

#5 Equations of Parallel Lines

① $m = 1$ (5, 1)

$$1 = 1(5) + b$$

$$1 = 5 + b$$

$$-4 = b$$

$$y = x - 4$$

② $m = -\frac{1}{2}$ (-8, 7)

$$7 = -\frac{1}{2}(-8) + b$$

$$7 = 4 + b$$

$$3 = b$$

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

③ $4x - 3y = -12$

$$-3y = -4x - 12$$

$$y = \frac{4}{3}x + 4$$

$$m = \frac{4}{3} \text{ (-3, 3)}$$

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

$$3 = -4 + b$$

$$7 = b$$

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

④ $m = 4$ (-2, 2)

$$2 = -2(4) + b$$

$$2 = -8 + b$$

$$10 = b$$

$$y = 4x + 10$$

⑤ $m = \frac{1}{3}$ (6, 4)

$$4 = \frac{1}{3}(6) + b$$

$$4 = 2 + b$$

$$2 = b$$

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

⑥ $m = -2$ (4, -2)

$$-2 = -2(4) + b$$

$$-2 = -8 + b$$

$$6 = b$$

$$y = -2x + 6$$

⑦ $m = -3$ (-2, 4)

$$4 = -3(-2) + b$$

$$4 = 6 + b$$

$$-2 = b$$

$$y = -3x - 2$$

⑧ $m = -3$ (-1, 6)

$$6 = -3(-1) + b$$

$$6 = 3 + b$$

$$3 = b$$

$$y = -3x + 3$$

⑨ $m = -\frac{1}{2}$ (4, -6)

$$-6 = -\frac{1}{2}(4) + b$$

$$-6 = -2 + b$$

$$-4 = b$$

$$y = -\frac{1}{2}x - 4$$

⑩ $4x + 2y = 8$

$$2y = -4x + 8$$

$$y = -2x + 4$$

$m = -2$ $b = 2$

$$y = -2x + 2$$

⑪ $x - 3y = 6$

$$-3y = -x + 6$$

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

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

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

⑫ $m = 0$

$$b = -4$$

$$y = -4$$

#10 Equations of Perpendicular Lines

① $m = -2$ (4, 2)

$$2 = -2(4) + b$$

$$2 = -8 + b$$

$$10 = b$$

$$\boxed{y = -2x + 10}$$

② $m = \frac{3}{2}$ (2, -3)

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

$$-3 = 3 + b$$

$$-6 = b$$

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

③ $m = -\frac{1}{7}$ (6, 4)

$$4 = -\frac{1}{7}(6) + b$$

$$4 = -\frac{6}{7} + b$$

$$4\frac{6}{7} = b$$

$$\boxed{y = -\frac{1}{7}x + 4\frac{6}{7}}$$

④ $m = 1$ (-8, -7)

$$-7 = 1(-8) + b$$

$$-7 = -8 + b$$

$$1 = b$$

$$\boxed{y = x + 1}$$

⑤ $m = \frac{1}{3}$ (6, -2)

$$-2 = \frac{1}{3}(6) + b$$

$$-2 = 2 + b$$

$$-4 = b$$

$$\boxed{y = \frac{1}{3}x - 4}$$

⑥ $m = -\frac{2}{5}$ (-5, -1)

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

$$-1 = 2 + b$$

$$-3 = b$$

$$\boxed{y = -\frac{2}{5}x - 3}$$

⑦ $m = \frac{1}{3}$ (-9, -5)

$$-5 = \frac{1}{3}(-9) + b$$

$$-5 = -3 + b$$

$$-2 = b$$

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

⑧ $2x + 4y = 12$

$$4y = -2x + 12$$

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

$$m = 2$$
 (-1, 3)

$$3 = 2(-1) + b$$

$$3 = -2 + b$$

$$5 = b$$

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

⑨ $3x - y = 6$

$$-y = -3x + 6$$

$$y = 3x - 6$$

$$m = -\frac{1}{3}$$
 (6, -6)

$$-6 = -\frac{1}{3}(6) + b$$

$$-6 = -2 + b$$

$$-4 = b$$

$$\boxed{y = -\frac{1}{3}x - 4}$$

⑩ $x - 2y = 5$

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

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

$$m = -2 \quad b = -2$$

$$\boxed{y = -2x - 2}$$

⑪ $4x + 3y = 8$

$$3y = -4x + 8$$

$$y = -\frac{4}{3}x + \frac{8}{3}$$

$$m = \frac{3}{4} \quad b = 5$$

$$\boxed{y = \frac{3}{4}x + 5}$$

Parallel and Perpendicular Lines

$$\frac{1}{3}(7, 2)$$

$$y - 2 = \frac{4}{3}(x - 7) \quad (\text{i.o.B})$$

$$\begin{aligned} 2x + 5y &= 15 \\ 5y &= -2x + 15 \\ y &= -\frac{2}{5}x + 3 \end{aligned}$$

$$m = -\frac{2}{5} \quad (4, -4)$$

$$y + 4 = -\frac{2}{5}(x - 4) \quad (\text{k.o.v})$$

$$\begin{aligned} 3) -3x + y &= 8 \\ y &= 3x + 8 \end{aligned}$$

$$m = 3 \quad (-1, 5)$$

$$5 = 3(-1) + b$$

$$5 = -3 + b$$

$$8 = b$$

$$y = 3x + 8 \quad (\text{f.o.l})$$

$$\begin{aligned} 4) x - 4y &= 4 \\ -4y &= -x + 4 \\ y &= \frac{1}{4}x - 1 \end{aligned}$$

$$m = \frac{1}{4} \quad (4, 3)$$

$$3 = \frac{1}{4}(4) + b$$

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

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

$$y = \frac{1}{4}x + \frac{3}{2} \quad (\text{a.o.T})$$

$$\begin{aligned} 5) 2x + 3y &= 30 \\ 3y &= -2x + 30 \\ y &= -\frac{2}{3}x + 10 \end{aligned}$$

$$m = -\frac{2}{3} \quad (2, 5)$$

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

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

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

$$y = -\frac{2}{3}x - \frac{11}{3}$$

$$3\left(\frac{2}{3}x + y = -\frac{11}{3}\right)$$

$$\boxed{2x + 3y = -11} \quad (\text{p.o.N})$$

$$6) y - 5x + 2 = 0$$

$$y = 5x - 2$$

$$m = 5 \quad (-3, -8)$$

$$-8 = 5(-3) + b$$

$$-8 = -15 + b$$

$$7 = b$$

$$y = 5x + 7$$

$$\boxed{-5x + y = 7} \quad (\text{j.o.v})$$

$$7) m = 2 \quad (-4, 7)$$

$$y - 7 = 2(x + 4) \quad (\text{i.o.T})$$

$$8) 8x - 3y = 12$$

$$-3y = -8x + 12$$

$$y = \frac{8}{3}x - 4$$

$$m = -\frac{3}{8} \quad (4, -1)$$

$$y + 1 = -\frac{3}{8}(x - 4) \quad (\text{b.o.F})$$

$$\textcircled{9} \quad 2x + 5y = 10$$

$$5y = -2x + 10$$

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

$$m = \frac{5}{2} \quad (4, 9)$$

$$9 = \frac{5}{2}(4) + b$$

$$9 = 10 + b$$

$$-1 = b \quad \boxed{y = \frac{5}{2}x - 1 \quad (j \cdot L)}$$

$$\textcircled{10} \quad 6x - y - 5 = 0$$

$$-y = -6x + 5$$

$$y = 6x - 5$$

$$m = -\frac{1}{6} \quad (-3, 2)$$

$$2 = -\frac{1}{6}(-3) + b$$

$$2 = \frac{1}{2} + b$$

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

$$\boxed{y = -\frac{1}{6}x + \frac{3}{2} \quad (O \cdot F)}$$

$$\textcircled{11} \quad 4x + 3y = 24$$

$$3y = -4x + 24$$

$$y = -\frac{4}{3}x + 8$$

$$m = \frac{3}{4} \quad (-5, 0)$$

$$0 = \frac{3}{4}(-5) + b$$

$$0 = -\frac{15}{4} + b \quad y = \frac{3}{4}x + \frac{15}{4}$$

$$\frac{15}{4} = b \quad \boxed{-\frac{3}{4}x + y = \frac{15}{4}}$$

$$\boxed{-3x + 4y = 15 \quad (r \cdot N)}$$

$$\textcircled{12} \quad 2x - 7y + 21 = 0$$

$$-7y = -2x + 21$$

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

$$m = -\frac{7}{2} \quad (-1, -4)$$

$$-4 = -\frac{7}{2}(-1) + b$$

$$-4 = \frac{7}{2} + b$$

$$-7\frac{1}{2} = b$$

$$y = -\frac{7}{2}x - \frac{15}{2}$$

$$2\left(\frac{7}{2}x + y = -\frac{15}{2}\right)$$

$$\boxed{7x + 2y = -15 \quad (n \cdot T)}$$

$$\textcircled{13} \quad (3, 2) \quad (9, 12)$$

$$\frac{12 - 2}{9 - 3} = \frac{10}{6} = \frac{5}{3}$$

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

$$2 = 5 + b$$

$$-3 = b$$

$$\boxed{y = \frac{5}{3}x - 3 \quad (m \cdot O)}$$

$$\textcircled{14} \quad (-1, -4) \quad (8, -8)$$

$$\frac{-8 + (+4)}{8 + (+1)} = \frac{-4}{9}$$

$$-4 = -\frac{4}{9}(-1) + b$$

$$-4 = \frac{4}{9} + b$$

$$-4\frac{4}{9} = b$$

$$\boxed{y = -\frac{4}{9}x - \frac{40}{9} \quad (C \cdot F)}$$

$$\textcircled{15} \quad (-2, 0) \quad (-7, 15)$$

$$\frac{15 - 0}{-7 + (+2)} = \frac{15}{-5} = -3$$

$$15 = -3(-7) + b$$

$$15 = 21 + b$$

$$-6 = b$$

$$\boxed{y = -3x - 6 \quad (n \cdot A)}$$

Parallel & Perpendicular Lines Practice

① $m=1$ (3, 2)

$$2 = 1(3) + b$$

$$2 = 3 + b$$

$$-1 = b$$

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

② $m=-4$ (-2, 5)

$$5 = -4(-2) + b$$

$$5 = 8 + b$$

$$-3 = b$$

$$\boxed{y = -4x - 3}$$

③ $m=-\frac{3}{4}$ (4, -6)

$$-6 = -\frac{3}{4}(4) + b$$

$$-6 = -3 + b$$

$$-3 = b$$

$$\boxed{y = -\frac{3}{4}x - 3}$$

④ $m=\frac{2}{5}$ (5, 4)

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

$$4 = 2 + b$$

$$2 = b$$

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

⑤ $m=\frac{4}{3}$ (12, 3)

$$3 = \frac{4}{3}(12) + b$$

$$3 = 16 + b$$

$$-13 = b$$

$$\boxed{y = \frac{4}{3}x - 13}$$

⑥ $m=-2$ (3, 1)

$$1 = -2(3) + b$$

$$1 = -6 + b$$

$$7 = b$$

$$\boxed{y = -2x + 7}$$

⑦ $m=\frac{2}{3}$ (-3, 4)

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

$$4 = -2 + b$$

$$6 = b$$

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

⑧ $m=3$ (-1, -2)

$$-2 = 3(-1) + b$$

$$-2 = -3 + b$$

$$1 = b$$

$$\boxed{y = 3x + 1}$$

⑨ $m=\frac{5}{4}$ (-8, 2)

$$2 = \frac{5}{4}(-8) + b$$

$$2 = -10 + b$$

$$12 = b$$

$$\boxed{y = \frac{5}{4}x + 12}$$

⑩ $m=-3$ (-1, -4)

$$-4 = -3(-1) + b$$

$$-4 = 3 + b$$

$$-7 = b$$

$$\boxed{y = -3x - 7}$$

⑪ $m=-\frac{4}{3}$ (-5, 6)

$$6 = -\frac{4}{3}(-5) + b$$

$$6 = \frac{20}{3} + b$$

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

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

⑫ $m=-\frac{2}{5}$ (3, 1)

$$1 = -\frac{2}{5}(3) + b$$

$$1 = -\frac{6}{5} + b$$

$$2\frac{1}{5} = b$$

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

⑬ $m=3$ (-2, 2)

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

$$-2 = -6 + b$$

$$4 = b \quad \boxed{y = 3x + 4}$$

⑭ $m=-1$ (-4, 5)

$$5 = -1(-4) + b$$

$$5 = 4 + b$$

$$1 = b$$

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

⑮ $m=\frac{1}{4}$ (-4, -3)

$$-3 = \frac{1}{4}(-4) + b$$

$$-3 = -1 + b$$

$$-2 = b$$

$$\boxed{y = \frac{1}{4}x - 2}$$

$$(16) m = 5 (0, 1)$$

$$y = 5x + 1$$

$$(17) m = -6 (2, 4)$$

$$4 = -6(2) + b$$

$$4 = -12 + b$$

$$16 = b$$

$$y = -6x + 16$$

$$(18) m = 4 (-1, -7)$$

$$-7 = 4(-1) + b$$

$$-7 = -4 + b$$

$$-3 = b$$

$$y = 4x - 3$$

$$(19) m = \frac{7}{4} (-4, 1)$$

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

$$1 = -7 + b$$

$$8 = b$$

$$y = \frac{7}{4}x + 8$$

$$(20) m = \frac{4}{5} (10, 5)$$

$$5 = \frac{4}{5}(10) + b$$

$$5 = 8 + b$$

$$-3 = b$$

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

$$(21) m = -\frac{5}{2} (4, -5)$$

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

$$-5 = -10 + b$$

$$5 = b$$

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

$$(22) m = \frac{2}{3} (1, 1)$$

$$1 = \frac{2}{3}(1) + b$$

$$1 = \frac{2}{3} + b$$

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

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

$$(23) m = \frac{3}{4} (-6, -5)$$

$$-5 = \frac{3}{4}(-6) + b$$

$$-5 = -\frac{9}{2} + b$$

$$-\frac{1}{2} = b$$

$$y = \frac{3}{4}x - \frac{1}{2}$$

$$(24) m = -\frac{6}{5} (-3, 5)$$

$$5 = -\frac{6}{5}(-3) + b$$

$$5 = \frac{18}{5} + b$$

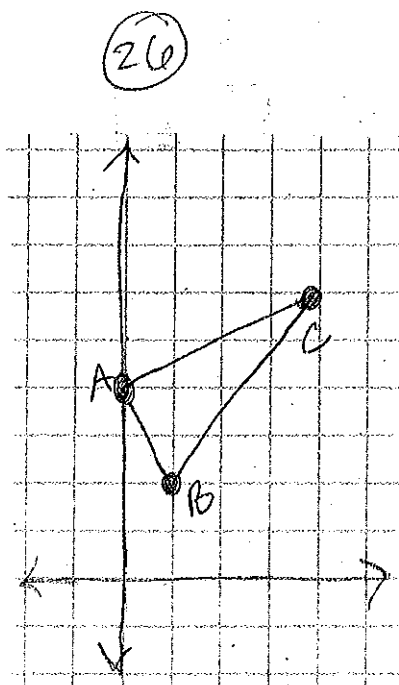
$$\frac{7}{5} = b$$

$$y = -\frac{6}{5}x + \frac{7}{5}$$

$$(25) \overline{AC} \rightarrow m = 7$$

$$\overline{BD} \rightarrow m = -\frac{1}{7}$$

Yes, they
are perpendicular
b/c their slopes are
negative reciprocals.



$$\overline{AB} \rightarrow m = -2$$

$$\overline{AC} \rightarrow m = \frac{1}{2}$$

Yes, it's a right
triangle b/c $\overline{AB} \perp$
 \overline{AC} intersect
to form a right
angle.