

Grade

2



ARAL

PROGRAM

MATHEMATICS

Tutor's Guide

ARAL – Math Grade 2

Teacher’s Guide

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GRADE 2 - MATH

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ARAL Summer Grade 2 Math

Session 1

Giving the Place Value of a Three-Digit Number

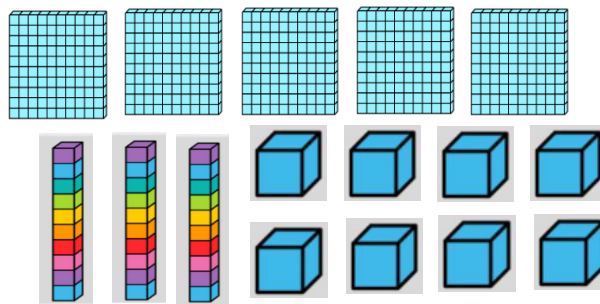
Lesson Objective:

At the end of the session, the learners are expected to give the place value of a digit in three-digit numbers.

Lesson Sample and Explanation:

Place Value refers to the value of a digit based on its position in a number.

Developing Lesson through place value blocks



Hundr eds	Tens	Ones		Num ber
5	3	8		538

Explanation:

In the number 538, how many hundreds are there?

There are 5.

How many tens? There are 3.

How many ones? There are 8.



Developing
Lesson using
number
symbols

538

_____ hundreds
_____ tens
_____ ones

Explanation:

In the number 538, how many
hundreds are there?

There are 5.

How many tens? There are 3.

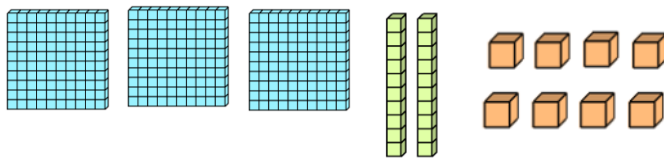
How many ones? There are 8.

Guided Activity

Directions: Count the hundreds, tens, and ones in each
group. Write the digit in the correct space in the table.
Then, write the place value of each digit in the blanks.

1.

Hundreds	Tens	Ones



3? _____

2? _____

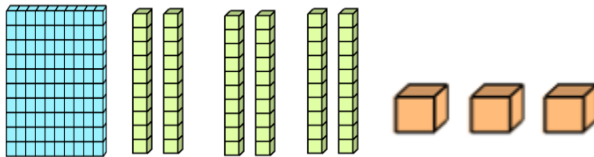
8? _____





2.

Hundreds	Tens	Ones



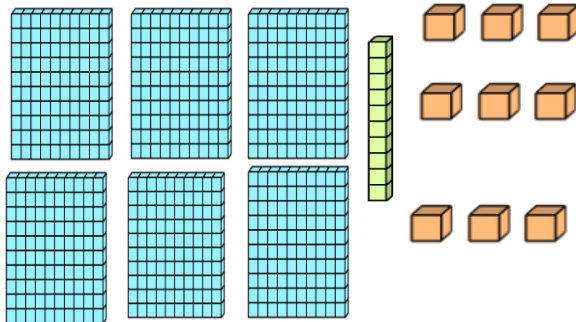
1? _____

6? _____

3? _____

3.

Hundreds	Tens	Ones



6? _____

1? _____

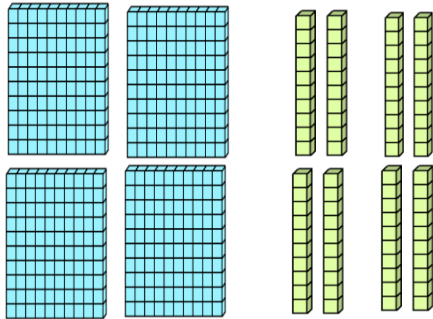
9? _____





4.

Hundreds	Tens	Ones

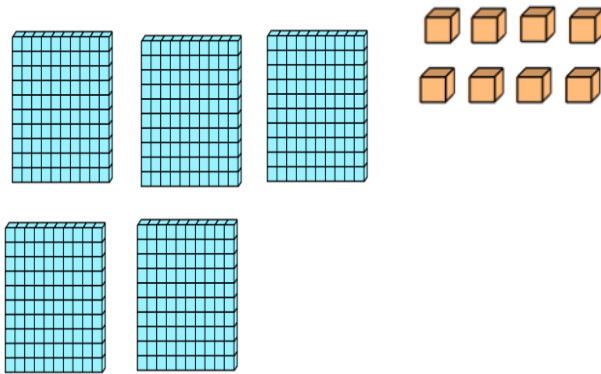


4? _____

8? _____

5.

Hundreds	Tens	Ones



5? _____

8? _____





ARAL Summer Grade 2 Math

Session 2

Reading Numbers up to 1000 in Symbols and in Words

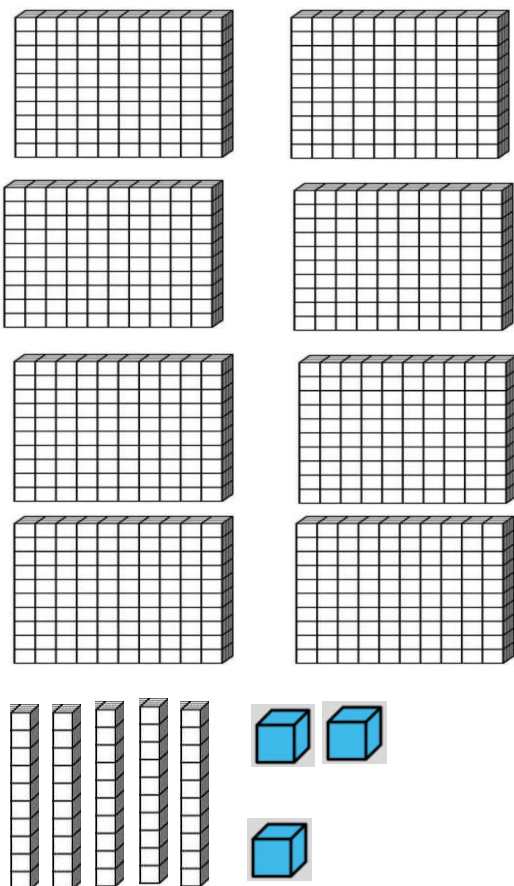
Lesson Objective:

At the end of the session, the learners are expected to read numbers up to 1000 in symbols and in words

Lesson Sample and Explanation:

- We read numbers from left to right.
- We use a hyphen in writing in words 3-digit numbers more than 100.

Developing the Lesson through Pictorial



Developing the Lesson using number symbols

Read:

Symbol

853

Words

Eight
hundred fifty-
three



Explanation:

The picture representation is read as eight hundred fifty- three. In symbol, it is read as 853.

Explanation:

In the number symbol, the number is read as 853.

In words, it is eight hundred fifty-three.

Guided Activity

Directions: Match each word to its corresponding number symbol.

A

1.

six hundred
twelve

2.

eight hundred
eighty- two

3.

One hundred
ninety

4.

Nine hundred
sixty- one

5.

Five hundred
eighty- two

B

A. 190

B. 961

C. 582

D. 612

E. 882





ARAL Summer Grade 2 Math

Session 3

Visualizing and Writing Three-Digit Numbers in Expanded Form

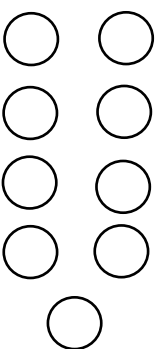
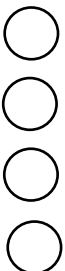
Lesson Objective:

At the end of the session, the learners are expected to visualize and write three-digit numbers in expanded form.

Lesson Sample and Explanation:

- The expanded form is a way of writing a number to show the value of each digit. It shows the number in ones, tens, and hundreds.

Developing the Lesson through Number Discs

Hundreds	Tens	Ones
		
9	4	3

9 discs of hundreds
4 discs of ten
3 discs of ones

Developing the Lesson through Number Symbols.

Hundreds	Tens	Ones
9	4	3

9 hundreds = 900
4 tens = 40
3 ones = 3

Explanation: In visualizing and writing 943 in expanded form, we show:

$$943 = 900 + 40 + 3$$





Explanation: In visualizing and writing numbers using number discs in expanded form, we say that there are

9 discs of hundreds
4 discs of ten
3 discs of ones

$900 + 40 + 3 = 943$

Guided Activity

Direction: Write the numbers given below in expanded form.

1. 462 = _____ hundreds _____ tens _____ ones

2. 517 = _____ hundreds _____ tens _____ ones

3. 953 = _____ hundreds _____ tens _____ ones

4. 173 = _____ hundreds _____ tens _____ ones

5. 548 = _____ hundreds _____ tens _____ ones





ARAL Summer Grade 2 Math

Session 4

Ordering Numbers Up to 1,000 in Increasing or Decreasing Order

Lesson Objective:

At the end of the session, the learners are expected to compare numbers up to 1,000 using the relational symbol.

Lesson Sample and Explanation:

We compare numbers using the following relational symbols

$>$ means “greater than”

$<$ means “less than”

$=$ means “equal to”

Developing the Lesson through Concrete Objects	Developing the Lesson through Pictorials	Developing the Lesson using number symbols
Comparing Mangoes  greater than $>$ 20 	Example:  less than ($<$) 	Comparing 30 and 20: 30 is greater than ($>$) 20





Explanation: 30 mangoes are greater than ($>$) 20 mangoes	Explanation: 13 balls are less than 14 balls	Explanation: "30 is greater than ($>$) 20" means that the number 30 is larger or has a higher than the number 20.
--	---	--

Guided Activity

Direction: Compare the following sets of pictures using less than, greater than, or equal to.

1. Oranges



2. Watermelons



3. Gifts



4. Flowers



5. Balls







ARAL Summer Grade 2 Math

Session 5

Pattern Using Two Attributes

Lesson Objective:

At the end of the session, the learners are expected to identify the missing terms in a given continuous pattern using two attributes.

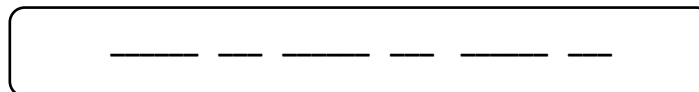
Lesson Sample and Explanation:

What is a Pattern?

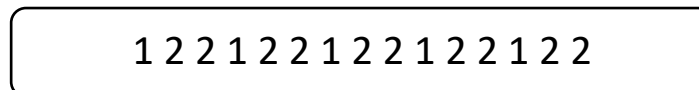
- A pattern is an arrangement of lines, numbers, colors, sizes, or shapes in which the same figure is arranged repeatedly.

Examples:

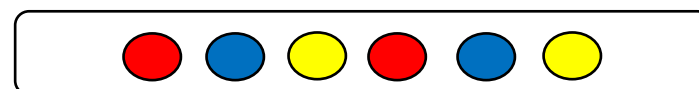
- Lines



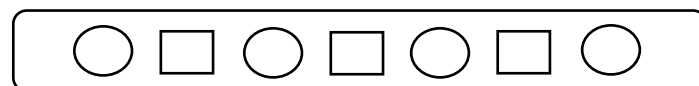
- Numbers



- Colors



- Shapes



Developing the Lesson through Concrete Objects

Developing the Lesson through Pictorials

Developing the Lesson using number symbols

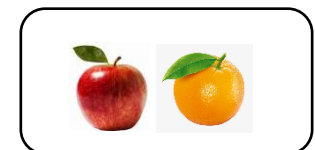
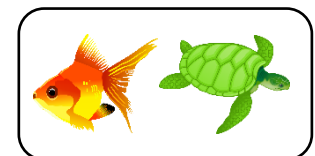
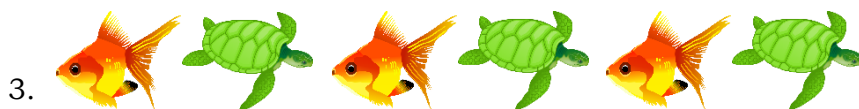
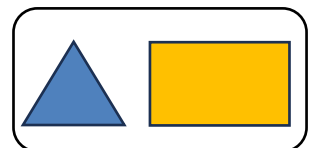
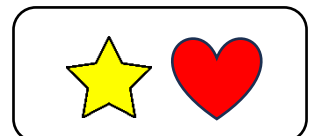




Show the learners sample patterns, and let the learners create their own pattern. Example: • lines • numbers • colors • shapes	Show an easy pattern using two attributes. Then ask the learners: What comes next? Example: color and shape 	Show another pattern using two attributes. Then ask the learners: What comes next? Example: number and letter 1A 2B 3C 4D 5E 6F 7G
---	--	--

Guided Activity

Direction: Encircle the picture in the box that comes next.





ARAL Summer Grade 2 Math

Session 6

Counting and Number Patterns: Visualizing and Counting Numbers by 10s, 50s, and 100s

Lesson Objective:

At the end of the session, the learners are expected to visualize and count numbers by 10s, 50s, and 100s.

Lesson Sample and Explanation:

This session should help learners develop their ability to recognize and extend numerical patterns. This lesson is foundational for understanding counting by tens, fifties, and hundreds.

Developing the Lesson through Concrete Objects	Developing the Lesson through Pictorials	Developing the Lesson using number symbol
		By 10s: 10, 20, 30, 40, 50 By 50s: 50, 100, 150, 200, 250 By 100s: 100, 200, 300, 400, 500





Prepare a jar filled with marbles. Ask the first learner to take 10 marbles, the second learner to take 20 marbles, the third learner to take 30 marbles, and continue the pattern. Have the learners line up in order based on the number of marbles they are holding. Guide them to observe the pattern and ask: <i>“What do you notice about the numbers?”</i> Lead the discussion by explaining that the numbers increase by 10 each time. Emphasize that this is called counting by 10s, where each step adds 10 more.	Ask the learners to observe the numbers and guide them with questions such as: <i>“What do you notice about the numbers on the balloons?”</i> and <i>“How much is added each time?”</i> Explain that the numbers increase by 50 each step. Emphasize that this is called counting by 50s, where we add 50 to get the next number. Let the learners read the numbers aloud together: 50, 100, 150, 200... while pointing to each balloon.	Write a sequence of numbers on the board using number symbols, such as: 10, 20, 30, 40, 50. Ask the learners to read the numbers aloud together. Guide them to observe the pattern by asking: <i>“What do you notice about the numbers?”</i> and <i>“How much is added each time?”</i> Explain that each number increases by a fixed amount. Emphasize that when we add 10 each time, we are counting by 10s. Repeat the activity using other sequences,
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Encourage the learners to count aloud together (10, 20, 30, 40, ...) while pointing to each learner in line to reinforce the concept.

To deepen understanding, ask follow-up questions such as: *“Who has 50 marbles?”* or *“What number comes after 60?”* count these on the floor.

You may also ask volunteers to predict the next numbers or draw the next balloon to continue the pattern.

To reinforce learning, ask questions like: *“What comes after 150?”* or *“Which balloon shows 100?”*

such as 50, 100, 150, 200 for counting by 50s, and 100, 200, 300, 400 for counting by 100s.

Encourage learners to continue each pattern and write the next numbers on the board. Ask guiding questions like: *“What comes next?”* or *“What number comes before 200?”* to reinforce their understanding of number patterns.





Guided Activity:

Directions: Fill in the missing numbers.

Count by 10s.

10	20								
									500

Count by 50s.

50	100			
				500

Count by 100s.

100				500
------------	--	--	--	------------





ARAL Summer Grade 2 Math

Session 7

Numbers with Sums up to 1,000 without and with Regrouping: 2-digit and 3-digit numbers

Lesson Objective:

At the end of the session, the learners are expected to visualize problems, represent, and add 2-digit and 3-digit numbers with sums up to 1,000 with regrouping.

Lesson Sample and Explanation:

The learners will be aided by the Teacher on how to visualizing, representing, and adding the following numbers with sums up to 1,000 with regrouping:

- 2-digit by 3-digit numbers

Pilar is helping her teacher organize books in the classroom. She says that she counted 148 books in the Math section and 35 books in the English section. How many books did Pilar count in all?

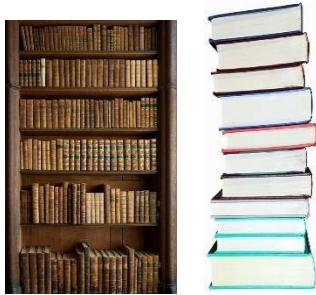
Riza is planting flowers in her garden. She plants 126 flowers in the front yard, and 95 flowers in the side yard. How many flowers is she planting in all?

Jake is collecting stickers. He collected 358 stickers from his friend and 78 stickers from his brother. How many stickers did Jake collect in all?

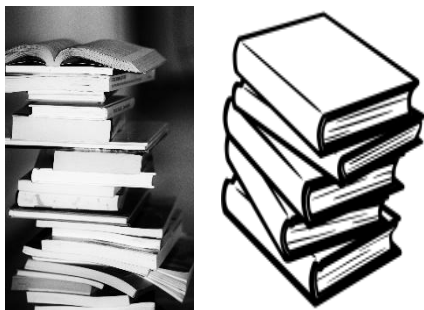




Step 1: $148 + 35 =$



$$100 + 40 + 8 = 148$$



$$30 + 5 = 35$$

Step 2:

$$\begin{array}{r} 148 \\ + 35 \\ \hline \end{array}$$

Add the ones:

$$8 + 5 = 13$$

Step 1:
Use the place value

Hun dreds	Tens	Ones
1	2	6
	9	5

Step 2:

Add the ones:

$$6 + 5 = 11$$

Regroup to the tens place, then add the tens group and regroup, then add to the hundreds place

Step 3:

$$\begin{array}{r} 11 \\ 126 \\ + 95 \\ \hline 221 \end{array}$$

Step 1:

$$\begin{array}{r} 358 \\ + 78 \\ \hline \end{array}$$

Step 2:

Add the ones:

$$8 + 8 = 16$$

Regroup the tens place, then add the tens group and regroup, then add to the hundreds place.

Step 3:

$$\begin{array}{r} 11 \\ 358 \\ + 78 \\ \hline 236 \end{array}$$





Regroup to the tens place, then add the tens group and the hundreds place

Step 3:

$$\begin{array}{r} 1 \\ 148 \\ + 35 \\ \hline 183 \end{array}$$

Guided Activity

Directions: Read the problem and understand the problem, then solve.

1. Jerome gave 399 sticks to his brother and 63 sticks to his friend. How many sticks did Jerome give in all?

Step 1: Visualize $399 + 63 = \underline{\hspace{2cm}}$.

Step 2: Add each place value and regroup.

Step 3: Give the correct answer.

2. Aling Magda sold 637 pieces of coconut in the market and 95 pieces of sayote. How many pieces of coconut and sayote did she sell in all?

Step 1: Visualize $637 + 95 = \underline{\hspace{2cm}}$.

Step 2: Add each place value and regroup.

Step 3: Give the correct answer.





3. The class of Mr. Cruz planted 687 mahogany seedlings at the campsite while the class of Mrs. Palmes planted 78 mahogany seedlings. How many mahogany seedlings have they planted together?

Step 1: Visualize $687 + 78 = \underline{\hspace{2cm}}$.

Step 2: Add each place value and regroup.

Step 3: Give the correct answer.

4. Rico gave 239 pieces of candy to a Grade 1 class and 84 pieces of candy to a Kindergarten class. How many candies did Rico give in all?

Step 1: Visualize $239 + 84 = \underline{\hspace{2cm}}$.

Step 2: Add each place value and regroup.

Step 3: Give the correct answer.

5. The Grade 2 pupils of Masigasig Elementary School brought 758 pieces of white stones, while the Grade 1 pupils brought 95 pieces of white stones. How many white stones do they have in all?

Step 1: Visualize $758 + 95 = \underline{\hspace{2cm}}$.

Step 2: Add each place value and regroup.

Step 3: Give the correct answer.





ARAL Summer Grade 2 Math

Session 8

Addition of Whole Numbers Including Money with Sums up to 1,000 Using Appropriate Problem-Solving Strategies and Tools

Lesson Objective:

At the end of the session, the learners are expected to solve problems involving addition of whole numbers including money with sums up to 1,000 using appropriate problems-solving strategies and tools.

Lesson Sample and Explanation:

Using an example, the Teacher will illustrate how to solve problems involving addition of whole numbers including money with sums up to 1,000 using appropriate problems-solving strategies and tools.

Read and understand the problem. Use the prices of food sold in the canteen as an example. Ana has ₱50.00 for her meal allowance in school. What can she buy with this amount? Compute the total amount of	Beth has P150.00 for her meal allowance in school. What can she buy with this amount? Compute the total amount of the different combinations of food she can order.	During a garage sale, Maylene bought the following items: T-Shirt ₱ 170.00 Jeans ₱ 250.00 Shoes ₱ 400.00
--	---	--





each set of food ordered.

Snacks	
Sandwich	₱15.00
Banana Que	₱10.00
Fruit Juice	₱25.00
Fruit Salad	₱25.00
Bottled Water	₱10.00
Meals	
Fried fish and rice	₱30.00
Munggo and rice	₱25.00
Beef steak and rice	₱50.00
Vegetable salad and rice	₱35.00

Possible answer:

Sandwich
₱15.00
Banana Que
₱10.00
Fruit Juice
₱25.00
Total
₱50.00

Fried fish.....	₱30.00
Beef Steak and rice.....	₱50.00
Vegetable Salad	₱35.00
Fruit Salad.....	₱25.00
Bottled Water.....	₱10.00
Total	₱150.00

How much did it cost her to buy all three items?

Solutions:

T-Shirt

₱170.00

Jeans ₱ 250.00

Shoes ₱ 400.00

Total ₱ 820.00





Guided Activity

Direction: Solve the following problems.

1. In the flower shop, Merly picked 14 red roses for a total amount of ₱370.00 and 16 white roses for a total amount of ₱475.00. How much did she pay for all the flowers that she picked?
2. Nurse Joan bought a sack of rice for ₱350.00 and 1 kilogram of pork for ₱280.00. How much did she pay the vendor?
3. Gary and Lery worked during the summer vacation. Gary earned ₱300.00 while Lery earned ₱575.00. How much did Gary and Lery earn together?
4. Jar A contains ₱230.00 and Jar B contains ₱175.00. How much money are in the two jars in all?
5. I saw a vendor in the parking lot. I bought from him one bottled water that costs ₱25.00, a pack of chips that costs ₱65.00, and candies that cost ₱20.00. How much did I pay the vendor?





ARAL Summer Grade 2 Math

Session 9

Addition of Whole Numbers Including Money with Sums Up to 1,000 Using Appropriate Problem-Solving Strategies and Tools

Lesson Objectives:

At the end of the session, the learners are expected to solve problems involving addition of whole numbers, including money, with sums up to 1,000 using appropriate problem-solving strategies and tools.

Lesson Sample and Explanation:

Routine Problem:

A toy store has a sale. A robot costs 350 pesos, a doll costs 275 pesos, and a toy car costs 125 pesos. How much do the robot and the doll cost together?

What is asked in the problem? (How much do the robot and the doll cost together?)

What are the given facts? (P350, P275, P125)

Non-Routine Problem:

You have 1,000 pesos to spend on a birthday gift for your friend. You want to buy your friend a gift basket filled with a variety of things. The first three items you want to buy are a book for 250 pesos, a box of chocolates for 150 pesos, and a scented candle for 100 pesos. You also want to include some other small items in the basket. How





What operation are we going to use? (Addition)

What is the number sentence?
($P300.00 + P275.00$)

What is the answer?
($P575.00$)

much money do you have left to spend on additional items?

Solution:

Step 1: Calculate the total cost of the main items:

Book: 250 pesos

Chocolates: 150 pesos

Candle: 100 pesos

Total Cost: $250 + 150 + 100 = 500$ pesos

Step 2: Calculate the Remaining Budget by subtracting the Total Cost of the main items (500 pesos) from the Total Budget (1,000 pesos).

Remaining budget:

$1,000 - 500 = 500$ pesos

Answer: You have 500 pesos left to spend on additional items for the gift basket.





Guided Activity

Directions: Solve the following problems.

1. Maria is planning a birthday treat for her friend. She wants to buy 10 cupcakes that cost a total of 150 pesos and 5 packs of juice that cost a total of 50 pesos. How much money will Maria need to buy all the treats?
2. The students of Ms. Reyes were selling juice and banana cues at the school fair. They sold 150 pesos for juice and 30 pesos for banana cues. How much money did they earn?
3. Ryan wants to buy a toy car that costs 150 pesos and a toy truck that costs 375 pesos. How much money does he need to buy both toys?
4. The teacher and pupils of Grade 2 Kawayan are having a bake sale to raise money for new books. They sold 15 boiled bananas for a total of 150 pesos and 20 sandwiches for a total of 250 pesos. How much money did they earn from the bake sale?





ARAL Summer Grade 2 Math

Session 10

Digit Numbers with Minuends Up to 999 without and with Regrouping

Lesson Objective:

At the end of the session, the learners are expected to visualize problems and subtract 2- to 3- digit numbers with minuends up to 999 with regrouping.

Lesson Sample and Explanation:

Example 1: Subtract 35 from 87

Step 1: Set up the problem.

Write the numbers vertically, aligning the digits in each place value column (ones, tens, hundreds).

$$\begin{array}{r} 87 \\ - 35 \\ \hline \end{array}$$

Step 2: Start with the Ones Column.

Subtract the bottom digit from the top digit.

$$\begin{array}{r} 87 \\ - 35 \\ \hline 2 \end{array}$$





Then go to the tens digit. Subtract the bottom digit from the top digit.

The answer is: 52.

Example 2: Subtract 35 from 82

The top digit is less than the bottom digit. In this example, 2 is less than 5. See how it is written below:

$$\begin{array}{r} 82 \\ - 35 \\ \hline \end{array}$$

Regroup: Borrow 1 ten (10 ones) from the tens column. Add the borrowed 10 to the ones digit in the top number.

$$\begin{array}{r} 10+ \\ 2 \\ 82 \\ - 35 \\ \hline \end{array}$$

Subtract: Subtract the bottom digit from the regrouped top digit.

$$\begin{array}{r} 12 \\ 82 \\ - 35 \\ \hline 57 \end{array}$$





In the tens column, 8 now becomes 7.

$$\begin{array}{r} \text{7} \quad \text{12} \\ - \text{8} \text{ } \text{2} \\ \text{3} \text{ } \text{5} \\ \hline \text{7} \end{array}$$

Subtract 3 from 7.

$$\begin{array}{r} \text{7} \quad \text{12} \\ - \text{8} \text{ } \text{2} \\ \text{3} \text{ } \text{5} \\ \hline \text{4} \text{ } \text{7} \end{array}$$

Example 3: Subtract 35 from 112

As in the previous example, borrow 1 ten (10 ones) from the tens column. Add the borrowed 10 to the ones digit in the top number.

Then, note that the top digit in the tens column is also less than the bottom digit, so we also need to borrow from the hundreds column also.

$$\begin{array}{r} \text{0} \quad \text{10} \quad \text{12} \\ - \text{1} \text{ } \text{1} \text{ } \text{2} \\ \text{3} \text{ } \text{5} \\ \hline \text{7} \text{ } \text{7} \end{array}$$

Key Points to Remember:

- **Place Value:** Align the digits in each place value column carefully.





- **Regrouping:** When the top digit is smaller than the bottom digit, borrow from the digit to its left. When working with larger numbers, you might need to regroup multiple times. Just follow the same steps, borrowing from the next place value column to the left as needed.
- **Practice:** Practice regularly to gain confidence and speed.

Example 4: Subtract 455 from 634

	hundreds	tens	ones	
	5	12	14	regrouped
$-$	~~6~~	~~3~~	4	minuend
	5	5	5	subtrahend
	1	7	9	difference

Guided Activity:

Direction: Subtract 2- to 3-digit numbers with minuends up to 999 without regrouping.

6	7	1
-	3	4

5	4	2
-	2	2

8	6	2
-	4	1

4	7	3
-	1	2

7	4	4
-	6	5





ARAL Summer Grade 2 Math

Session 11

Solving Problems Involving Subtraction of Whole Numbers, Including Money, with Minuends up to 1000 Using Appropriate Problem-Solving Strategies and Tools

Lesson Objective:

At the end of the session, the learners are expected to solve problems involving subtraction of whole numbers, including money, with minuends up to 1000 using appropriate problem-solving strategies and tools.

Lesson Sample and Explanation:

We solve non-routine word problems using these steps: understand the problem, plan the steps, solve step by step using more than one operation if needed, check the solution, and write the final answer.

Routine Problem:

Problem:

John had 875 marbles. He gave his friend 236 marbles. How many marbles did John have left?

Solution:

1. Understand the problem: John started with 875 marbles and gave away 236. We need to find out how many marbles were left.

Non-Routine Problem:

Problem:

Linda had ₱820. She bought a pair of shoes for ₱595 and a ribbon for ₱135. After buying both items, how much money did Linda have left?

Solution:

1. Understand the problem: Linda started with ₱820. She spent ₱595 on a pair of shoes





2. Set up the subtraction: $875 - 236$ 3. Perform the subtraction: $875 - 236 = 639$ 4. Final answer: John had 639 marbles left.	and ₱135 on a ribbon. We need to figure out how much money was left after buying both items. 2. First, subtract the cost of the shoes from her total amount: $₱820 - ₱595 = ₱225$ 3. Next, subtract the cost of the ribbon from the remaining amount: $₱225 - ₱135 = ₱90$ 4. Final answer: Linda will have ₱90 left after buying both the shoes and the ribbon.
---	---

Guided Activity:

Directions: Solve each of the following problems.

1. Mark had 850 marbles. He gave 412 marbles to his friend. How many marbles did Mark have left?





2. Sarah had ₱1000 in her bank account. She bought some school supplies for ₱675. How much money was left in her account?

3. A car dealership had 950 cars. Last month, 379 cars were sold. How many cars did they have left?

4. Emma had ₱980. She bought a bag for ₱450 and a book for ₱120. How much money did she have left?

5. Jason bought a jacket priced at ₱600 but had a discount of ₱150. How much did he pay after the discount?





ARAL Summer Grade 2 Math

Session 12

Multiplication as repeated addition, array, counting by multiples, and equal jumps on the number line

Lesson Objective:

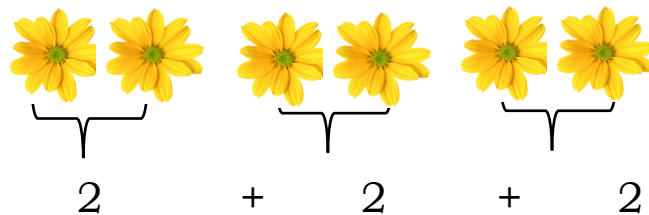
At the end of the session, the learners are expected to illustrate multiplication as repeated addition.

Lesson Sample and Explanation:

We can illustrate multiplication as repeated addition.

Developing Lesson through Concrete Objects

Illustrate as repeated addition



Explanation:

Displaying 2 flowers multiple times, and the result is 6.

Developing Lesson through Pictorials



Explanation:

There are 3 groups of teddy bears. Each group has 2 teddy bears. Therefore, there are 6 teddy bears in all.





Developing Lesson
through using
Number Symbols

$$2 + 2 + 2 = 6$$

Explanation:

2 is being added 3 times, so the result is 6.

Guided Activity:

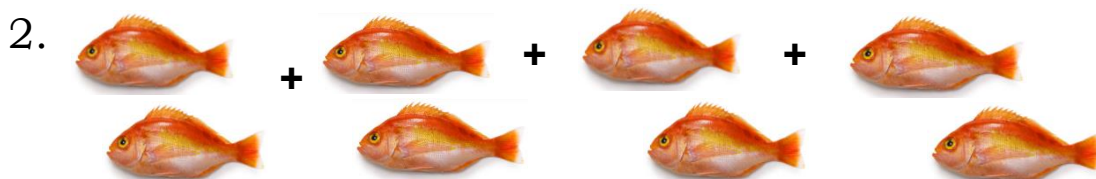
Directions: Write the repeated addition and the multiplication sentence based on the given pictures.



Repeated Addition

Multiplication Sentence

_____ = _____



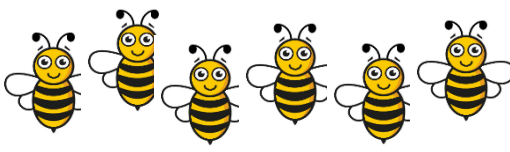
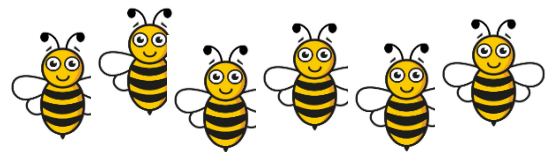
Repeated Addition

Multiplication Sentence

_____ = _____



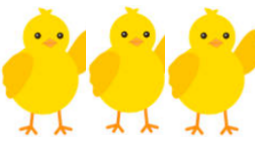
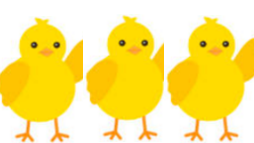
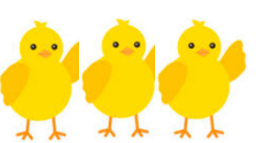
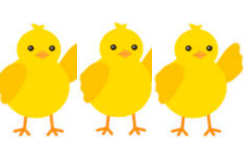


3.  + 

Repeated Addition

Multiplication Sentence

_____ = _____

4.  +  +  + 

Repeated Addition

Multiplication Sentence

_____ = _____

5.  + 

Repeated Addition

Multiplication Sentence

_____ = _____





ARAL Summer Grade 2 Math

Session 13

Multiplication as repeated addition, array, counting by multiples, and equal jumps on the number line

Lesson Objective:

At the end of the session, the learners are expected to illustrate multiplication as repeated addition, array, counting by multiples, and equal jumps on the number line.

Lesson Sample and Explanation:

We can use an array to show a multiplication equation, arranging objects in rows and columns.

Developing Lesson through Concrete Objects

Illustrate as an array

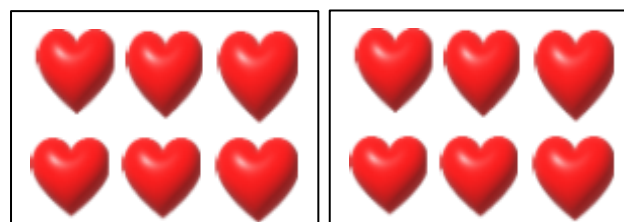


Explanation:

There are 2 columns of 6 pencils, making a total of 12 pencils.

Developing Lesson through Pictorials

Example:



= 12



	Explanation: We have 2 columns of hearts in an array with 6 hearts in each column for a total of 12 hearts .
Developing Lesson through using Number Symbols	$2 \times 6 = 12$ Explanation: It shows that multiplying 2 by 6 gives an answer of 12.

Guided Activity:

Directions: Write the correct multiplication sentence represented by the given array of objects.

1.  _____ **x** _____ = _____

2.  _____ **x** _____ = _____



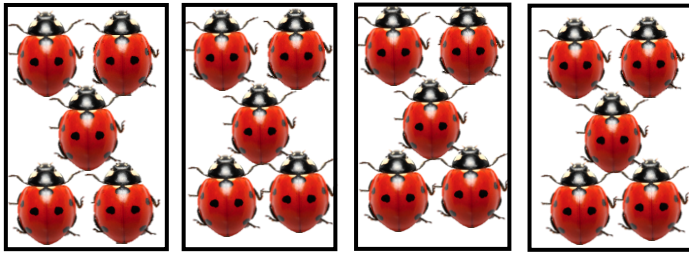


3.



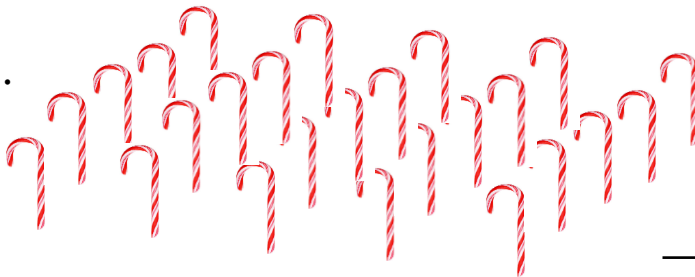
$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

4.



$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

5.



$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$





ARAL Summer Grade 2 Math

Session 14

Visualizing Division as Equal Sharing

Lesson Objective:

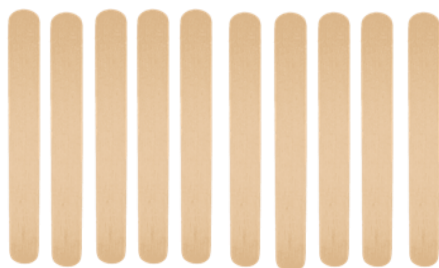
At the end of the session, the learners are expected to visualize division as the process of equal sharing.

Lesson Sample and Explanation:

When we think of division as **equal sharing**, we are giving the same number of things to each person or group.

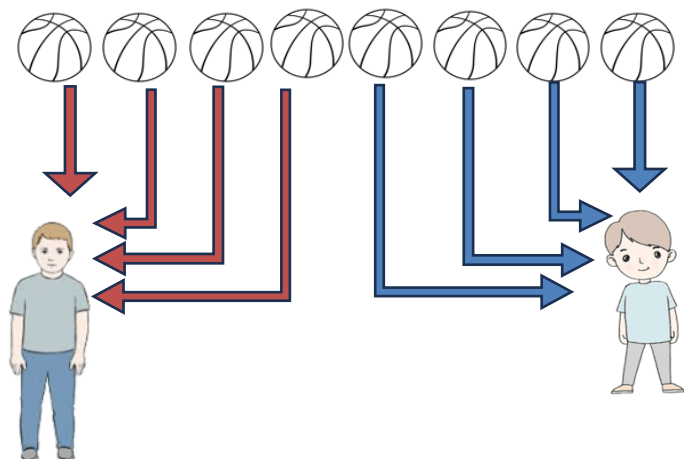
Developing Lesson through Concrete Objects

What you need: 10 Popsicle sticks
What to do: Share the popsicle sticks into 2 groups so that each group has the same number of popsicle sticks.



Developing Lesson through Pictorial

Tatay Noli has 8 balls and wants to share them equally between Nick and Nelson. How many balls will each of them get?





Answer the following question:

1. How many popsicle sticks do we have?

2. Into how many groups do we divide the popsicle sticks?

3. How many popsicle sticks are there in each group?

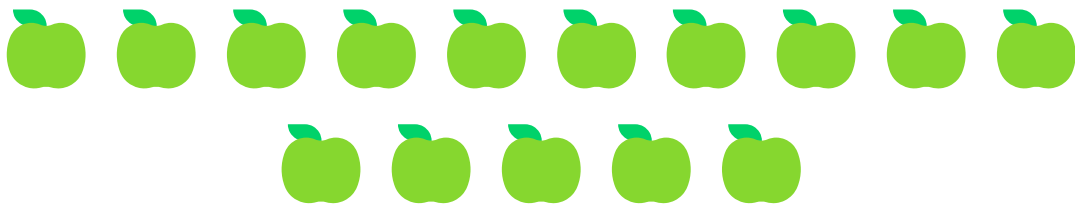
Nick
Nelson

In the picture above, you can see that Nick has 4 balls, and Nelson also has 4 balls. Tatay Noli gave each of them 4 balls.

Guided Activity

Directions: Using the provided set, organize and group the objects to see how many are in each group.

Set 1: Divide the 15 apples into 3 baskets.

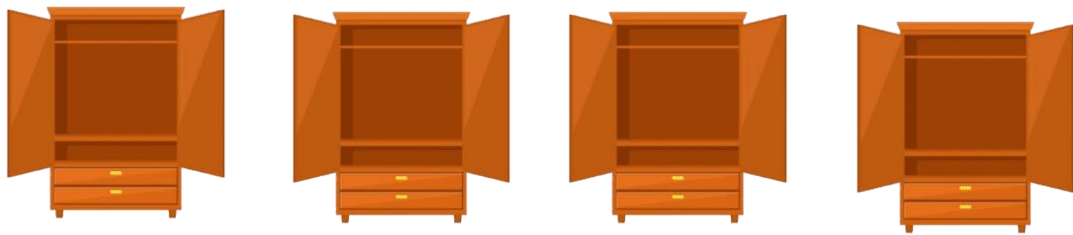
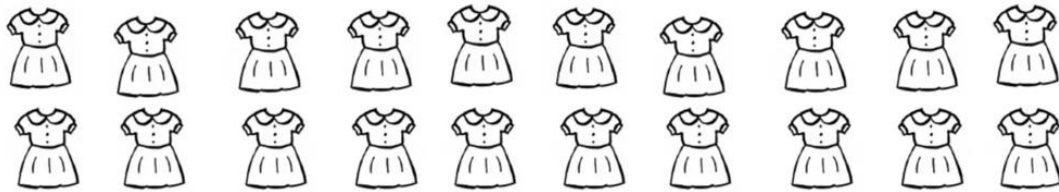


How many apples are in each basket? _____



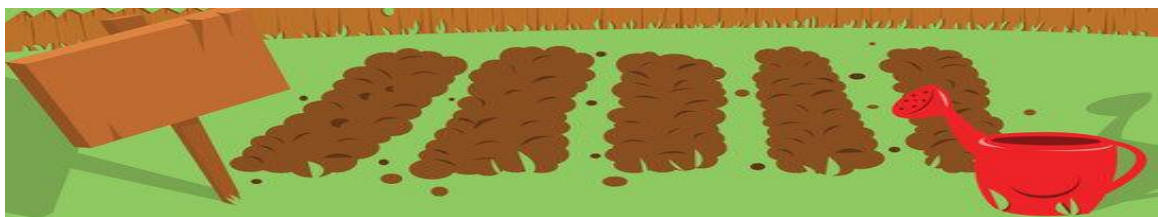
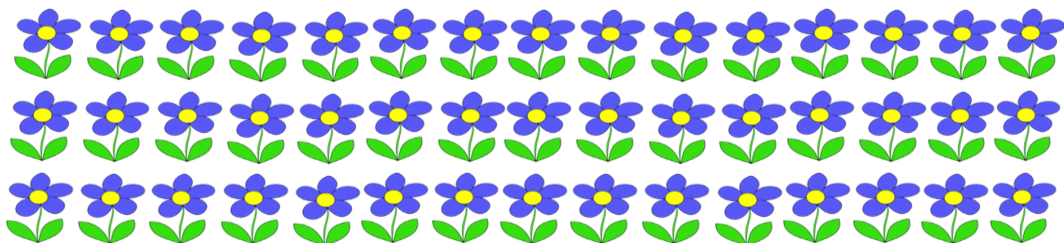


Set 2: Place the 20 dresses equally into 4 cabinets.



How many dresses are in each cabinets? _____

Set 3: Plant the 45 flowers in 5 garden plots equally.

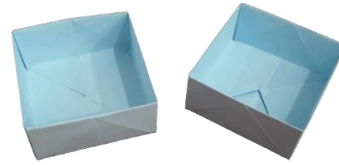
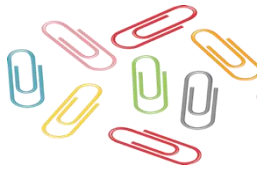


How many flowers are planted in each garden plot? _____



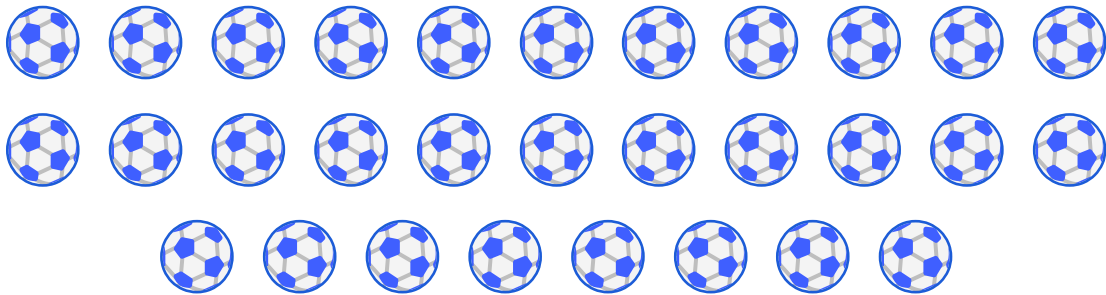


Set 4: Put the paper clips into 2 boxes so that each box has the same number of paper clips.



How many paper clips are in each box? _____

Set 5: Put the 30 balls into 10 crates so that each crate has the same number of balls.



How many balls are there in each ball crates? _____





ARAL Summer Grade 2 Math

Session 15

Visualizing Division as Repeated Subtraction

Lesson Objective:

At the end of the session, the learners are expected to represent division as repeated subtraction.

Lesson Sample and Explanation:

Division as repeated subtraction means taking the same number away from a bigger number again and again until you get to zero.

Developing Lesson through Concrete Objects

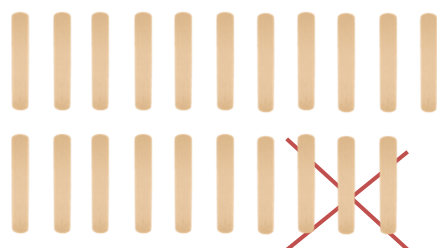
Divide 21 popsicle into 3 groups.

What do you need:

21 Popsicle sticks

What to do:

1. Remove 3 popsicle sticks from 21.



How many popsicle sticks left? _____

Developing Lesson through Numbers

Pina wants to share her 21 popsicle sticks with her friends. If each of them gets 3, how many of them shared the 21 popsicle sticks?

What to do: To get the answer, repeatedly subtract 3 from 21 until the difference will be zero.

$$\begin{array}{r} 21 \\ - 3 \\ \hline 18 \end{array} \quad \longleftarrow \quad 1$$

$$\begin{array}{r} 18 \\ - 3 \\ \hline 15 \end{array} \quad \longleftarrow \quad 2$$





2. Keep removing 3 popsicle sticks at a time until no more popsicle sticks left.

How many times did you remove 3 popsicle sticks until there were no more popsicle sticks left?

This shows that 21 divides 3 is 7 because you removed 3 popsicle sticks 7 times .

$$\begin{array}{r} 15 \\ - 3 \\ \hline 12 \end{array} \quad \longleftarrow 3$$

$$\begin{array}{r} 12 \\ - 3 \\ \hline 9 \end{array} \quad \longleftarrow 4$$

$$\begin{array}{r} 9 \\ - 3 \\ \hline 6 \end{array} \quad \longleftarrow 5$$

$$\begin{array}{r} 6 \\ - 3 \\ \hline 3 \end{array} \quad \longleftarrow 6$$

$$\begin{array}{r} 3 \\ - 3 \\ \hline 0 \end{array} \quad \longleftarrow 7$$

How many times did we subtract 3 from the 21?

This shows that 21 divides 3 is 7 because you subtracted 3 popsicle sticks 7 times until no more popsicle sticks left.

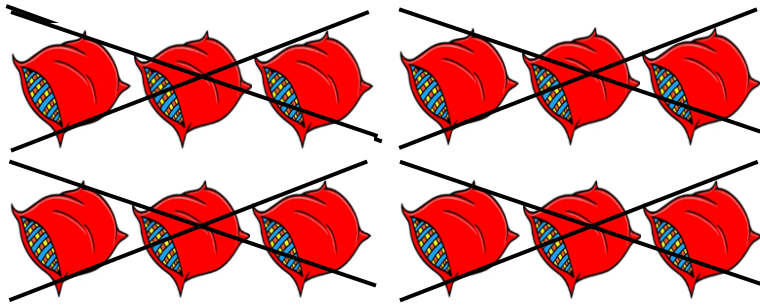




Guided Activity

Direction: Using the objects below, continuously subtract one group at a time and mark it with an X until no objects are left. Item 1 is done for you as an example.

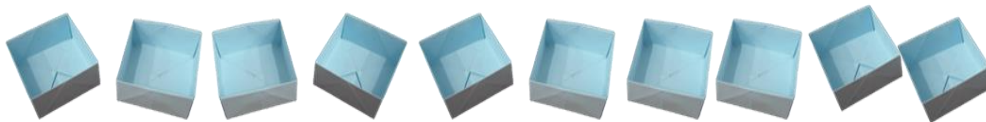
1. Divide the 12 cabinets into sets of 3.



How many times did you remove 3 cabinets until no more cabinets were left? 4

This means that 12 divided by 3 is 4.

2. Divide the 10 paper boxes into groups of 2.



How many times did you remove 2 paper boxes until no more paper boxes were left? _____

This means that 10 divides 2 is _____.

3. Divide the 15 pencils into groups of 3.



How many times did you remove 3 pencils until no more pencils were left? _____

This means that 15 divides 3 is _____.





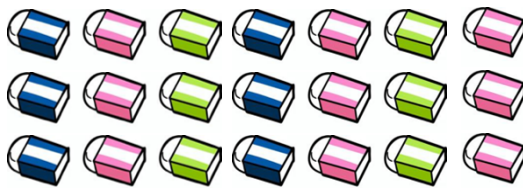
4. Divide 20 plants into 5 groups



How many times did you take away 5 plants until there were no plants were left? _____

This means that 20 divides 5 is _____.

5. Divide 21 erasers into 7 groups.



How many times did you remove 7 erasers until no more erasers were left? _____

This means that 21 divides 7 is _____.





ARAL Summer Grade 2 Math

Session 16

Visualizing Division by Forming Equal Groups of Objects

Lesson Objective:

At the end of the session, the learners are expected to visualize division by forming equal groups of objects.

Lesson Sample and Explanation:

Division by forming equal groups means taking a big group of objects and splitting them into smaller, equal groups

For example, if you have 12 apples and want to divide them into groups of 3, you need to put the same number of apples in each group. Here's how you will do it:

1. Start with 12 apples. Then make one group of 3 apples.



2. Make another group of 3 apples.



3. Continue grouping the apples until no more left.





4. Count how many group of apples you made.



In this case, you made 4 groups. This shows that 12 divided by 3 equals 4.

Guided Activity

Directions: Using the sets below, divide the objects into equal groups.

1. Divide 6 by 2



2. Divide 10 by 2



3. Divide 9 by 3



4. Divide 10 by 5



5. Divide 16 by 4





ARAL Summer Grade 2 Math

Session 17

Half circles and quarter circles

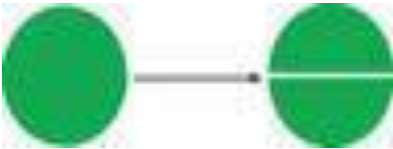
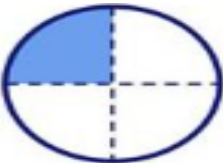
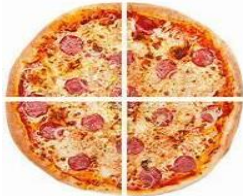
Lesson Objective:

At the end of the session, the learners are expected to describe half circles and quarter circles.

Lesson Sample and Explanation:

If the whole is divided into 2 equal sized pieces, each piece is one half of the whole.

If the whole is divided into 4 equal sized pieces, each piece is one fourth of the whole.

Developing Lesson through Concrete Objects	Developing Lesson through Pictorial
Example:   Explanation: A half circle is one half of a whole circle.  	Example:  Explanation: Imagine a pizza cut in half. Each half is a half-circle. 



Explanation:

When a shape is partitioned into 4 equal pieces, each piece is called a QUARTER or a FOURTH."

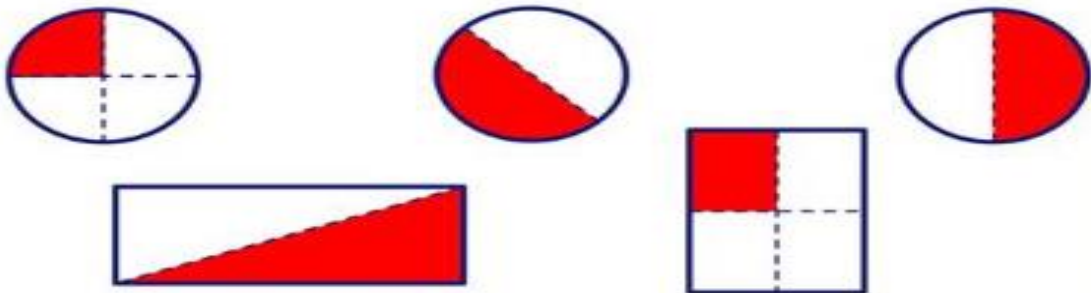
Explanation:

Think of a pizza cut into four slices. Each slice is a quarter circle

Guided Activity:

Directions: Check all the shapes that match the clue.

Clue: Half of me is shaded.



Clue: A quarter of me is shaded.





ARAL Summer Grade 2 Math

Session 18

Square, rectangle, triangle, and circle in 2- and 3-Dimensional Objects

Lesson Objective:

At the end of the session, the learners are expected to identify the four basic shapes (square, rectangle, triangle, and circle) in 2-dimensional objects.

Lesson Sample and Explanation:

- A **square** is a two-dimensional closed shape with 4 equal sides and 4 vertices. Its opposite sides are parallel to each other.
- A **rectangle** is a closed 2-D shape, having 4 sides, 4 corners, and 4 right angles (90°). The opposite sides of a rectangle are equal and parallel.
- A **triangle** is a three-sided polygon that has 3 angles, and 3 vertices.
- A **circle** is a two-dimensional closed figure that has no edges or corners.

Developing Lesson through Concrete Objects	Developing Lesson through Pictorial	Developing Lesson through using number symbol
The four basic shapes: Example: 	Example: 	Example: 



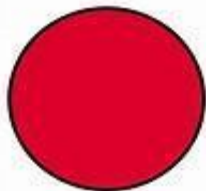
Explanation:
Squares have sides that are all the same length. They both have four sides.



Explanation:
Rectangles have two pairs of equal sides. Top and bottom are equal length. Sides are equal length.



Explanation:
Triangle has 3 sides

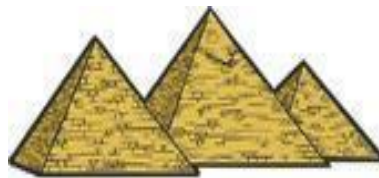


Explanation:
Circle is round.

Explanation:
The checkerboard has a lot of squares.



Explanation:
A greenboard is a rectangle in shape.



Explanation:
The pyramids are all made up of triangle shapes.



Explanation:
This basketball is in the shape of circle.

Explanation:
A window has 4 sides, all sides are equal.



Explanation:
A door has 2 pairs of equal sides.



Explanation:
A piece of cake has 3 sides.



Explanation:
A bike tire has no sides.

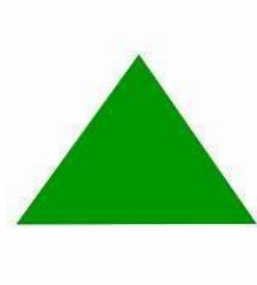
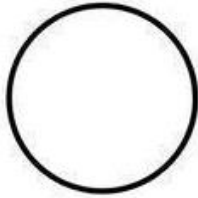




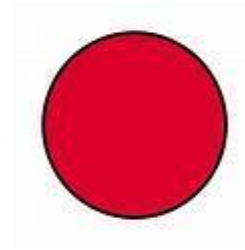
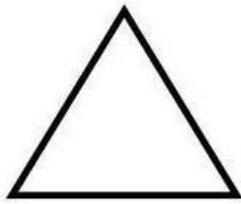
Guided Activity:

Directions: Draw lines to match the shapes in each column.

1.



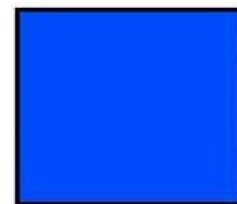
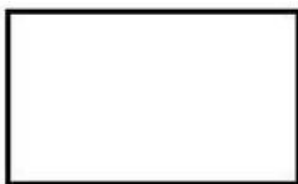
2.



3.



4.





ARAL Summer Grade 2 Math

Session 19

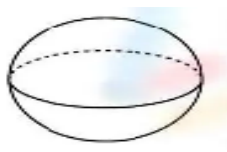
Square, rectangle, triangle, and circle in 2- and 3-Dimensional Objects

Lesson Objective:

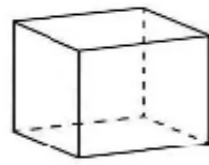
At the end of the session, the learners are expected to name the four basic shapes (square, rectangle, triangle, and circle) in 2-dimensional and 3-dimensional objects.

Lesson Sample and Explanation:

- A **sphere** is a round, three-dimensional object with all points equidistant from the center. It is like a ball.
- A **cube** is a three-dimensional object with six square faces. It is like a box.
- A **cylinder** is three-dimensional object with parallel circular bases connected by a curved surface. It is like a can.
- A **cone** is a three-dimensional object with a circular base that tapers to a point. It is like an ice cream cone.

Developing Lesson through Concrete Objects	Developing Lesson through Pictorial
Example:  Sphere Explanation: Sphere is like a ball.	Example:  Explanation: A ball is a shape of a sphere

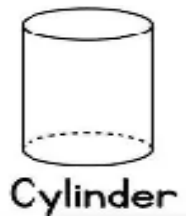




Cube

Explanation:
Cube is like a box.

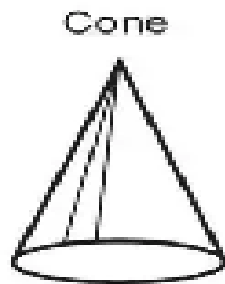
Example:



Cylinder

Explanation:
Cylinder is like a can.

Example:



Cone

Explanation:
Cone is like an ice cream cone.



Explanation:
A dice is a shape of a cube.

Example:



Explanation:
A can is a shape of a cylinder.

Example:



Explanation:
An ice cream cone is a shape of a cone.





Guided Activity:

Directions: Draw lines from their real-world items to their matching shapes.

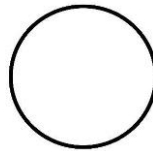
1.



2.



3.



4.



5.





ARAL Summer Grade 2 Math

Session 20

Square, rectangle, triangle, and circle in 2- and 3-Dimensional Objects

Lesson Objective:

At the end of the session, the learners are expected to describe the four basic shapes (square, rectangle, triangle, and circle) in 2-dimensional and 3-dimensional objects.

Lesson Sample and Explanation:

A **sphere** is a round, three-dimensional object with all points equidistant from the center.

- Symmetrical in all directions.
- No edges or corners.
- Has a curved surface.

A **cube** is a three-dimensional object with six square faces.

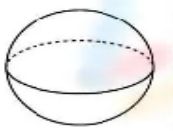
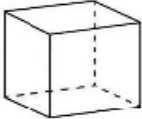
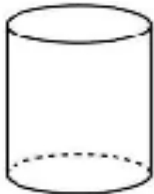
- Has six equal square faces.
- Has eight corners and twelve edges.
- All angles are right angles.

A **cylinder** is a three-dimensional object with two parallel circular bases connected by a curved surface.

- Two circular bases that are congruent and parallel.
- A curved lateral surface that connects the bases.
- No corners.





A cone is a three-dimensional object with a circular base that tapers to a point. • A circular base. • A curved lateral surface that extends from the base to the apex (the pointed top).	
Developing Lesson through Concrete Objects	Developing Lesson through Pictorial
 Sphere Explanation: Think of a ball. It's round and has no corners or edges.  Cube Explanation: Imagine a box. It has six flat sides that are all squares.  Cylinder	 Explanation: A ball is a shape of a sphere.  Explanation: A dice is a shape of a cube. 



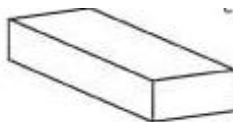


Explanation: Like a can. It has two flat circles at the top and bottom, and a curved side.



Explanation: Picture an ice cream cone. It has a flat circle at the bottom and gets smaller as it goes up to a point.

Example:



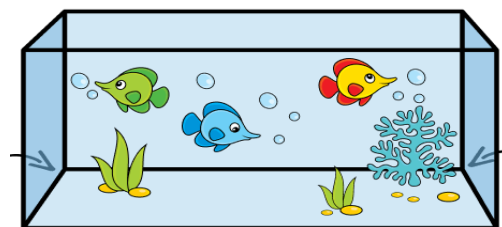
Explanation:
A rectangular prism is a three-dimensional shape with 6 rectangular faces where all the faces (one at the top, one at the bottom and four lateral faces) meet at right angles.

Explanation: A can is a shape of a cylinder



Explanation: An ice cream cone is a shape of a cone.

Example:



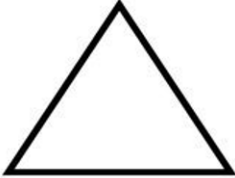
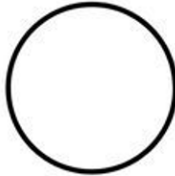
Explanation:
An aquarium is a shape of a rectangular prism.





Guided Activity:

Directions: Name the 2D shapes below. Write your answer in the blank.

			
1. _____	2. _____	3. _____	4. _____



