Concept 8: Parallel & Perpendicular Slopes

Level 2

1. **Watch the video (Parallel & Perpendicular Slopes: Level 2)**
2. **Complete the Notes & Basic Practice**
3. **Complete 2 of the following tasks**

Pre-Quiz Score = _____/5
Score 5 = Level 4
Score 3,4 = Level 3
Score 0-2 = Level 2

IXL Practice	Worksheets	Creating
S18 – (Algebra 1) (at least to 85)	Parallel Slopes Level 2	Create a graph using www.desmos.com of 10 parallel lines. Take a screenshot of the graph, upload it to google drive and share it with me.

4. **Take the Schoology Quiz (Concept 8: Level 2)**
    - **Score of 4 or higher move to level 3**
    - **Score of 3 or less, complete the Level 2 Review**

Level 2
Quiz Score:

Level 3

1. **Watch the video (Parallel & Perpendicular Slopes: Level 3)**
2. **Complete the Notes & Basic Practice**
3. **Complete 2 of the following tasks**

IXL Practice	Worksheets	Creating
S19 – (Algebra 1) (at least to 85)	Parallel & Perpendicular Slopes Level 3	Create a graph using www.desmos.com of 4 sets of parallel and perpendicular lines Share the graph with me using google drive

4. **Take the Schoology Quiz (Concept 8 – Level 3)**
    - **Score of 3 or less, complete the Level 3 Review**
    - **Score of 4 or higher congratulations, move on to level 4!**

Level 3
Quiz Score:

Level 4

1. **Watch the video (Parallel & Perpendicular Slopes: Level 4)**
2. **Complete the Notes & Basic Practice**
3. **Complete 2 of the following tasks**

IXL Practice	Worksheets	Creating
E6 – (Geometry) (at least to 85)	Parallel & Perpendicular Slopes Level 4	Create a graph with a rectangle made from 4 equations Prove

4. **Take the Schoology Quiz (Concept 8 – Level 4)**
    - **Score of 3 or less, complete the Level 2 Review**
    - **Score of 4 or higher congratulations, you are a Math Master!**

Level 4
Quiz Score:

Quiz Scores							

Level 2/3:

Goals:

        I have mastered <u>level 2</u> when I can:

                Identify Parallel Slopes from a Graph and Equation

                Create a parallel equation given an equation or graph

        I have mastered <u>level 3</u> when I can:

                Identify Perpendicular Slopes from a Graph and Equation
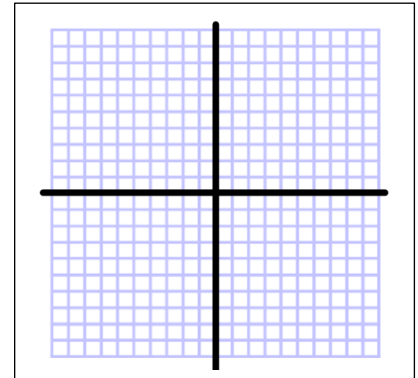
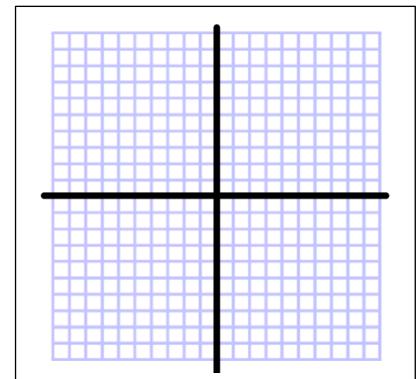   **Create a Perpendicular equation given an equation or graph**

Notes:

Big Ideas	Examples/Details	
Examples of Parallel Equations & Graphs		
Slopes are Parallel when…		
Examples of Perpendicular Equations & Graphs		
Slopes are Perpendicular when…		

Level 2 Practice:

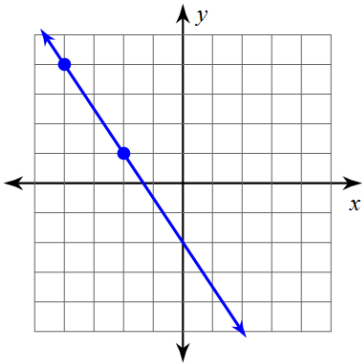### Find the slope of a line parallel to each given line.

1) $y = 2x + 4$

2) $y = -\frac{2}{3}x + 5$

3) $y = 4x - 5$

4) $y = -\frac{10}{3}x - 5$

For each graph below, write an equation for a parallel line.
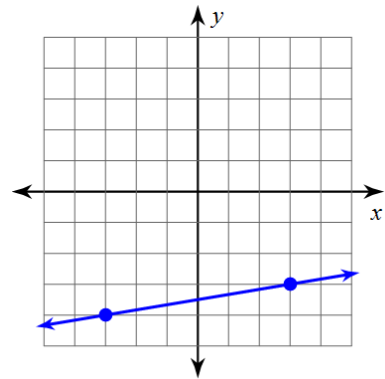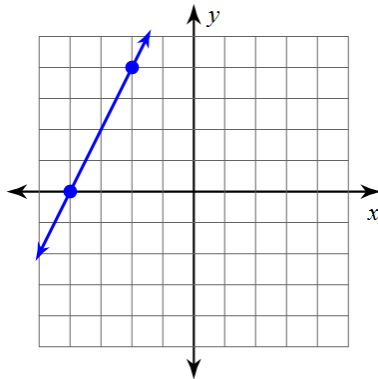
Level 3 Practice:

Find a slope that is perpendicular
For each equation below

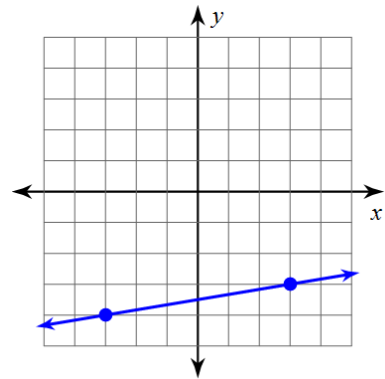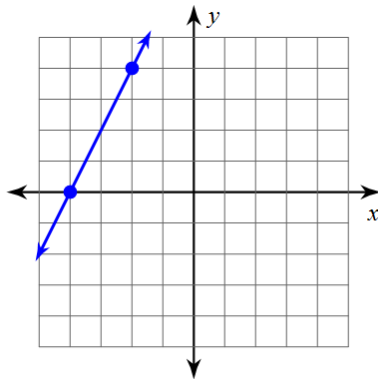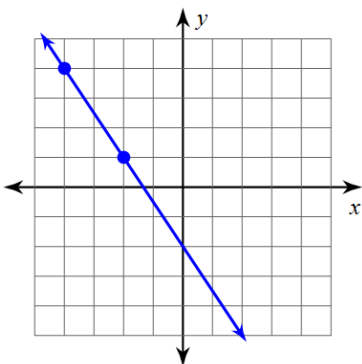Find a slope that is perpendicular to the line that goes through
each of the two points below.

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

$y = \frac{4}{5}x$

1) through: $(-5, -4)$ and $(0, -5)$

2) through: $(-2, -1)$ and $(0, -4)$

For each graph below, write an equation for a perpendicular line.

Worksheet Level 2: Parallel & Perpendicular

Practice #1

Write an equation for a line that is parallel to the given information.
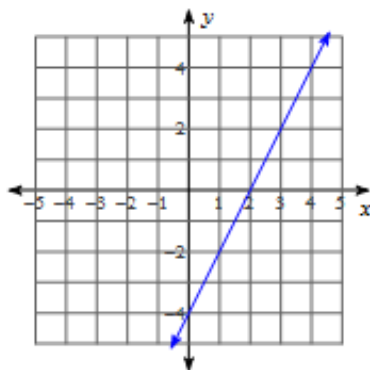
1) Slope $= \dfrac{1}{3}$, y-intercept $= 3$

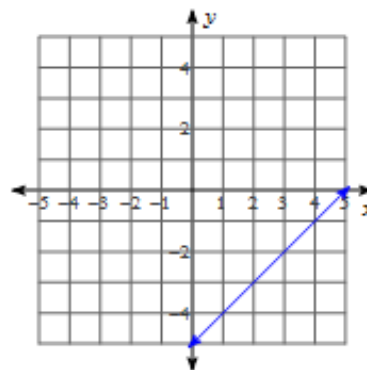2) Slope $= \dfrac{1}{3}$, y-intercept $= 0$

3) Slope $= -\dfrac{4}{3}$, y-intercept $= 1$

4) Slope $= \dfrac{3}{4}$, y-intercept $= 5$

5)

6)

7) through: $(-3, -5)$ and $(3, 2)$

8) through: $(-3, 1)$ and $(-5, 3)$

9) through: $(-3, 3)$ and $(0, 3)$

10) through: $(2, 5)$ and $(-3, -3)$

Practice #2

Directions: Graph the points and use a ruler to draw the line that passes through them. Use the designated color to draw each line.

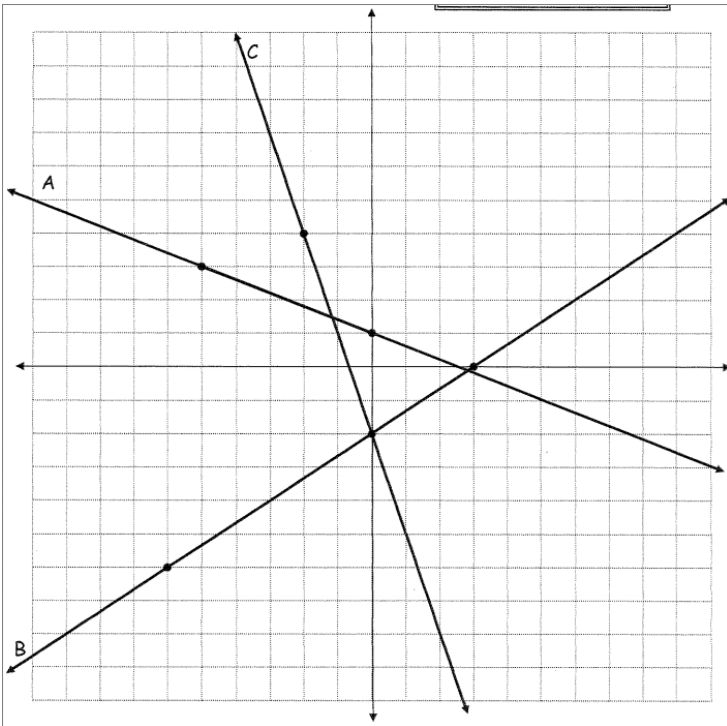RED: (-3, 2)   (0, 4)

BROWN: (-5, -1)   (5, -5)

GREEN: (1, 1)   (2, -2)

Given Lines and Their Points	
A: (0, 1)	(-5, 3)
B: (3, 0)	(-6, -6)
C: (-2, 4)	(0, -2)

Find the equations of lines A, B and C.

A	
B	
C	

Equations of the RED, BROWN, GREEN lines.

Red	
Brown	
Green	

Questions

Which line is parallel to line A? Write out the slopes of the two equations.

Which line is parallel to line B? Write out the slopes of the two equations.

Which line is parallel to line C? Write out the slopes of the two equations.

What do you notice about slopes of parallel lines?

# Worksheet Level 3: Parallel & Perpendicular

Practice #1

For each equation below, find the slope and y-intercept.

Then find an equation that is parallel and an equation that is perpendicular.

Equation	$y = 4x + 2$	$y = \frac{2}{7}x + 1$	$y = -\frac{1}{2}x + 1$	$y = -9x - 13$
Y-intercept				
Slope				
Parallel Equation				
Perpendicular Equation				

Practice #2

Create an equation for a perpendicular line that passes through the given point on the graph.
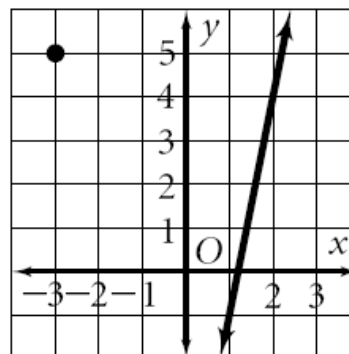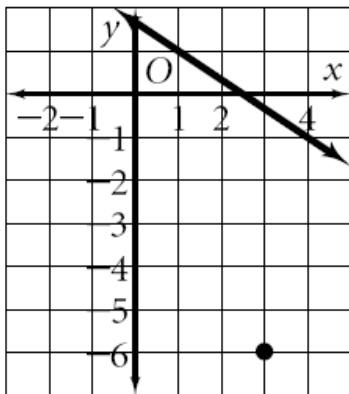
Practice #3

Directions: Graph the points and use a ruler to draw the line that passes through them. Use the designated color to draw each line.

BLUE: (0, 2)   (2, –1)
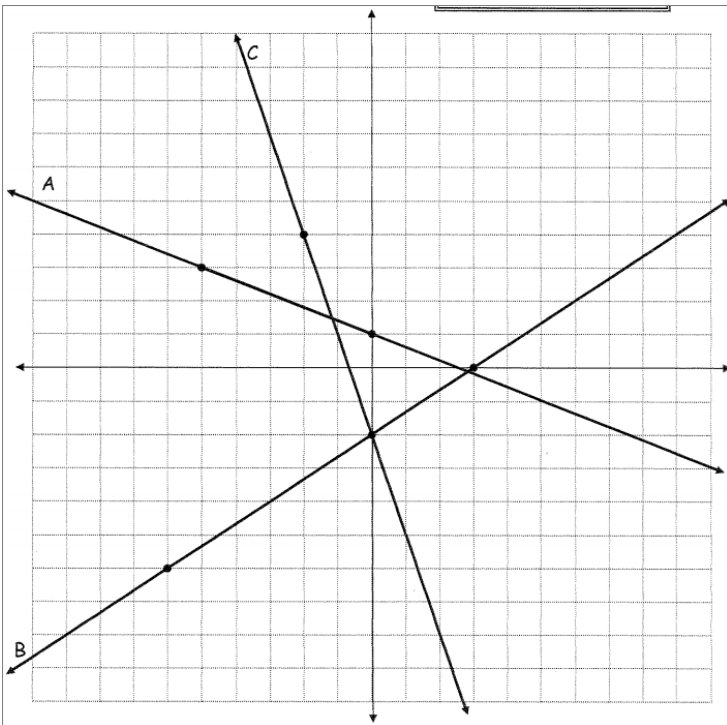
PURPLE: (–3, 6)   (–6, 5)

ORANGE: (4, 0)   (6, 5)

Given Lines and Their Points	
A: (0, 1)	(–5, 3)
B: (3, 0)	(–6, –6)
C: (–2, 4)	(0, –2)

Find the equations of lines A, B and C.

A	
B	
C	

Equations of the BLUE, PURPLE, & ORANGE lines.

Blue	
Purple	
Orange	

Questions

Which line is perpendicular to line A? Write out the slopes of the two equations.

Which line is perpendicular to line B? Write out the slopes of the two equations.

Which line is perpendicular to line C? Write out the slopes of the two equations.

What do you notice about slopes of perpendicular lines?

Level 4:

Goals:

    I have mastered level 4 when I can:

        Create a parallel or perpendicular equation given a slope and a point
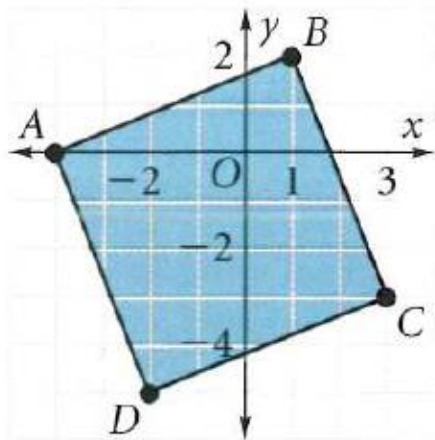
        Analyze a polygon using slopes
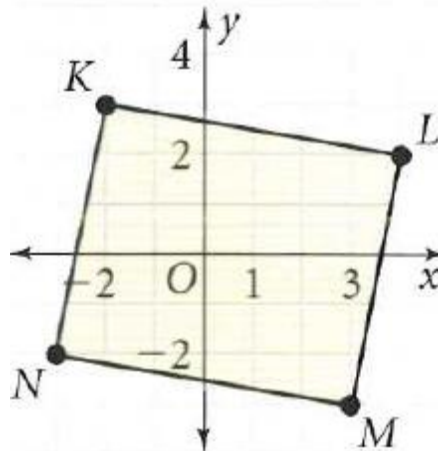
Notes:

Big Ideas	Examples/Details

Basic Practice:

Determine if each shape below is a rectangle by checking the slopes of each side. (Remember rectangles have 4 right angles.)

A (-4,0)   B (1,2)

C (3,-3)   D (-2, -5)

K (-2,3)   L (4,2)

N (-3,-2)   M (3,-3)

Write the slope-intercept form of the equation of the line described.

1) through: $(4, 5)$, parallel to $y = 2x - 2$

2) through: $(-2, -5)$, parallel to $y = 10x + 1$

3) through: $(-2, -2)$, perp. to $y = -\frac{1}{3}x + 5$

4) through: $(4, 0)$, perp. to $y = 4x - 5$

Worksheet Level 4: Parallel & Perpendicular

Goals:

I have mastered level 4 when I can:

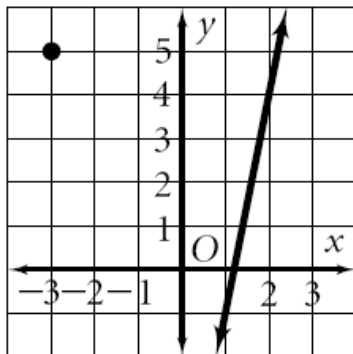   **Create a parallel or perpendicular equation given a slope and a point**

   Analyze a polygon using slopes

Practice #1

Create an equation for a parallel line and a perpendicular line that passes through the given point on the graph.
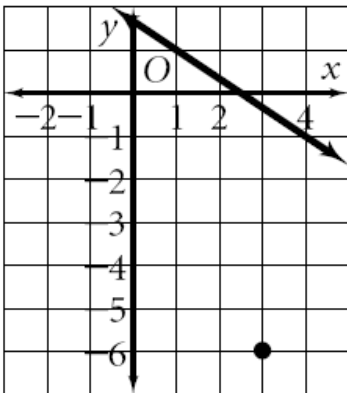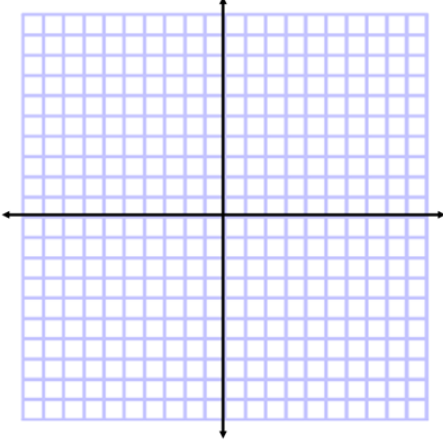
Original Equation	
Parallel Equation	
Perpendicular Equations	

Original Equation	
Parallel Equation	
Perpendicular Equations	

Practice #2

1. Plot each set of points on the graphs below.
2. Find the slopes of each side.
3. Name each polygon based whether or not the sides are parallel or perpendicular or neither.
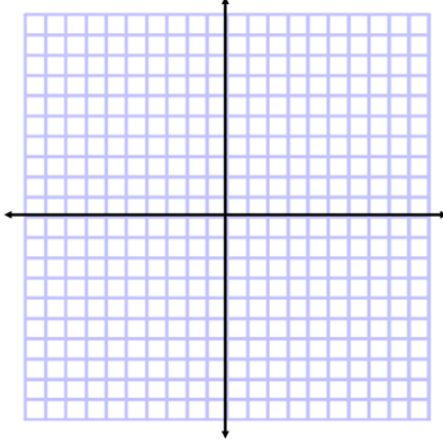
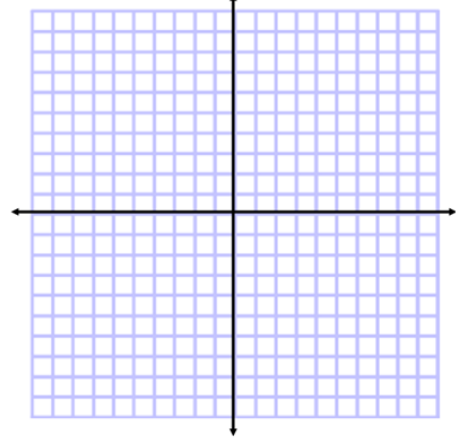1. (-5,0), (1,4), (6,3), (-3,-3)

Slopes of the Four Sides

Shape: _____

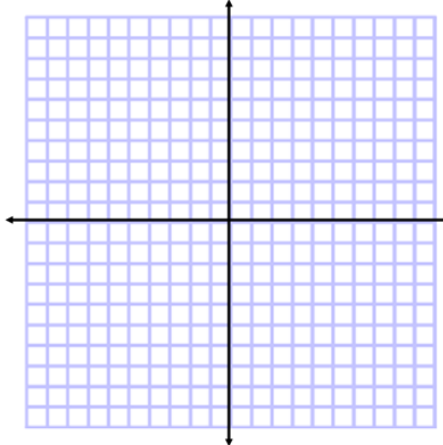2. (-3,-2), (3,1), (5,-3), (-1,-6)

Slopes of the Four Sides

Shape: _____

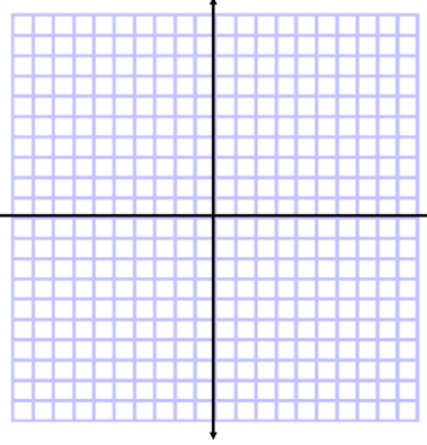3. (-3,4), (0,4), (3,0), (3,-4)

Slopes of the Four Sides

Shape: _____

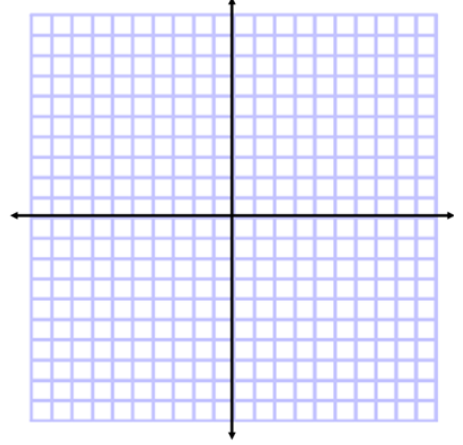4. (-1,4), (2,7), (5,-2), (2,-5)

Slopes of the Four Sides

Shape: _____

5. (-4,-1), (-2,7), (2,6), (3,3)

Slopes of the Four Sides

Shape: _____

6. (0,4), (2,8), (6,-2), (2,-1)

Slopes of the Four Sides

Shape: _____