

## Exercise Set 6.2

In problems 1-3, first determine the midpoint of the segment connecting each pair of points. Then find the slope of a line that contains each pair of points.

1.  $(12, -7)$  and  $(-6, 15)$  Midpoint: \_\_\_\_\_ Slope: \_\_\_\_\_

2.  $(-17, -8)$  and  $(-1, 11)$  Midpoint: \_\_\_\_\_ Slope: \_\_\_\_\_

3.  $(14, -7)$  and  $(-3, 18)$  Midpoint: \_\_\_\_\_ Slope: \_\_\_\_\_

Answer the following.

4. One endpoint of a segment is  $(12, -8)$ . The midpoint is  $(3, 18)$ . Find the coordinates of the other endpoint. \_\_\_\_\_

5. Parallelogram  $ABCD$  has vertices  $A(0, 0)$ ;  $B(6, 0)$ ;  $C(12, 8)$  and  $D(6, 8)$ . Find the coordinates of the midpoints of both diagonals. \_\_\_\_\_

6. Find the slopes of the diagonals of  $ABCD$  in problem 5. \_\_\_\_\_

7. Find the coordinates of two additional points that lie on the line passing through the points  $(0, 0)$  and  $(3, -4)$ . \_\_\_\_\_

8. Find the midpoint of the segment with endpoints  $(-7, 20)$  and  $(15, -10)$ . If the midpoint is  $M$ , and point  $N$  has coordinates  $(6, 8)$ , find the slope of line  $MN$ . \_\_\_\_\_

9. A line through points  $(-5, 2)$  and  $(2, y)$  has a slope of 3. Find  $y$ . \_\_\_\_\_

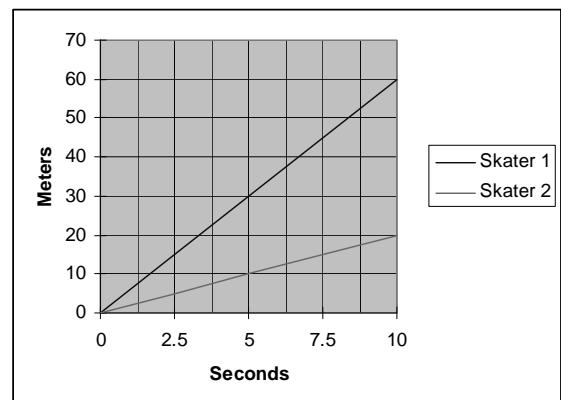
10. Quadrilateral  $FGHJ$  has vertices  $F(0, 0)$ ;  $G(6, 0)$ ;  $H(14, 8)$  and  $J(3, 8)$ . Find the slope of each of the four sides. \_\_\_\_\_

11. The graph to the right shows the distance traveled by two inline skaters over time. Which inline skater is faster? How much faster?

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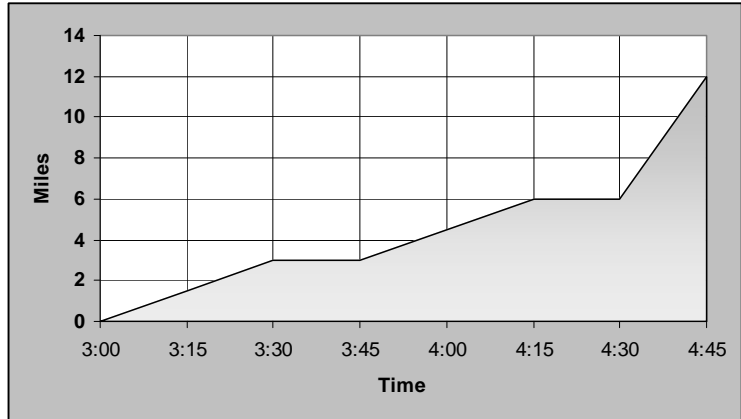
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12. The graph to the right shows a dirt-bike rider's trip up and down Skidmore Hill.



a. What was the average speed going uphill?  
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b. What was the average speed going downhill?  
\_\_\_\_\_

c. When did the rider start going back down? \_\_\_\_\_

d. What was the rider doing at 3:30? \_\_\_\_\_

13. The grade of a road is its slope given as a percent. So, for example, a road with a 6% grade would have a slope of  $\frac{6}{100}$ . This means that it would rise 6 feet for every 100 feet of horizontal run. Answer the following questions:



a. If a road had a grade of 100%, what would that mean?  
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b. Could you drive up a road with a grade of 100%? \_\_\_\_\_

c. Is it possible for a grade to be greater than 100%? \_\_\_\_\_

d. Visit <http://www.dflt.org/awareness/steep.htm> on the internet. What is the grade of typical stairs? What about a step ladder?  
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14. The slope of a roof is known as its *pitch*. A roof with a pitch of  $\frac{6}{12}$  rises 6 feet for every 12 horizontal feet. Why might a roof in Michigan's Upper Peninsula have a higher pitch than one in the deserts of Arizona?  
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