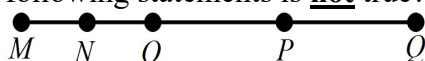


Do all work on your own paper. You must show work or a diagram for every problem.

For #1 – 10: Write the equation of each line described. Write your final answer in slope-intercept form (unless the line is a special line). Do not use any decimals in your answers.

- 1) Passing through $(-3, 8)$ with a slope of -6 .
- 2) Parallel to the line $y = \frac{3}{4}x - 2$ and passing through $(12, -5)$.
- 3) Passing through $(-8, -9)$ and $(-5, 7)$.
- 4) Perpendicular to the line $y = 6x - 3$ and passing through $(-2, 11)$.
- 5) Parallel to $7y - 2x = 8$, and passing through $(-4, -8)$.
- 6) Passing through $(-3, 5)$ and parallel to the line $x = 7$.
- 7) Perpendicular to $-8y - 3x = 9$ and passing through $(-6, -5)$.
- 8) Parallel to $y = 14$ and passing through $(8, 9)$.
- 9) Perpendicular to $x = 2$, and passing through the midpoint of AB with $A(14, 9)$ and $B(17, 23)$.
- 10) Perpendicular to the line CD and passing through point E , given that $C(-9, 4)$, $D(5, 2)$, and $E(8, -2)$.

- 11) In the diagram below, $MQ = 30$, $MN = 5$, $NO = MN$, and $OP = PQ$. Which of the following statements is **not** true?



- | | |
|-------------------|----------------------|
| A. $NP = MN + PQ$ | C. $MQ = 3 \cdot PQ$ |
| B. $MP = OQ$ | D. $NQ = MP$ |

- 12) Determine whether the conjecture is true or false. Give a counterexample if the conjecture is false.

Given: Two angles are supplementary.

Conjecture: They are both acute angles.

- 13) Given the following, determine which angle is congruent to $\angle G$:
- $\angle B$ is a complement of $\angle A$; $\angle C$ is a supplement of $\angle B$; $\angle D$ is a supplement of $\angle C$
 $\angle E$ is a complement of $\angle D$; $\angle F$ is a complement of $\angle E$; $\angle G$ is a supplement of $\angle F$

- 14) Which of the following are lines that are parallel to $5x - 2y = 8$? Choose all that apply.

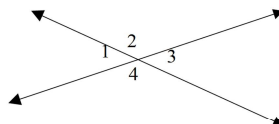
- | | | |
|-------------------|---------------------------|-----------------------|
| A) $-5x + 2y = 3$ | B) $7 - 2y = 5x - 4$ | |
| C) $2y = 5x + 3$ | D) $y = \frac{5}{2}x - 4$ | E) $3 + 2y = 5x - 11$ |

- 15) Which equation of the line passes through $(4, 7)$ and is perpendicular to the graph of the line that passes through the points $(1, 3)$ and $(-2, 9)$?

- | | |
|---------------------------|---------------------------|
| A. $y = 2x - 1$ | C. $y = \frac{1}{2}x - 5$ |
| B. $y = \frac{1}{2}x + 5$ | D. $y = -2x + 15$ |

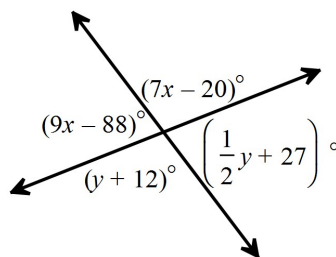
- 16) Write the equation of a line perpendicular to $y - 40 = -71$ that passes through $(-13, -15)$.

- 17) Find the measure of $\angle 4$ if $m\angle 1 = (6y + 50)^\circ$; $m\angle 2 = (5x + 8y)^\circ$; $m\angle 3 = (7x - 4)^\circ$; $m\angle 4 = (80 + 4y)^\circ$



18) Find the values of x and y in the diagram below.

- A. $x = 18, y = 94$
- B. $x = 18, y = 118$
- C. $x = 74, y = 94$
- D. $x = 74, y = 88$



19) Given the coordinates below, compare $\overline{RS}$ and $\overline{XY}$ and determine which of the following statements is true:

$R(-2, -7)$

$S(5, -1)$

$X(-3, 3)$

$Y(6, -1)$

- A. The midpoints of $\overline{RS}$ and $\overline{XY}$ have the same x -coordinate.
- B. The midpoints of $\overline{RS}$ and $\overline{XY}$ have the same y -coordinate.
- C. The length of $\overline{RS}$ and the length of $\overline{XY}$ are the same.
- D. The length of $\overline{RS}$ is longer than the length of $\overline{XY}$.

20) Line p passes through the origin and through the point (a, b) . Write the equation of the line that passes through the origin that is perpendicular to line p .

21) Find the value of n so that the line perpendicular to the line $-2y + 4 = 6x + 8$ passes through the points $(n, -4)$ and $(2, -8)$.

22) Determine whether the points at $A(-2, 2)$, $B(2, 5)$, and $C(6, 8)$ are collinear. Justify your answer.

Answers:

1) $y = -6x - 10$ 2) $y = \frac{3}{4}x - 14$ 3) $y = \frac{16}{3}x + \frac{101}{3}$ 4) $y = -\frac{1}{6}x + \frac{32}{3}$ 5) $y = \frac{2}{7}x - \frac{48}{7}$

6) $x = -3$ 7) $y = \frac{8}{3}x + 11$ 8) $y = 9$ 9) $y = 16$ 10) $y = 7x - 58$ 11) D

12) False; sample counter-example is 30° and 150° because the angles are supplementary but not both acute.

13) $\angle C$ 14) A, C, D, and E 15) B 16) $x = -13$ 17) 100° 18) A

19) A 20) $y = -\frac{a}{b}x$ 21) 14 22) The slope of AB is $\frac{3}{4}$; the slope of BC is also $\frac{3}{4}$, as is the slope of AC . Since AB and BC have the same slope and both use point B , the 3 points must be collinear.