Name _____ Teacher's Name _____

Show your working.

1   Martin has £5. He wants to buy some pens costing 42p each.

   (a)   What is the maximum number of pens that Martin can buy with £5?

   ....Answer .... [2]

   (b)   Martin decides to buy 8 pens. How much change should he get from £5?

   ....

   ....Answer £ .... [3]

   Brian buys some of the same pens with a £10 note. He receives £3.28 change.

   (c)   How many pens did Brian buy?

   ....

   ....

   ....Answer .... [3]

2   Reflect the following shape in the dotted line.
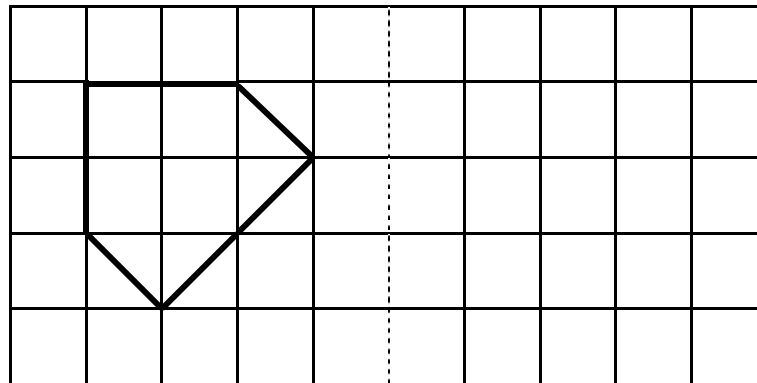
[2]

3   Simplify the following expression

   (a) $2t + 3 - t + 2$ ....Answer .... [1]

   Solve the following equations

   (b) $9y = 18$ ....Answer $y =$ .... [1]

   (c) $x + 3 = 10$ ....Answer $x =$ .... [1]

4   Calculate $\dfrac{4}{5}$ of 40kg.

   ....

   ....Answer .... kg [2]

5 A gardener draws the following scale diagram of his garden.
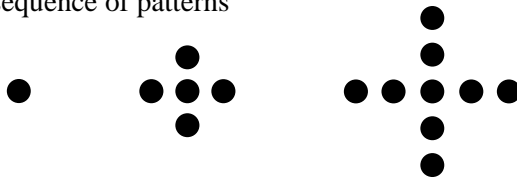
Length

Patio

Grass

Pond
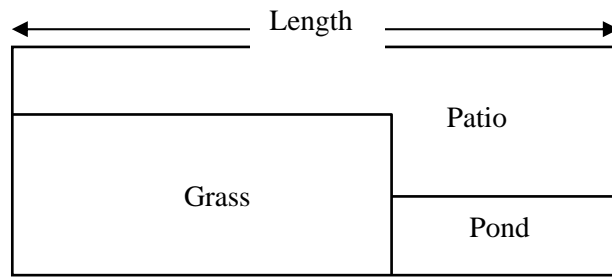
The scale used by the gardener is 1cm to 3m.

(a) By measuring the length of the diagram, calculate the total length of the garden in metres

....Answer .... m [2]

(b) The gardener has missed out a 6m long flower bed on his diagram.
How long should he draw the flower bed to add it to his diagram?

....Answer .... cm [2]

6 Here is a sequence of patterns

(a) Draw Pattern 4 in the space above. [1]

(b) Complete this table

Pattern	1	2	3	4	5
Number of dots	1	5	9		

[2]

(c) What pattern do you notice in the 'Number of dots' row in the table?

.... [1]

(d) How many dots will there be in the eighth pattern?　　　　Answer .... [1]

(e) Which pattern will contain 37 dots?　　　　Answer .... [1]

7 Here is a triangle.
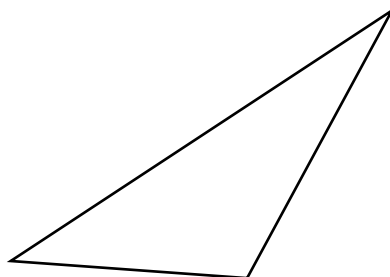
(a) On this triangle, mark an obtuse angle with the letter X. [1]

(b) On the same triangle, mark an acute angle with the letter Y. [1]

(c) Is this triangle isosceles, scalene, or equilateral? Briefly explain for your answer.

....

.... [2]

8 A bag contains 6 red balls, 4 blue balls, 12 green balls, and 2 black balls.
One ball is taken out of the bag at random.

(a) Find the probability that this ball is blue.

....Answer .... [1]

(b) Find the probability that the ball is either red or green.

....Answer .... [2]

(c) Find the probability that the ball is not black.

....Answer .... [2]

Here are five numbers.

659, 161, 718, 521, 990

(d) Write down the median of these numbers.   Answer .... [1]

(e) Calculate the mean of these numbers.

....Answer .... [2]

9 **(a)** Calculate the area of the following shape.

8cm

6cm
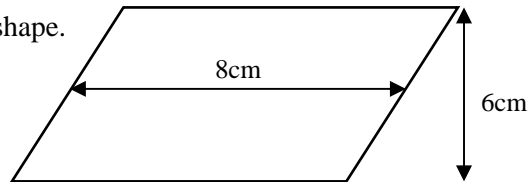
....Answer .... cm^2 [2]

(b) A rectangle has perimeter 26cm. One side has length 5cm.
What is the area of this rectangle?

Perimeter = 26cm   5cm

....

....

....
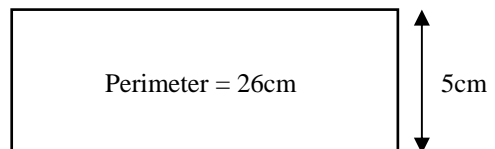
....Answer .... [4]
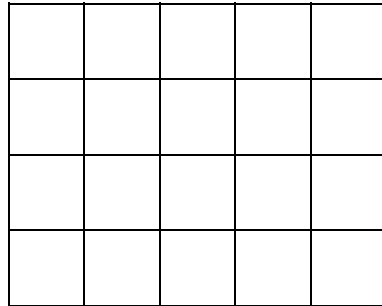
10 Adrian is walking from his home to the shops. He leaves home at 10.30, and arrives at the shops at 10.48.

(a) How many minutes did it take Adrian to walk to the shops.

....Answer .... min [1]

(b) Write your answer to (a) in hours, as a decimal.

....Answer .... hours [1]

(c) Adrian always walks at 5km per hour. How far does he walk to get to the shops?

....

....

....Answer .... km [3]

11 **(a)** **(i)** Shade in 20% of the grid below.

[1]

(ii) Write down the fraction of the grid which has not been shaded and give your answer as a fraction.

Answer .... [1]

(b) Sam buys a jacket. The jacket normally costs £30, but the price is reduced by 15% in a sale.

(i) How much does Sam pay for the jacket?

...

....Answer £.................................... [3]

(ii) Write 15% as a simplified fraction and as a decimal

Fraction: ....Answer .... [1]

Decimal: ....Answer .... [1]

For Questions 12 onwards there is no marked out space to write your answers. Where there is not enough space, write your answers on separate paper. In your actual GCSE examination, marked spaces are normally provided on the whole paper.

12. Solve the equations–
   a) $3x + 3 = -18$
   b) $99q - 5 = 100q + 4$ 5 marks

13. Find the value of y when $x = 3$
   a) $y = 7 - 3x$
   b) $y = x^2 + x^3$ 5 marks

14. Work out a formula for the perimeter and area of the triangle.   4 marks
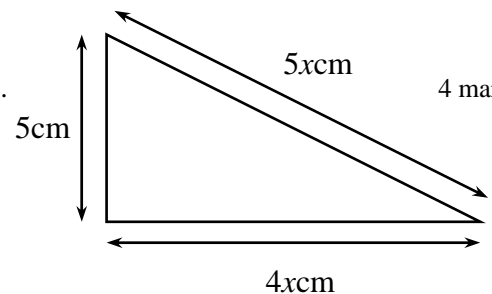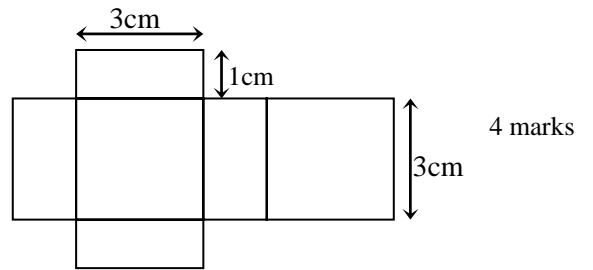

15. Work out–
   (a) 169^2
   (b) 7^4 2 marks

16. Showing your working order the following fractions starting with the smallest– $\frac{1}{100}, \frac{99}{100}, \frac{5}{6}, \frac{6}{7}, \frac{51}{60}$.

   3 marks

17. A car costs £12,000 plus vat at 17.5%.
   Calculate the cost of the car after VAT has been added.   3 marks

18. This is the net of a simple three dimensional solid.

3cm

1cm

3cm

4 marks

    a)   What is the name of the three dimensional solid that the net will make?
    b)   The solid made by this net has six faces. How many edges will this solid have?
    c)   Calculate the volume of the solid shape the net will make.
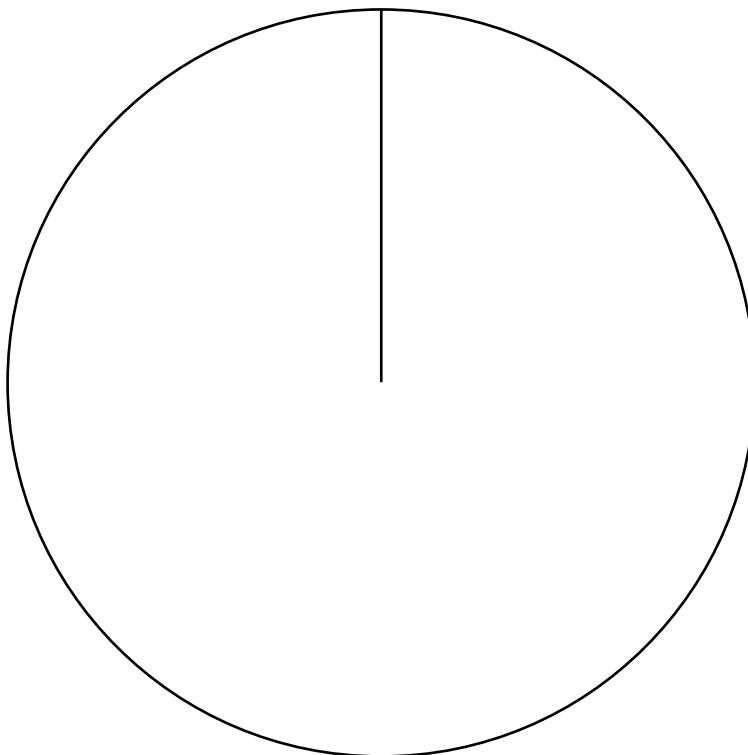
19. Calculate the missing angles x, y and z.

$y°$ $z°$ $77°$ $x°$ $163°$ $100°$

8 marks
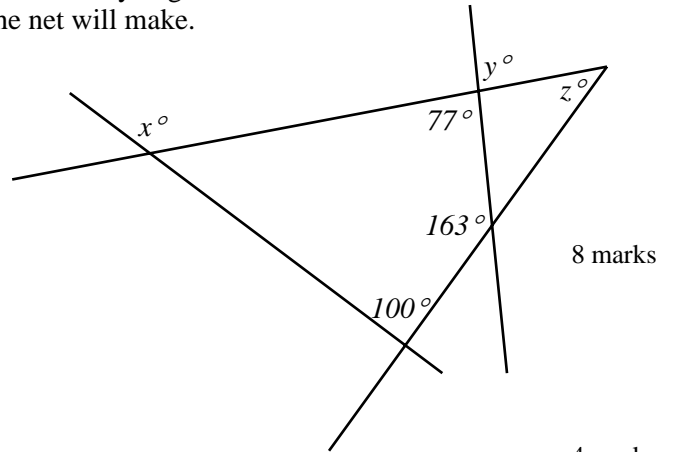
20.   a)   How many cubic metres is $1cm^3$?
    b)   How many cubic centimetres is $4m^3$?

4 marks

21. Sarah asked 90 girls what their favourite takeaway foods were
Here are her results.

Food	Fish and chips	Chinese meal	Indian meal	Pizza	Chicken
Number of girls	21	13	15	24	17

(a) Draw a pie chart to show these results.

Sarah also asked 72 boys about their favourite takeaway foods.
She drew a pie chart to show her results, and the angle for fish and chips was 145°

(b) How many boys said that fish and chips was their favourite takeaway food?   7 marks