Numbers, Relations and Functions 10
Quiz – Coordinate Geometry

Name: _____
December 2011

PART A – Multiple Choice (15 Marks)
Circle the letter corresponding to the correct solution on the quiz AND enter your answer into the SENTEO responder.

1. The slope of a line that is parallel to the x-axis is always…
[A] positive [B] negative [C] zero [D] undefined

2. What is the slope of a line perpendicular to the line $3x-y+2=0$?
[A] 3 [B] -3 [C] $-\frac{1}{3}$ [D] $\frac{1}{3}$

3. What is the equation of the line that passes through these points: $A(-32,40)$ and $B(10,124)$?
[A] $y=\frac{1}{2}x+56$ [B] $y=2x+104$ [C] $y=\frac{1}{2}x-52$ [D] $y=1.6x+60.7$

4. Determine the value of x if the slope of a line is $\frac{1}{2}$ and the line passes through the points $(-6,2)$ and $(x,10)$.
[A] -2 [B] 6 [C] 10 [D] 22

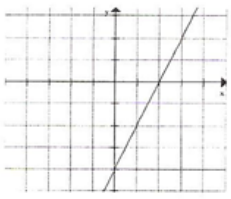
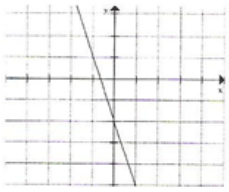
5. The line $5x+2y=6$ passes through which of the following ordered pairs?
[A] $(2,-2)$ [B] $(2,2)$ [C] $(-2,-2)$ [D] $(-2,2)$

6. What is the equation of the line with a slope of $-\frac{5}{3}$ and passes through the point $(-2,3)$?
[A] $5x+3y+1=0$ [B] $5x+3y+7=0$ [C] $5x+3y-19=0$ [D] $5x-3y+19=0$

7. Determine the slope - y intercept equation of the line that passes through $(-3,4)$ and has a slope of 5.
[A] $y=5x+19$ [B] $y=5x+11$ [C] $y=5x-23$ [D] $y=5x-17$

8. If the product ***xy*** is ***positive***, then the point (x, y) will lie in which quadrants?
[A] 1 or 2 [B] 2 or 3 [C] 2 or 4 [D] 1 or 3

9. What is the x-intercept of the relation… $y=3x-6$?
[A] (0, -6) [B] (-6, 0) [C] (0, 2) [D] (2, 0)

10. Which of the following is the graph of the equation $3x+y+2=0$?
[A]

[B]

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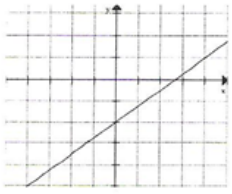
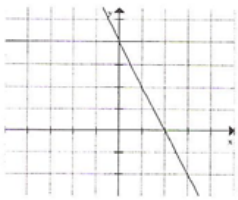

[D]


11. Two perpendicular lines have slopes $\frac{2}{5}$ and $\frac{k}{7}$. What is the value of k?
[A] $\frac{14}{5}$ [B] $\frac{35}{2}$ [C] $-\frac{14}{5}$ [D] $-\frac{35}{2}$

12. What is the slope of a line passing through the points (-2 , 4) and (3 , 5) ?
[A] 5 [B] 9 [C] $\frac{1}{9}$ [D] $\frac{1}{5}$

13. Determine the sum of the x and y intercepts of the line $x-3y=-6$ is…
[A] -4 [B] 0 [C] -8 [D] -9

14. Which of the following is an equation of a vertical line?
[A] $x+y=0$ [B] $y-5=0$ [C] $x-y=0$ [D] $x+2=0$

15. Determine the equation of the line that passes through the point $(-2,5)$ and is parallel to the line $y=-\frac{1}{2}x+2$.
[A] $x+2y-8=0$ [B] $2x-y+9=0$ [C] $x-2y+8=0$ [D] $2x+y-1=0$

PART B – Open Response (25 Marks)
Show all of your work in the space that is provided.

1. Determine the equation of a line that satisfies the given conditions and put the equation in **Standard Form**. [12]

a) the line passes has an x-intercept of 4 and a y-intercept of -5

b) the line passes through the point $(3,-2)$ and has a slope of $-\frac{4}{5}$

c) the line has the same y-intercept as $\frac{y}{3}+4=2x$ and is parallel to the line $2x-4y=3$

d) the line passes through $(-2,-5)$ and is perpendicular to the line $2x-3y-5=0$

2. Find k if the line passing through $(5,k)$ and $(-4,-2)$ is **parallel** to the line joining $(3,-k)$ and $(1,2)$ [4]

3. Given the equation below, complete all of the following:

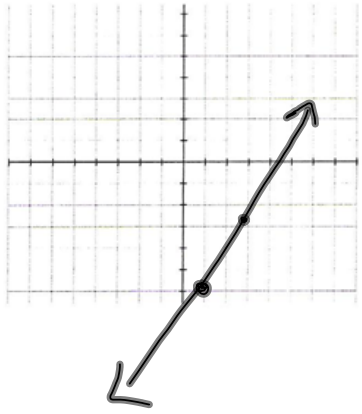
$$\frac{3x}{4}-\frac{y}{2}=1$$

a) Put the above equation in **slope-y-intercept** form [2]

b) x-intercept → _____ y-intercept → _____ slope → _____ [3]

c) Complete the table of values with at least 3 points and graph the equation. [4]

x	y



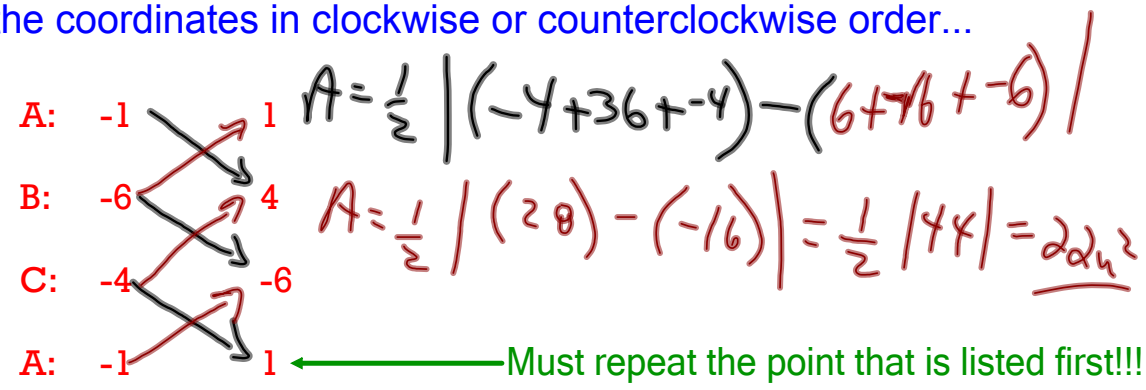
Area of a Triangle

$$A_{triangle} = \frac{1}{2}\left|(sum\ of\ down\ products) - (sum\ of\ up\ products)\right|$$

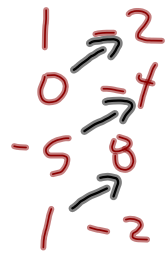
Example...

Determine the area of $\triangle ABC$ with vertices A(-1,1); B(-6,4) & C(-4,-6).

- List the coordinates in clockwise or counterclockwise order...



Example: Determine the area of the triangle formed by joining the ordered pairs (-5 , 8) , (1 , -2) and (0 , -4) .



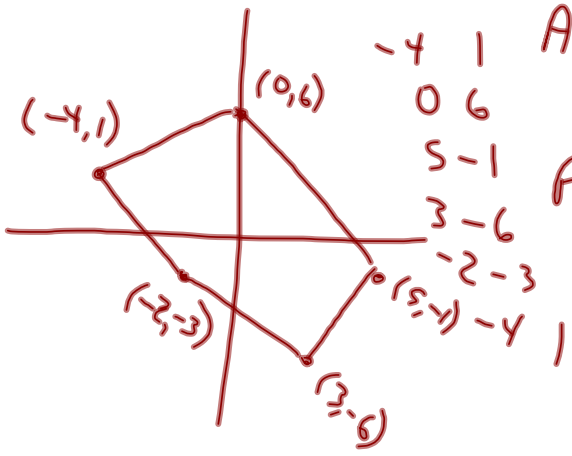
$$A = \frac{1}{2}\left|(8+20+0)-(-4+0+10)\right|$$

$$A = \frac{1}{2}\left|(28)-(6)\right|$$

$$A = \frac{1}{2}|22| = 11u^2$$

This formula will work for any polygon, not just triangles....

Example: Determine the area of the polygon formed by joining the ordered pairs (3 , -6) , (5 , -1) , (0 , 6), (-4 , 1) and (-2 , -3) .



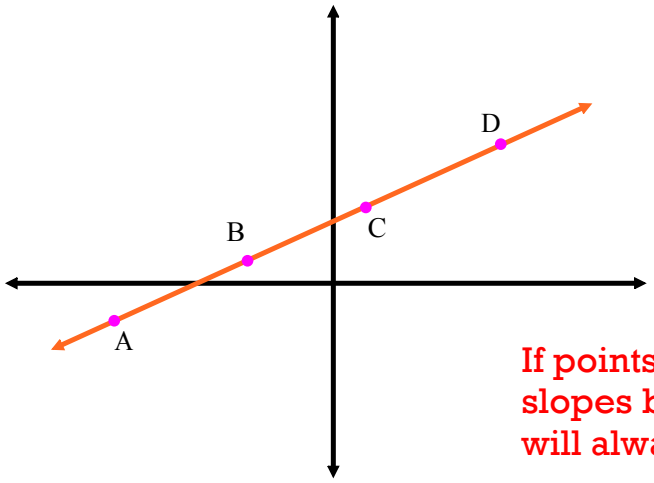
$$A = \frac{1}{2}\left|(-24+0-30-9-2)-(24+0-3+30+0)\right|$$

$$A = \frac{1}{2}\left|(-65)-(51)\right|$$

$$A = \frac{1}{2}\left|-116\right|$$

$$A = \frac{1}{2}(116) = 58u^2$$

Collinear Points: Three or more points that lie along the same straight line.



How could we prove points to be collinear?

- What about slopes?

If points are collinear, then the slopes between any two points will always be equal.

FACT: If Area = 0, then the points are collinear

Example... Determine whether or not the following points are collinear:

L(1, -1) I(-3,-4) B(5,2)

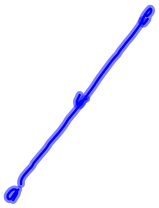
$m_{LI} = \frac{-4+1}{-3-1} = \frac{-3}{-4} = \frac{3}{4}$

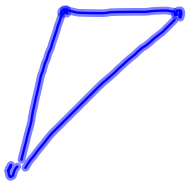
$m_{LB} = \frac{2-(-1)}{5-1} = \frac{3}{4}$

$\therefore$ LIB are collinear

Homework

Worksheet: #2, 4, 5, and 7





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