Republic of the Philippines

**Department of Education**

Region V (Bicol)

DIVISION OF CATANDUANES

Virac, Catanduanes

Lesson Plan in Mathematics

**MATHEMATICS V**

**WEEK 2**

**LESSON 5**

 Using Divisibility Rules for 3, 6 and 9 to Find Common Factors

 **M5NS-1b-58.2**

**I. Objective:**

* Uses the divisibility rules for 3, 6 and 9 to find common factors.

Value Formation: Workmanship Accuracy

Prerequisite Concepts and Skills:

Multiplication and Division Basic Facts

**Materials**: flashcards, pocket chartchart

 **References**: K to 12 Grade 5 Curriculum Guide LM math Grade 5 pages 51 - 54

**III. Learning Activities:**

**A. Preparatory Activities:**

***1. Drill:*** (Mental Computation)

 Have a drill on the basic multiplication facts using the game “Naming the Babies”

 Name the number or factors when multiplied give the following numbers.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  18 | 54 | 72 | 90 | 27 | 48 | 28 |

***2. Review:***

 Conduct a review on finding the common factor using divisibility rule for 2, 5, and 10.

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3. 1. ***Motivation:***

 Show a picture of children doing their Album about “ Classifyng Plants”.

Ask the pupils to tell something about the picture.

 Elicit the value of workmanship.

 How do you make your project? Is planning on how many pictures are to be pasted in one page a part of doing your album? Why?

**B. Developmental Activities:**

1. ***Presentation***

 Strategy: Use a problem Opener.

 Bimby, Bimbo and Bosing are making their projectsin Science about classifying plants.Bimby has 18 pictures given by his ate and 84 pictures from his compilation and plans to paste it by 3s . Bimbo has 72 pictures from his father and 24 pictures drawn by him and plans to paste it by 6’s. Bosing has 36 coloredpictures and 45 black and white pictures and plans to paste it by 9’s. Are their pictures will be exactly pasted by 3, 6, and 9??

 Have the pupils read the problem opener.

1. Ask the student: What are given? What is being asked? How may we solve the problem?

2. Have students solve the problem by actual division.

3. Elicit that division is finding the missing factor.

4. Tell the students that using the divisibility rules will help in identifying if a number is divisible by another number without actual division and finding its common factor.

* A number is divisible by 3 when the sum of its digit is divisible by 3.
* Since division is finding the missing factor if it is divisible by 3 3 is a factor of the number.
* A number is divisible by 6 if it is divisible by 2 and 3.
* A number divisible by 6, 6 is a factor of the number
* A number is divisible by 9 when the sum of its digit is divisible by 9.
* A number is divisible by 9, 9 is a factor of the number

2. Performing the Activities

Group the learners into 3 groups, Use the divisibility rule for 3, 6, and 9 to find common factors

 Expected solutions in the problem.

Group 1

Find out if 3 is a common factor of 18 and 84.

18 = 1 + 8 = 9, 9 is divisible by 3 therefore 3 is a factor of 18

84 = 8 = 4 = 12, 12 is divisible by 3 therefore 3 is a factor of 84

3 is a common factor of 18 and 84.

Group 2

Find out if 6 is a common factor of 72 and 24

72 is an even number so it is divisible by 2 therefore 2 is a factor of 72.

72 = 7 = 2 = 9, 9 is divisible by 3 therefore 3 is a factor of 72.

72 is divisible by 2 and 3 so it is divisible by 6 .

6 is a factor of 72

24 is an even number so it is divisible by 2 2 is a factor of 24

24 = 2 = 4 = 6 6 is divisible by 3, 3 is a factor of 24.

24 is divisible by 2 and 3 so it is divisible by 6.

6 is a common factor of 72 and 24.

Group 3

36 = 3 + 6 = 9 9 is divisible by 9, 9 is a factor of 36.

45 = 4 = 5 = 9, 9 is divisible by 9, 9 is a factor of 45.

After the groups have finished their work ask them to post their outputs.

3. Processing the Activities

 After the groups have presented their work, ask them

* How did you find the activity? Why?
* How did you solve the problem?
* What is the importance of the divisibility rules?

4. Reinforcing the Concept and Skill

 Mrs. De Luna scheduled her for an outdoor activity. The class she handles has 54 boys and 36 girls. However, she is having a hard time deciding if it can be group into 3, 6 and 9 without any student being left behind. Can she group the class into 3, 6, and 9?

 To find out whether 3, 6, and 9 are common factors of 54 and 36 without using the division process we will use the Divisibility Test.

Below are the common tests for divisibility.

|  |
| --- |
|  Divisible by 3 |

To check whether a number is divisible by 3, add the digits and check whether the sum of the digits can be divided by 3.

Example: Is 75 divisible by 3?

 We add the digits of 75 7 + 5 = 12 .

Since 12 can be divided by 3 therefore, 75 is divisible by 3.

25 x 3 = 75 so 3 is factor of 75.

|  |
| --- |
| Divisible by 6 |

Any even number and divisible by 3 is divisible by 6.

Example: Is 72 divisible by 6?

 72 is an even number and the sum of its digit is 9 ; 9 is divisible by 3 therefore 72 is divisible by 6 because it is divisible by 2 and 3.

36 x 2 = 72, 2 is a factor of 72.

24 x 3 = 72, 3 is a factor of 72

|  |
| --- |
|  Divisible by 9 |

A number is divisible by 9 when the sum of its digits is divisible by 9.

Example 1 Is 349 divisible by 9?

Add the digits of 342 → 3 + 4 +2 = 9 . Since 9 hasno remainder when divided by 9 , then 342 is divisible by 9.

38 x 9 = 342 9 is a factor of 342.

To find out if the given sets of numbers has 3, 6, and 9 as a common factor use the divisibility test for 3, 6, and 9

1. Box the number if 3 is a factor.
2. 624 2. 962
3. 230 4. 456

5. 609 6. 5 4

1. Check on the space provided if 6 is a factor of the given number.
2. 3 690 \_\_\_\_\_\_\_\_ 2. 162 \_\_\_\_\_\_\_\_\_\_

3. 242 \_\_\_\_\_\_\_\_ 4. 392 \_\_\_\_\_\_\_\_\_\_\_

5. 378 \_\_\_\_\_\_\_\_\_\_\_ 6. 4 654 \_\_\_\_\_\_\_\_\_\_

1. Circle all the numbers which 9 is a factor.
2. 842 2. 1 905
3. 3 009 4. 2 004

5. 609 6. 423

 D. Encircle the numbers from the given sets of numbers which 3 is a common factor

1. 561, 342, 198 2. 822, 738, 795

 Put a check under the correct column which 3, 6 and 9 are factors applying the rules for divisibility.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   | 120 | 315 | 8640 | 4176 | 4726 | 9276 | 396 | 8118 |
| 3 |  |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |  |
| 9 |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |

Based on the table which of the given number has a common factor of 3? 6? And 9?

1. ***Summarizing the Lesson***

 ***How do we find 3, 6 and 9 as common factors of a set ofnumbers.***

What are the divisibility rules for 3, 6, and 9

|  |  |  |
| --- | --- | --- |
| A number is divisible by | Test | Examples |
| 3 | If the sum of of all the digits in the number is divisible by 3 and 3 is a factor of the number. | 924 is divisible by 3 since the sum of the digits 9 + 2 + 4 = 15 and 15 is divisible by 3. |
| 6  | If the number is divisible by both 2 and 3 6 is a factor of the number. | 324 is divisible by 6 since it is divible by both 2 and 3. |
| 9 | If the sum of all the digits in the number is divisible by 9 9 is a factor of a number.. | 3 465 is divisible by 9 since the sum of the digits 18 is divisible by 9. |

1. ***Applying to new and other situations.***

Put a check on the blank if the second number is a common factor of the first number

1. 432, 162 6\_\_\_\_\_ 2. 4599,6453 9\_\_\_\_\_

228,345 3\_\_\_\_\_ 4. 543, 451 3\_\_\_\_\_

 753,114 6\_\_\_\_\_

1. .List 2 pairs of numbers which has 3 as a common factor.
2. List2 pairs of numbers which has 6 as a common factor.
3. List 2 pairs of numbers which has 9 as a common factor.

**Assessment**

 Encircle the numbers which the given number before each item is a common factor

 \_\_\_3\_\_1. 54, 261, 346, 84

 \_\_\_9\_ 2. 657, 299, 846, 627

 \_\_\_6\_ 3.342, 296, 357, 477

 \_\_\_3\_ 4 .843, 799, 312, 579

 \_\_\_9\_ 5. 117, 378, 1953, 216

Home Activity

Remediation

Given 2 sets of numbers use the divisibility rules for 3,6,and 9 to find out if 3,6 and 9 is a common factor.

1. 735, 225 2. 924, 702

3.4276,8757

Enrichment

Write the missing digit in the box to make 3 a factor of the resulting number . Below are the given conditions

1. 52 \_The missing digit must produce the least even number.
2. 345\_ The missing digit must produce the greatest number.
3. 4\_\_35 The missing digit must the smallest odd number.

Supply the missing digit in the box to make9 a factor of the number.

1. 245\_\_\_\_\_\_\_\_\_ 2. 2\_\_\_\_97 3. 34\_\_\_\_34
2. 69\_\_\_\_\_3

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