school nova™

WARM-UP

1. The same shapes stand for the same numbers. Fill in the missing whole tens.

$$\square + \cap + \triangle = 100$$

$$\square + \cap - \triangle = 60$$

$$\square - \cap + \triangle = 40$$

$$\square - \cap - \triangle = 0$$

2. Find the sum using the most convenient method.

$10 + 20 + 30 + 40 + 50 + 60 + 70 + 80 + 90 =$

3. Play with teacher. Find pairs that add to 50. Play with numbers.

4. State which equalities below are true (mark with T) and which ones are false (mark with F).

$2 + 5 = 6$	$12 = 10 + 2$
$3 + 4 = 2 + 5$	$3 + 2 = 2 + 3$
$8 = 4 = 4$	$32 = 23$

$3 + 4 + 2 = 4 + 5$	$5 + 3 = 8 + 1$

REVIEW

Lines, line segments and rays.

A <u>straight line</u> is the path connecting two points and extending beyond the points in both directions.

<u>Line segment</u> is the part of straight line included between two given points and the points themselves.

<u>Ray</u> is a part of straight line starting at a particular point and extending infinitely in one direction.

5. Point **O** splits the straight line **AB** into two parts. What is each part called? What makes each of these parts different from a straight line or line segment?

A   **O**   **B**
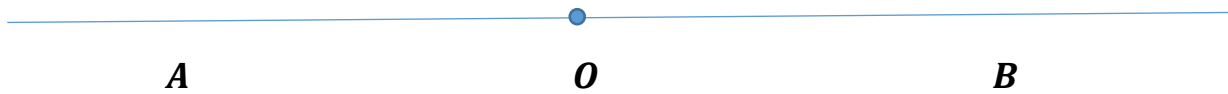
6. Find Line segment, which is a part of ray **r.**

P   Q   r
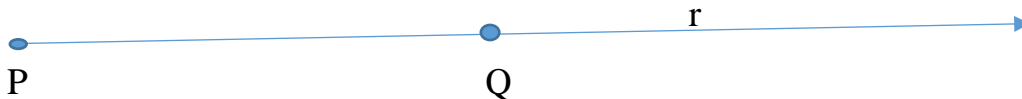
7. Circle the endpoint of each ray. How is the first ray named? Name the other two rays in the same way.

C

CK

K

A

M ☐

☐ N

D
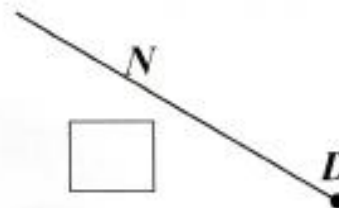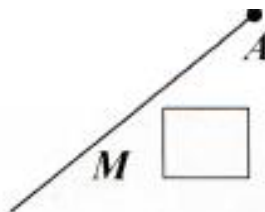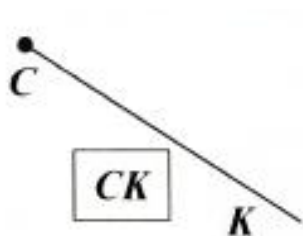
8. Connect the name with the right pictures.

| Straight line *AB* | Segment *AB* | Ray *AB* |
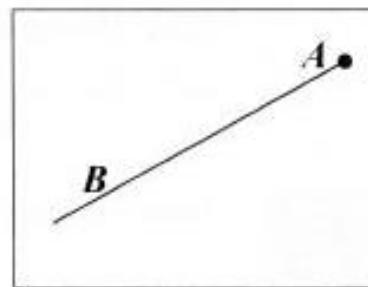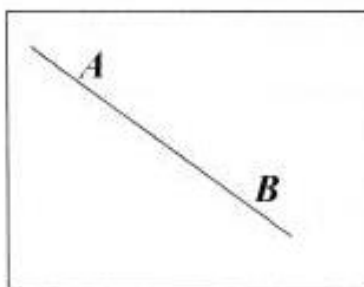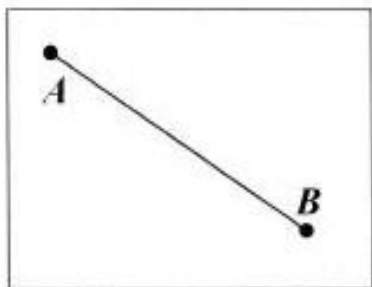
A

B

A

B

A

B

9. Calculate.

$$+\begin{array}{cc} 3 & 9 \\ 5 & 0 \end{array}$$

$$+\begin{array}{cc} 3 & 0 \\ 2 & 3 \end{array}$$

$$+\begin{array}{cc} 3 & 6 \\ 4 & 2 \end{array}$$

$$\begin{array}{cc} 3 & 4 \\ 1 & 4 \end{array}$$

$$+\begin{array}{cc} 3 & 1 \\ 6 & 8 \end{array}$$

$$\begin{array}{cc} 3 & 2 \\ 1 & 7 \end{array}$$

10 Mental math. Calculate.

$200 + 300 + 100 =$ $900 - 500 - 300 =$

$800 - 600 + 200 =$ $700 - 100 + 200 =$

$500 + 100 - 400 =$ $600 + 300 - 900 =$

NEW MATERIAL

Take a look at picture #1 below. What do you see? Points A and B belong to the line *a* and point C does not belong to the line *a*.

Points that do not belong to the line can be on the *same side of the line* **or** belong to the *different sides* of the line.
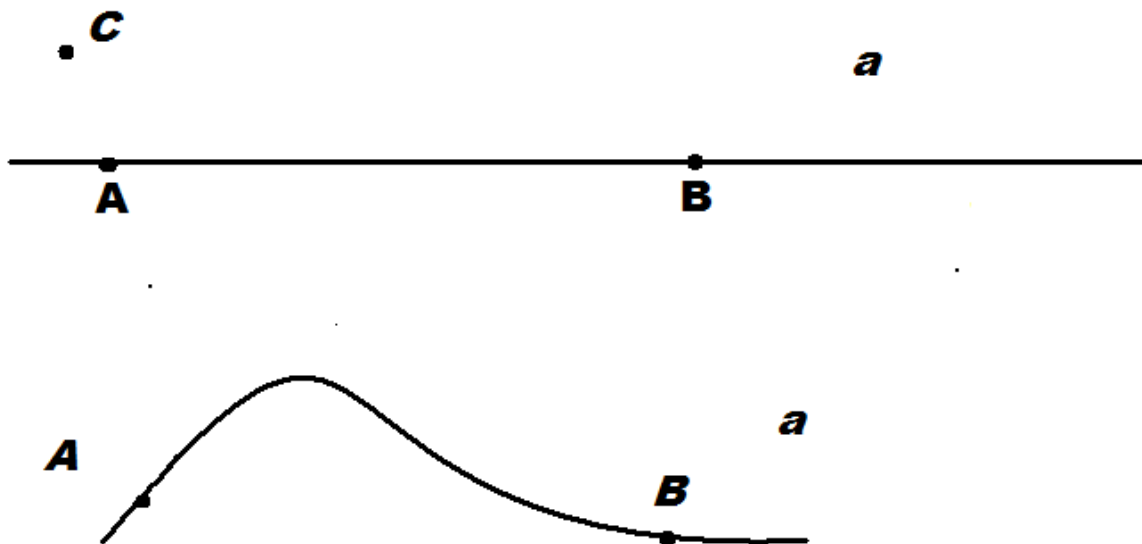
Take a look at the picture #2. This is also a line. Does it look the same as the line in the first picture? In geometry, we call the second line a **curved line**. What is the difference

between a straight line and a curved line?

When we draw a straight line, our pencil does not change its direction.

When we draw a curved line, our pencil changes direction.
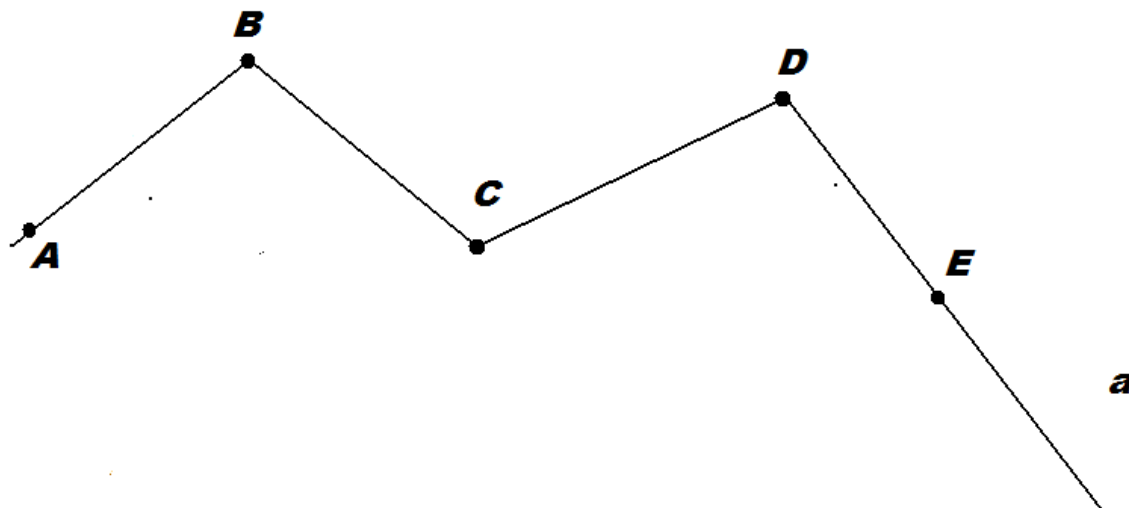
Take a look at the picture 3. What do you see? What kind of line is it? What is the difference between the broken line and the straight line?

What is the difference between a broken line and a curved line? When we draw a broken line, we draw a segment of a straight line, then suddenly change the direction and draw another segment, and continue in this pattern...

A broken line consists of several segments of a straight line.
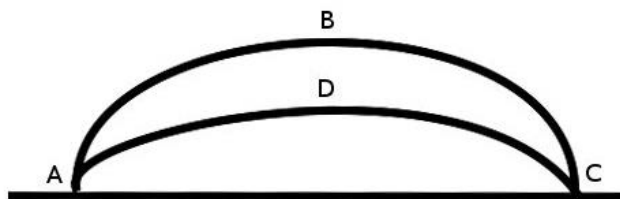
Take a look at the picture 4. There are two points A and C.

How many straight lines can we draw through these points? How many broken lines? How

many curved lines? Which line is the shortest?

Which of these curved lines is longer?

Two or more lines that meet at a point are called *intersecting lines*. The intersection point is on both of these lines. In Figure 1, lines *l* and *m* intersect at point *Q*.
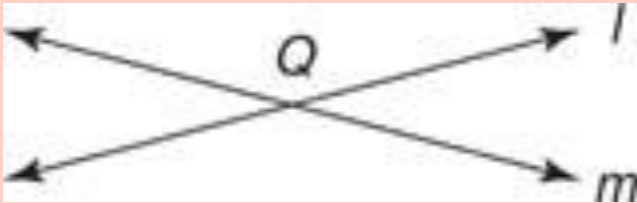
Figure 1.

Two lines in the same plane that never intersect are called parallel lines. Parallel lines remain the same distance apart at all times. The symbol // is used to denote parallel lines. In Figure 2, *l* // *m*.

Figure 2.

On a plane, two straight lines are always either parallel or intersecting.

11. Using your ruler draw:

Two line segments, which intersect at point *K*

Two line segments, which do NOT intersect and are not parallel

Two line segments, which are parallel.

12. Consider a pair of rays [AB) and [CD). Using your ruler draw:

   a) Two rays which intersect at point *M*

   b) Two rays which do NOT intersect and are not parallel

   c) Two rays which are parallel

13. Draw the rays **DA** and **MC**. Do they intersect? Do lines *DA* and *MC* intersect?

A •

M •

D •

C •
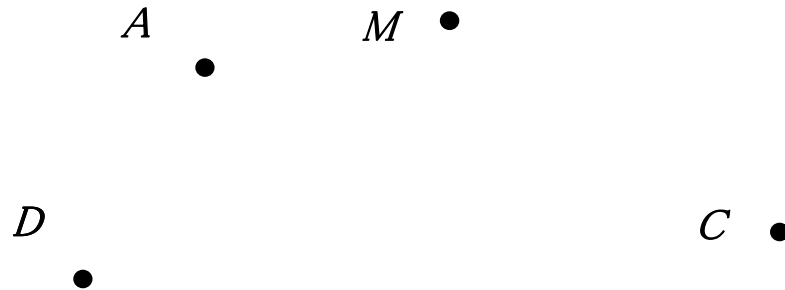
14.

A hat costs a dollars, and a coat costs 9 times more. How much do the hat and a coat cost together?

b)   The cost of a dog bed is b dollars , and the cost of a dog food is 2 dollars less. How much do the bed and the food cost together?

c) A pair of shoes cost a dollars , and a pair of gloves cost 7 times less. What is the difference in price between a pair of shoes and a pair of gloves?

d) A piece of fabric is d meters long. Jill needs to make 8 dresses using this piece. She is going to use n meters of the fabric to make each dress. How many meters of the fabric will she have left?
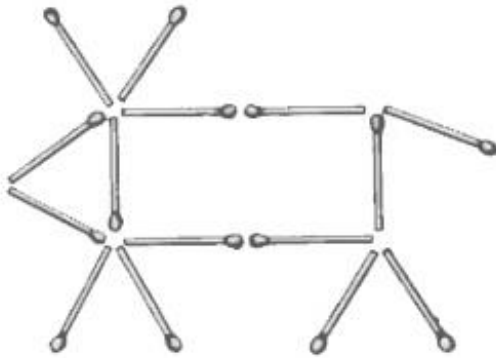
15.

a) One penny out of three is fake. It is lighter than the others. How can you identify the fake coin by using a balance scale like the one shown in the picture? You can only weigh once!

b) How can you find one fake penny out of 9 pennies if you can only weigh twice?

16.

Move 2 matches to make the cow look the other way.

<div style="background-color:#c5e0b3; border:1px solid black; text-align:center;">

Did you know …

</div>

The metric system was first developed in France during the French Revolution. A French law passed in 1795 defined five units of measure. Three of these names are still in use today. They are the meter, which is the unit of length, the gram that is the unit of mass and the liter, which is the unit of volume.

The United States, Myanmar (Burma) and Liberia do not use the metric system, making up 5% of the world 's population not using the system.

In 1960 the rules for the metric system were revised. The revised system was called the "International System of Units" (which is often written "SI" for short). The definition of SI also included rules for writing SI quantities. These rules are the same for all languages.

In the metric system, length is measured in meters. The symbol for the meter is the letter "m". The meter was originally defined as being $1/10,000,000$ of the distance between the North Pole and the Equator on the meridian that passed through Paris. In 1799, a platinum bar that was equal to this length was made and became the "prototype meter"

In the metric system, all units have a "symbol". Symbols are a shorthand way of writing the names of units.

People write "*kilometre*" in the United Kingdom.

People write "*kilometer*" in the United States.

People write "*quilómetro*" in Portugal.

People write "*χιλιόμετρα*" in Greece.

Everybody uses the symbol "km" for "kilometer".