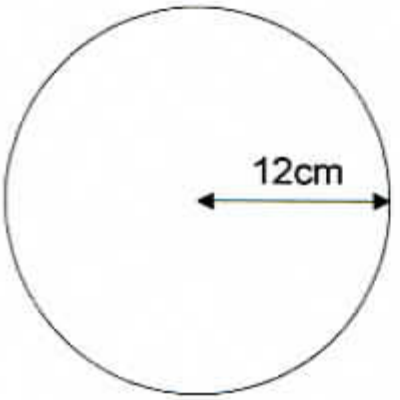
1. Find the areas and perimeters of the following shapes.
Give your answers to 1 decimal place.

(i)



$A = \pi \times 12^2$

$= 452.389...$

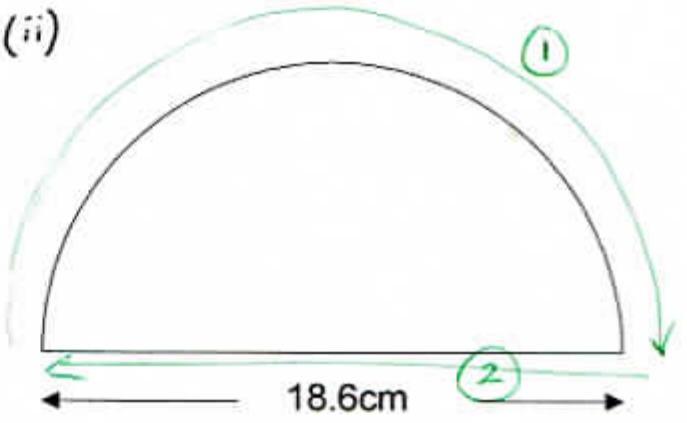
$P = 2 \times \pi \times 12$

$= 75.398...$

Area: 452.4 cm² [2]

Perimeter: 75.4 cm [2]

(ii)



$r = 18.6 \div 2 = 9.3\text{cm}$

$A = \pi \times 9.3^2 \div 2$

$= 135.858...$

$P = 2 \times \pi \times 9.3 \div 2 + 18.6$

$\quad\quad (1) \quad\quad + \quad (2)$

$= 47.8168...$

Area: 135.9 cm² [2]

Perimeter: 47.8 cm [2]

2. Use a calculator to work out the following, giving your answers to 2 decimal places

(i) $\dfrac{2.3 \times 61.4}{18.6 - 7.84}$

$= \dfrac{141.22}{10.76}$

$= 13.1245...$

Ans: 13.12 [2]

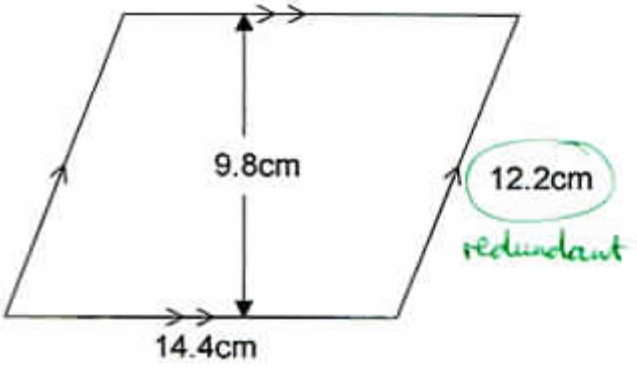
(ii) $\sqrt{4.56 \times 5.36^3}$

$= 26.49900...$

Ans: 26.50 [2]

3. Find the areas of the following shapes.

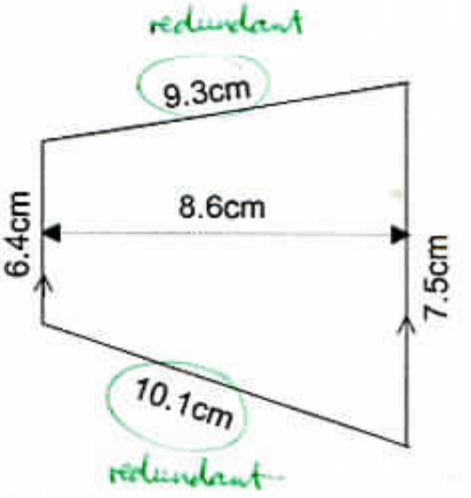
(i)



14.4 × 9.8

Ans: 141.12 cm² [2]

(ii)



$\frac{8.6}{2}(6.4+7.5)$

Ans: 206.4 cm² [3]

4. In a survey at school pupils were asked how many pets they had at home. The results were recorded in a frequency table.

(i) Find the mean number of pets

Number of pets (x)	frequency (f)	f × x
0	5	0
1	12	12
2	8	16
3	6	18
4	9	36
	40	82

$\text{mean} = \frac{82}{40} =$

Ans: 2.05 [4]

5. (i) Draw an ordered stem and leaf diagram of the following list of numbers with a key.

10.3 9.4 5.7 8.4 10.9 5.4 5.9 8.2 10.8 9.1 8.4 6.5

rough

5	7 4 9
6	5
7	
8	4 2 4
9	4 1
10	3 9 8

Answer

5	4 7 9
6	5
7	
8	2 4 4
9	1 4
10	3 8 9

key: 5|4 means 5.4

[5]

(ii) Find the mean, mode, median and range of the list of numbers in part (i)

$$\text{mean} = \frac{10.3 + 9.4 + 5.7 + \ldots\ldots + 9.1 + 8.4 + 6.5}{12}$$

$$= \frac{99}{12} = 8.25$$

Ans: Mean 8.25 [2]

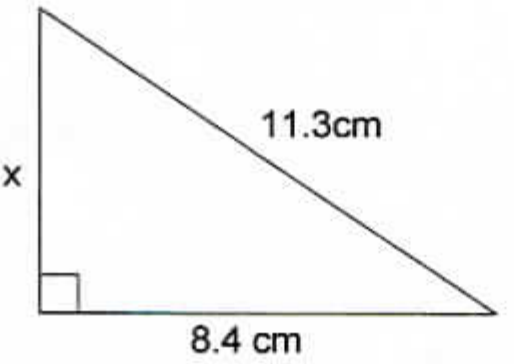
Ans: Mode 8.4 [1]

Ans: Median 8.4 [1]

Ans: Range 5.5 [1]

$10.9 - 5.4$

6. Find the length of the side of x of the triangle, giving your answer to 1 decimal place.



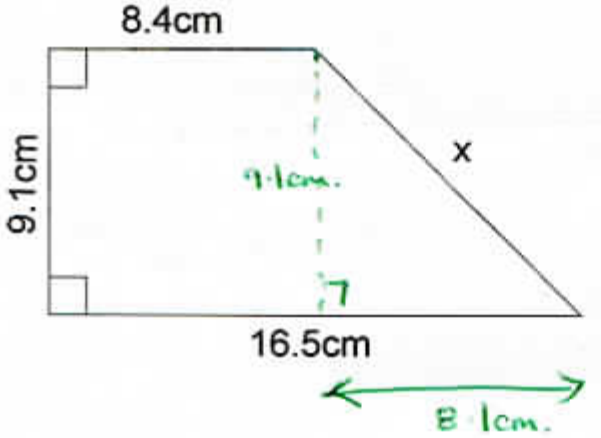
$x^2 + 8.4^2 = 11.3^2$

$x^2 = 11.3^2 - 8.4^2 = 57.13$

$x = \sqrt{57.13} = 7.558\ldots$

Ans: 7.6 cm [3]

7. Find the length x in the diagram. Give your answer to 1 decimal place.



$8.1^2 + 9.1^2 = x^2 = 148.42$

$x = \sqrt{148.42}$

$= 12.1827\ldots$

Ans: 12.2 cm [4]

8. (i) Find 24% of £24

0·24 x 24

Ans: £5·76 [2]

(ii) A camera costs £66.50 but is reduced by 36% in a sale.
What is the sale price?

0·36 x 66·50 = 23·94

66·50 − 23·94 = £42·56

Ans: £42·56 [3]

(iii) Change the following into percentages.

(a) $\frac{3}{4}$ x 100 (b) $\frac{5}{8}$ x 100 (c) 0.4 x 100

Ans: 75% Ans: 62·5% Ans: 40% [3]

(iv) The depth of water in a tank was 2.8 metres but after a month it has fallen by 25%.
What is the new depth of water?

0·25 x 2·8 = 0·7

2·8 − 0·7 = 2·1

Ans: 2·1m [2]

(v) In a school of 140 children 55% are girls.
How many girls are there in the school?

0·55 x 140 = 77

Ans: 77 [2]

9. A circle has area 88 cm^2. What is its radius. Give your answer to 1 decimal place.

$\pi \times r^2 = 88$

$r^2 = \frac{88}{\pi}$

$r = \sqrt{\frac{88}{\pi}} = 5.2925\ldots$

Ans: 5.3 [3]

10. (i) A man buys the following online
5 DVDs at £8.99 each
2 computer games at 23.50 each.
4 memory cards at £12.50 each.
What is the total cost of the items?

$(5 \times 8.99) + (2 \times 23.5) + (4 \times 12.5)$

$= 141.95$

Ans: £141.95 [3]

(ii) He must also pay VAT which increases the price by 20%.
What will the final bill be?

$0.20 \times 141.95 = 28.39$

$141.95 + 28.39$

Ans: £170.34 [2]

11. Use your calculator or otherwise to work out

(i) $2\frac{5}{24} + 4\frac{19}{36}$

$= \frac{485}{72} =$

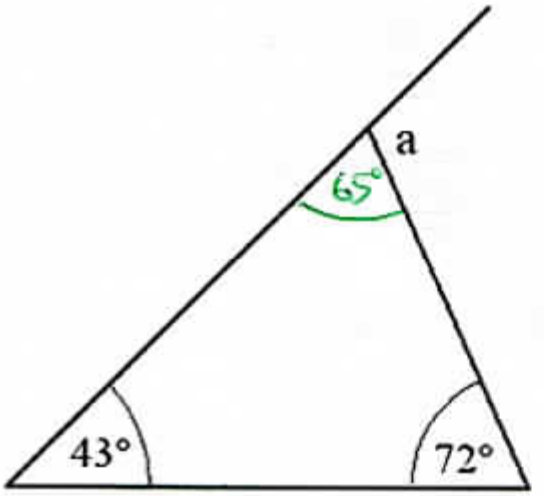
Ans: $6\frac{53}{72}$ [2]

(ii) $\sqrt{2\frac{1}{4}}$

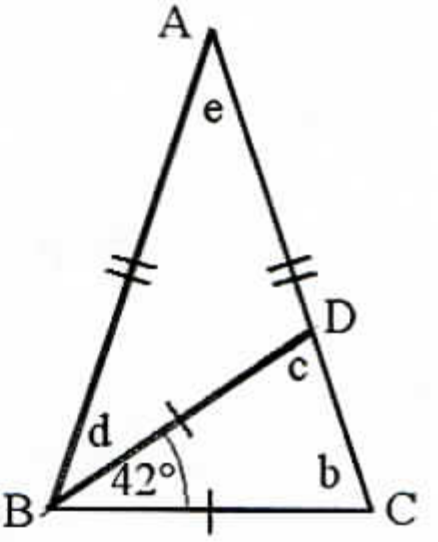
Ans: 1.5 [2]

12. Calculate the angles marked with letters

(i)



(ii) AB = AC & BC = BD



Ans: a = 115° [2]

$\frac{180-42}{2}$

Ans: b = 69° [1]

Ans: c = 69° [1]

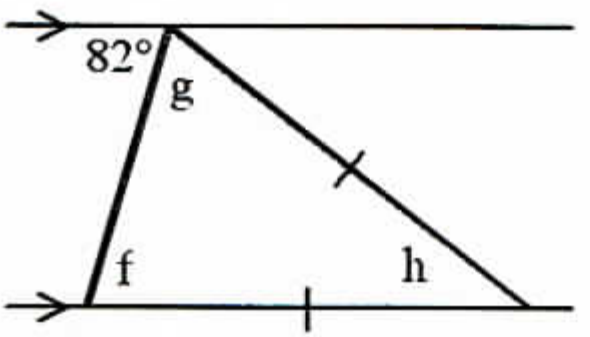
Ans: d = 27° [1]

69 − 42

Ans: e = 42° [1]

180 − 69 − 69

(iii)



Ans: f = 82° [1]

Ans: g = 82° [1]

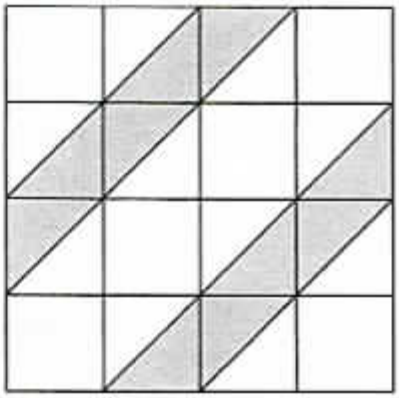
Ans: h = 16° [1]

13. (i) In a packet of sweets the ratio of chocolate to toffee to caramel is 4 : 3 : 5.
If there are 21 toffees how many many chocolates and how many caramels are there?

4 : 3 : 5) ×7
□ : 21 : □

Ans: chocolates 28 [1] Ans: caramels 35 [1]

(ii) In the diagram find the ratio of shaded to unshaded areas.



10 : 32
5 : 16

Ans: 5 : 16 [2]

14. Write the following ratios in their simplest form

(i) 72 : 54
36 : 27
12 : 9
4 : 3

Ans: 4 : 3 [1]

(ii) $3\frac{1}{5}$: 4
$\frac{16}{5}$: 4
16 : 20
4 : 5

Ans: 4 : 5 [2]

15. £150 is to be divided between Janet, Chris and Peter in the ratio 3 : 5 : 4.
How much does each get?

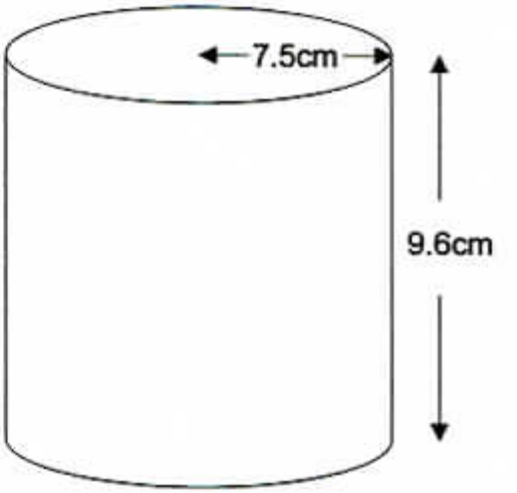
$3+5+4 = 12$

$150 \div 12 = 12.5$

3×12.5 5×12.5 4×12.5

Ans: Janet = £37.50 Chris = £62.50 Peter = £50 [4]

16. Find the volume of the cylinder in the diagram
Give your answer to the nearest whole number.

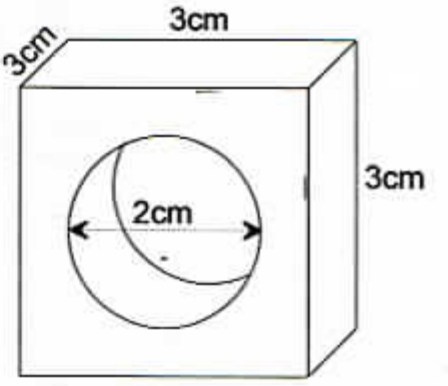


$\pi \times 7.5^2 \times 9.6$

$= 1696.46....$

Ans: $1696\ cm^3$ [4]

17. A wooden cube with each side 3cm has a hole of diameter 2cm drilled right through it.
What is the volume of wood left of the cube.
Give your answer to 2 decimal places.



volume of whole cube $= 3 \times 3 \times 3 = 27 cm^3$

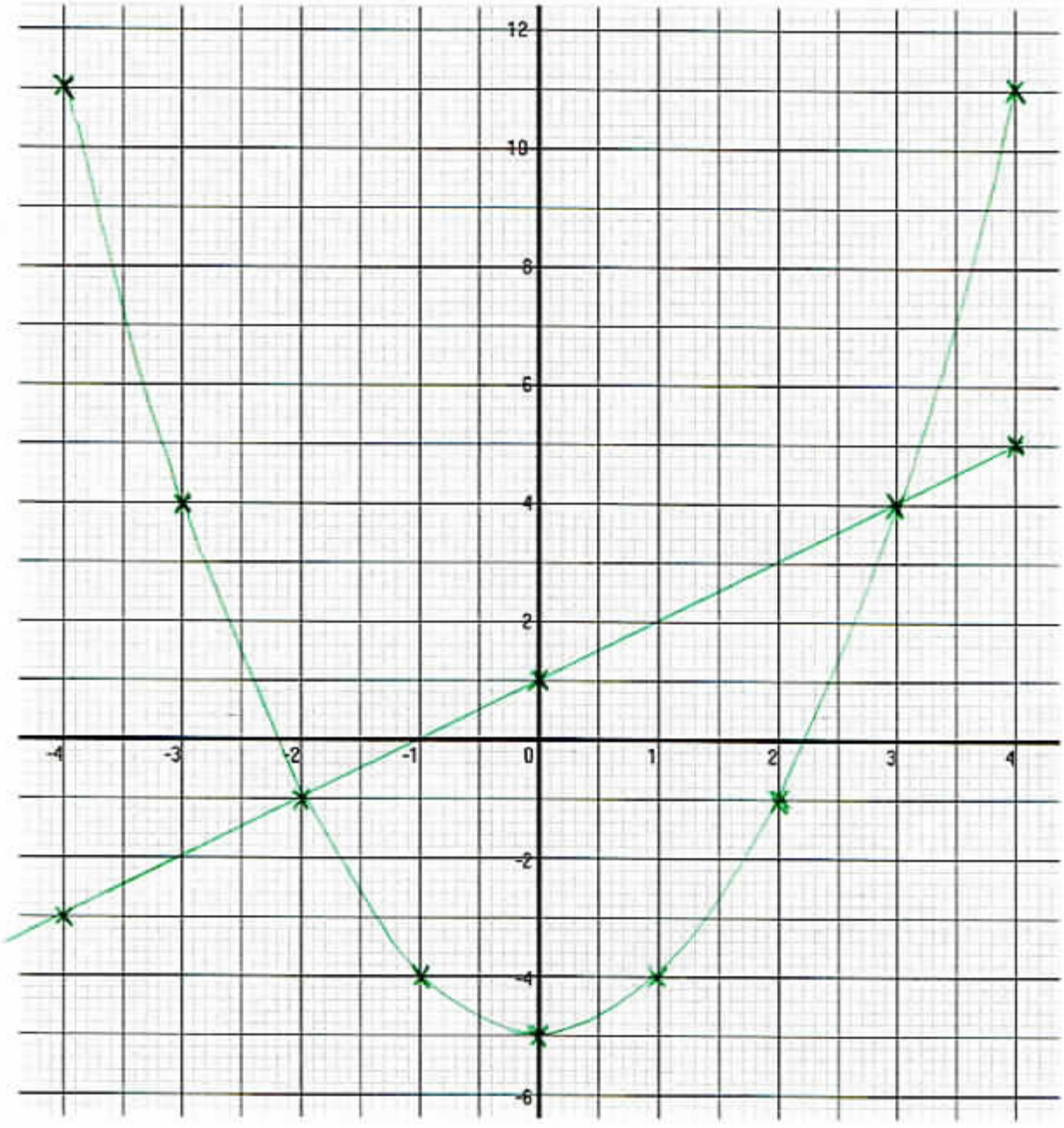
volume of hole $= \pi \times 1^2 \times 3 = 9.42477....$

$27 - 9.42477... = 17.575....$

Ans: $17.58 cm^3$ [4]

18 Complete the table and draw the graph of $y = x^2 - 5$

x	-4	-3	-2	-1	0	1	2	3	4
y	11	4	-1	-4	-5	-4	-1	4	11



Complete the table and on the same page draw the graph of $y = x + 1$

x	-4	0	4
y	-3	1	5

Mark the points where the graphs cross and write down the coordinates of these points.

Ans: $(-2, -1)$ and $(3, 4)$ [10]