

WARM-UP

1.

Multiplication exercises - 3 minutes

2.

Without solving the equations, in each pair find an equation where value of x is smaller and circle it.

$x \times 4 = 12$

$x \times 8 = 40$

$x \div 6 = 12$

$36 \div x = 6$

$6 \times x = 12$

$x \times 8 = 16$

$x \div 6 = 8$

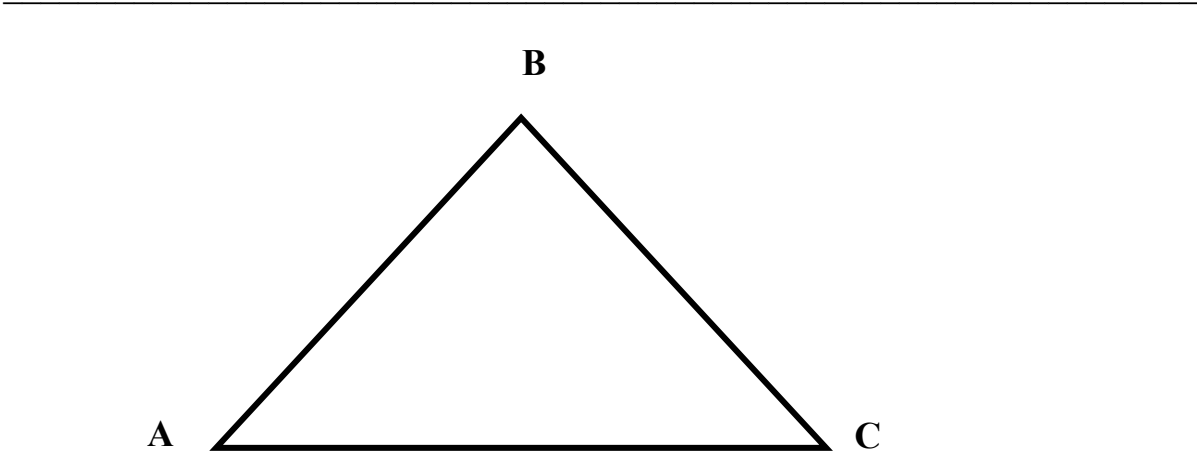
$36 \div x = 9$

3.

A clock shows 7 o'clock in the morning. What time it will show in 150 minutes?

4.

In the triangle ABC draw 2 line segments to get 6 triangles. Label both segments and write down all triangles:

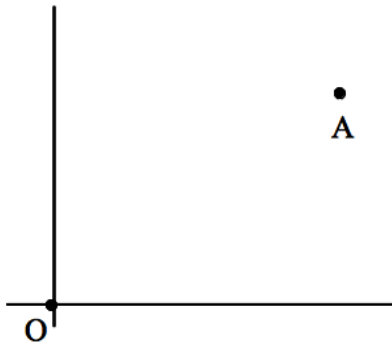


NEW MATERIAL

If we want to indicate the position of a point on the plane, one number is no longer enough. Suppose we mark a point on the plane and call it point O.

How can you describe the position of a point A relative to the point O? Take a look at the picture below and explain where A is relative to O.

If your description is in words, can you use just one number to specify where A is in relation to O?



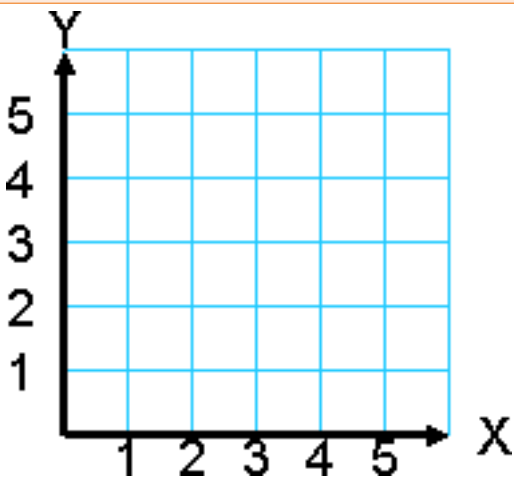
Coordinates on a plane

A *coordinate system* on the plane is a way to describe position of any point on the plane relative to a fixed point (the center of coordinate system).

A coordinate system on the plane has two number lines. Those lines are perpendicular to each other.

We usually call horizontal number line “x-axis” and vertical number line “y-axis”.

The origin – point O has coordinates (0,0).



1. Mark point A on the coordinate system so that:

- a) Point A lies on the x-axis;
- b) Point A is at the mark 5 on the x-axis;

Mark point B on the coordinate system so that:

- a) Point B lies on the y-axis;
- b) Point B is at the mark 2 on the y-axis;

2.

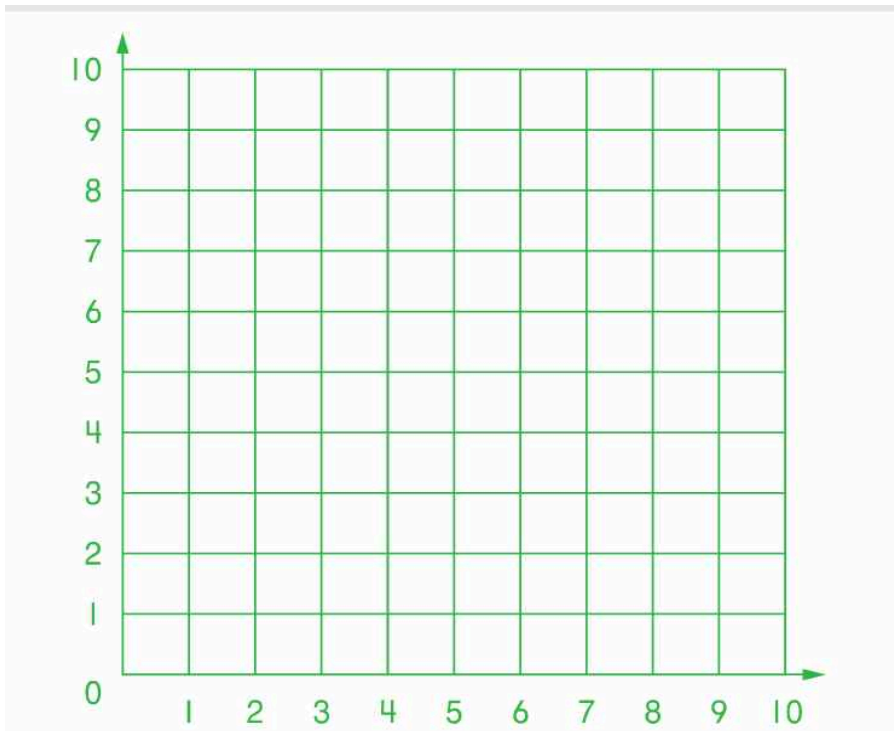
On the coordinate plane mark the points with the following coordinates:

A (1, 2)

B (2, 2)

C (3, 4)

D (6, 7)



3.

Find coordinates of points **A**, **B**, and **C**.

A

B

C

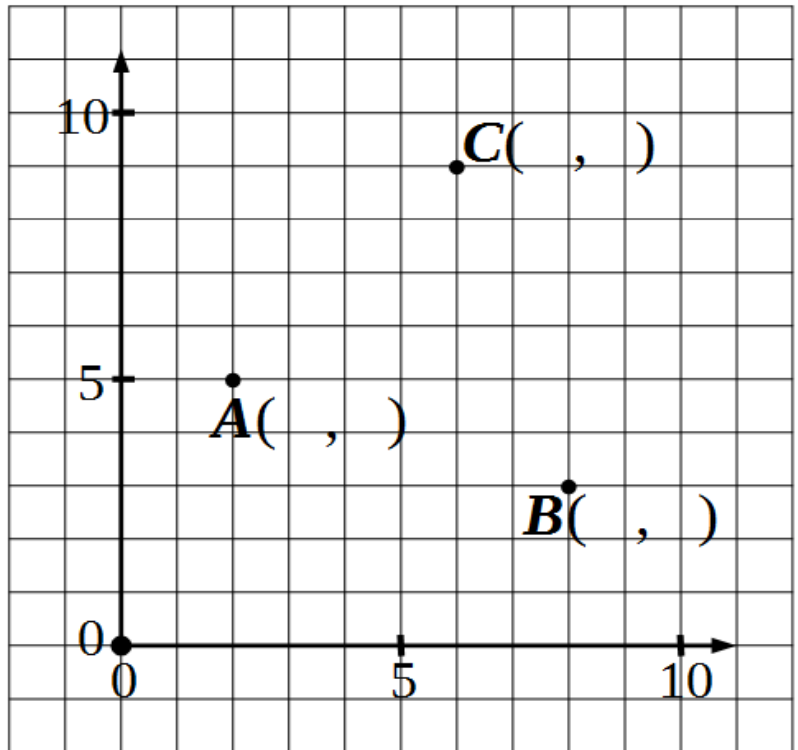
Plot points

D (3, 2)

E (11, 5)

F (4, 12)

G (7, 5)



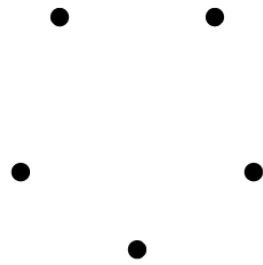
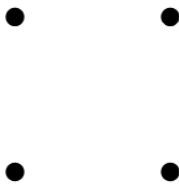
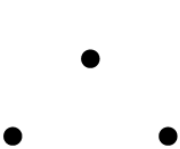
4.

A group of people shook each other's hands. How many handshakes were exchanged if the group had ...

A. ... three people

B. ... four people

C. ... five people



Challenge yourself

5. A fence is installed around a rectangular piece of land 10 meters long and 4 meters wide. Posts are set 2 meters apart. How many posts have to be used in order to fence the land of this size?

Hint: Using a ruler make a drawing so that 1 m is replaced by 1 cm and mark the position of each post with the dot.

Did you know ...

The **coordinate plane** was developed centuries ago and refined by the French mathematician and philosopher René Descartes. He was born in La Haye, France (now named in his honor) on March 31, 1596.

In 17th century, he was also known by the name Renatus Cartesius.

So the story goes, René Descartes was lying in his bed staring at a fly on the ceiling, when it occurred to him that the position of the fly could be described by its distance from each wall.

Until Descartes, Geometry and Algebra were largely independent branches of mathematics. His work was influential to the development of analytic geometry, calculus, and cartography.



Real-life application of Cartesian plane: air and sea navigation (planes and ships), archeology, military service, economics, etc.