

Accel. Geometry  
Writing Equations of Parallel and Perp. Lines

Name Key  
Date \_\_\_\_\_

1. Find the slope of the line passing through (3, -5) and (-7, 2)

$$\frac{2 - (-5)}{-7 - 3} = \frac{7}{-10}$$

2. Find the slope of the line  $5y = 3x - 7$

$$y = \frac{3}{5}x - \frac{7}{5}$$

$$\text{slope} = \frac{3}{5}$$

3. Find the slope of the line  $2x + 3y - 9 = 0$

$$3y = -2x + 9$$

$$y = -\frac{2}{3}x + 3 \quad \text{slope} = -\frac{2}{3}$$

4. Determine whether the lines AB and CD are parallel, perpendicular or neither for

(a) A (1, 1), B (-1, -5), C (3, 2), D (6, 1)

(b) A (3, 6), B (-9, 2), C (5, 4), D (2, 3)

(c) A (14, 13), B (-11, 0), C (-3, 7), D (-4, -5)

$$a) AB = \frac{-5-1}{-1-1}$$

$$= \frac{-6}{-2}$$

$$= 3$$

$$CD = \frac{2-2}{6-3}$$

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

Perpendicular

$$b) AB = \frac{2-6}{-9-3}$$

$$= \frac{-4}{-12}$$

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

Parallel

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

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

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

$$c) AB = \frac{0-13}{-11-14} = \frac{-13}{-25} = \frac{13}{25}$$

$$CD = \frac{-5-7}{-4+3} = \frac{-12}{-1} = 12$$

Neither

5. Find the equation of the line passing through (-2, 5) and parallel to the line  $y = 3x + 4$

$$5 = 3(-2) + b$$

$$5 = -6 + b$$

$$11 = b$$

$$y = 3x + 11$$

6. Passing through (-2, 5) and parallel to the line  $y = \frac{-3}{4}x + 2$

$$5 = \frac{-3}{4}(-2) + b$$

$$5 = \frac{3}{2} + b$$

$$5 - \frac{3}{2} = b$$

$$b = \frac{7}{2}$$

$$y = -\frac{3}{4}x + \frac{7}{2}$$

7. Passing through (4, -5) and perpendicular to the line  $y = -7x - 4$

$$-5 = \frac{1}{7}(4) + b$$

$$-5 = \frac{4}{7} + b$$

$$-5 - \frac{4}{7} = b$$

$$-\frac{39}{7} = b$$

$$y = \frac{1}{7}x - \frac{39}{7}$$

$\perp$  :  $\frac{1}{7}$

8. Passing through (4, -5) and perpendicular to the line  $y = \frac{2}{3}x + 5$

$$-5 = -\frac{3}{2}(4) + b$$

$$-5 = -6 + b$$

$$1 = b$$

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

$\perp$  :  $-\frac{3}{2}$

9. Passing through (3, -4) and parallel to the line which passes through (2, 4), (5, 6)

$$-4 = \frac{2}{3}(3) + b$$

$$-4 = 2 + b$$

$$-6 = b$$

$$y = \frac{2}{3}x - 6$$

$$\frac{6-4}{5-2} = \frac{2}{3}$$

10. Passing through (7, 3) and perpendicular to the line which passes through (-2, -3), (-1, 5)

$$3 = -\frac{1}{8}(7) + b$$

$$3 = -\frac{7}{8} + b$$

$$3 + \frac{7}{8} = b$$

$$\frac{31}{8} = b$$

$$y = -\frac{1}{8}x + \frac{31}{8}$$

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

$$\perp : -\frac{1}{8}$$

11. Here are some equations of lines. Which four lines form the sides of a rectangle? Explain your reasoning.

$y + 2x = 8$	$2y + \frac{1}{2}x + 1 = 0$	$2y + x = 1$	$y = x - 4$	$y = 2(x - 1)$
$2y = x - 4$	$y + 2x + 2 = 0$	$y = \frac{1}{2}x + 2$	$y = 4 - x$	$2y = 4 - x$

Opp. sides are  $\parallel$

Consec sides are  $\perp$

12. Complete the drawing below to show the four lines and the x and y axes. Label the lines clearly.

