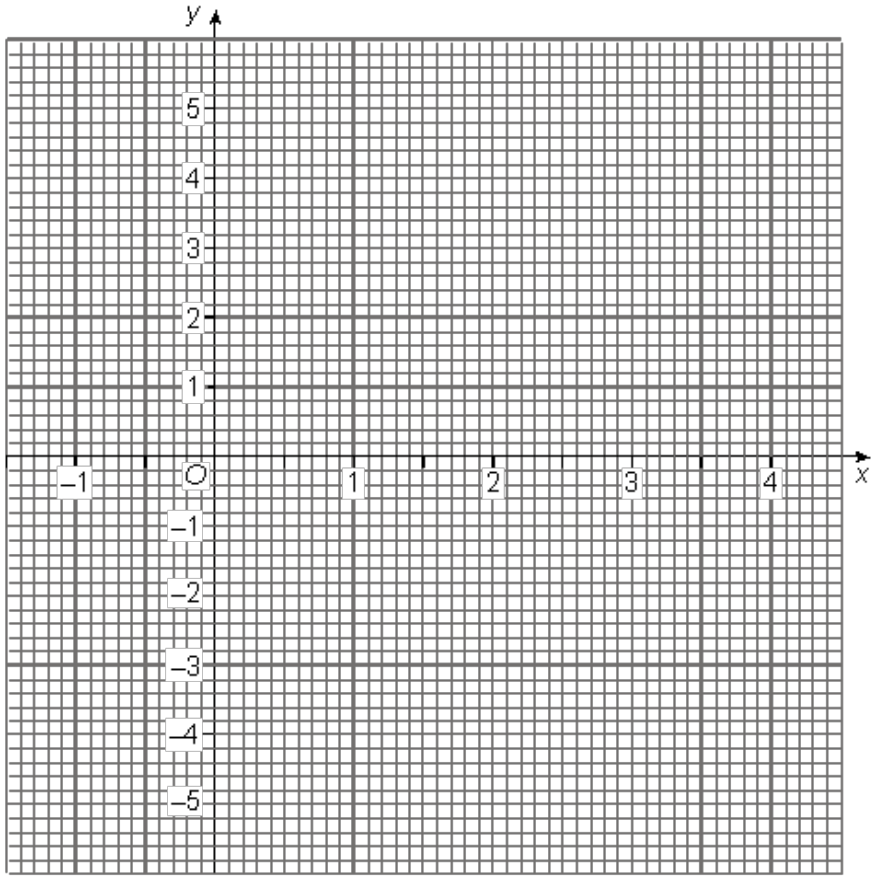
Q1. (a) On the grid below draw the graph of $y = 2x - 3$ for values of x from –1 to 4.

.....

.....

.....



(3)

(b) The line $y = 4.5$ crosses the line $y = 2x - 3$ at P.

Use the graph to work out the coordinates of P.

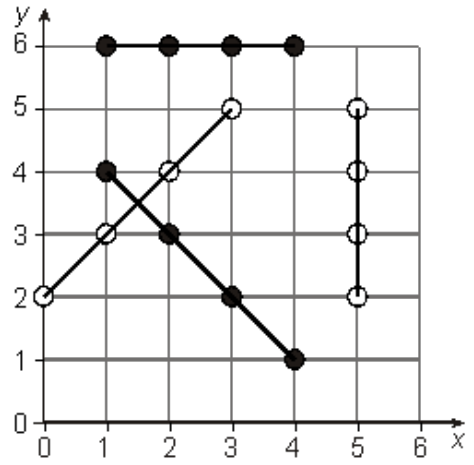
Answer (..... , ...)

(2)

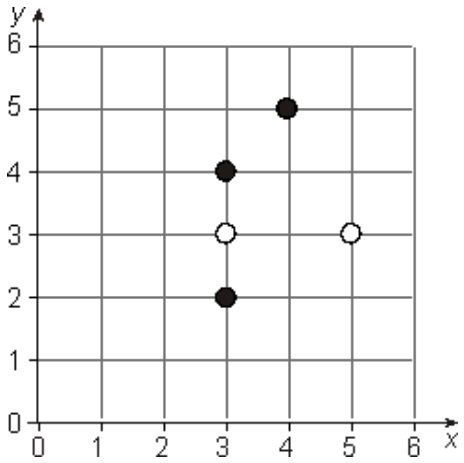
(Total 5 marks)

Q2. '4 in a line' is a game for two players.
Players take it in turns to place a coloured counter on a coordinate point.
The first player to place four counters in a straight line wins.

Examples of winning lines are shown on this grid.



The grid below shows an unfinished game between Ali and Sasha.
Ali has gone first and so far has placed three black counters.
Sasha is about to place her third counter at the point (4, 3).



(a) Mark the point (4, 3) on the grid.

(1)

(b) Explain why Sasha can be certain of winning if the counter is placed there.

.....

.....

.....

.....

(2)
(Total 3 marks)

Q3. (a) Complete the table of values for $y = 2x - 1$

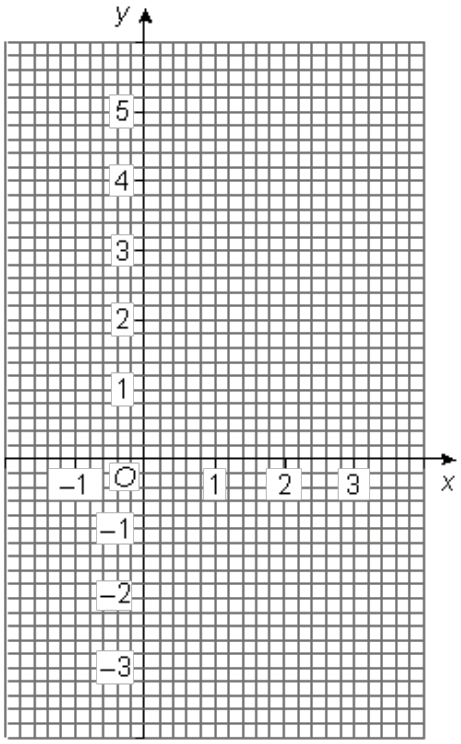
x	–1	0	1	2	3
y	–3		1		5

.....

.....

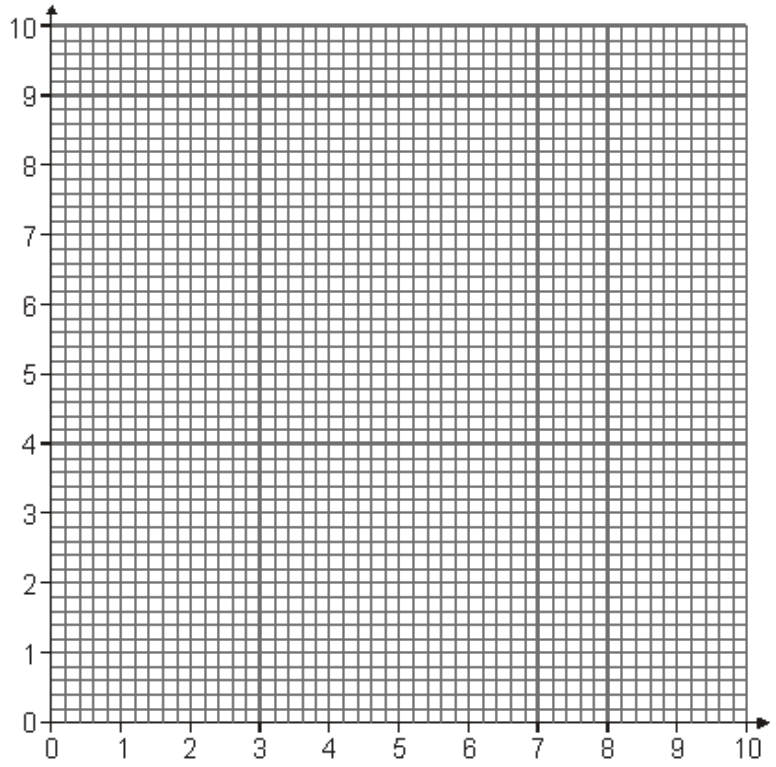
(1)

(b) On the grid below, draw the graph of $y = 2x - 1$ for values of x from –1 to +3



(2)
(Total 3 marks)

Q4. (a) Here is a centimetre grid.



Plot four points *A, B, C* and *D* on the grid to make a rectangle *ABCD* of length 6 cm and width 4 cm.

(2)

(b) Tick whether each statement is always true, sometimes true or never true.

(i) Rectangles with an area of 24 cm^2 have a length of 6 cm.

☐ Always true ☐ Sometimes true ☐ Never true

(1)

(ii) Rectangles with a perimeter of 20 cm have a length of 12 cm.

☐ Always true ☐ Sometimes true ☐ Never true

(1)

(iii) Rectangles with length 6 cm and width 4 cm have area 24 cm^2 and perimeter 20 cm.

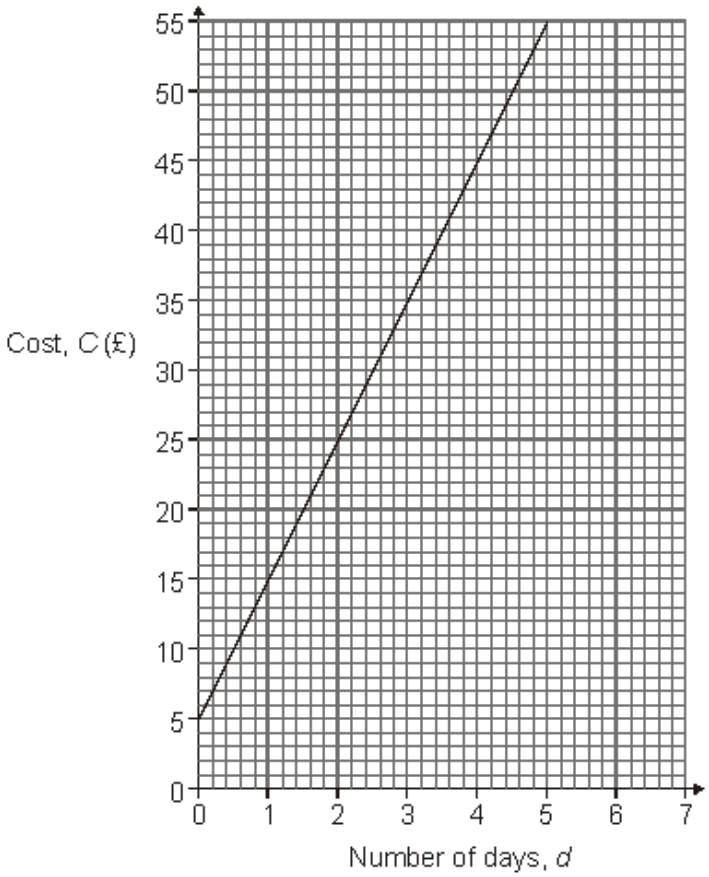
☐ Always true ☐ Sometimes true ☐ Never true

(1)

(Total 5 marks)

Q5. An activity centre hires out road bikes and mountain bikes.

The graph shows the cost, C (£) of hiring a road bike for a number of days, d.



(a) Circle the correct formula connecting the cost, C and the number of days, d for hiring a road bike.

$C = 2d + 5$ $C = 5d + 10$ $C = 10d + 5$

.....

.....

(1)

(b) The cost of hiring a mountain bike is given by the formula $C = 5d + 15$

Rowan would like to hire a mountain bike.

He thinks that a mountain bike will always cost more to hire than a road bike.

Is this true? Yes ☐ No ☐

Explain your answer.

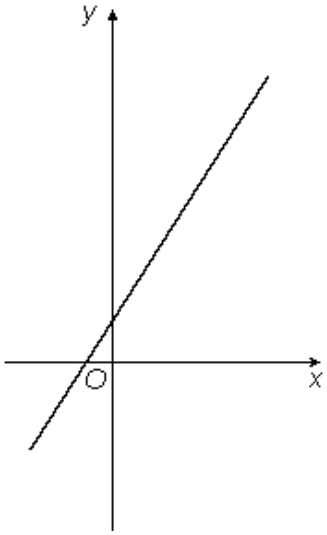
.....

.....

(3)

(Total 4 marks)

Q6. The graph shows a sketch of the line $y = 3x + 1$



Not drawn accurately

(a) Does the point (–2, –5) lie on the line?

☐ Yes ☐ No

Explain your answer.

.....

.....

.....

.....

(2)

(b) On the graph, sketch the line $y = 3x + 4$

(2)

(c) Rearrange the formula $y = 3x + 1$ to make x the subject.

.....

.....

.....

Answer .....

(2)
(Total 6 marks)

Q7. (a) Complete the table of values for $y = 2x - 1$

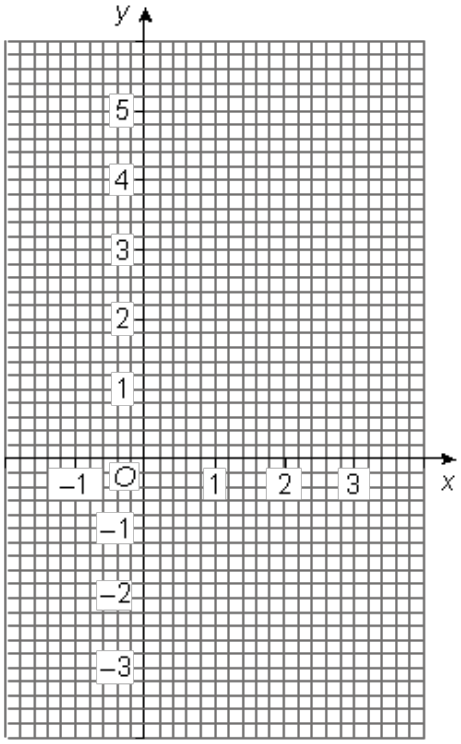
x	–1	0	1	2	3
y	–3		1		5

.....

.....

(1)

(b) On the grid below, draw the graph of $y = 2x - 1$ for values of x from –1 to +3



(2)
(Total 3 marks)

M1. (a) Two points calculated or plotted

B1 For each point or *(–1, –5)*
B1 Line through (0, –3) *(0, –3)*
B1 Line gradient 2 *(1, –1)*
(2, 1)
(3, 3)
(4, 5)

B2

Straight line drawn

B1

(b) Attempt to read off at $y = 4.5$ or $2x = 7.5$

or 4.5 as y coordinate

B1

3.75

ft Their graph

± 1 mm ($\frac{1}{2}$ square)

B1 ft

[5]

M2. (a) Correct plot

B1

(b) Can win with either (2, 3) or (6, 3) Both cannot be blocked

or Ali can only block one side, Sasha can go at the other side

Full explanation E2

Partial explanation E1

*eg two possible places to win **or** Can win with either (2, 3) or (6, 3)*

E2

[3]

M3. (a) $0 \rightarrow -1$ and $2 \rightarrow 3$

B1

(b) Straight line passing through
(–1, –3), (0, –1), (1, 1), (2, 3) and
(3, 5) ± $\frac{1}{2}$ small square

B1 (–1, –3), their (0, –1), (1, 1), their (2, 3) and (3, 5) plotted correctly ± $\frac{1}{2}$ small square
or Line through three or four correct points

B2

[3]

M4. (a) Fully correct rectangle

B1 for one correct side

B2

(b) (i) Sometimes true

B1

(ii) Never true

B1

(iii) Always true

B1

[5]

M5. (a) $C = 10d + 5$

B1

(b) Correct substitution of a value for d in formula

20, 25, 30

M1

Identifies equal pay at $d = 2$

M1 dep

No and cheaper at $d > 2$

oe

A1

Alternate method

Plots at least two correct coordinates on graph for mountain bike
(0, 15) (1, 20) (2, 25) (3, 30)

M1

Correct line at least as far as intersection at (2, 25)

M1 dep

No and cheaper at $d > 2$

A1

[4]

M6. (a) Yes and full explanation
eg, $-5 = 3 \times -2 + 1$ or $-5 = -6 + 1$
or $3 \times -2 + 1 = -5$ or $-6 + 1 = -5$

E1 For Yes and partial explanation
eg, values work in equation or $3 \times -2 + 1$ or $-6 + 1$

E2

(b) Line 'parallel' to existing line

B1

Line intersects *y*-axis between $1\frac{1}{2}$ and 4 cm above *x* axis

B1

(c) $3x = y - 1$

M1

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

A1

[6]

M7. (a) $0 \rightarrow -1$ and $2 \rightarrow 3$

B1

(b) Straight line passing through
(–1, –3), (0, –1), (1, 1), (2, 3) and
(3, 5) $\pm \frac{1}{2}$ small square

B1 (–1, –3), their (0, –1), (1, 1), their (2, 3) and (3, 5) plotted correctly $\pm \frac{1}{2}$ small square
or Line through three or four correct points

B2

[3]