Math 3, Classwork 25

WARM UP

1. Compare, using <, >, and =

a) 12,000 ÷ 60 … 1,200 ÷ 6

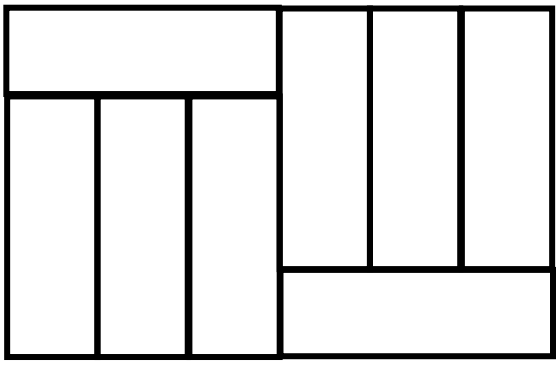
b) 130 × 50 … 1,300 × 5

c) 30,000 ÷ 5 … 3,000 ÷ 50

d) 210 × 300 …2,100 × 30

2. This rectangle is made from smaller rectangles that measure 9 cm long and 3 cm wide. Find the area of the larger rectangle A = _____

Find the perimeter of the larger rectangle P = _____



3. Calculate (don't forget about an order of operations):

a) 9 – 5 ÷ (8 – 3) x 2 + 6 =

b) 4 – 3(4 – 6 ÷ 3) =

4. a) Remove parenthesis and simplify where possible:

$(a - 2) + (b + 3) - (c - 7) =$

$2a - (2 + b) + 3) - (a - 7) =$

b) Remove unnecessary parenthesis:

(a × b) + (c × d)

4x + (4 – 5)

REVIEW Fractions

5. Arrange fractions in order, from smallest to greatest:

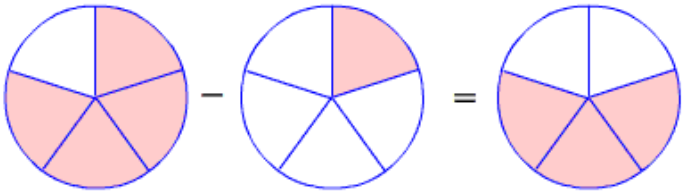
$\frac{1}{15}, \quad \frac{4}{15}, \quad \frac{6}{15}, \quad \frac{9}{15}$ _____

$\frac{1}{2}, \quad \frac{1}{5}, \quad \frac{1}{10}, \quad \frac{1}{15}$ _____

$\frac{3}{11}, \quad \frac{3}{7}, \quad \frac{3}{5}, \quad \frac{3}{4}$ _____

6. Add and subtract like fractions (fractions with the same denominator).

a) Write down the addition and subtraction samples, using fractions:



b) Calculate (simplify to the lowest term where possible)

$\frac{37}{50} - \frac{12}{50} =$ $\frac{9}{100} + \frac{5}{100} =$ $\frac{18}{45} - \frac{8}{45} =$

NEW MATERIAL

Mixed fractions

Finding $\frac{1}{4}$ of the number is equivalent to dividing this number by 4.

For example, $\frac{1}{4}$ of 16 is equivalent to 16 ÷ 4.

If a number cannot be divided exactly, it leaves a **remainder.**

For example, 43 ÷ 4 = 10 remainder 3

The remainder can be expressed as a **fraction.**

$43 \div 4 = \frac{1}{4}$ of 43 or $= 10\frac{3}{4}$

$10\frac{3}{4}$ is a **mixed number.**

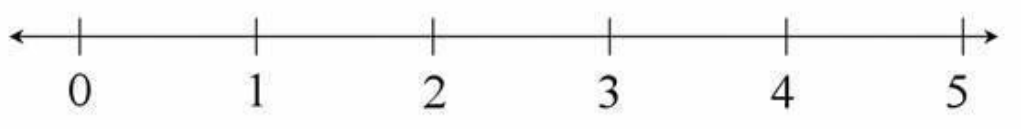
7. Find:

1/3 of 18 = 1/3 of 31 =

1/4 of 20 = 1/8 of 24 =

1/5 of 35 = 1/12 of 24 =

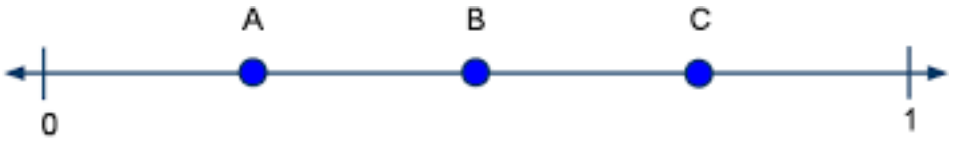
8. Mark and label points on the number line for 1/ 2, 2/2, 3/2, 4/2, 5/2, and 6/2.



Write down the fractions corresponding to letters on the number lines a) and b).

a)

A =
B =
C =



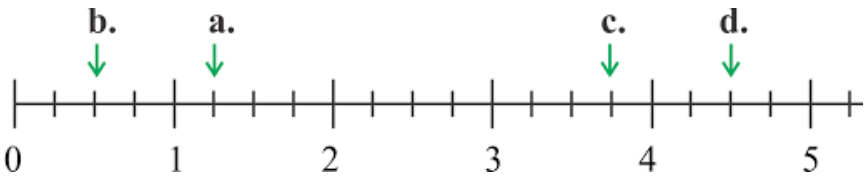
b)

A =
B =

9. Here is a part of the number line (actually of the number ray).
Write down the fractions corresponding to:

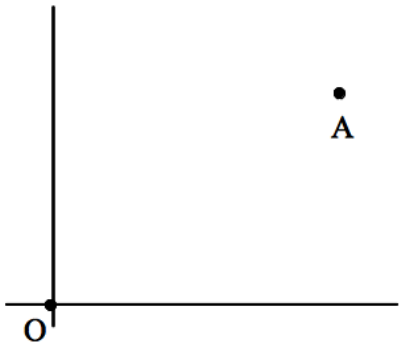
a) Letter a _____ b) letter b _____

c) letter c _____ d) letter d _____



Coordinate Plane

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?

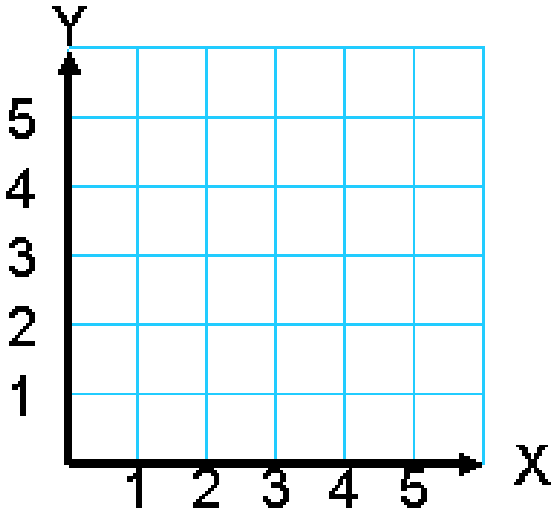


Coordinates on a plane

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).

10.

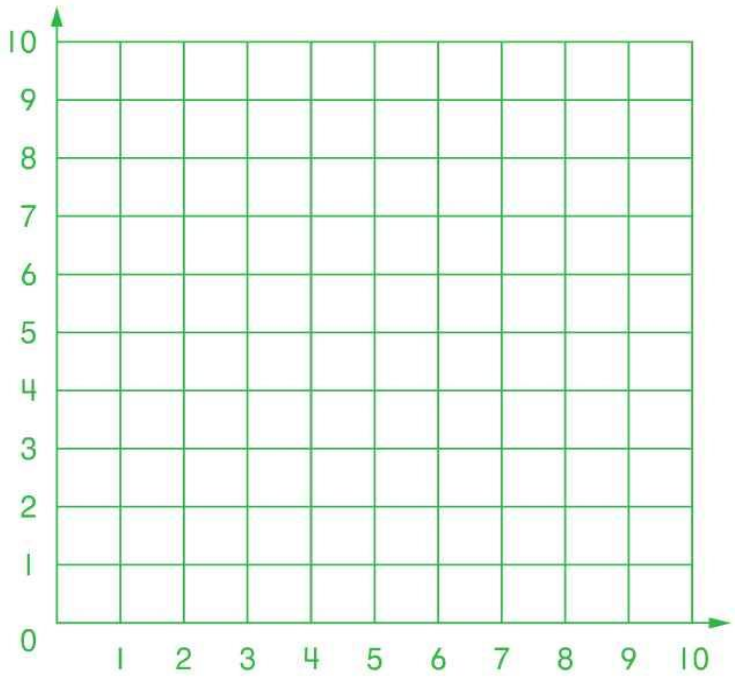


Mark point A on the coordinate system so that:
a) Point A lies on the x-axis;
b) Point A is at the mark 5 on the x-axis;

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;

11.

Mark the Axis X and Axis Y. Remember X is horizontal, Y is vertical.
Mark points: M (1, 1), K (8, 0), N (6, 6), L (9,5) and P (3, 5)



Challenge yourself

12. A fence is installed around a rectangular piece of land that is 10 meters long and 4 meters wide. Posts supporting the fence 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 meter 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, and many others.