



www.MathWorksheetsGo.com

Write the Equation of a Line Through Two Points

Part I. *Model Problems with answers*

Part II. *Practice Problems with challenge problems*

Part III. *Answer Key*

Related links

This topic: www.mathwarehouse.com/equationline (you-tube style lesson)

Slope: www.mathwarehouse.com/slope2/

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

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

© 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>.

More Math Worksheets and Printables available at
www.MathWorksheetsGo.com

Model Problem 1)

What is the equation for the line that passes through the points (3, 4) and (5,8)?

Model Problem 2)

What is an equation for the line that passes through the coordinates (4,5) and (8, 3)?

Model Problem 3)

What is the equation for the line that passes through the coordinates (1,2) and (5, 10) ?

ANSWER TO MODEL PROBLEM 1

Model Problem 1

What is the equation for the line that passes through the points (3, 4) and (5,8)?

Steps to solve these problems:

1) *Calculate Slope*

$$\frac{8 - 4}{5 - 3} = \frac{4}{2} = 2$$

2) *Plug it into the slope intercept formula:* $y = mx + b$
 $y = 2x + b$

3) *Plug the x and y given in the question into the point slope formula*

$$y = 2x + b$$
$$4 = 2(3) + b$$

4) *Solve for b*

$$4 = 6 + b$$
$$4 = 6 + b$$
$$\frac{-6 \quad -6}{-2 = b}$$

5) *Rewrite equation with only slope and y-intercept*

$$y = 2x - 2$$

ANSWER TO MODEL PROBLEM 2

Model Problem 2)

What is an equation for the line that passes through the coordinates (4,5) and (8, 3)?

1) Calculate Slope

$$\frac{5-3}{4-8} = \frac{2}{-4} = -\frac{1}{2}$$

2) Plug it into the slope intercept formula: $y = -\frac{1}{2}x + b$

3) Plug the x and y given in the question into the point slope formula

$$5 = -\frac{1}{2}(4) + b$$

4) Solve for b

$$5 = -\frac{1}{2}(4) + b$$

$$5 = -2 + b$$

$$\begin{array}{r} +2 \quad +2 \\ \hline 7 = b \end{array}$$

5) Rewrite equation with only slope and y-intercept

$$y = -\frac{1}{2}x + 7$$

ANSWER TO MODEL PROBLEM 3

Model Problem 3) What is the equation for the line that passes through the coordinates (1,2) and (5, 10)?

1) Calculate Slope

$$\frac{10-2}{5-1} = \frac{8}{4} = 2$$

2) Plug it into the slope intercept formula: $y = 2x + b$

3) Plug the x and y given in the question into the point slope formula

$$2 = 2(1) + b$$

4) Solve for b

$$2 = 2 + b$$

$$\frac{-2 \quad -2}{0 = b}$$

5) Rewrite equation with only slope and y-intercept

$$y = 2x + 0$$

Or

$$y = 2x$$

Practice Problems

1) What is an equation for the line that passes through the coordinates (2,7) and (0, 1)?

2) What is an equation for the line that passes through the coordinates (2,0) and (0,3) ?

3) What is an equation for the line that passes through the coordinates (-1,2) and (7,6) ?

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

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

6) Find the equation of the line that passes through the points $(2, 6)$ and $(-2, 4)$?

7) Find the equation of a line that passes through the points $(2, 16)$ and $(-1, 7)$.

8) Find the equation of a line that passes through the points $(2, 13)$ and $(1, 8)$

9) Find the equation of a line that passes through the points $(4, 3)$ and $(8, 1)$

Challenge Questions

10) Find the equation of a line that passes through the points $(2, 5)$ and $(2, 12)$.

11) Find the equation of a line that passes through the points $(5, 3)$ and $(2, 3)$.

Practice Problem Answers

1) What is an equation for the line that passes through the coordinates (2,7) and (0, 1)?

Answer : $y = 3x + 1$

2) What is an equation for the line that passes through the coordinates (2,0) and (0,3) ?

Answer : $y = -\frac{1}{2}x + 3$

3) What is an equation for the line that passes through the coordinates (-1,2) and (7,6) ?

Answer : $y = \frac{1}{2}x + 2.5$

4) What is an equation for the line that passes through the points (1,1) and (3,5)?

Answer : $y = 2x - 1$

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

Answer : $y = 1x + 2$ or $y = x + 2$

6) Find the equation of the line that passes through the points (2, 6) and (-2, 4) ?

Answer : $y = \frac{1}{2}x + 5$

7) Find the equation of a line that passes through the points (2, 16) and (-1, 7).

Answer : $y = 3x + 10$

8) Find the equation of a line that passes through the points (2,13) and (1,8)

Answer : $y = 5x + 3$

9) Find the equation of a line that passes through the points (4, 3) and (8,1)

Answer : $y = -\frac{1}{2}x + 5$

Challenge Questions

10) Find the equation of a line that passes through the points (2, 5) and (2, 12).

Answer : $x = 2$. This is the equation of a vertical line whose slope is undefined.

11) Find the equation of a line that passes through the points (5, 3) and (2, 3).

Answer : $y = 3$. This is the equation of a horizontal line.

© 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/

More Math Worksheets and Printables available at
www.MathWorksheetsGo.com