

Equation Perpendicular to Line Through a Point

Part I.

3 Model Problems Answered step by step

Part II.

Practice Problems

Part III.

Homework (mixed questions on linear equations)

Related links

This Topic [www.mathwarehouse.com/algebra/linear equation/write-equation/equation-of-line-perpendicular-through-point.php](http://www.mathwarehouse.com/algebra/linear_equation/write-equation/equation-of-line-perpendicular-through-point.php) (Video Tutorial)

Slope Intercept Form: www.mathwarehouse.com/slope-intercept

Parallel Lines: [www.mathwarehouse.com/algebra/linear equation/parallel-perpendicular-lines.php](http://www.mathwarehouse.com/algebra/linear_equation/parallel-perpendicular-lines.php)

Slope: www.mathwarehouse.com/slope2/

Pictures of Perpendicular Lines

[www.mathwarehouse.com/algebra/linear equation/images/perpendicular-lines/](http://www.mathwarehouse.com/algebra/linear_equation/images/perpendicular-lines/)

© www.MathWorksheetsGo.com All Rights Reserved

Commercial Use Prohibited

Terms of Use: By downloading this file you are agreeing to the Terms of Use Described at <http://www.mathworksheetsgo.com/downloads/terms-of-use.php>.

Free Graph Paper : www.mathworksheetsgo.com/paper/

Free Printable Math Worksheets

www.MathWorksheetsGo.com

Perpendicular

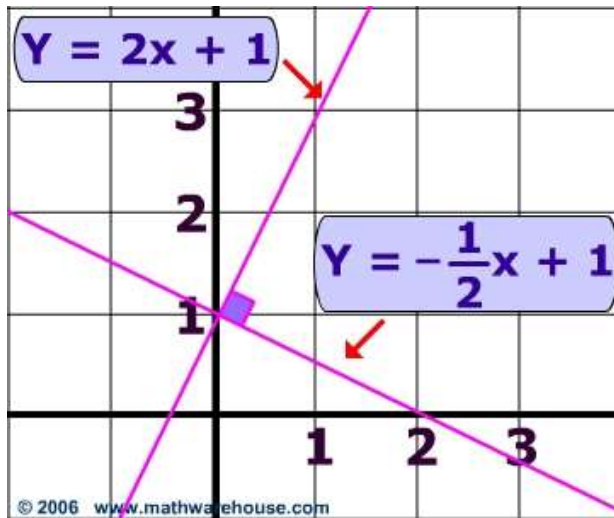
Warm Up → What is the negative reciprocal of the following numbers?

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

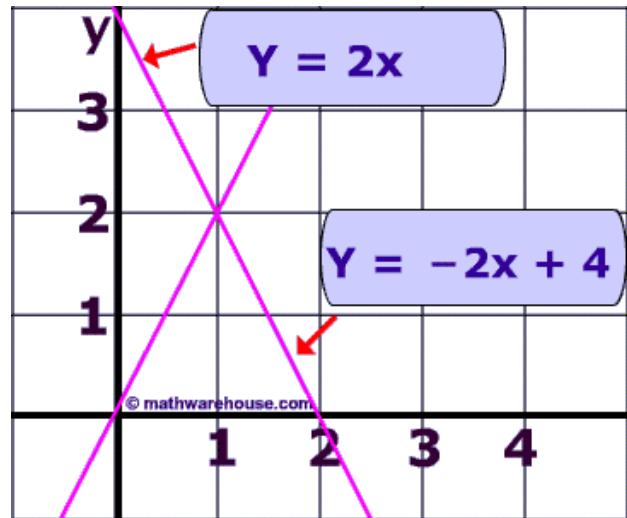
B) 5

C) $-\frac{1}{2}$

Perpendicular Lines



Not Perpendicular



Model Problems

1. Write the equation of a line that is perpendicular to $y = -5x + 2$ that passes through the point (10,6)?

2. Write the equation of a line that is perpendicular to $y = \frac{1}{2}x - 6$ that passes through the point $(6, 4)$

3. Write the equation of a line that is perpendicular to $y = -\frac{1}{8}x + 2$ that passes through the point $(-4, 2)$.

Model Problem 1)**answer**

Write the equation of a line that is perpendicular to $y = -5x + 2$ that passes through the point $(10,6)$?

Step 1) find the negative reciprocal of the slope

$$\text{Slope} = -5 \text{ or } -\frac{5}{1}$$

$$\text{Negative reciprocal } \frac{1}{5}$$

2) Plug the x and y given in the question into the slope intercept formula

$$6 = \frac{1}{5}(10) + b$$

3) Solve for b

$$6 = 2 + b$$

$$\begin{array}{r} -2 \quad -2 \\ \hline 6 = b \end{array}$$

4) Substitute b into slope intercept equation

$$y = \frac{1}{5}x + 6$$

Model Problem 2)**Answer**

Write the equation of a line that is perpendicular to $y = \frac{1}{2}x - 6$ and passes through the point $(6,4)$?

Step 1) find the negative reciprocal of the slope

$$\text{Slope} = \frac{1}{2}$$

Negative reciprocal -2

2) Plug the x and y given in the question into the slope intercept formula

$$4 = -2(6) + b$$

3) Solve for b

$$4 = -12 + b$$

$$\begin{array}{r} +12 \\ +12 \\ \hline \end{array}$$

$$16 = b$$

4) Substitute b into slope intercept equation

$$y = -2x + 16$$

Model Problem 3)**Answer**

Write the equation of a line that is perpendicular to $y = -\frac{1}{8}x + 2$ and passes through the point $(-4, 2)$.

Step 1) find the negative reciprocal of the slope

$$\text{Slope} = -\frac{1}{8}$$

Negative reciprocal 8

2) Plug the x and y given in the question into the slope intercept formula

$$2 = 8(-4) + b$$

3) Solve for b

$$2 = -32 + b$$

$$\begin{array}{r} +32 \quad +32 \\ \hline 34 = b \end{array}$$

4) Rewrite equation with only slope and y-intercept

$$y = 8x + 34$$

Part II.

1. Write the equation of a line that is perpendicular to $y = -\frac{3}{2}x - 3$ that passes through the point $(6,7)$?

2. Write the equation of a line that is perpendicular to $y = -2x + 4$ that passes through the point $(8, 8)$

***The next questions are a bit different. Read them carefully.*

3. Write the equation of a line perpendicular to $y = -\frac{5}{6}x - 3$ and whose y-intercept is $(0,11)$.

4. Write the equation of a line perpendicular to $y = \frac{3}{8}x - 3$ and whose y-intercept is $(0,12)$.

5. Write the equation of a line that is perpendicular to $y = -\frac{4}{5}x - 3$ that passes through the point $(5,-10)$

Homework

1) The two lines below are **not** parallel. Explain why

a. $y - 2x = 3$

b. $2y + 4x = 6$

2) Write the equation of a line perpendicular to $y = -\frac{11}{12}x + 12$ and whose y-intercept is $(0, 5)$.

3) Write the equation of a line parallel to $y = -\frac{3}{4}x + 12$ and whose y-intercept is $(0, 5)$.

4) Find the slope of the line that passes through the points $(1,1)$ and $(3,5)$?

5) Find the slope of the line that passes through the points $(1,3)$ and $(2,4)$?

6) What is the equation of a line with a slope of 4 that goes through the point $(1,9)$?

Related Links

This Topic www.mathwarehouse.com/algebra/linear_equation/write-equation/equation-of-line-perpendicular-through-point.php (Video Tutorial)

Slope Intercept Form: www.mathwarehouse.com/slope-intercept

Parallel Lines: www.mathwarehouse.com/algebra/linear_equation/parallel-perpendicular-lines.php

Slope: www.mathwarehouse.com/slope2/

Pictures of Perpendicular Lines

www.mathwarehouse.com/algebra/linear_equation/images/perpendicular-lines/

© www.MathWorksheetsGo.com All Rights Reserved

Commercial Use Prohibited

Terms of Use: By downloading this file you are agreeing to the Terms of Use Described at <http://www.mathworksheetsgo.com/downloads/terms-of-use.php>.

Free Graph Paper : www.mathworksheetsgo.com/paper/

Free Printable Math Worksheets

www.MathWorksheetsGo.com