

Task 1

- 1) Find the equation of the line parallel to $y = 3x + 2$ which passes through $(0, 5)$.
- 2) Find the equation of the line parallel to $y = -2x + 1$ which passes through $(0, -3)$.
- 3) Find the equation of the line parallel to $y = \frac{1}{2}x + 4$ which passes through $(0, 7)$.
- 4) Find the equation of the line parallel to $y = -\frac{3}{4}x + 6$ which passes through $(0, 1)$.
- 5) Find the equation of the line parallel to $y = 4x - 2$ which passes through $(2, 3)$.
- 6) Find the equation of the line parallel to $y = -x + 6$ which passes through $(3, 2)$.
- 7) Find the equation of the line parallel to $y = \frac{2}{3}x + 1$ which passes through $(6, 5)$.
- 8) Find the equation of the line parallel to $y = -\frac{5}{2}x - 1$ which passes through $(2, -6)$.
- 9) Find the equation of the line parallel to $2y = 6x + 4$ which passes through $(1, 7)$.
- 10) Find the equation of the line parallel to $3y - 6x = 9$ which passes through $(2, 1)$.
- 13) Find the equation of the line perpendicular to $y = \frac{1}{2}x - 4$, which passes through $(2, 3)$.
- 14) Find the equation of the line perpendicular to $y = -4x + 2$, which passes through $(1, -1)$.
- 15) Find the equation of the line perpendicular to $y = 5x - 3$, which passes through $(3, 2)$.
- 16) Find the equation of the line perpendicular to $y = -\frac{2}{3}x + 1$, which passes through $(6, 4)$.
- 17) Find the equation of the line perpendicular to $y = x + 2$, which passes through $(2, -3)$.
- 18) Find the equation of the line perpendicular to $y = -\frac{1}{4}x + 3$, which passes through $(4, 2)$.
- 19) Find the equation of the line perpendicular to $2y = 8x + 6$, which passes through $(1, 2)$.
- 20) Find the equation of the line perpendicular to $3y - 3x = 6$, which passes through $(3, 1)$.

Task 2

- 11) Find the equation of the line perpendicular to $y = 2x + 7$ which passes through $(0, 4)$.
- 12) Find the equation of the line perpendicular to $y = -3x + 1$, which passes through $(0, 6)$.

Task 3

- 21) Line 1 passes through the points $(1, 2)$ and $(3, 6)$. Work out the equation of Line 2, which is parallel and passes through the point $(0, 1)$.

22) Line 1 passes through the points (1, 1) and (3, 5). Work out the equation of Line 2, which is perpendicular and passes through the point (0, 2).

23) Line 1 passes through the points (2, 3) and (4, 7). Work out the equation of Line 2, which is parallel and passes through the point (1, 1).

24) Line 1 passes through the points (0, 0) and (-8, -9). Work out the equation of Line 2, which is perpendicular and passes through the point (2, 1).

25) Line 1 passes through the points (1, 3) and (-2, -5). Work out the equation of Line 2, which is parallel and passes through the point (6, -4).

26) Line 1 passes through the points (10, m) and (8, $2m$). Line 2 passes through the points (4, 8) and (-2, m). Given that the lines are parallel, work out the value of m .

27) Line 1 passes through the points (2, 2) and (4, p). Line 2 passes through the points (3, 5) and (5, 7). Given that the lines are perpendicular, work out the value of p .

28) Determine whether the following two lines are parallel, perpendicular or neither.

$$y = 3x + 8$$
$$4y = 16 + 12x$$

29) Determine whether the following two lines are parallel, perpendicular or neither.

$$2y = \frac{1}{2}x + 8$$
$$y = 4x + 10$$

30) Determine whether the following two lines are parallel, perpendicular or neither.

$$8 - 5y = 25x$$
$$10y = -50x + 12$$

31) Determine whether the following two lines are parallel, perpendicular or neither.

$$3y + 2x = 17$$
$$-6x + 4y + 10 = 0$$

Challenge

32) A line segment has endpoints (2, 3) and (6, 7). Work out the equation of the perpendicular bisector.

33) The line $y = 2x + 5$ intersects the vertical line $x = 2$. Find the equation of the line perpendicular to $y = 2x + 5$ at their point of intersection.

34) Line 1 has the equation $8y - 64 = 16x$. Point Q has an x-coordinate of 2 and lies on Line 1. Line 2 is perpendicular to Line 1 and passes through the point Q .

a. Write the equation of Line 2 in the form $ax + by + c = 0$, where a, b and c are integers to be found.

b. Line 1 and Line 2 cross the x-axis at the points R and S respectively. Work out the area of the triangle QRS .