

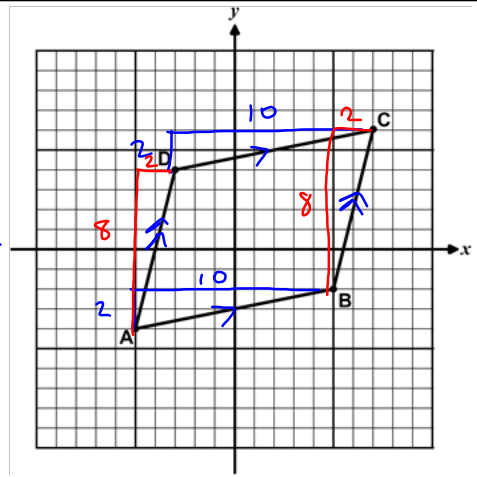
**DO NOW**

Given quadrilateral  $ABCD$

- (a) Determine the slope of all four sides either algebraically or graphically

$$AB: \frac{2}{10} = \frac{1}{5} \quad CD: \frac{2}{10} = \frac{1}{5}$$

$$BC: \frac{8}{2} = 4 \quad AD: \frac{8}{2} = 4$$



- (b) State all pairs of parallel sides based on (a).

$$\overline{AB} \parallel \overline{CD} \quad \text{and} \quad \overline{BC} \parallel \overline{AD}$$

- (c) What type of figure does this represent?

Parallelogram

**HW Answers**

1) A

2)  $-\frac{2}{3}$

3) 2

4) slope PQ = -1, slope QR = -3, slope PR =  $\frac{5}{3}$

5) 15

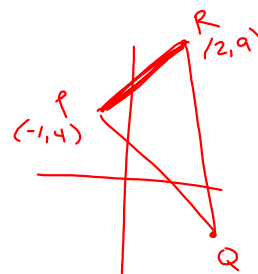
6) slopes of AB and CD =  $\frac{2}{7}$

7) (a) 2; (b)  $\frac{k-4}{3}$ ; (c) 10

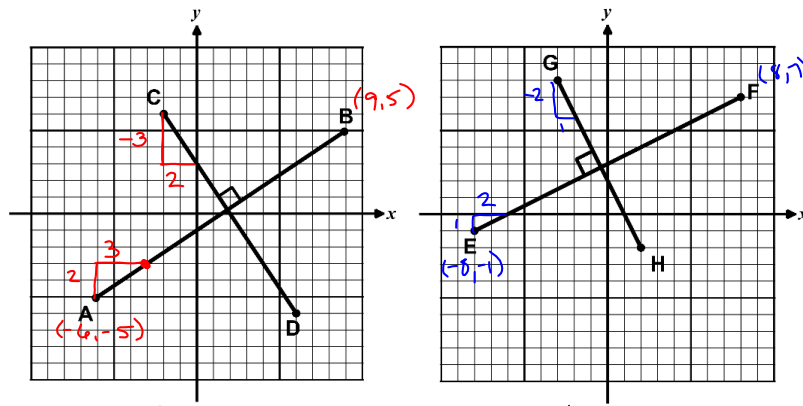
$$3 \cdot \frac{k-4}{3} = 2 \cdot 3$$

$$k-4 = 6$$

$$k = 10$$



Determine the slope of the perpendicular lines given below



$AB: \frac{2}{3}$

$CD: -\frac{3}{2}$

$EF: \frac{1}{2}$

$GH: -2$

What can you conclude about the slopes of perpendicular lines?

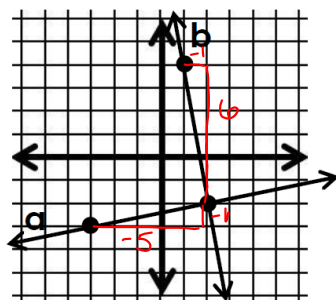
\* Opposite signs and reciprocals of each other

Opposite Reciprocal Slopes

Slopes of Perpendicular Lines are

opposite reciprocals

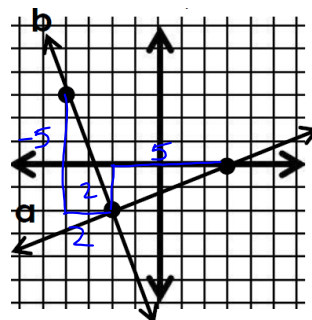
Find the slope of each line. Is  $a \perp b$ ?



slope a:  $-\frac{1}{5} = \frac{1}{5}$

slope b:  $\frac{6}{-1} = -6$

**No**



slope a:  $\frac{2}{5}$

slope b:  $-\frac{5}{2}$

**Yes**

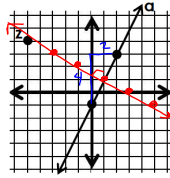
1) Line segment  $AB$  has endpoints of  $A(-2,6)$  and  $B(2,14)$ . Which of the following could be the slope of a line perpendicular to  $AB$ ?

- (1) 2      (2) -2      (3)  $\frac{1}{2}$       (4)  $-\frac{1}{2}$

slope  $AB: \frac{14-6}{2-(-2)} = \frac{8}{4} = 2$

$\perp$  slope =  $-\frac{1}{2}$

2) Draw a line that is perpendicular to line  $a$  and passes through point  $z$ .



slope  $a: \frac{4}{2} = 2$

$\perp$  slope =  $-\frac{1}{2}$

$-\frac{1}{2}$  or  $-\frac{1}{2}$

3) A line segment whose endpoints are  $(3,9)$  and  $(7,k)$  is perpendicular to a line whose slope is  $-2$ . Which of the following is the value of  $k$ ?

- (1) 1      (3) 11  
(2) -7      (4) -5

$\perp$  slope =  $\frac{1}{2}$

$\frac{k-9}{7-3} = \frac{1}{2}$

~~$\frac{k-9}{4} = \frac{1}{2} \cdot 4$~~

$k-9 = 2$

$k = 11$

4) In  $\triangle EFG$ ,  $E(-2,7)$ ,  $F(7,-8)$  and  $G(-6,-3)$ . Is  $\triangle EFG$  a right triangle? Provide proof of your yes/no answer. The use of the grid at the right is optional.

$EG: \frac{-3-7}{-6-(-2)} = \frac{-10}{-4}$

$\frac{5}{2}$

$FG: \frac{-3-(-8)}{-6-7} = \frac{5}{-13}$

$-\frac{5}{13}$

No because slopes are not opp. reciprocals

