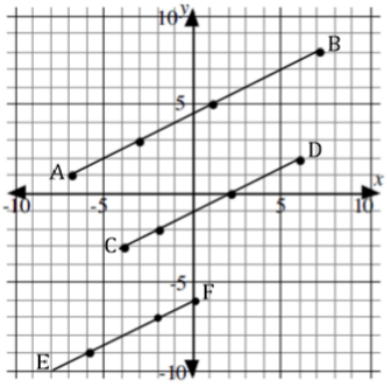
Lesson 6.2: Slopes of Parallel and Perpendicular Lines

Specific Outcome: 3.8 – Generalize and apply a rule for determining whether two lines are parallel or perpendicular.

SLOPES OF PARALLEL LINES

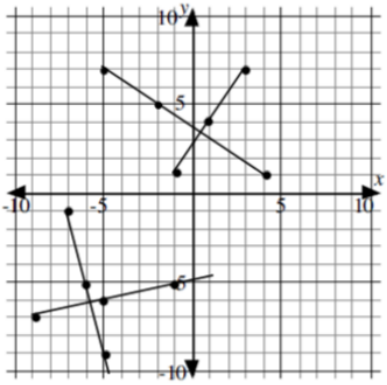
This graph shows 3 parallel lines. Determine each line's slope.



Conclusion: _____

SLOPES OF PERPENDICULAR LINES

This graph shows 2 sets of perpendicular lines. Determine each line's slope.



Conclusion: _____

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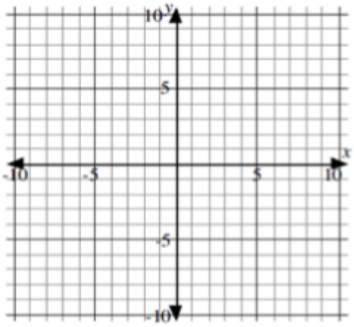
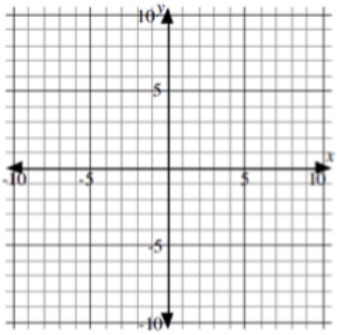
Practice:

1. Line PQ passes through P(-7,2) and Q(-2,10). Line RS passes through R(-3,-4) and S(5,1)
   a) Use the slope formula to determine if these two lines parallel, perpendicular, or neither?



   b) Sketch the lines to verify the answer.

2. Line ST passes through S(-2,7) and T(2,-5). Lines UV passes through U(-2,3) and V(7,6).
   a) Are these two lines parallel, perpendicular, or neither?



   b) Sketch the lines to verify the answer.

3. Determine the slope of a line that is:

a) parallel to the line through A(2,3) and B(-4,-1)

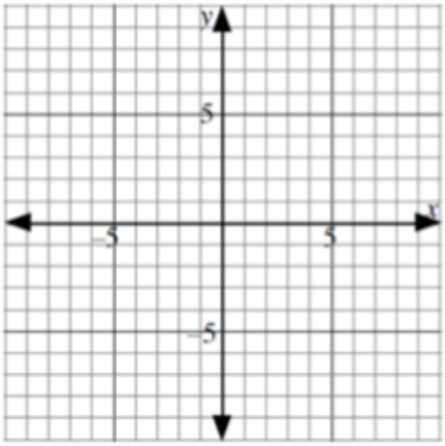
b) perpendicular to the line through C(-4,5) and D(9,1)

c) parallel to the line through E(3,1) and F(8,1)

d) perpendicular to the line through E(3,1) and F(8,1)

Problem Solving:

1. $\triangle LMN$ has coordinates $L(-4,2)$, $M(-2,7)$, and $N(1,0)$. Use slopes to show that the triangle is right-angled at L.



2. Two lines have slopes of $-\frac{3}{4}$ and $\frac{k}{6}$. Find the value of k if the lines are:

a) parallel

b) perpendicular

HOMEWORK: P. 349 – #3-5, 8ab, 9-13, 17