

UNIT 1
ASSIGNMENT #17

Determining if lines are parallel or perpendicular

OBJECTIVE: S.W.B.A.T. logically find a relationship between angles made by transversals and parallel lines

Determine whether \overleftrightarrow{MN} and \overleftrightarrow{RS} are *parallel, perpendicular, or neither*.

5. $M(-2, 2), N(1, -3), R(-2, 1), S(3, 4)$

$$\overleftrightarrow{MN} = \frac{-3 - 2}{1 - (-2)} = \frac{-5}{3}$$
$$\overleftrightarrow{RS} = \frac{1 - 4}{3 - (-2)} = \frac{-3}{5} \quad \text{Neither}$$

6. $M(0, 0), N(2, 4), R(2, 1), S(8, 4)$

$$\overleftrightarrow{MN} = \frac{4 - 0}{2 - 0} = \frac{4}{2} = 2$$
$$\overleftrightarrow{RS} = \frac{4 - 1}{8 - 2} = \frac{3}{6} = \frac{1}{2} \quad \text{Neither}$$

Find the slope of \overleftrightarrow{MN} and the slope of any line perpendicular to \overleftrightarrow{MN} .

7. $M(2, -4), N(-2, -1)$

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

New \perp slope = $\frac{4}{3}$

8. $M(1, 3), N(-1, 5)$

$$\overleftrightarrow{MN} = \frac{5 - 3}{-1 - 1} = \frac{2}{-2} = -1$$

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

9. $M(4, -2), N(5, 3)$

$$\overleftrightarrow{MN} = \frac{3 - (-2)}{5 - 4} = \frac{5}{1}$$

New \perp slope = $-\frac{1}{5}$

10. $M(2, -3), N(-4, 1)$

$$\overleftrightarrow{MN} = \frac{1 - (-3)}{-4 - 2} = \frac{4}{-6} = -\frac{2}{3}$$

New \perp slope = $\frac{3}{2}$

Determine the slope of the line that contains the given points.

1. $S(-1, 2), W(0, 4)$

$$\overleftrightarrow{SW} = \frac{4 - 2}{0 - (-1)} = \frac{2}{1} = 2$$

2. $G(-2, 5), H(1, -7)$

$$\overleftrightarrow{GH} = \frac{-7 - 5}{1 - (-2)} = \frac{-12}{3} = -4$$

Determine the slope of the line that contains the given points.

3. $C(0, 1), D(3, 3)$

$$\overrightarrow{CD} = \frac{3-0}{3-0} = \frac{2}{3}$$

4. $J(-5, -2), K(5, -4)$

$$\overrightarrow{JK} = \frac{-4 - (-2)}{5 - (-5)} = \frac{-2}{10} = -\frac{1}{5}$$

Given the following information, determine which lines, if any, are parallel. State the postulate or theorem that justifies your answer.

1. $m\angle BCG + m\angle FGC = 180$ 2. $\angle CBF \cong \angle GFH$

consecutive interior

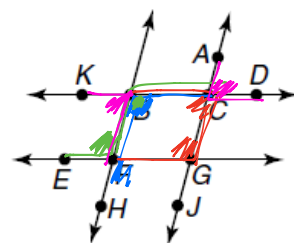
corresponding

3. $\angle EFB \cong \angle FBC$

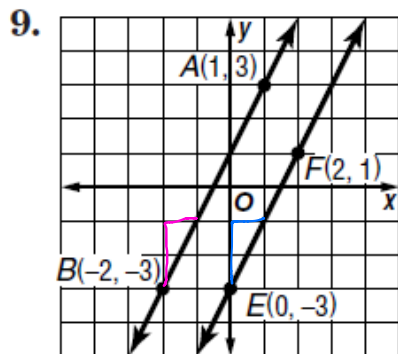
Alternate interior

4. $\angle ACD \cong \angle KBF$

Alternate interior

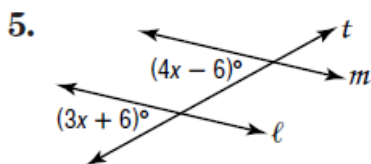


Determine whether each pair of lines is parallel. Explain why or why not.



$m = \frac{2}{1}$ $m = \frac{2}{1}$
slopes are equal, so \parallel

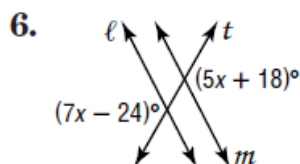
Find x so that $\ell \parallel m$.



$x = 12$

$$3x + 6 = 4x - 6$$

$$12 = x$$

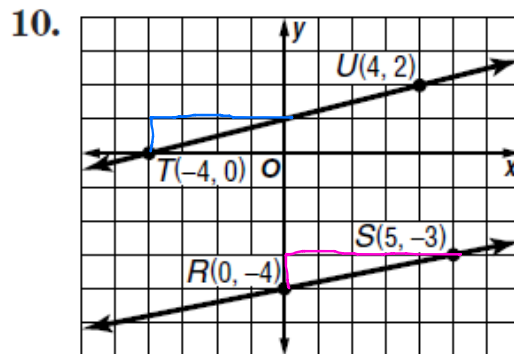


$x = 21$

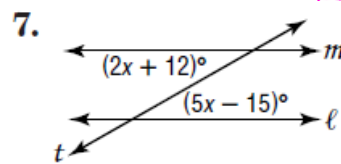
$$7x - 24 = 5x + 18$$

$$2x = 42$$

$$x = 21$$



$m = \frac{1}{4}$ $m = \frac{1}{5}$
slopes not equal, so not \parallel



$x = 9$

$$2x + 12 = 5x - 15$$

$$27 = 3x$$

$$9 = x$$