G.G.62: Parallel and Perpendicular Lines 2: Find the slope of a perpendicular line, given the equation of a line

1 What is the slope of a line perpendicular to the line whose equation is $y = 3x + 4$?

2 What is the slope of a line perpendicular to the line whose equation is $y = -\frac{2}{3}x - 5$?

3 What is the slope of a line perpendicular to the line whose equation is $2y = -6x + 8$?

4 What is the slope of a line perpendicular to the line whose equation is $5x + 3y = 8$?

5 What is the slope of a line that is perpendicular to the line whose equation is $3x + 5y = 4$?

6 What is the slope of a line that is perpendicular to the line whose equation is $3x + 4y = 12$?

7 What is the slope of a line that is perpendicular to the line represented by the equation $x + 2y = 3$?

8 What is the slope of the line perpendicular to the line represented by the equation $2x + 4y = 12$?

9 What is the slope of a line perpendicular to the line whose equation is $20x - 2y = 6$?

10 What is the slope of a line perpendicular to the line whose equation is $3x - 7y + 14 = 0$?

11 The equation of a line is $3y + 2x = 12$. What is the slope of the line perpendicular to the given line?

12 Find the slope of a line perpendicular to the line whose equation is $2y - 6x = 4$.

13 The slope of line ℓ is $-\frac{1}{3}$. What is an equation of a line that is perpendicular to line ℓ?

1) $y + 2 = \frac{1}{3}x$
2) $-2x + 6 = 6y$
3) $9x - 3y = 27$
4) $3x + y = 0$

14 The slope of $\overline{QR}$ is $\frac{x-1}{4}$ and the slope of $\overline{ST}$ is $\frac{8}{3}$. If $\overline{QR} \perp \overline{ST}$, determine and state the value of x.

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Answer Section

1 ANS:

$-\frac{1}{3}$

REF: 061022ge

2 ANS:

$\frac{3}{2}$

REF: 080917ge

3 ANS:

$\frac{1}{3}$

$2y = -6x + 8$ Perpendicular lines have slope the opposite and reciprocal of each other.

$y = -3x + 4$

$m = -3$

$m_{\perp} = \frac{1}{3}$

REF: 081024ge

4 ANS:

$\frac{3}{5}$

REF: fall0828ge

5 ANS:

$\frac{5}{3}$

The slope of $3x + 5y = 4$ is $m = \frac{-A}{B} = \frac{-3}{5}$. $m_{\perp} = \frac{5}{3}$.

REF: 061127ge

6 ANS:

$\frac{4}{3}$

REF: 011025ge

7 ANS:

2

The slope of $x + 2y = 3$ is $m = \frac{-A}{B} = \frac{-1}{2}$. $m_{\perp} = 2$.

REF: 081122ge

8 ANS:
2

The slope of $2x + 4y = 12$ is $m = \frac{-A}{B} = \frac{-2}{4} = -\frac{1}{2}$. $m_{\perp} = 2$.

REF: 011310ge

9 ANS:
$-\frac{1}{10}$

$m = \frac{-A}{B} = \frac{-20}{-2} = 10$. $m_{\perp} = -\frac{1}{10}$

REF: 061219ge

10 ANS:
$-\frac{7}{3}$

$m = \frac{-A}{B} = \frac{-3}{-7} = \frac{3}{7}$ $m_{\perp} = -\frac{7}{3}$

REF: 081414ge

11 ANS:
$\frac{3}{2}$

$m = \frac{-A}{B} = \frac{-2}{3}$ $m_{\perp} = \frac{3}{2}$

REF: 061417ge

12 ANS:

$m = \frac{-A}{B} = \frac{6}{2} = 3$. $m_{\perp} = -\frac{1}{3}$.

REF: 011134ge

13 ANS: 3

The slope of $9x - 3y = 27$ is $m = \frac{-A}{B} = \frac{-9}{-3} = 3$, which is the opposite reciprocal of $-\frac{1}{3}$.

REF: 081225ge

14 ANS:

$\frac{x-1}{4} = \frac{-3}{8}$

$8x - 8 = -12$

$8x = -4$

$x = -\frac{1}{2}$

REF: 011534ge