$y = mx + c$ - Worksheet

Skill

Group A - Writing equations in the form y=mx+c

Write the equation of the straight line

1) $m = 1,\ c = 1$

2) $m = 3,\ c = 2$

3) $m = 5,\ c = 0$

4) $m = 10,\ c = -3$

5) $m = -2,\ c = 1$

6) $m = -4,\ c = 0$

7) $c = 5,\ m = -1$

8) $c = -4,\ m = \frac{1}{2}$

9) $c = 0,\ m = -\frac{2}{5}$

10) $c = -\frac{1}{2},\ m = \frac{1}{4}$

11) $c = 1,\ m = 0$

12) $c = -3,\ m = 0$

Group B - State the gradient and the y-intercept

State the gradient and the y-intercept

1) $y = 2x + 1$

2) $y = 3x - 5$

3) $y = 5x$

4) $y = -x + 2$

5) $y = -2x + 3$

6) $y = 2 - x$

7) $y = 9 - 3x$

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

9) $y = 2(x + 4)$

10) $y = \frac{1}{4}(x - 8)$

11) $y = \frac{1}{5}(2 - 3x)$

12) $y = -5(\frac{x}{10} - 3)$

Group C - State the gradient and the y-intercept

State the gradient and the y-intercept

1) $2y = 4x + 6$

2) $3y = 12x + 21$

3) $\frac{y}{3} = x$

4) $x + y = 4$

5) $3x + y = -4$

6) $x + y = -5$

7) $6 - y = 2x$

8) $x = 3y + 12$

9) $x = \frac{y}{5} - 7$

10) $x = 5(y + 2)$

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

12) $\frac{-y}{4} + 12 = \frac{x}{20}$

$y = mx + c$ - Worksheet

Group D - State the gradient and the y-intercept

State the equation of the straight line that passes through each pair of coordinates.

1) (0,0) and (3,9)

2) (0,0) and (2,10)

3) (0,2) and (1,12)

4) (1,18) and (5,22)

5) (1,-1) and (2,5)

6) (3,0) and (5,-2)

7) (1,6) and (5,-2)

8) (2,-8) and (-1,28)

9) (10,2) and (20,4)

10) (8,-2) and (-12,-17)

11) (-6,7) and (15,0)

12) (1,0.5) and (-4,13)

$y = mx + c$ - Worksheet

Applied

1) a) A straight line has a gradient of 5 and passes through the point (0,2). Work out the equation of the line. Give your answer in the form $y = mx + c$.

b) Another line also passes through the point (0,2), and (8,4). Calculate the gradient of the line.

2) a) The equation $4x = 8y + 24$ represents a straight line. Rearrange the equation to make y the subject.

b) Hence, state the gradient and y-intercept of the line.

3) a) The equation $x + y = 8$ intersects both axes. State the coordinates of these two points.

b) Use part a) to sketch the graph of $x + y = 8$

4) a) A line passes through the point (7,21). The y-intercept of the line is at 0. Calculate the gradient of the line.

b) State the gradient of the line that is half as steep as the line in part a).

$y = mx + c$ - Exam Questions

1) **(a)** A line has the equation $y = 5x - 7$. What is the gradient of the line? Circle your answer. ……

5	-7	-5	$\frac{1}{5}$	7

(1)

(b) What is the y-intercept? Circle your answer. ……

5	-7	-5	$\frac{1}{5}$	7

(1)

2 marks)

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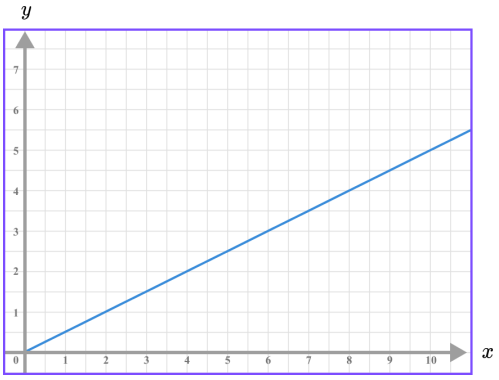
2) **(a)** Find the equation of the line:



……

(2)

(b) Does the coordinate (15,8) lie on the line? Explain your answer. ……

(2)

(4 marks)

$y = mx + c$ - Exam Questions

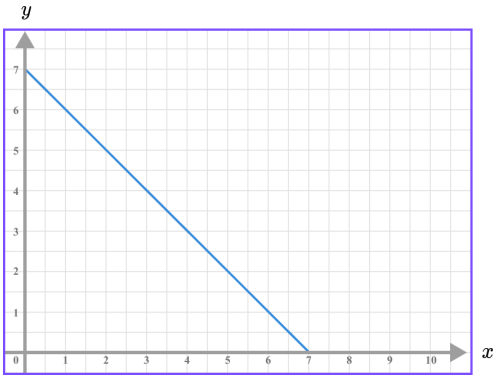
3) **(a)** Which of the following equations is the equation of the straight line graph?

$y = 7x$

$y = x + 7$

$y = x - 7$

$y = 7 - x$



..... **(2)**

(b) Calculate the x value when the straight line intersects with the line $y = -8$.

..... **(2)**

(4 marks)

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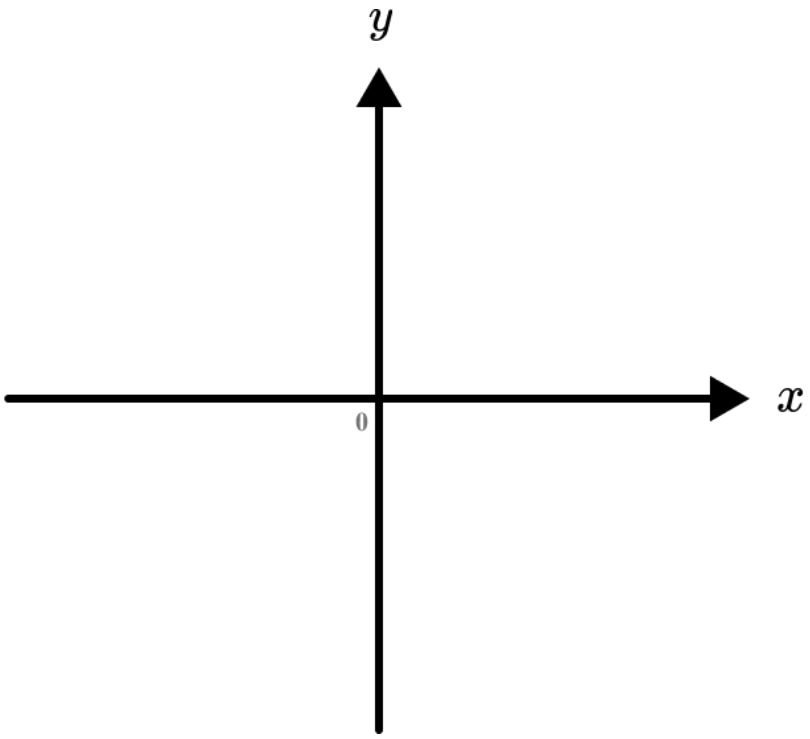
4) **(a)** Show that the straight line $x = -\frac{1}{2}(4y + 3)$ has a gradient of $-\frac{1}{2}$.

..... **(3)**

(b) Sketch the graph of $x = -\frac{1}{2}(4y + 3)$ on the axes below.

..... **(3)**

(6 marks)



$y = mx + c$ - Answers

	Question	Answer
Group A	Skill Questions	
	Write the equation of the straight line **1)** m=1, c=1 **2)** m=3, c=2 **3)** m=5, c=0 **4)** m=10, c=-3 **5)** m=-2, c=1 **6)** m=-4, c=0 **7)** c=5, m=-1 **8)** c=-4, m=1/2 **9)** c=0, m=-2/5 **10)** c=-1/2, m=1/4 **11)** c=1, m=0 **12)** c=-3, m=0	**1)** $y = x + 1$ **2)** $y = 3x + 2$ **3)** $y = 5x$ **4)** $y = 10x - 3$ **5)** $y = -2x + 1$ **6)** $y = -4x$ **7)** $y = -x + 5$ **8)** $y = \frac{1}{2}x - 4$ **9)** $y = -\frac{2}{5}x$ **10)** $y = \frac{1}{4}x - \frac{1}{2}$ **11)** $y = 1$ **12)** $y = -3$

$y = mx + c$ - Answers

Group B	State the gradient and the y-intercept **1)** $y = 2x + 1$ **2)** $y = 3x - 5$ **3)** $y = 5x$ **4)** $y = -x + 2$ **5)** $y = -2x + 3$ **6)** $y = 2 - x$ **7)** $y = 9 - 3x$ **8)** $y = \frac{1}{2}x - 3$ **9)** $y = 2(x + 4)$ **10)** $y = \frac{1}{4}(x - 8)$ **11)** $y = \frac{1}{5}(2 - 3x)$ **12)** $y = -5(\frac{x}{10} - 3)$	**1)** m=2, c=1 **2)** m=3, c=-5 **3)** m=5, c=0 **4)** m=-1, c=2 **5)** m=-2, c=3 **6)** m=-1, c=2 **7)** m=-3, c=9 **8)** m=½, c=-3 **9)** m=2, c=8 **10)** m=¼, c=-2 **11)** m=-⅗, c=⅖ **12)** m=-½, c=15

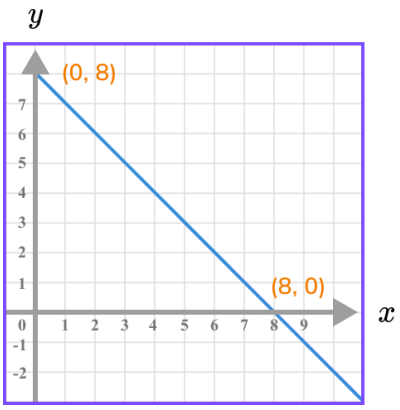
$y = mx + c$ - Answers

Group C	Skill Questions	
	State the gradient and the y-intercept **1)** $2y = 4x + 6$ **2)** $3y = 12x + 21$ **3)** $\frac{y}{3} = x$ **4)** $x + y = 4$ **5)** $3x + y = -4$ **6)** $x + y = -5$ **7)** $6 - y = 2x$ **8)** $x = 3y + 12$ **9)** $x = \frac{y}{5} - 7$ **10)** $x = 5(y + 2)$ **11)** $\frac{3}{2}y + x = 6$ **12)** $\frac{-y}{4} + 12 = \frac{x}{20}$	**1)** m=2, c=3 **2)** m=4, c=7 **3)** m=3, c=0 **4)** m=-1, c=4 **5)** m=-3, c=-4 **6)** m=-1, c=-5 **7)** m=-2, c=6 **8)** m=⅓, c=-4 **9)** m=5, c=35 **10)** m=⅕, c=-2 **11)** m=-⅔, c=4 **12)** m=-1/5, c=48

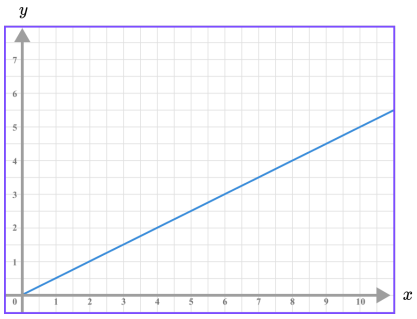
$y = mx + c$ - Answers

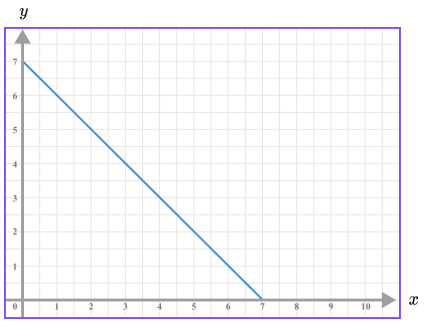
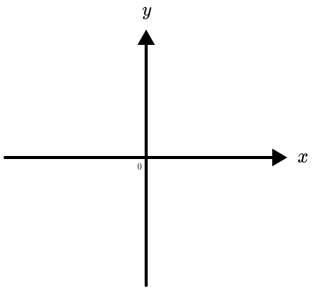
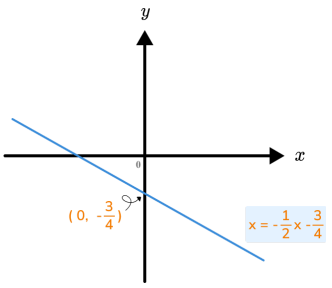
Group D	Skill Questions	
	State the equation of the straight line that passes through each pair of coordinates. **1)** (0,0) and (3,9) **2)** (0,0) and (2,10) **3)** (0,2) and (1,12) **4)** (1,18) and (5,22) **5)** (1,-1) and (2,5) **6)** (3,0) and (5,-2) **7)** (1,6) and (5,-2) **8)** (2,-8) and (-1,28) **9)** (10,2) and (20,4) **10)** (8,-2) and (-12,-17) **11)** (-6,7) and (15,0) **12)** (1,0.5) and (-4,13)	**1)** $y = 3x$ **2)** $y = 5x$ **3)** $y = 10x + 2$ **4)** $y = x + 17$ **5)** $y = 6x - 7$ **6)** $y = -x + 3$ **7)** $y = -2x + 8$ **8)** $y = -12x + 16$ **9)** $y = \frac{1}{5}x$ **10)** $y = \frac{3}{4}x - 8$ **11)** $y = -\frac{1}{3}x + 5$ **12)** $y = -\frac{5}{2}x + 3$

$y = mx + c$ - Answers

	Question	Answer
	Applied Questions	
1)	**a)** A straight line has a gradient of 5 and passes through the point (0,2). Work out the equation of the line. Give your answer in the form $y = mx + c$. **b)** Another line also passes through the point (0,2), and (8,4). Calculate the gradient of the line.	**a)** $m = 5$ $c = 2$ $y = 5x + 2$ **b)** $\frac{4-2}{8-0} = \frac{2}{8} = \frac{1}{4}$ $m = \frac{1}{4}$
2)	**a)** The equation $4x = 8y + 24$ represents a straight line. Rearrange the equation to make y the subject. **b)** Hence, state the gradient and y-intercept of the line.	**a)** $x = 2y + 6$ $2y = x - 6$ $y = \frac{1}{2}x - 3$ **b)** $m = \frac{1}{2}$ $c = -3$
3)	**a)** The equation $x + y = 8$ intersects both axes. State the coordinates of these two points. **b)** Use part a) to sketch the graph of $x + y = 8$	**a)** (0,8) and (8,0) **b)** 
4)	**a)** A line passes through the point (7,21). The y-intercept of the line is at 0. Calculate the gradient of the line. **b)** State the gradient of the line that is half as steep as the line in part a).	**a)** $m = \frac{21-0}{7-0} = \frac{21}{7} = 3$ **b)** $m = \frac{3}{2}$ or $m = 1.5$

$y = mx + c$ - Mark Scheme

	Question	Answer	
	Exam Questions		
1) (a)	A line has the equation $y = 5x - 7$. What is the gradient of the line? Circle your answer. 5 | -7 | -5 | $\frac{1}{5}$ | 7	(a) 5	**(1)**
(b)	What is the y-intercept? Circle your answer. 5 | -7 | -5 | $\frac{1}{5}$ | 7	(b) -7	**(1)**
2) (a)	Calculate the equation of the line: 	$m = \frac{5-0}{10-0} = \frac{1}{2}$ $c = 0$ $y = \frac{1}{2}x$	**(1)** **(1)** **(1)**
(b)	Does the coordinate (15,8) lie on the line? Explain your answer.	(b) When $x = 15, y = \frac{1}{2} \times 15 = 7.5$ No.	**(1)** **(1)**
3) (a)	Which of the following equations is the equation of the straight line graph? $y = 7x$ $y = x + 7$ $y = x - 7$	(a) $y = 7 - x$	**(1)**

	$y = 7 - x$  		
(b)	Calculate the x value when the straight line intersects with the line $y = -8$.	(b) When $y = -8$, $-8 = 7 - x$ $x = 15$	**(1)** **(1)**
4) (a)	Show that the straight line $x = -\frac{1}{2}(4y + 3)$ has a gradient of $-\frac{1}{2}$	(a) $x = -\frac{1}{2}(4y+3)$ $\times 2 \quad \times 2$ $2x = -1(4y+3)$ $2x = -4y - 3$ $+4y \quad +4y$ $4y + 2x = -3$ $-2x \quad -2x$ $4y = -2x - 3$ $\div 4 \quad \div 4$ $y = -\frac{1}{2}x - \frac{3}{4}$	**(1)** **(1)** **(1)**
(b)	Sketch the graph of $x = -\frac{1}{2}(4y + 3)$ on the axes below.  	(b)  Straight line drawn Y-intercept highlighted Negative gradient	**(1)** **(1)** **(1)**