

Starter

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Find the slope of the line with the following points.

1. $A(-3, 4)$ $B(2, -5)$ $m = \frac{-5 - 4}{2 - (-3)} = \frac{-9}{5}$ 2. $C(-4, -3)$ $D(-2, 3)$
 $m = \frac{3 - (-3)}{-2 - (-4)} = \frac{6}{2} = 3$

3. What is the slope of the line perpendicular to AB ?

$$-\frac{9}{5}$$

4. What is the slope of the line parallel to CD ?

5. Write the equation of AB.

$$y - 4 = -\frac{9}{5}(x - 3)$$

$$m = -\frac{1}{3}$$

$$y - y_1 = m(x - x_1)$$

6. Write the equation of line CD.

$$y - (-3) = 3(x - (-4))$$

$$y - 4 = -\frac{9}{5}(x + 3)$$

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

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1. $-3/5$ 2. $3/5$ 3. undefined

4. parallel 5. no 6. parallel

$$y - (-3) = 2(x - 0)$$

$$y + 3 = 2x$$

$$y - \frac{1}{3} = -3x$$

$$(0, \frac{1}{3})$$

$$y - 6 = \frac{1}{2}x$$

-3 y-intercept

$$[0, -3]$$

$$m = 2$$

$$y - (-3) = 2(x - 0)$$

$$y + 3 = 2x$$

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10

$$y - 5 = 2x$$

11

$$y - 6 = \frac{4}{5}(x - 5)$$

12

$$y + 2 = -1(x + 4)$$

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1

$$\overleftrightarrow{AC} \quad m = 2$$

$$\overleftrightarrow{BD} \quad m = -\frac{1}{2}$$

Yes \perp

2

$$\overleftrightarrow{AC} \quad m = \frac{3}{2}$$

$$\overleftrightarrow{BD} \quad m = -\frac{1}{2}$$

NOT \perp

3

$$\overleftrightarrow{AC} \quad m = 1$$

$$\overleftrightarrow{BD} \quad m = -1$$

Yes \perp

(4)	NO	(5)	yes
(6)	yes	(7)	yes
(8)	NO	(9)	yes

(10)	$-\frac{1}{3}$	(11)	$-\frac{4}{3}$	(12)	$\frac{1}{2}$
(13)	$\frac{7}{5}$	(14)	2	(15)	$\frac{5}{2}$
(16)	-1	(17)	$\frac{7}{6}$		

Decide whether lines p_1 and p_2 are perpendicular.

18. line $p_1: y = 3x + 5$ $m = 3$

line $p_2: y = \frac{1}{3}x + 5$ $m = \frac{1}{3}$

NOT \perp

19. line $p_1: 3x + 5y = 12$

line $p_2: 5x + 3y = 18$

p_1 $m = -\frac{3}{5}$

p_2 $m = -\frac{5}{3}$

NOT \perp

$ax + by = c$

$m = -\frac{a}{b}$

$y = mx + b$

$y - y_1 = m(x - x_1)$

20. line $p_1: 4x - 2y = 6$

line $p_2: 2x + 4y = 6$

p_1 $m = -\frac{4}{-2} = 2$

p_2 $m = -\frac{2}{4} = -\frac{1}{2}$

They are \perp

21. line $p_1: x + 8y = -4$

line $p_2: 4x - 2y = 10$

p_1 $m = -\frac{1}{8}$

p_2 $m = -\frac{4}{-2} = 2$

NOT \perp

Line j is perpendicular to the line with the given equation and line j passes through P . Write an equation of line j .

22. $y = \frac{1}{3}x + 4$, $P(0, 5)$

$m = \frac{1}{3}$

$\perp m = -3$

$y - y_1 = m(x - x_1)$

$y - 5 = -3(x - 0)$

$y - 5 = -3x$

23. $y = 3x + 4$, $P(0, -2)$

$m = 3$

$\perp m = -\frac{1}{3}$

$y - 2 = -\frac{1}{3}(x - 0)$

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

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

24. $y = -\frac{4}{5}x + 4$, $P(1, 1)$

$\perp m = \frac{5}{4}$

$y - 1 = \frac{5}{4}(x - 1)$

25. $y = \frac{2}{3}x + 4$, $P(2, 0)$

$\perp m = -\frac{3}{2}$

$y - 0 = -\frac{3}{2}(x - 2)$

$y = -\frac{3}{2}(x - 2)$