Math 3, Classwork 19

WARM UP

1. Calculate, follow the order of operations:

$$24 \overset{6}{:} 3 \overset{7}{-} (3 \overset{4}{+} 5 \overset{3}{\cdot} 2 \overset{5}{-} (10 \overset{1}{:} 2 \overset{2}{+} 1) = \dots$$

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a) $200 - 80 \div 5 + 3 \times 4 =$ ______________________________________

b) $4 \times 8 + 42 \div 6 \times 5 =$ ______________________________________

c) $63 + 100 \div 4 - 8 \times 0 =$ ______________________________________

d) $72 \times 10 - 64 \div 2 \div 4 =$ ______________________________________

e) $54 + (13 + 61 - 4 \times (2 + 3)) =$ ______________________________________

f) $(4 + (4 + (12 - 6 \div 2)) - 2) - 6 =$ ______________________________________

2. Calculate by the most optimal way:

10m – 6m 9cm + 2m 8cm + 4m 1cm =

14m 5dm – 7m 5dm8cm – 6m2cm + 7m1dm =

3. Compare without making a calculation. Use <, > , =

$(54 - 42) \div 3 \dots 54 \div 3 - 42 \div 3$ $\qquad$ $18 \times 12 \dots 11 \times 18 - 18$

$54 \times (6 - 3) \dots 54 \times 6 - 54 \times 3$ $\qquad$ $204 \times 3 \dots 204 \times 2 - 204$

REVIEW

4. Find quotient and remainder from the division of different numbers by 6.

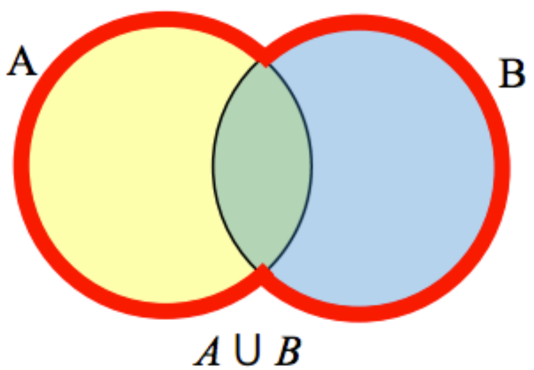
$10 \div 6 =$ ___ + ____ $14 \div 6 =$ ___ + _____ $29 \div 6 =$ ___ + ___

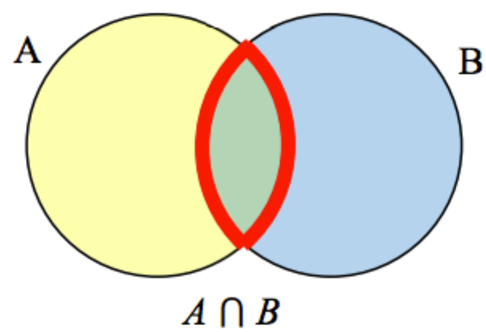
$16 \div 6 =$ ___ + ___ $47 \div 6 =$ ___ + ____ $31 \div 6 =$ ___ + ___

Operations with sets

5. $A \cup B$ contains all elements in either set (union)

$A \cap B$ contains only those elements in both sets—in the overlap of the circles.





6. Consider sets: **A** = {February, March, June, July} and
B = {January, April, May, June, July}

a) By using {}, define the elements of the set **A∩B**. ____________________
b) By using {}, define the elements of the set **A∪B**. ____________________
c) By using $\in$ *or* $\notin$, find an element which $\in$ to both sets A and B ______
d) By using $\in$ *or* $\notin$, find an element which $\in$ to set A and doesn't belong set B and vice versa ____
e) By using $\subset$ *or* $\not\subset$, find a set C which is subset of both set A and B _______

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f) By using $\subset$ *or* $\not\subset$, find a set C which is subset of set A and isn't subset of set B and vice versa: ____

g) What is the Universal set of both sets A and B? ______________________

h) Consider a set D = {October, November, December). What is **A∩D**? ____
What is **B∩D?** _______

SOLVING WORD PROBLEMS.

Many problems can be solved in different ways.
You already know how to solve the problems:

1. By drawing diagrams (or bar model)
2. By representing the unknown quantity with a variable (equation)
3. By using Venn diagrams

1. *In maths a **bar model** is a pictorial representation of a problem or concept where bars or boxes are used to represent the known and unknown quantities. Bar models are most often used to solve number problems with the four operations – addition, subtraction, multiplication and division*
2. *Using **equations** to solve word math problems means to step out of the numbers in the problem, and see the general quantities involved and how those are related to each other.*
(a bar model often helps to write an equation).

7.

Solve the following problems using the best method:

a) Ved was reading a very interesting book and he was enjoying it so much that he didn't notice until 20 pages remained. How many pages did Ved read if there were only 90 pages in the book?

b) Victoria, Julia, and Eli together have 51 marbles. Victoria has double as many marbles as Julia has, and Eli has 12. How many does Julia have?

c) Ronav fed the rabbits. On the 1^{st} day he gave them several carrots, on the 2^{nd} day he gave them three times more carrots. How many carrots did Ronav gave his rabbits on the 1^{st} day if he gave 16 carrots total over the 2 days?

d) Milan is cooking potatoes. The recipe says you need 5 minutes for every pound of potatoes you are cooking. How many minutes will it take for Milan to cook 12 pounds of potatoes?

e) A group of children walked 18 km. This is 3 times more than they have left to go. What is the total length of the route? ____________________

3. *A **Venn Diagram** is an illustration that shows logical relationships between two or more sets (grouping items). Venn diagram uses circles (both overlapping and nonoverlapping) or other shapes.*

f) Suppose that out of 96 third-graders, 50 children only play sports, 22 only take music lessons, and ten children do both sports and music.

a. How many children only play sports?
b. How many children only take music lessons?
c. How many children do at least one of those activities?
d. How many children do only one of those activities?
e. How many children do nothing?

g) Let's find an ideal car. Name the 3 most important qualities you wish your car would have. Use a Venn diagram to find out whether it is important for you that your car will have all 3 qualities or some combinations of 2 qualities will do. You may draw your own diagram.

Did you know …

The benefits of analyzing math problems before starting to solve them.

There was a boy in a class studying math with, of course, a math teacher. This boy's name is Carl Friedrich Gauss (1777 - 1855). One day this math teacher presented a challenging mathematical problem to the class where Gauss was in.

The math problem is to add up all the numbers starting from 1 and ending with 100.
Every students picked up a piece of paper and started to add up the numbers one after another from number 1 onwards.

Within a short span of time, while his fellow students were still struggling, Gauss went forward to the teacher and submitted his answer.
That action surprised not only his math teacher but the whole class. But that is not all....
The interesting thing is that his answer was correct.

How did he do that so fast?

He came out a different way of analyzing the mathematical problem. Instead of the normal way of adding the first numbers onwards, Gauss looked at the problem with a different angle.

What he did was to split the range of number from 1 to 100 into two equal halves, 1 to 50 and 51 to 100. He noticed that if he flipped the last half to start from 100, and adding it the two ranges together, he will get something stunning.

He discovered that by adding the first pair, 1 + 100, he got an answer of 101. For the second pair, 2 + 99, he again got the same answer 101.

This answer of 101 was still valid for the rest of the number pair additions. And since there were 50 pairs of numbers, the final total is 101 x 50 which gave Gauss an answer of 5050.