

WARM UP

1. Multiplication Gym – 3 minutes

Calculate:

2. $1\text{m} - 6\text{dm } 9\text{cm} + 2\text{dm } 8\text{cm} + 4\text{dm } 1\text{cm} =$ _____

$10\text{m} - 5\text{m } 5\text{dm} - 1\text{m} 7\text{dm} + 7\text{m} 1\text{dm} =$ _____

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

$82 - (53 + 18) \dots 82 - 53 - 18$ $3 \times 5 \dots 5 \times 4 - 5$

$5 \times 7 + 26 \dots 32 + 7 \times 5$ $6 \times 4 \dots 7 \times 4 - 4$

REVIEW

4. Ashton has \$7. He would like to buy several bags of candies. How many bags of candies can he buy if each bag costs 90 cents? How much money will he have left after his purchase?

5. Find quotient and remainder from the division of different numbers by 3.

$10 \div 3 =$ ___ + ___

$14 \div 3 =$ ___ + ___

$29 \div 3 =$ ___ + ___

$16 \div 3 =$ ___ + ___

$47 \div 3 =$ ___ + ___

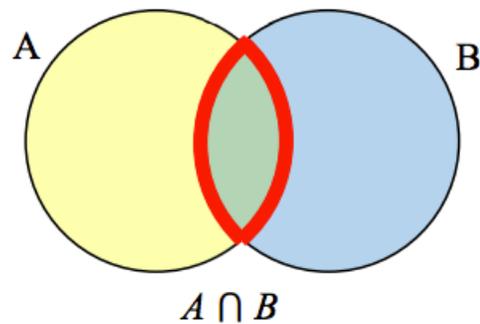
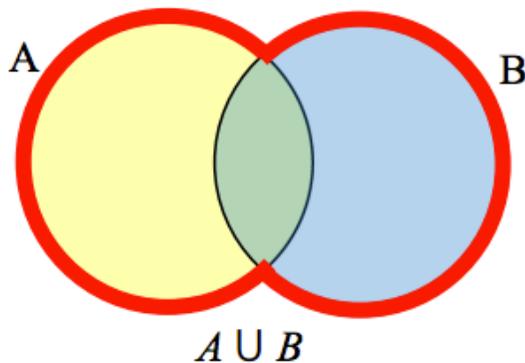
$31 \div 3 =$ ___ + ___

NEW MATERIAL I

To visualize the interaction of sets, John Venn in 1880 thought to use overlapping circles, building on a similar idea used by Leonhard Euler in the eighteenth century. These illustrations now called **Venn Diagrams**.

A Venn diagram represents each set by a circle, usually drawn inside of a containing box representing the universal set. Overlapping areas indicate elements common to both sets.

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



6. *Example:* Consider the sets: $A = \{\text{red, green, blue}\}$, $B = \{\text{red, yellow, orange}\}$,
 $C = \{\text{red, orange, yellow, green, blue, purple}\}$. Find the following:

- Find $A \cup B$
- Find $A \cap B$

Answers: a) The union contains all the elements in either set: $A \cup B = \{\text{red, green, blue, yellow, orange}\}$ Notice we only list red once.

b) The intersection contains all the elements in both sets: $A \cap B = \{\text{red}\}$

7. There are 3 sets – H, F and W. Suppose $H = \{\text{cat, dog, rabbit, mouse}\}$, $F = \{\text{dog, cow, duck, pig, rabbit}\}$, and $W = \{\text{duck, rabbit, deer, frog, mouse}\}$.

- Find a set which is $(H \cap F) \cup W$ _____
- Find a set which is $H \cap (F \cup W)$ _____

A **universal set** is a set that contains all the elements we are interested in. This would have to be defined by the context.

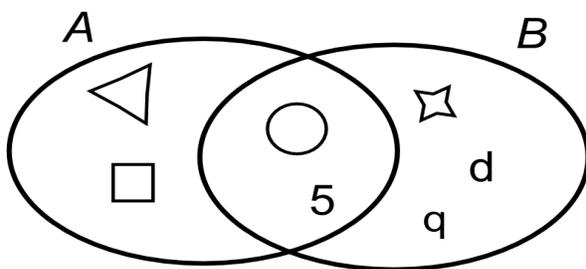
Example: If we were discussing searching for books, the universal set might be all the books in the library.

Universal set is usually represented by a box and all other sets are drawn inside this box

8.

Consider sets **A** and **B**:

By using $\{ \}$, define the elements of the set $A \cap B$. _____



$$A = \{\triangle, \square, \bigcirc, 5\}$$

$$B = \{\bigcirc, \star, q, 5, d\}$$

9.

A survey asks 200 people “What beverage do you drink in the morning”, and offers choices:

1. Tea only

2. Coffee only

3. Both coffee and tea

Suppose 20 report tea only, 80 report coffee only, 40 report both.

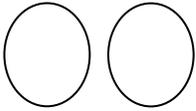
a) How many people drink tea in the morning? _____

b) How many people drink neither tea nor coffee? _____

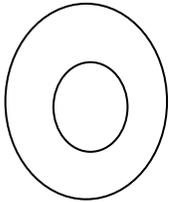
Create a Venn diagram to help you to solve a problem.

10.

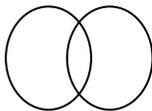
Connect each pair of circles with the correct pair of sets.



- set of cactuses
- set of plants



- set of plants with red flowers
- set of plants with thorns



- set of cactuses
- set of roses



SOLVING WORD PROBLEMS.

Many problems can be solved in different ways.

You already know how to solve the problems:

- By drawing diagrams
- By representing the unknown quantity with a variable
- By using Venn diagrams

11.

Solve problems using the best method:

1. Ronav fed the rabbits. The little rabbit got three carrots, and mom got five carrots more. How many carrots did mom get?

2. Ved was reading a very interesting book and he was so captured by the book that he did not notice until 20 pages have remained. How many pages did Ved read if there were only 90 pages in the book?

3. 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?
-

4. What number should be divided by 3 to get 8?
-

5. A group of children walked 18 km. This is 3 times more than left to go. What is the length of the route?
-
-
-

6. Suppose that out of 96 first-graders, 50 children are only playing sports, 22 - only take music lessons, and ten children are doing both - sports and music.
- How many children are only playing sports? _____
 - How many children do only take music lessons? _____
 - How many children do at least one of those activities? _____
 - How many children do only one of those activities? _____
 - How many children are not involved in music and sports? _____

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 is 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 is 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 stunting.

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 addition. And since there were 50 pairs of numbers, the final total is 101×50 which gave Gauss an answer of 5050.