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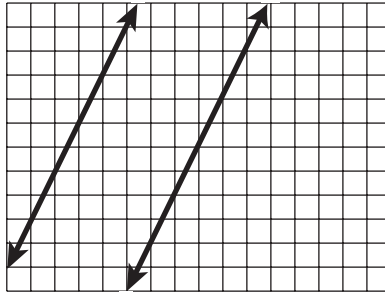
Date: _____

Station Activities: Parallel Lines, Slopes, and Equations

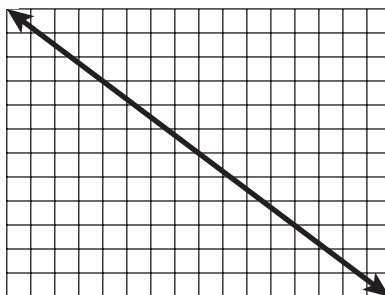
Station 1

At this station, you will find rulers. Use these to help you determine whether or not the following lines are parallel.

Look at the graph below.



1. Are these lines parallel?
2. Explain two ways you can tell lines are parallel.
3. What is the shortest distance between these two lines?
4. Draw a line that is parallel to the given line below.



5. How do you know your line is parallel?

Station 2

At this station, you will find graph paper, a ruler, a red marker, and a blue marker. As a group, construct an x - and y -axis on your graph paper.

1. On your graph paper, construct a straight line that passes through $(-2, -5)$ and $(7, 1)$.

What is the slope of this line?

Show how you found this slope by using the red and blue markers to represent rise and run on your graph.

2. Construct a second line that passes through $(0, 4)$ and $(18, 16)$.

What is the slope of this line?

Show how you found this slope by using the red and blue markers to represent rise and run on your graph.

3. Construct a third line that passes through $(0, 0)$ and $(10, 8)$.

What is the slope of this line?

Show how you found this slope by using the red and blue markers to represent rise and run on your graph.

4. Of the three straight lines you created, which two lines do you think are parallel? Explain your answer.

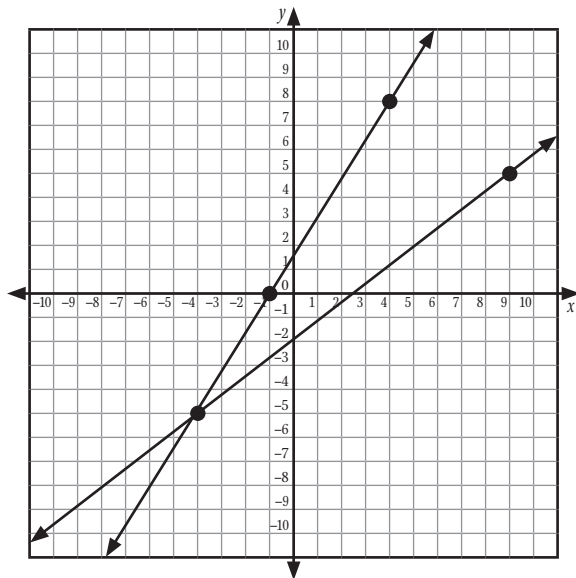
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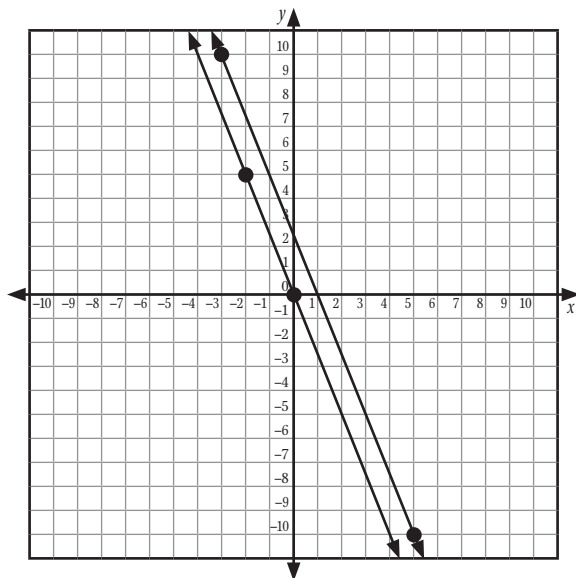
For problems 5–8, determine whether the lines are parallel. Answer *yes* or *no*. Justify your answers.

5.



Are the lines parallel?

6.



Are the lines parallel?

7. One line has a slope of $\frac{2}{3}$ and another line has a slope of $\frac{16}{24}$.

Are the lines parallel?

8. One line has a slope of $-\frac{1}{2}$ and another line has a slope of $\frac{1}{2}$.

Are the lines parallel?

Station 3

At this station, you will find spaghetti noodles, graph paper, and a ruler. Work as a group to construct the lines and answer the questions.

1. On your graph paper, construct a straight line that passes through $(-2, -2)$ and $(5, 10)$. Place a spaghetti noodle on this line.
2. On the same graph, construct a straight line that passes through $(-6, 4)$ and $(1, 16)$. Place a spaghetti noodle on this line.

By looking at the spaghetti noodles, the two lines may appear to be parallel, but are they?

3. How can you use the points on each line to determine if the two lines are parallel? Show your work. Are the lines parallel? Why or why not?

4. On the same graph, construct a straight line that passes through $(5, 10)$ and $(17, 3)$. Place a spaghetti noodle on this line.

What is the slope of this line?

Is this line perpendicular to the line you created in problem 1? Why or why not?

Is this line also perpendicular to the line you created in problem 2? Why or why not?

5. Perpendicular lines create four angles that each measure _____.

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Station 4

At this station, you will find graph paper and a ruler. Work as a group to construct the graphs and answer the questions.

1. On your graph paper, graph the straight line that passes through the points $(-4, 5)$ and $(4, -5)$.
2. What is the slope of this line?
3. Use the formula for point-slope form to find an equation for this line. Show your work and answer in the space below.

Point-slope form: $y - y_1 = m(x - x_1)$

Equation for the line: _____

4. If you were to construct a line parallel to the line in problem 1, what slope would this line have? Explain your answer.
5. How can you use your graph paper and the slope you found in problem 2 to construct a line parallel to the line in problem 1?

Draw this line on your graph paper.

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6. Use the formula for point-slope form to find an equation for this line. Show your work and answer in the space below.

Point-slope form: $y - y_1 = m(x - x_1)$

Equation for the line: _____

7. Construct another parallel line on your graph paper.

8. Use the formula for point-slope form to find an equation for this line. Show your work and answer in the space below.

Point-slope form: $y - y_1 = m(x - x_1)$

Equation for the line: _____