STRAIGHT LINES: GRADIENTS and INTERCEPTS

1) **Axes: x from –2 to 5, y from –8 to 12.**
Find the gradients and intercepts of the following lines and hence plot the lines on your axes.

i) $y = 2x - 1$. ii) $y = x + 2$. iii) $y = 3x - 2$.

2) **Axes: x from –2 to 5, y from –8 to 12.**
Find the gradients and intercepts of the following lines and hence plot the lines on your axes.

i) $y = x - 3$. ii) $y = 6 - x$. iii) $y = 8 - 2x$.

3) **Axes: x from –2 to 5, y from –8 to 12.**
Find the gradients and intercepts of the following lines and hence plot the lines on your axes.

i) $y + 2x = 9$. ii) $y + x = 4$. iii) $y - 3x = 1$.

4) **Axes: x from –2 to 5, y from –9 to 8.**
Find the gradients and intercepts of the following lines and hence plot the lines on your axes.

i) $y = \frac{1}{2}x + 2$. ii) $y = 2 - \frac{1}{2}x$. iii) $y = 1.5x - 4$.

5) By rearranging the following straight line formulas into the form $\boldsymbol{y = mx + c}$ (if needed) find the gradients and intercepts of the lines.

a) $y = 3x + 1$. b) $y = 4x - 1$. c) $y = 3 + 2x$.

d) $y = 2 - 3x$. e) $y + 3x = 1$. f) $y - 4x = -3$.

g) $2x + y = 7$. h) $2y = 2 + 6x$. i) $3y + 9x = 12$.

j) $2y - 8 = 2x$.

6) Repeat question 5) for the following lines.

a) $y - x + 2 = 0$. b) $y + 4x - 1 = 0$. c) $2y = 6 + 3x$.

d) $2y = 2 - 5x$. e) $3y + 2x = 9$. f) $3y - 3x = -6$.

g) $7 = 2x - y$. h) $6x = 2 - 2y$.

7) Write down the equation of any straight line which is parallel to the line $y = 4x + 1$.

8) Write down the equation of any straight line which is parallel to the line $y = 4 - 3x$.

9) **Axes: x from –2 to 5, y from –8 to 12.**

For each of the following, i) plot the line on your axes,
and ii) find the equation of the line in the form $\boldsymbol{y = mx + c}$.

a) The line with intercept 3 and gradient 2.

b) The line with intercept 5 and gradient –2.

c) The line with intercept 0 and gradient 1.

d) The line with gradient 2 and passing through the point (3, 2).

10) **Axes: x from –2 to 5, y from –8 to 12.**

For each of the following, i) plot the line on your axes,
and ii) find the equation of the line in the form $\boldsymbol{y = mx + c}$.

a) The line with gradient 3 and passing through the point (2, 1).

b) The line with gradient 1 and passing through the point (3, 0).

c) The line with gradient 3 and passing through the point (1, 2).

d) The line with gradient –2 and passing through the point (1, 6).

Extension. (You might want to use graph paper for the following.)

11) Find the equation of the line passing through the points $A(1, 1)$ and $B(2, 3)$.

12) Find the equation of the line passing through the points $A(2, 1)$ and $B(4, 5)$.

13) Find the equation of the line passing through the points $A(2, 0)$ and $B(5, 9)$.

14) Find the equation of the line passing through the points $A(0, 9)$ and $B(2, 3)$.

ANSWERS.

		Gradient	Intercept
1)	i)	2	–1.
	ii)	1	2.
	iii)	3	–2.
2)	i)	1	–3.
	ii)	–1	6.
	iii)	–2	8.
3)	i)	–2	9.
	ii)	–1	4.
	iii)	3	1.
4)	i)	$\frac{1}{2}$	2.
	ii)	$-\frac{1}{2}$	2.
	iii)	1.5	–4.
5)	a)	3	1.
	b)	4	–1.
	c)	2	3.
	d)	–3	2.
	e)	–3	1.
	f)	4	–3.
	g)	–2	7.
	h)	3	1.
	i)	–3	4.
	j)	1	4.
6)	a)	1	–2.
	b)	–4	1.
	c)	1.5	3.
	d)	–2.5	1.
	e)	$-\frac{2}{3}$	3.
	f)	1	–2.
	g)	2	–7.
	h)	–3	1.

7) $y = 4x +$ {any number}.
8) $y =$ {any number} $- 3x$.
9) a) $y = 2x + 3$, b) $y = 5 - 2x$, c) $y = x$, d) $y = 2x - 4$.
10) a) $y = 3x - 5$, b) $y = x - 3$, c) $y = 3x - 1$, d) $y = 8 - 2x$.
11) $y = 2x - 1$.
12) $y = 2x - 3$.
13) $y = 3x - 6$.
14) $y = 9 - 3x$.