

Find the Missing Information  
①  $(x_1, y_1)$   $(x_2, y_2)$   
 $(4, -3)$  and  $(0, 0)$  ← origin

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - (-3)}{0 - 4} = \frac{3}{-4} = \left(-\frac{3}{4}\right)$$

$$\textcircled{a} \quad \overset{(x_1, y_1)}{(7, 4)} \text{ and } \overset{(x_2, y_2)}{(k, 3)} \quad m = \underline{\underline{-1}}$$

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

$$-1 = \frac{3 - 4}{k - 7}$$

$$\cancel{\frac{-1}{1}} = \cancel{\frac{-1}{k-7}}$$

$$\overset{\curvearrowright}{-1(k-7)} = 1(-1)$$

$$-k + 7 = -1$$

$$-k = -1 - 7$$

$$-k = -8$$

$$\boxed{k = 8}$$

③  $(2, -1)$  and  $(7, 8)$  find  $m$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{8 - (-1)}{7 - 2} = \left(\frac{9}{5}\right)$$

$$\textcircled{4} \quad \begin{array}{l} \overbrace{2(y-1)}^{\text{distribute}} = 3x+4 \\ 2y-2 = 3x+4 \\ 2y = 3x+4+2 \end{array}$$

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

$$y = \left(\frac{3}{2}\right)x + 3$$

$$m = \frac{3}{2} \rightarrow \text{Perpendicular Slope} = \left(-\frac{2}{3}\right)$$

⑤  $(5, 1)$  and  $(3k, 5)$ ,  $m = -\frac{3}{2}$  perpendicular  $m_{\perp} = \frac{2}{3}$

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

$$\frac{2}{3} = \frac{5 - 1}{3k - 5}$$

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

$$2(3k - 5) = 3(4)$$

$$6k - 10 = 12$$

$$6k = 12 + 10$$

$$\frac{6k}{6} = \frac{22}{6}$$

$$k = \frac{22}{6} = \frac{11}{3}$$

⑥  $(-3, 4)$  and  $(4, 0)$ ,  $m = ?$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - 4}{4 - (-3)} = \left( \frac{-4}{7} \right)$$

$$\textcircled{7} \quad (3k, 2) \text{ and } (5k, 6) \quad m = -\frac{1}{2}$$

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

$$-\frac{1}{2} = \frac{6-2}{5k-3k}$$

$$-\frac{1}{2} = \frac{4}{2k}$$

$$-1(2k) = 2(4)$$

$$\frac{-2k}{-2} = \frac{8}{-2}$$

$$\boxed{k = -4}$$

$$\textcircled{8} \quad (4, m) \text{ and } (-2m, 10)$$

$$m = -\frac{3}{4}$$

parallel

$$\boxed{m = -\frac{3}{4}}$$

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

$$-\frac{3}{4} = \frac{10 - m}{-2m - 4}$$

$$-3(-2m - 4) = 4(10 - m)$$

$$6m + 12 = 40 - 4m$$

$$6m + 4m = 40 - 12$$

$$\frac{10m}{10} = \frac{28}{10}$$

$$m = \frac{28}{10} = \frac{14}{5}$$



$$\textcircled{9} \quad (1, 2k) \text{ and } (-3k, 2)$$

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

perp.

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

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

$$\frac{-3}{1} = \frac{2 - 2k}{-3k - 1}$$

$$-3(-3k - 1) = 1(2 - 2k)$$

$$9k + 3 = 2 - 2k$$

$$9k + 2k = 2 - 3$$

$$\frac{11k}{11} = \frac{-1}{11}$$

$$k = -\frac{1}{11}$$

$$\textcircled{10} \quad 5x - 8 = 5y + 2$$

$$-5y = -5x + 2 + 8$$

$$\frac{-5y}{-5} = \frac{-5x + 10}{-5}$$

$$y = 1x - 2$$

$m = 1 \longrightarrow$  Perpendicular slope =  $\left(\frac{-1}{1}\right)$

$$\textcircled{11} \text{ a) } 2y - 4 = 5x + 4 \quad m = \frac{5}{2}$$

$$2y = 5x + 4 + 4 \quad b = 4$$

$$2y = 5x + 8$$

$$\boxed{y = \frac{5x}{2} + 4}$$

$$\text{b) } 3(y - 4) = 9x + 12 \quad m = 3$$

$$3y - 12 = 9x + 12 \quad b = 8$$

$$3y = 9x + 12 + 12$$

$$3y = 9x + 24$$

$$\boxed{y = 3x + 8}$$

$$\text{c) } \frac{1}{3}y - 2 = 6x - 3 \quad m = 18$$

$$\frac{1}{3}y = 6x - 3 + 2 \quad b = -3$$

$$3 \cdot \frac{1}{3}y = 6x - 1$$

$$\boxed{y = 18x - 3}$$

$$\text{d) } 5x - 4 = 4y - 8 \quad m = \frac{5}{4}$$

$$-4y = -5x - 8 + 4$$

$$-4y = -5x - 4 \quad b = 1$$

$$\boxed{y = \frac{5x}{4} + 1}$$

$$\text{e) } 3 \cdot \frac{1}{3}(y - 2) = 4x - 1 \quad m = 12$$

$$y - 2 = 12x - 3 \quad b = -1$$

$$y = 12x - 3 + 2$$

$$\boxed{y = 12x - 1}$$

$$\text{f) } -y = 8x - 4 \quad m = -8$$

$$\boxed{y = -8x + 4} \quad b = 4$$