

GCSE
MATHEMATICS (8300)
FOUNDATION
Algebra

Total number of marks: 34 per optional item

Q5a

(a) Solve $x - 3 = 14$

$x = \underline{\hspace{10cm}}$

(Total 1 mark)**Q5b**

(b) Solve $5y = 45$

$y = \underline{\hspace{10cm}}$

(Total 1 mark)**Q5c**

(c) Solve $8 + w = 6$

$w = \underline{\hspace{10cm}}$

(Total 1 mark)**Q7a**

Here is a number machine.

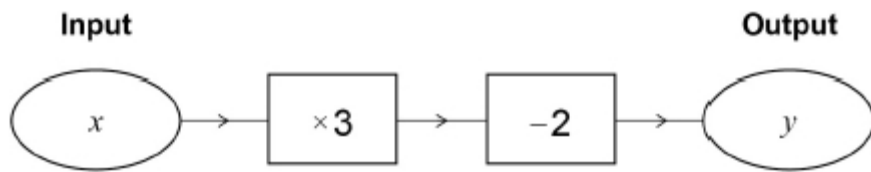


(a) Work out the output when the input is 4

(Total 1 mark)

Q7b

Here is a number machine.



(b) Work out the output when the input is -4

(Total 1 mark)

Q17

Match each expression in Column P with the equivalent expression in Column Q.

One has been done for you.

Column P

$$a^2 \times a$$

$$2a \times 3$$

$$12a^2 \div 2$$

$$10 \times \frac{1}{2}a^2$$

Column Q

$$6a$$

$$5a$$

$$a^3$$

$$5a^2$$

$$6a^2$$

(Total 3 marks)

Q7

Choose **one** of the following to make a correct statement each time.

is less than

is equal to

is greater than

When $a = 3$ $4a$ _____ $a + 7$

When $b = 8$ $2b - 6$ _____ $18 - b$

When $c = 0.5$ $3c$ _____ $c + 1$

When $d = -1$ d _____ d^2

(Total 4 marks)

Q5b

(b) Simplify $5(x + 3) - x + 2$

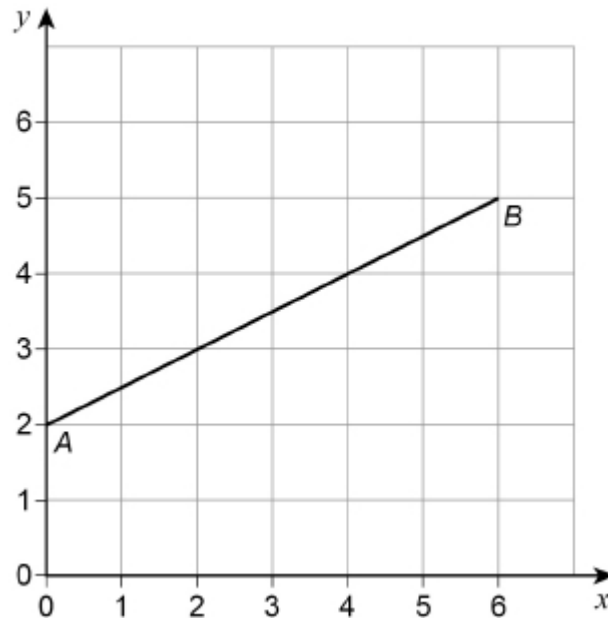
(Total 3 marks)

Q7a

Line AB is shown on the grid.

A is the point $(0, 2)$

B is the point $(6, 5)$



- (a) Work out the coordinates of the midpoint of the line AB .

Answer (_____ , _____)

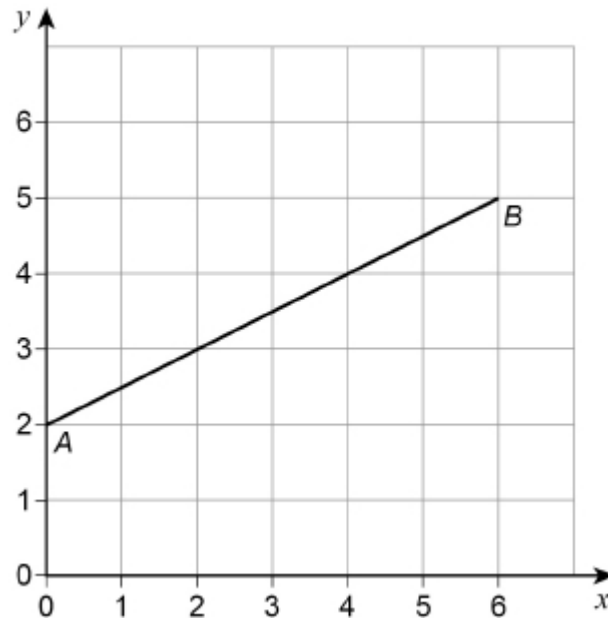
(Total 1 mark)

Q7b

Line AB is shown on the grid.

A is the point $(0, 2)$

B is the point $(6, 5)$



(b) C is another point on AB .

C is closer to B than to A .

The coordinates of C are whole numbers.

Work out the coordinates of C .

Answer (_____ , _____)

(Total 1 mark)

Q14

The n th term of a sequence is $5n - 2$

Work out the 3rd term.

Circle your answer.

51

5

123

13

(Total 1 mark)

Q13a

Here is a formula for the amount of water needed to cook rice.

$$w = 1.5r + 0.5$$

w is the number of cups of water needed

r is the number of cups of rice to be cooked

- (a) How many cups of water are needed to cook 7 cups of rice?

(Total 2 marks)

Q22a

Here is a rule for a sequence.

After the first two terms, each term is half the sum of the previous two terms

- (a) Here is a sequence that follows this rule.

2 10 6

Show that the 6th term is the first one that is **not** a whole number.

(Total 3 marks)

Q15a

A company uses this formula to work out the cost, £ A , of a taxi ride.

$$A = 4 + 1.8m + b$$

£4 is a fixed charge

m is the number of miles travelled

£ b is a charge for booking online

- (a) Clare books a taxi online and travels 8 miles.
She pays £20 altogether.

How much is the charge for booking online?

(Total 3 marks)

Q15b

A company uses this formula to work out the cost, £ A , of a taxi ride.

$$A = 4 + 1.8m + b$$

£4 is a fixed charge

m is the number of miles travelled

£ b is a charge for booking online)

- (b) A different company
- has a fixed charge of £3
 - charges £1.90 per mile
 - has no charge for booking online.

Write a formula for the cost, £ C , of a taxi ride with this company.

(Total 1 mark)

Q22a

Here is a formula.

$$T = n^2 - \frac{12}{n}$$

- (a) Work out T when $n = 5$

(Total 1 mark)

Q28

Solve $5(x + 3) < 60$

(Total 2 marks)

Q26a

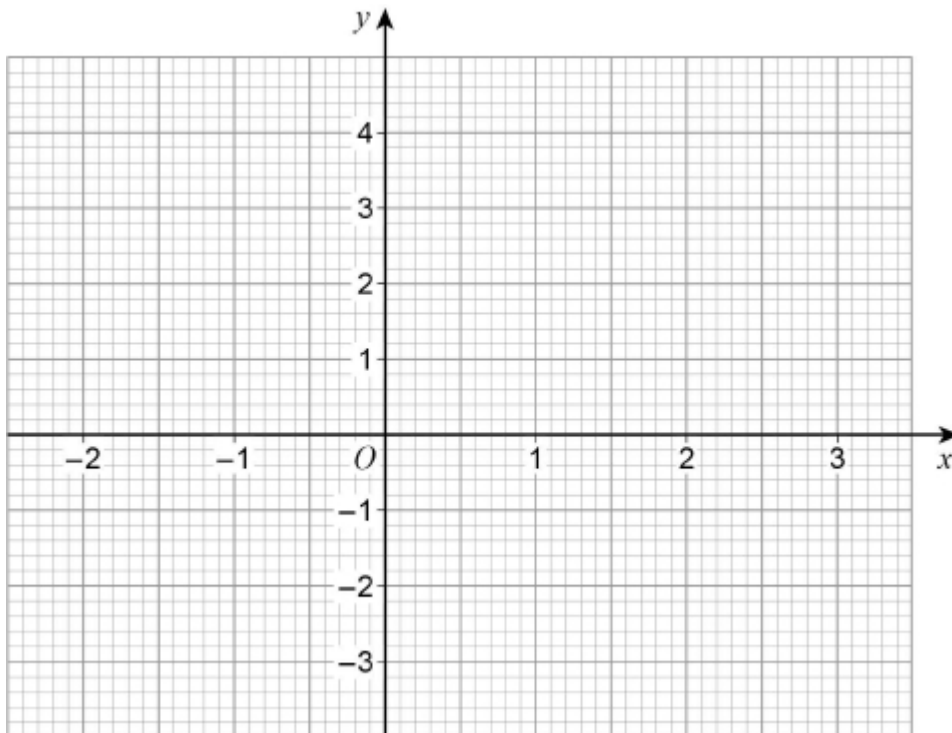
- (a) Complete the table of values for $y = x^2 - x - 2$

x	-2	-1	0	1	2	3
y			-2	-2		4

(Total 2 marks)

Q26b

- (b) Draw the graph of $y = x^2 - x - 2$ for values of x from -2 to 3



(Total 2 marks)