

11 Here is a sequence of patterns made from counters.



Pattern
number 1



Pattern
number 2



Pattern
number 3

(a) In the space below, draw Pattern number 4

(1)

(b) Complete the table.

Pattern number	1	2	3	4	5
Number of counters	3	6	9		

(1)

(c) Work out the number of counters in Pattern number 10

(1)

Sven has exactly 70 counters.

(d) Can Sven make Pattern number 25 using his 70 counters?

Tick the appropriate box below.

Yes

No

Give a reason for your answer.

(1)

(Total for Question 11 is 4 marks)



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12 The diagram shows a box **B** and a carton **C**

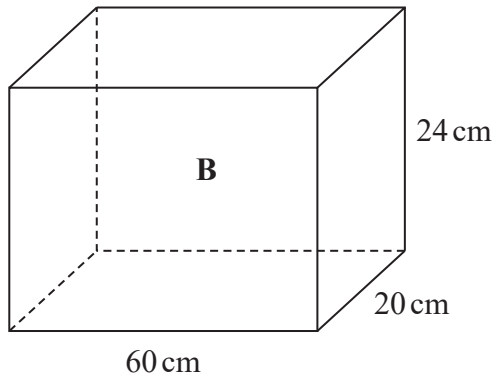
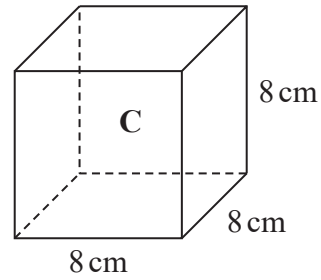


Diagram **NOT** accurately drawn



The box **B** is in the shape of a cuboid.
Each carton **C** is in the shape of an 8 cm cube.

Martha is going to put as many of the cartons as possible into the box.
She has enough cartons to do this.

Martha will then fill the remaining space inside the box with packing material.

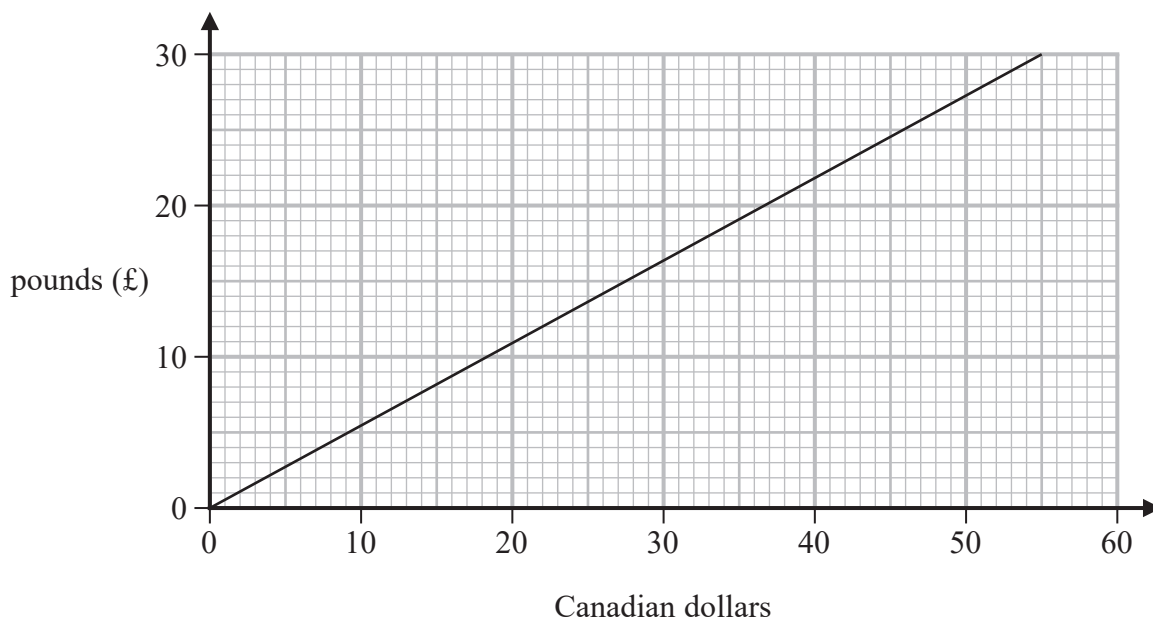
Work out the volume of the space inside the box that Martha will fill with packing material.

..... cm³

(Total for Question 12 is 5 marks)



13 Here is a conversion graph to change between Canadian dollars and pounds (£)



(a) Use the graph to change

(i) 46 Canadian dollars to pounds (£)

£.....

(ii) £10 to Canadian dollars.

..... Canadian dollars
(2)

Alana is on holiday in London and is going to Paris.
She is going to book a hotel in Paris.
She knows that

$$1 \text{ pound (£)} = 1.2 \text{ euros}$$

(b) Change 528 euros to Canadian dollars.

..... Canadian dollars
(3)

(Total for Question 13 is 5 marks)



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14 Iman walked for 3 hours 15 minutes.
He walked a distance of 18.2 kilometres.

Work out Iman's average speed for his walk.
Give your answer in km/h

..... km/h

(Total for Question 14 is 3 marks)



P 6 9 2 0 2 A 0 1 5 2 8

15 Here is a list of the ingredients needed to make 12 chocolate brownies.

<p>Chocolate brownies Ingredients for 12 brownies</p> <p>150 g flour 250 g chocolate spread 3 eggs</p>

Thalia buys exactly enough of these ingredients to make 120 of these brownies.

1.5 kg of flour costs £1.30

500 g of chocolate spread costs £2.60

6 eggs cost £1.10

Thalia sells all 120 brownies at £0.40 each.

Work out the profit that she makes.

£.....

(Total for Question 15 is 5 marks)



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16 (a) Expand and simplify $x(2x - 3) + 7(2x + 1) - 5$

.....
(3)

(b) Expand and simplify $(y + 4)(2 - y)$

.....
(2)

(c) Factorise fully $15b^5c - 35b^3c^9$

.....
(2)

(Total for Question 16 is 7 marks)



P 6 9 2 0 2 A 0 1 7 2 8

17 Show that $6\frac{3}{4} \div 2\frac{4}{7} = 2\frac{5}{8}$

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(Total for Question 17 is 3 marks)



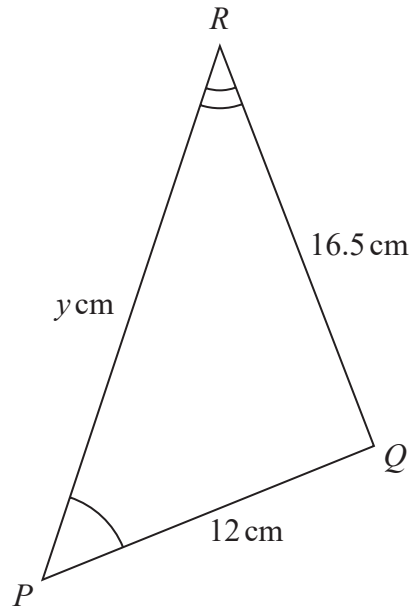
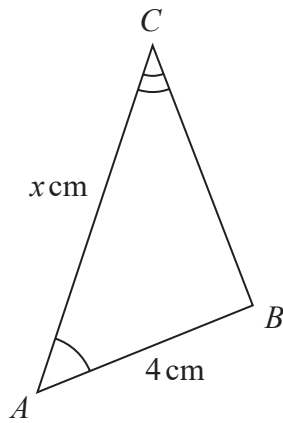


Diagram NOT accurately drawn

Triangle ABC is similar to triangle PQR

$AB = 4 \text{ cm}$ $PQ = 12 \text{ cm}$ $RQ = 16.5 \text{ cm}$ $AC = x \text{ cm}$ $PR = y \text{ cm}$

(a) Calculate the length of BC

..... cm
(1)

(b) Write down an expression for y in terms of x

$y =$
(1)

(Total for Question 18 is 3 marks)

