

Math Sheet

Name _____ Score _____ Teacher _____ Date _____

Perpendicular Line Through a Point

Write the equation of the line through the given point that is perpendicular to the given line. Use $y = mx + b$ when possible, and $x = c$ for a vertical answer.

1. Through $(-2, 2)$, write the perpendicular line.

Given line: $y = -\frac{6}{5}x - 6$

Point: $(-2, 2)$

Equation: _____

2. Through $(-4, 3)$, write the perpendicular line.

Given line: $y = -\frac{11}{9}x + 1$

Point: $(-4, 3)$

Equation: _____

3. Through $(3, 4)$, write the perpendicular line.

Given line: $y = \frac{5}{4}x + 12$

Point: $(3, 4)$

Equation: _____

4. Through $(4, 0)$, write the perpendicular line.

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

Point: $(4, 0)$

Equation: _____

5. Through $(2, -5)$, write the perpendicular line.

Given line: $3x - 8y = -88$

Point: $(2, -5)$

Equation: _____

6. Through $(-2, 5)$, write the perpendicular line.

Given line: $5x + 4y = 20$

Point: $(-2, 5)$

Equation: _____

7. Through $(-3, 0)$, write the perpendicular line.

Given line: $y = 4$

Point: $(-3, 0)$

Equation: _____

8. Through $(3, 4)$, write the perpendicular line.

Given line: $x = -3$

Point: $(3, 4)$

Equation: _____

Perpendicular Line Through a Point

Worked Answer Key

Write the equation of the line through the given point that is perpendicular to the given line. Use $y = mx + b$ when possible, and $x = c$ for a vertical answer.

1. Through (-2, 2), write the perpendicular line.

Given line: $y = -\frac{6}{5}x - 6$

Point: (-2, 2)

The given slope is $-6/5$; its perpendicular slope is $5/6$.
Substitute (-2, 2) and simplify: $y = 5/6x + 11/3$.

Answer: $y = \frac{5}{6}x + \frac{11}{3}$

2. Through (-4, 3), write the perpendicular line.

Given line: $y = -\frac{11}{9}x + 1$

Point: (-4, 3)

The given slope is $-11/9$; its perpendicular slope is $9/11$.
Substitute (-4, 3) and simplify: $y = 9/11x + 69/11$.

Answer: $y = \frac{9}{11}x + \frac{69}{11}$

3. Through (3, 4), write the perpendicular line.

Given line: $y = \frac{5}{4}x + 12$

Point: (3, 4)

The given slope is $5/4$; its perpendicular slope is $-4/5$.
Substitute (3, 4) and simplify: $y = -4/5x + 32/5$.

Answer: $y = -\frac{4}{5}x + \frac{32}{5}$

4. Through (4, 0), write the perpendicular line.

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

Point: (4, 0)

The given slope is $1/2$; its perpendicular slope is -2 .
Substitute (4, 0) and simplify: $y = -2x + 8$.

Answer: $y = -2x + 8$

5. Through (2, -5), write the perpendicular line.

Given line: $3x - 8y = -88$

Point: (2, -5)

The given slope is $3/8$; its perpendicular slope is $-8/3$.
Substitute (2, -5) and simplify: $y = -8/3x + 1/3$.

Answer: $y = -\frac{8}{3}x + \frac{1}{3}$

6. Through (-2, 5), write the perpendicular line.

Given line: $5x + 4y = 20$

Point: (-2, 5)

The given slope is $-5/4$; its perpendicular slope is $4/5$.
Substitute (-2, 5) and simplify: $y = 4/5x + 33/5$.

Answer: $y = \frac{4}{5}x + \frac{33}{5}$

7. Through (-3, 0), write the perpendicular line.

Given line: $y = 4$

Point: (-3, 0)

The given slope is 0; its perpendicular slope is undefined.
Substitute (-3, 0) and simplify: $x = -3$.

Answer: $x = -3$

8. Through (3, 4), write the perpendicular line.

Given line: $x = -3$

Point: (3, 4)

The given slope is undefined; its perpendicular slope is 0.
Substitute (3, 4) and simplify: $y = 4$.

Answer: $y = 4$