NAME:_____

3.6 Slopes of Parallel and Perpendicular Lines

What are the slopes of the lines?

What kind of lines are they?

*If you need more help on this Para/Perp lines go to section 6.4 on the Algebra site.

Two nonvertical lines are parallel if…

Any two vertical lines are parallel and any two horizontal lines are parallel.

Ex: Write the equation of the line that is parallel to y = - 3x - 5 and goes through the point (-1, 8)

Ex. Are the following lines parallel? Why or why not?
3x - y = 6
-6x + 2y = 24

What are the slopes of the lines? What kind of lines are these?

Two lines are perpendicular if and only if…

Vertical and horizontal lines are_____

Ex: Write the equation of a line that is perpendicular to y = x + 2 and contains the point (15, -4).

Ex: Are the following equations perpendicular? Why or why not?
y = 4x + 8
8x - 2y = 10

A rectangle is a quadrilateral that has opposite sides that are parallel and adjacent sides that are parallel. Is quadrilateral ABCD a rectangle? Why or why not?
A(1,1), B(5, 3), C(7, 1) and D(3, 0)

Try these…Write the slope-intercept form of the equation of the line described.

1) Through (1, -5) and parallel to y = -9x

2) Through (-3,2) and perpendicular to y = 3x - 4

Summary:

_____

_____

_____

_____

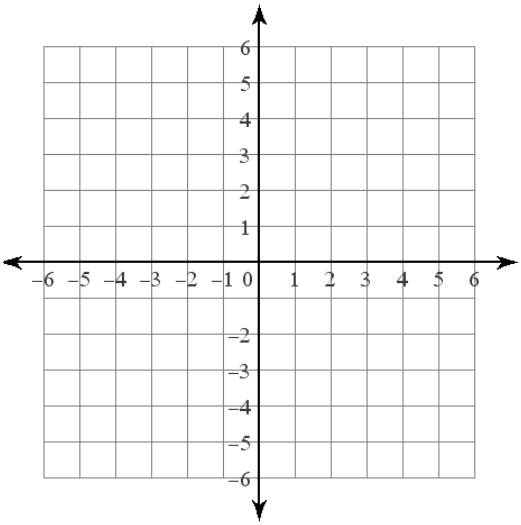
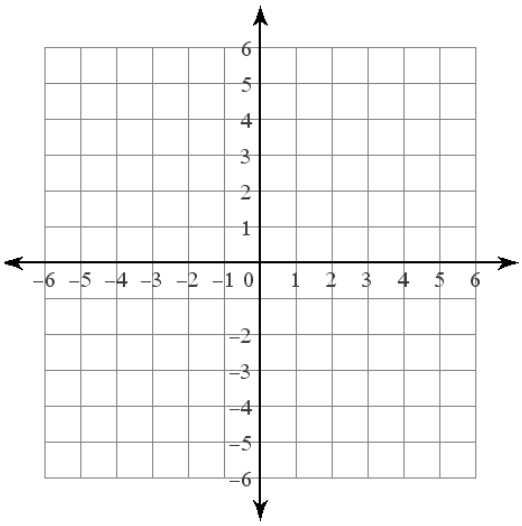
3.6 Practice Problems

Directions: Write the slope-intercept form of the equation of the line described.		
1)through (-2,2), parallel to y = -x - 2	2) through (-2, -3), parallel to y = x -3	3) through (-4, -5), parallel to $y = \frac{5}{2}x$

4) through (-3, 1), perpendicular to $y = \frac{3}{4}x - 2$	5) through (-3, -2), perpendicular to Y = -x -4	6) through (-3, -5), perpendicular to y = -3x – 5
Directions: Determine whether the lines are parallel, perpendicular or neither.		
7) 2x – 7y = -42 4y = -7x -2	8) y = 3 X = -2	9) 2x + 5y = -1 10y = -4x – 20
10) A parallelogram is a quadrilateral that has opposite sides that are parallel Is quadrilateral ABCD a parallelogram? .Why or why not? A(0,2), B(3,4), C(2,7) and D(-1,5)		

Algebra Review

Solve: 73 = 40 – 3k	Solve: 7h + 15 = 3h – 27	Multiply: $8n(7 - 5n)$

Factor: $42p^3 + 28p$	Graph: $y = -\frac{2}{5}x$	Graph: x = 4
		

3.6 APPLICATION and EXTENSION

1) Directions: Write the equation of the line through the point (5,5) and perpendicular to y = -6x + 1

2)Directions: Are the following lines parallel perpendicular or neither?

3y = 8x + 9

6x + 16y = 32

3) Mr. Kelly keeps his lunch money in a jar on his table. He suspects that Mr. Brust is stealing money from him so he starts to keep some data. He knows that after one week he has $9 and after 4 weeks he has $3.

a) What's Mr. Kelly's slope (rate of change) for this situation?

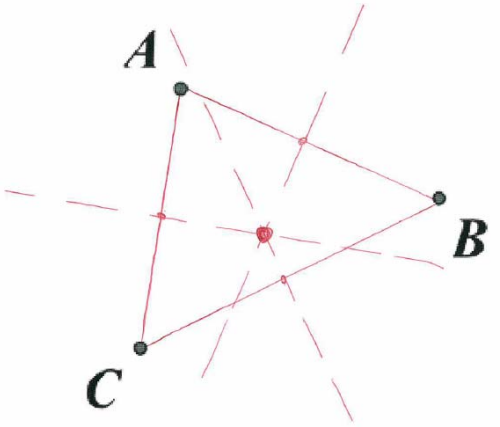
b) What's Mr. Kelly's y-intercept (initial value) for this situation?

c) Write an equation of the line for the given situation. Graph the line.(next page)

d) How much money would Mr. Kelly have after 10 weeks?

SAMPLE RESPONSES TO RICH TASK: PLACING A FIRE HYDRANT.

Student #1 : ZAKIAH



a. Show how to fold your paper to physically construct this point as an intersection of **two** creases. It may be helpful to try folding with other paper first. Then on this paper indicate your fold lines with dotted lines.

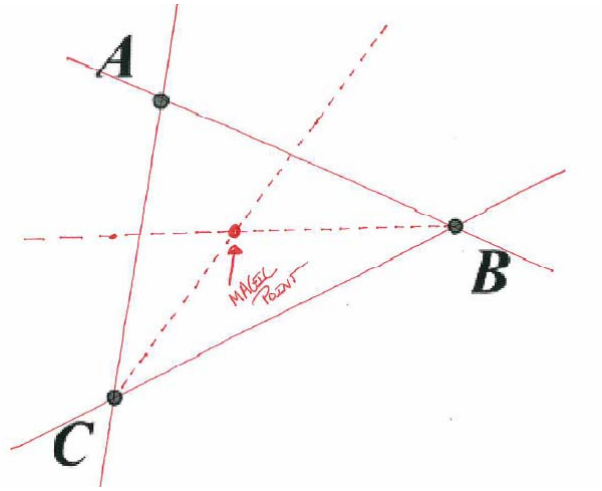
b. Explain why the above construction works, and in particular why you only needed to make two creases.

I FOUND THE MIDPOINT OF EACH SIDE AND THEN CONSTRUCTED THE PERPENDICULAR BISECTORS OF EACH SIDE. WHEN I DID THIS I NOTICED THAT ALL THREE MET AT THE SAME POINT. I CALLED THAT POINT D, AND MEASURE $\overline{AD}$, $\overline{BD}$ AND $\overline{CD}$ USING A RULER. ALL 3 SEGMENTS HAD THE SAME MEASURE SO THE ARE CONGRUENT. SINCE ALL 3 FOLDS MET AT 1 POINT I COULD HAVE JUST FOUND 2 FOLDS AND THEY WOULD HAVE MET AT THIS POINT.

How do you think Zakiah actually folded the paper in such a manner as to construct the perpendicular bisectors? Describe the process.

How does Zakiah know that the segments she identified are the same measure? Could she prove the segments are congruent a different way? Explain.

Student #2: PAULIE



a. Show how to fold your paper to physically construct this point as an intersection of **two** creases. It may be helpful to try folding with other paper first. Then on this paper indicate your fold lines with dotted lines.

b. Explain why the above construction works, and in particular why you only needed to make two creases.

Well, I constructed the angle bisectors of 2 of the angles. These 2 ~~points~~ lines met at one point. I called this point the magic point. The magic point looked to be the same distance from A as it was to B. Since I could only make 2 creases I never showed that the angle bisector of ∠A would also go through the magic point, but it will because I know that magic point is called the incenter where all angles bisectors meet.

Paulie calls the intersection point the "Magic Point". Explain why this is not the best way to label the point and how he could make it better.

What assumption did Paulie make about the angle bisectors in relation to this problem?

Are his assumptions correct? Why or why not?