12. 39
13. 26
14. 64
15. 44
16. 93
17. 87
18. 48
19. 25
20. 33

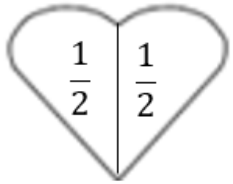
ARAL Math Grade 1 Worksheet 26
Fractions: ½ and ¼

1. 

2. 

3. 

4. 

5. 

ARAL Math Grade 1 Worksheet 27
Naming Fractions

1. $\frac{1}{4}$
2. $\frac{1}{2}$
3. $\frac{1}{2}$
4. $\frac{2}{2}$
5. 1
6. 1
7. 1
8. 1
9. 1
10. 1
11. 2
12. 4
13. 4
14. 2
15. 4
16. 2

ARAL Math Grade 1 Worksheet 28
Shading Fractions

1. Shade 1 of 2
2. Shade 1 of 4
3. Shade 2 of 4
4. Shade 1 of 2
5. Shade 1 of 4
6. Shade 1 of 4
7. Shade 1 of 2
8. Shade 1 of 4
9. Shade 1 of 4
10. Shade 1 of 2
11. Divide and shade 1/2
12. Divide and shade 1/4
13. Divide and shade 1/4
14. Divide and shade 1/2
15. Divide and shade 1/4
16. Divide and shade 1/4
17. Divide and shade 1/4
18. Divide and shade 1/2

ARAL Math Grade 1 Worksheet 29
Comparing Sets

1. fewer than
2. fewer than
3. more than
4. as many as
5. more than
6. more than
7. fewer than
8. fewer than
9. fewer than
10. fewer than
11. fewer than
12. more than
13. as many as
14. Draw fewer than 8 objects.
15. Draw fewer than 9 objects.
16. Draw more than 2 objects.
17. Draw more than 4 objects.