Parallel Lines

$$y = \frac{3}{2}x + 5$$

$$y = \frac{3}{2}x + 10$$

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

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

Perpendicular to these:

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

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

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

$$y = \frac{3}{2}x + 5$$

$$2y = 3x + 10$$

$$0 = 3x - 2y + 10$$

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

$$2y = 3x - 10$$

$$0 = 3x - 2y - 10$$

$$y = \frac{3}{2}x + 10$$

$$2y = 3x + 20$$

$$0 = 3x - 2y + 20$$

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

$$2y = 3x + c$$

$$0 = 3x - 2y + c$$

$$4x - 2y + 3 = 0$$

$$3x + 2y + 5 = 0 \quad \times$$

$$3x - 2y - 7 = 0 \quad \checkmark$$

$$6x - 4y + 1 = 0 \quad \checkmark$$

$$-3x + 2y - 5 = 0 \quad \checkmark$$

$$3x - 4y + 6 = 0$$

$$3x - 4y + c = 0 \qquad (4,5)$$

$$3(4) - 4(5) + c = 0$$

$$12 - 20 + c = 0$$

$$-8 + c = 0$$

$$c = 8$$

$$3x - 4y + 8 = 0$$

Perpendicular Lines

$$y = 2x + 3$$

Find $\perp$ line through $(4,7)$

$$y = -\tfrac{1}{2}x + c$$

$$7 = -\tfrac{1}{2}(4) + c$$

$$7 = -2 + c$$

$$9 = c$$

$$y = -\tfrac{1}{2}x + 9$$

$5x - 8y + 3 = 0$ $(1,2)$

$8x + 5y + c = 0$

$8(1) + 5(2) + c = 0$

$8 + 10 + c = 0$

$c = -18$

$\underline{8x + 5y - 18 = 0}$ ✓

Exercise 5F

1a) $\perp$

1b) $\parallel$

1c) N

1d) $\perp$

1e) $\perp$

1f) $\parallel$

1g) $y = 5x - 3$ $\parallel$

$5x + 4 = y$

1h) $5x - 1 = y$ $\perp$

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

1i) $y = -\frac{3}{2}x + 8$

$2y = -3x + 16$

$3x + 2y - 16 = 0$

$2x - 3y - 9 = 0$ $\perp$

1j $\parallel$ 1k N 1l

Q3 $3x + 8y - 11 = 0$ $(0, -8)$

$8x - 3y + c = 0$

$0 - 3(-8) + c = 0$

$24 + c = 0$

$c = -24$

$8x - 3y - 24 = 0$

$8y = -3x + 11$

$y = -\frac{3}{8}x + \frac{11}{8}$

Grad of $\perp$ line

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

$y = \frac{8}{3}x + c$ $(0, -8)$

$-8 = \frac{8}{3}(0) + c$

$-8 = c$

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

$3y = 8x - 24$

$0 = 8x - 3y - 24$

Hwk Ex5E Q6, Q7

Ex5F Q6, Q7