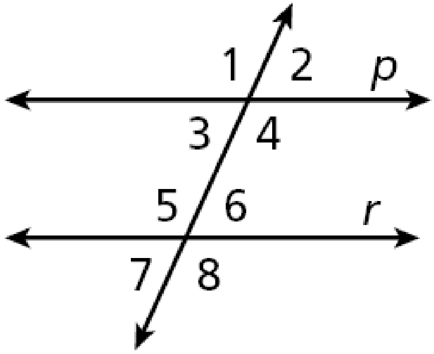
BELLWORK



Name the postulate or theorem that proves *p* || *r*.

1. $\angle 3 \cong \angle 6$ Conv. of Alt. Int. ∠s Thm.

2. $\angle 1 \cong \angle 8$ Conv. of Alt. Ext. ∠s Thm.

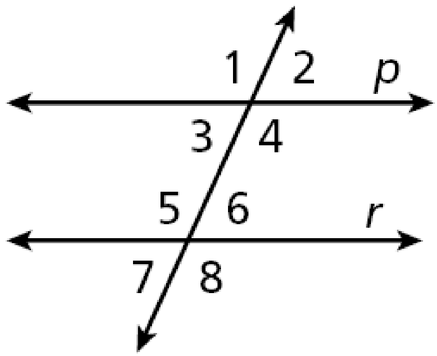
3. $\angle 2 \cong \angle 6$ Conv. of Corr. ∠s Post.

4. ∠4 and ∠6 are supplementary.

Conv. of Same-Side Int. ∠s Thm.

Bellwork (Continued)

Given: ***p* || *r*,** *State the theorem that shows the relationship between each angle pair.*

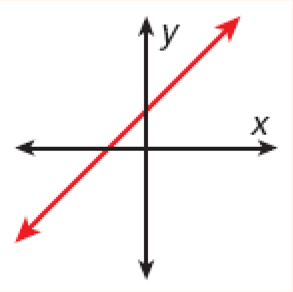
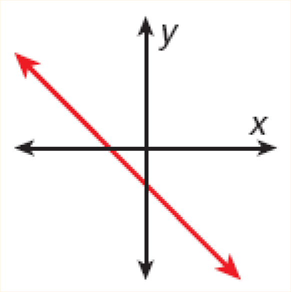
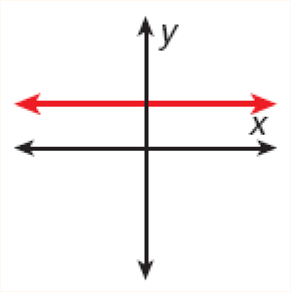
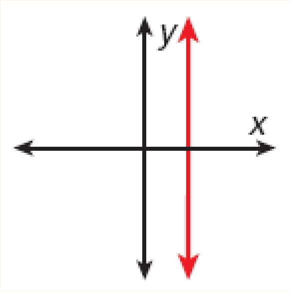


5. ∠4, ∠5

6. ∠2, ∠7

7. ∠1, ∠5

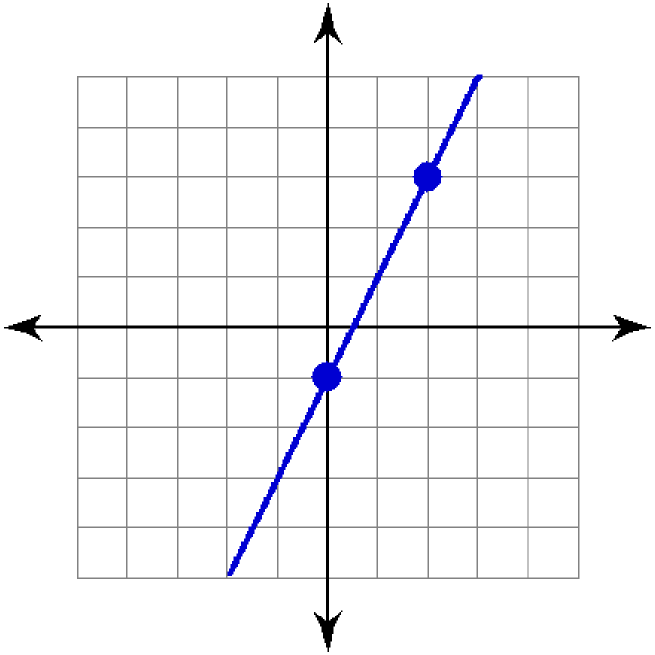
8. ∠3, ∠5

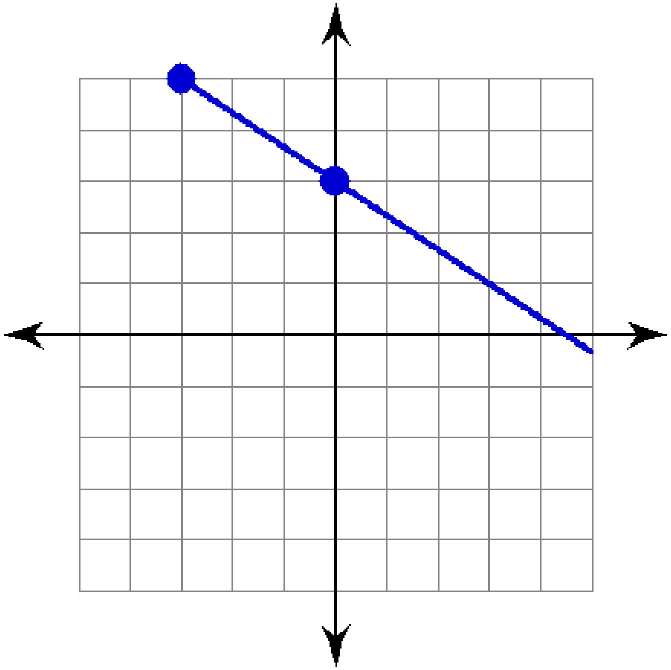
Summary: Slope of a Line			
Positive Slope	Negative Slope	Zero Slope	Undefined Slope
			

If slope is positive…rise **UP**, then go **RIGHT**

If slope is negative…rise **DOWN**, then go **RIGHT.**

Find slope of the lines.





Parallel Lines – Have the same slope

Perpendicular Lines – The product of the slopes is -1.

If a line has a slope of $\frac{a}{b}$, then the slope of a perpendicular line is $-\frac{b}{a}$.

The ratios $\frac{a}{b}$ and $-\frac{b}{a}$ are called *opposite reciprocals*.

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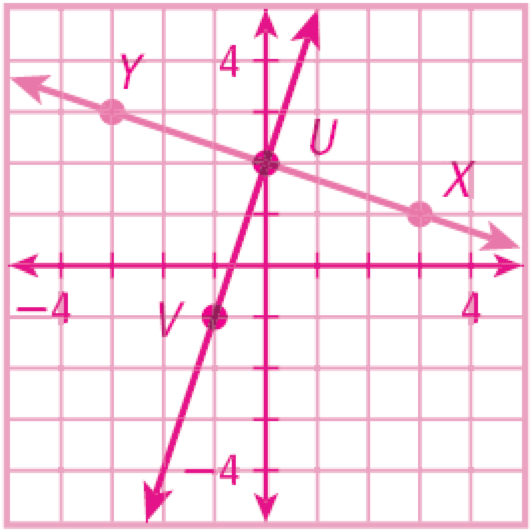
Example 3A: Determining Whether Lines Are Parallel, Perpendicular, or Neither

Graph each pair of lines. Use their slopes to determine whether they are parallel, perpendicular, or neither.

$\overleftrightarrow{UV}$ and $\overleftrightarrow{XY}$ for $U(0, 2)$, $V(-1, -1)$, $X(3, 1)$, and $Y(-3, 3)$



$$\text{slope of } \overleftrightarrow{UV} = \frac{-1-2}{-1-0} = \frac{-3}{-1} = 3$$

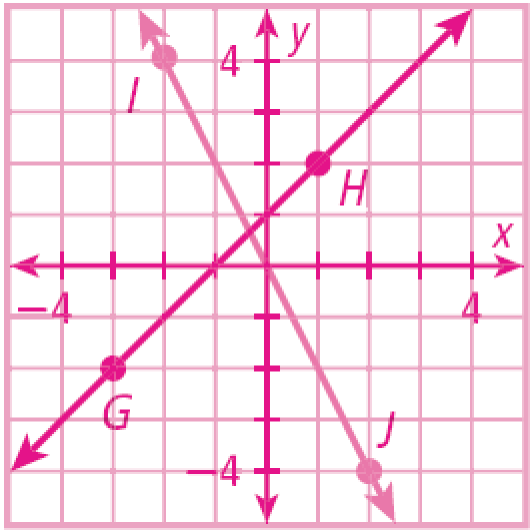
$$\text{slope of } \overleftrightarrow{XY} = \frac{3-1}{-3-3} = \frac{2}{-6} = -\frac{1}{3}$$

The products of the slopes is –1, so the lines are perpendicular.

Example 3B: Determining Whether Lines Are Parallel, Perpendicular, or Neither

Graph each pair of lines. Use their slopes to determine whether they are parallel, perpendicular, or neither.

$\overleftrightarrow{GH}$ and $\overleftrightarrow{IJ}$ for $G(-3, -2)$, $H(1, 2)$, $I(-2, 4)$, and $J(2, -4)$



$$\text{slope of } \overleftrightarrow{GH} = \frac{2-(-2)}{1-(-3)} = \frac{4}{4} = 1$$

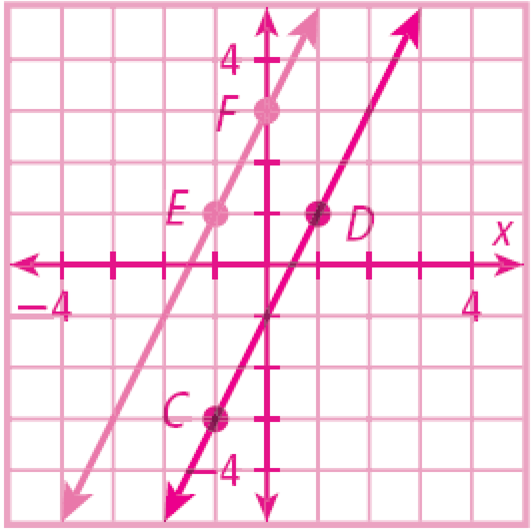
$$\text{slope of } \overleftrightarrow{IJ} = \frac{-4-4}{2-(-2)} = \frac{-8}{4} = -2$$

The slopes are not the same, so the lines are not parallel. The product of the slopes is not –1, so the lines are not perpendicular.

Example 3C: Determining Whether Lines Are Parallel, Perpendicular, or Neither

Graph each pair of lines. Use their slopes to determine whether they are parallel, perpendicular, or neither.

$\overleftrightarrow{CD}$ and $\overleftrightarrow{EF}$ for $C(-1, -3)$, $D(1, 1)$, $E(-1, 1)$, and $F(0, 3)$



$$\text{slope of } \overleftrightarrow{CD} = \frac{1-(-3)}{1-(-1)} = \frac{4}{2} = 2$$

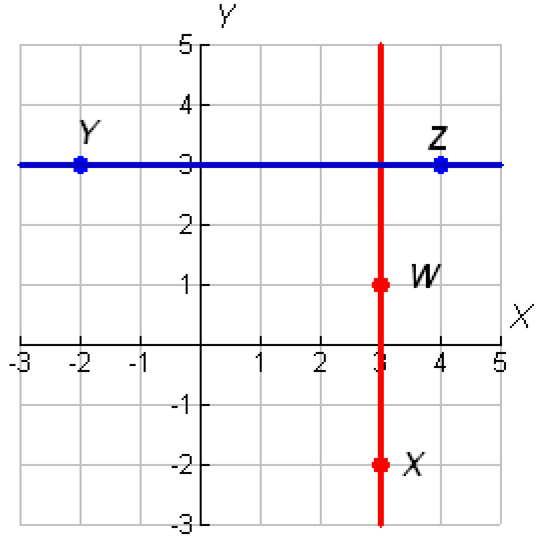
$$\text{slope of } \overleftrightarrow{EF} = \frac{3-1}{0-(-1)} = \frac{2}{1} = 2$$

The lines have the same slope, so they are parallel.

Check It Out! Example 3a

Graph each pair of lines. Use slopes to determine whether the lines are parallel, perpendicular, or neither.

$\overleftrightarrow{WX}$ and $\overleftrightarrow{YZ}$ for $W(3, 1)$, $X(3, -2)$, $Y(-2, 3)$, and $Z(4, 3)$



$$\text{slope of } \overleftrightarrow{WX} = \frac{-2-1}{3-3} = \frac{-3}{0}$$

$$\text{slope of } \overleftrightarrow{YZ} = \frac{3-3}{4-(-2)} = \frac{0}{6} = 0$$

Vertical and horizontal lines are perpendicular.

In-Class Work:

Pg.185 #7-9, 15-17

Find the slopes of each line and determine whether the lines are parallel, perpendicular, or neither.

7. $\overleftrightarrow{HJ}$ and $\overleftrightarrow{KM}$ for $H(3, 2)$, $J(4, 1)$, $K(-2, -4)$, and $M(-1, -5)$

8. $\overleftrightarrow{LM}$ and $\overleftrightarrow{NP}$ for $L(-2, 2)$, $M(2, 5)$, $N(0, 2)$, and $P(3, -2)$

9. $\overleftrightarrow{QR}$ and $\overleftrightarrow{ST}$ for $Q(6, 1)$, $R(-2, 4)$, $S(5, 3)$, and $T(-3, -1)$

Find the slopes of each line and determine whether the lines are parallel, perpendicular, or neither.

15. $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ for $A(2, -1)$, $B(7, 2)$, $C(2, -3)$, and $D(-3, -6)$

16. $\overleftrightarrow{XY}$ and $\overleftrightarrow{ZW}$ for $X(-2, 5)$, $Y(6, -2)$, $Z(-3, 6)$, and $W(4, 0)$

17. $\overleftrightarrow{JK}$ and $\overleftrightarrow{JL}$ for $J(-4, -2)$, $K(4, -2)$, and $L(-4, 6)$