

1 (a) Write down

(i) a multiple of 7 between 80 and 90,

Answer(a)(i) [1]

(ii) a prime number between 30 and 40,

Answer(a)(ii) [1]

(iii) a square number between 120 and 130,

Answer(a)(iii) [1]

(iv) a cube number between 100 and 200.

Answer(a)(iv) [1]

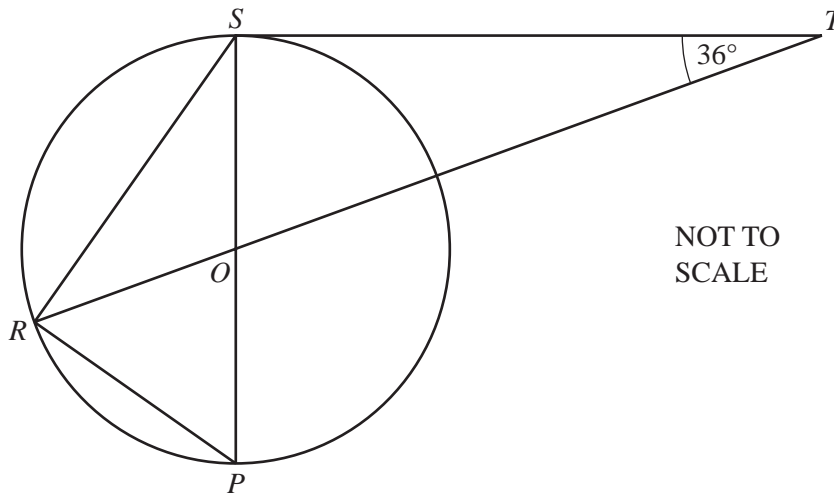
(b) Write the following numbers in order, starting with the smallest.

$$\sqrt{0.31}$$

$$\frac{5}{9}$$

55%

Answer(b) < < [2]



The points P , R and S lie on a circle, centre O .
 ROT is a straight line and TS is a tangent to the circle at S .
 Angle $STO = 36^\circ$.

- (a) Write down the size of angle TSO , giving a reason for your answer.

Answer(a) Angle $TSO =$ because
 [2]

- (b) (i) Calculate the size of angle TOS .

Answer(b)(i) Angle $TOS =$ [1]

- (ii) Show that angle $OPR = 63^\circ$.

Answer(b)(ii)

[2]

- (c) (i) Write down the size of angle PRS .

Answer(c)(i) Angle $PRS =$ [1]

- (ii) Calculate the size of angle PSR .

Answer(c)(ii) Angle $PSR =$ [1]

3

Month	Total rainfall (mm)	Average daily sunshine (hours)
January	79	6
February	84	7
March	62	4.5
April	46	1.5
May	53	3.5
June	54	1.5

The table shows some data about rainfall and sunshine.

(a) For the **rainfall**, calculate

(i) the mean,

Answer(a)(i) mm [2]

(ii) the range.

Answer(a)(ii) mm [1]

(b) For the **sunshine**, find

(i) the mode,

Answer(b)(i) h [1]

(ii) the median.

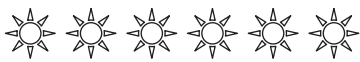

Answer(b)(ii) h [2]

(c) Dinesh draws a pie chart to display the **rainfall data**.

Calculate the sector angle for **February**.

Answer(c) [2]

(d) Amalia draws a pictogram to display the **sunshine data** for January and February.

January	
February	
March	

(i) Complete the key for the pictogram.

	represents
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[1]

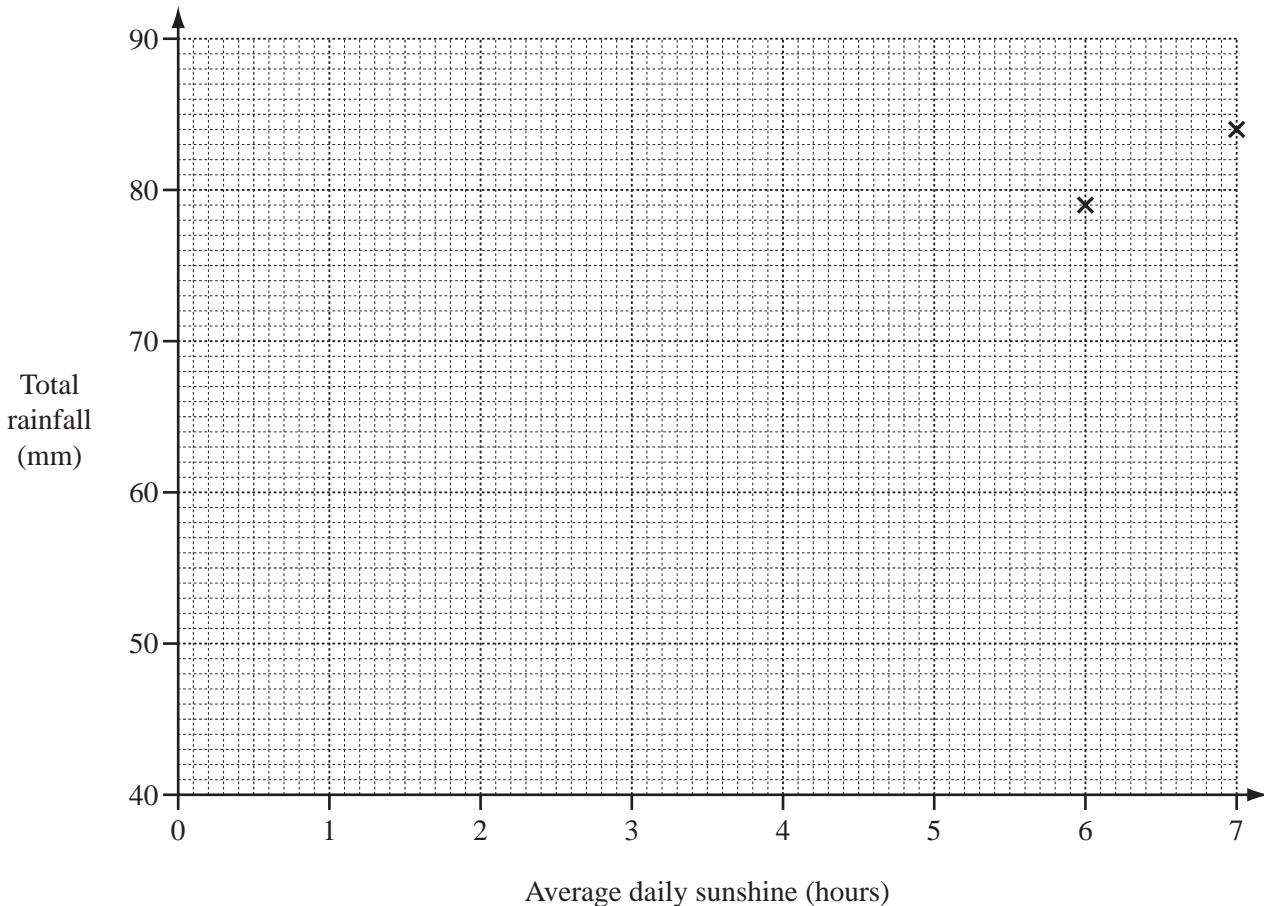
(ii) Complete the pictogram for March.

[1]

(e) Priya draws a scatter diagram to find the correlation between rainfall and sunshine for January to June.

(i) Complete the scatter diagram below.

January and February are plotted for you.

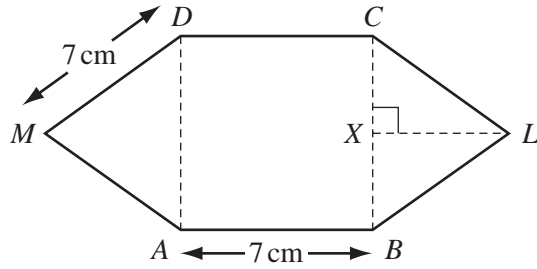


[2]

(ii) What type of correlation does the scatter diagram show?

Answer(e)(ii)

[1]



NOT TO SCALE

In the diagram, $ABCD$ is a square of side 7 cm.
 BLC and DMA are **equilateral** triangles.

(a) Find the perimeter of the shape $ABLCDM$.

Answer(a) cm [1]

(b) (i) Write down the size of angle CBL .

Answer(b)(i) Angle $CBL =$ [1]

(ii) Calculate the length of LX .

Answer(b)(ii) $LX =$ cm [2]

(c) (i) Calculate the area of triangle BLC .

Answer(c)(i) cm^2 [2]

(ii) Calculate the area of the shape $ABLCDM$.

Answer(c)(ii) cm^2 [2]

5 A shopkeeper buys cheese for \$3.75 per kilogram and sells it for \$5.10 per kilogram.

(a) Calculate his percentage profit.

Answer(a) % [3]

(b) Mrs Garcia buys cheese from the shopkeeper.

Calculate the number of **grams** of cheese she can buy for \$2.04 .

Answer(b) g [2]

(c) The shopkeeper sells 7 kg of cheese and has 3 kg left.

(i) He reduces his selling price of \$5.10 per kilogram by 70%.

Calculate the reduced price.

Answer(c)(i) \$ [2]

(ii) He sells the 3kg of cheese at the reduced price.

Calculate the **total** amount of money he receives by selling all the cheese.

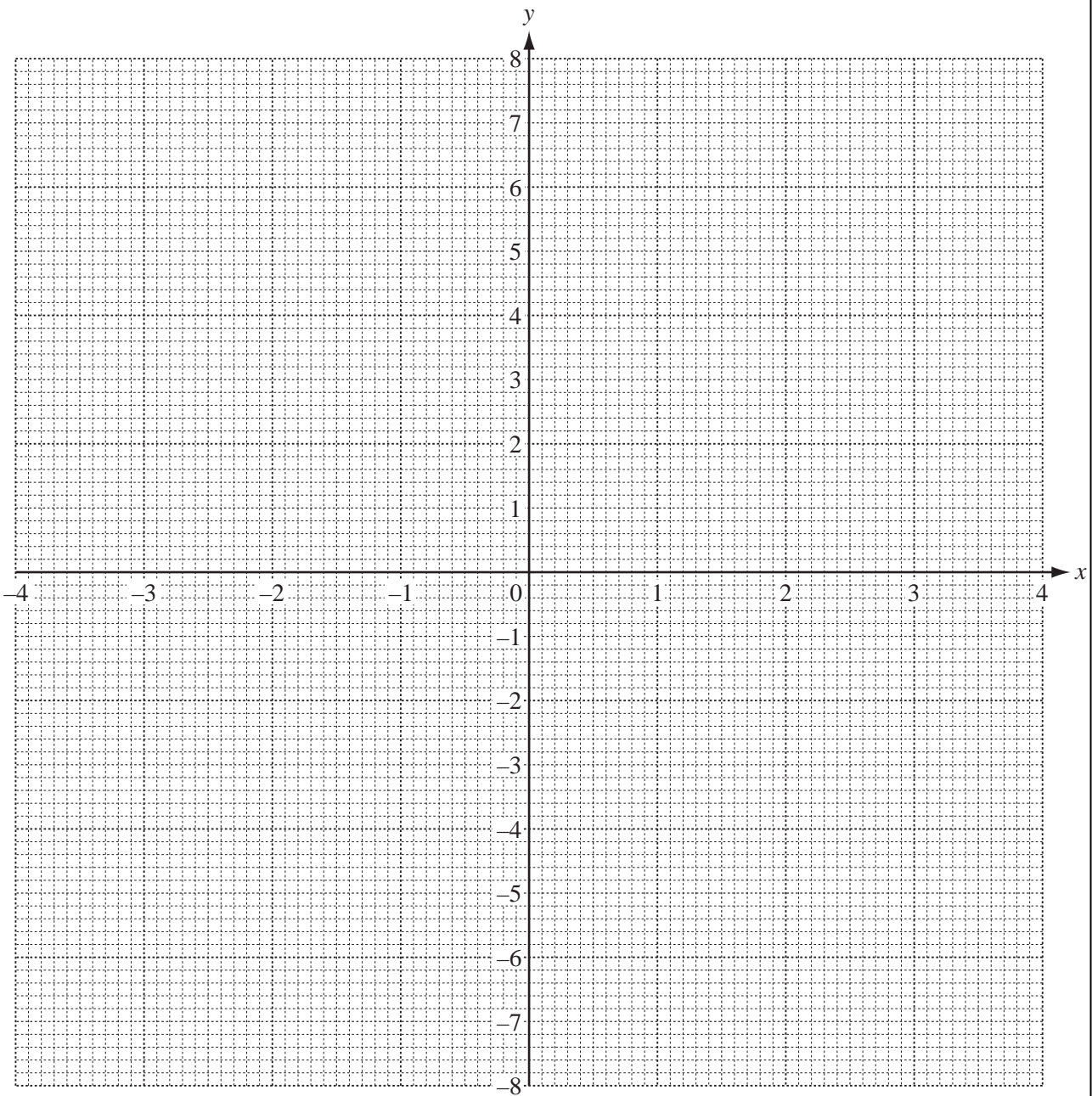
Answer(c)(ii) \$ [2]

- 6 (a) Complete the table of values for $y = \frac{4}{x}$, $x \neq 0$.

x	-4	-3	-2	-1	-0.5		0.5	1	2	3	4
y		-1.3	-2		-8		8	4	2		

[2]

- (b) On the grid below, draw the graph of $y = \frac{4}{x}$, for $-4 \leq x \leq -0.5$ and $0.5 \leq x \leq 4$.



[4]

(c) Complete the following statement.

The point $(-2.5, \dots)$ lies on the graph of $y = \frac{4}{x}$. [1]

(d) (i) On the grid, draw the line $y = 5$. [1]

(ii) Use your graphs to solve the equation $\frac{4}{x} = 5$.

Answer(d)(ii) $x = \dots$ [1]

(e) (i) On the grid, draw the straight line joining the points $(-0.5, -8)$ and $(2, 2)$. [2]

(ii) Find the gradient of this line.

Answer(e)(ii) \dots [1]

(iii) Write down the equation of this line in the form $y = mx + c$.

Answer(e)(iii) $y = \dots$ [2]

7 (a) Solve the equation.

$$4x + 3 = 2 + 6x$$

Answer(a) $x =$ [2]

(b) Simplify.

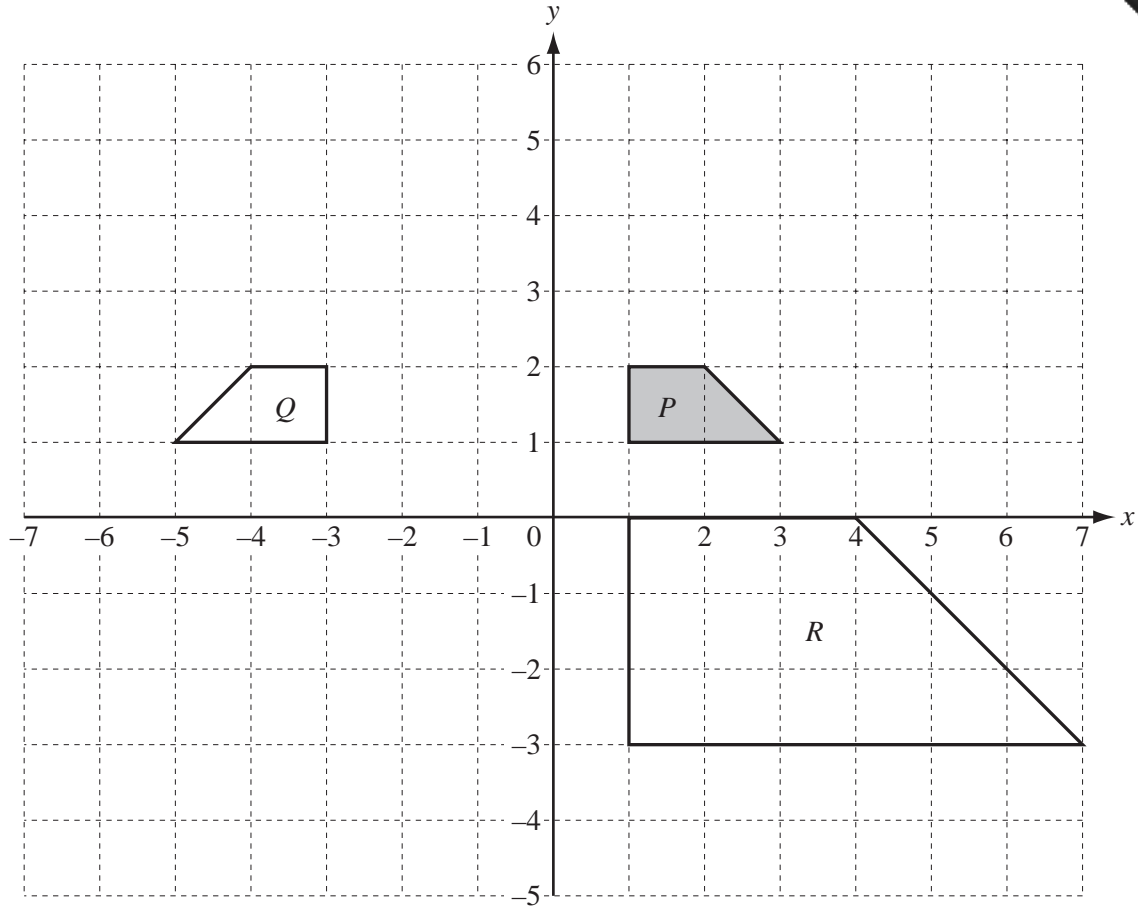
$$7(3x - 4y) - 3(5x + 2y)$$

Answer(b) [2]

(c) Factorise completely.

$$6g^2 - 3g^3$$

Answer(c) [2]



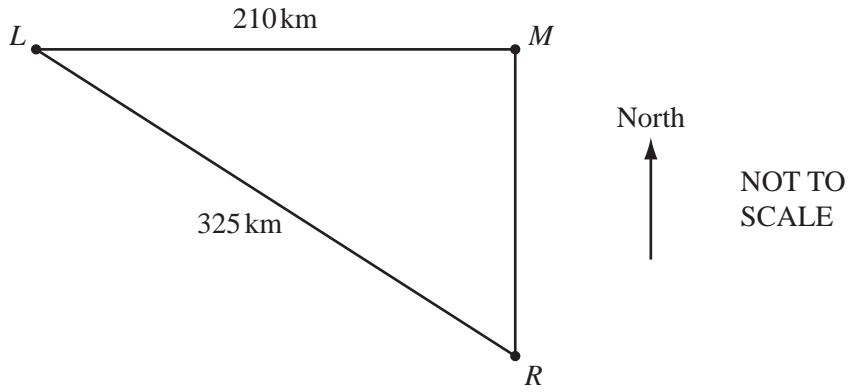
Shapes *P*, *Q*, and *R* are shown on the grid.

(a) On the grid, draw the image of **shape P** after

- (i) a rotation through 180° about the origin, [2]
- (ii) a reflection in the line $y = 3$, [2]
- (iii) a translation by the vector $\begin{pmatrix} -5 \\ 3 \end{pmatrix}$. [2]

(b) Describe fully the **single** transformation which maps

- (i) shape *P* onto shape *Q*,
 Answer(b)(i) [2]
- (ii) shape *P* onto shape *R*.
 Answer(b)(ii) [3]



The diagram shows three islands, L , M and R .

L is due west of M and R is due south of M .

$LM = 210$ km and $LR = 325$ km.

(a) Calculate the distance RM .

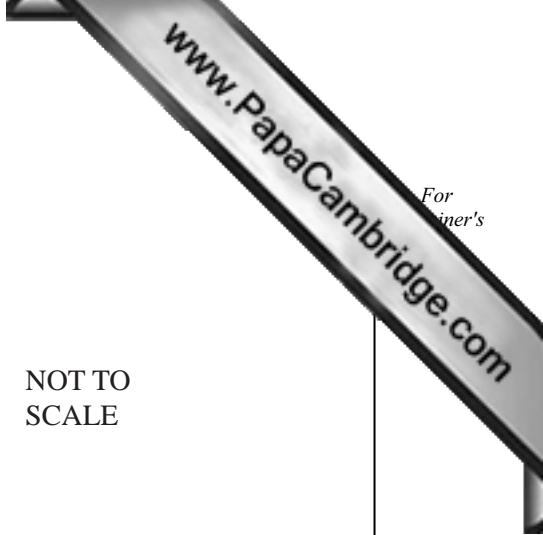
Answer(a) $RM = \dots\dots\dots$ km [3]

(b) (i) Use trigonometry to calculate angle LRM .

Answer(b)(i) Angle $LRM = \dots\dots\dots$ [2]

(ii) Find the bearing of L from R .

Answer(b)(ii) $\dots\dots\dots$ [2]



- (c) (i) A ferry travels directly from M to L .
It leaves M at 06 15 and arrives at L at 13 45.

Calculate the average speed of the ferry in kilometres per hour.

Answer(c)(i) km/h [2]

- (ii) The ferry then travels the 325 km from L to R at an average speed of 37 km/h.

Calculate the time taken.

Give your answer in hours and minutes, to the nearest minute.

Answer(c)(ii) h min [3]

- (iii) The ferry leaves L at 14 00.

Use your answer to **part (c)(ii)** to find the time it arrives at R .

Answer(c)(iii) [1]

10

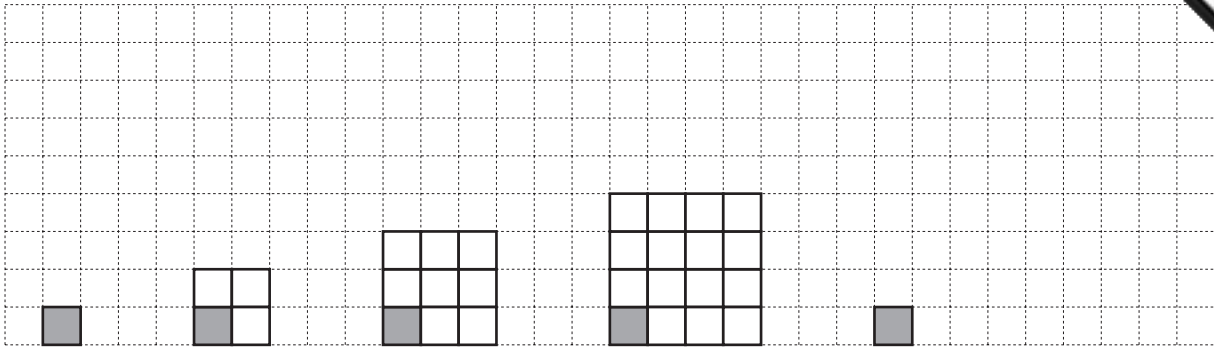


Diagram 1 Diagram 2 Diagram 3 Diagram 4 Diagram 5

Each of the diagrams above shows one small shaded square and a number of small unshaded squares. The diagrams form a sequence.

(a) Complete Diagram 5. [1]

(b) Complete the table.

Diagram	1	2	3	4	5		50		n
Total number of small squares	1	4	9	16					
Number of small shaded squares	1	1	1	1					
Number of small unshaded squares	0	3	8	15					

[7]

(c) Diagram p has 9999 small unshaded squares. Find p .

Answer(c) $p =$ [1]

- 11** Roberto earns a total of $\$p$ per week.
He works for t hours each week and is paid a fixed amount per hour.
He also receives a bonus of $\$k$ every week.

The formula for p is

$$p = 8t + k.$$

- (a)** Write down how much Roberto is paid per hour.

Answer(a) \$ [1]

- (b) (i)** Find how much Roberto earns in a week when he works for 40 hours and his bonus is \$35.

Answer(b)(i) \$ [2]

- (ii)** Find how many hours Roberto works in a week when he earns \$288 and his bonus is \$24.

Answer(b)(ii) h [3]

- (c)** Make t the subject of the formula.

Answer(c) $t =$ [2]
