

**Learner
Profile
Mathematics
Level 4
(Book 2)**

2.3.2.15

square numbers

1. $3^2 = 3 \times 3 = 9$ ✓

2. $6^2 = 6 \times 6 = 36$ ✓

3. $12^2 = 12 \times 12 = 144$ ✓

4. $8^2 = 8 \times 8 = 64$ ✓

5. $2^2 = 2 \times 2 = 4$ ✓

6. $4^2 + 3^2 = 16 + 9 = 25 = 5^2$ ✓

7. $7^2 + 2^2 = 49 + 4 = 53$ ✓

8. $1^2 + 2^2 + 3^2 + 4^2 = 1 + 4 + 9 + 16 = 30$ ✓

9. $\sqrt{64} = 8$ ✓ $16 \cdot \sqrt{81} = 9$ ✓

10. $\sqrt{36} = 6$ ✓ $17 \cdot \sqrt{49} = 7$ ✓

11. $\sqrt{1} = 1$ ✓

12. $\sqrt{25} = 5$ ✓

13. $\sqrt{121} = 11$ ✓

14. $\sqrt{16} = 4$ ✓

15. $\sqrt{144} = 12$ ✓

Recalling and showing understanding of square numbers.

Using inverse to identify square roots of given square numbers.

You understand square numbers and their inverse.

Make sure you know them and can recall them now. ✓ checked and can recall

Division (by chunking)

1. $108 \div 6 = 18$
$$\begin{array}{r} - 60 \\ \hline 48 \end{array}$$
$$\begin{array}{l} (10 \times 6) \\ (8 \times 6) \end{array}$$

$$10 + 8 = 18$$

$$18 \times 6 = 108 \quad \checkmark$$

2. $152 \div 8 = 19$
$$\begin{array}{r} - 80 \\ \hline 72 \end{array}$$
$$\begin{array}{l} (10 \times 8) \\ (9 \times 8) \end{array}$$

$$10 + 9 = 19$$

$$19 \times 8 = 152 \quad \checkmark$$

3. $225 \div 9 = 25$
$$\begin{array}{r} - 90 \\ \hline 135 \\ - 90 \\ \hline 45 \end{array}$$
$$\begin{array}{l} (10 \times 9) \\ (10 \times 9) \\ (5 \times 9) \end{array}$$

$$10 + 10 + 5 = 25$$

$$25 \times 9 = 225$$

4. $162 \div 6 = 27$
$$\begin{array}{r} - 60 \\ \hline 102 \\ - 60 \\ \hline 42 \end{array}$$

$$(10 \times 6)$$

$$(7 \times 6)$$

$$10 + 10 + 7 = 27 \quad 27 \times 6 = 162 \quad \checkmark$$

$$5. 238 \div 7 = \underline{34}$$

$$-70 (10 \times 7)$$

$$168$$

$$-70 (10 \times 7)$$

$$98$$

$$-70 (10 \times 7)$$

$$28 (4 \times 7)$$

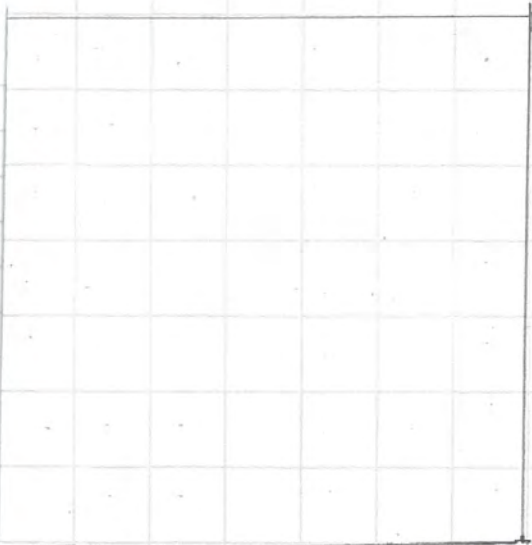
$$10 + 10 + 10 + \overset{4}{5} = \overset{34}{34} \quad \overset{34}{34} \times 7 = 238$$

You understand this method and are confident to use what you know. (u)

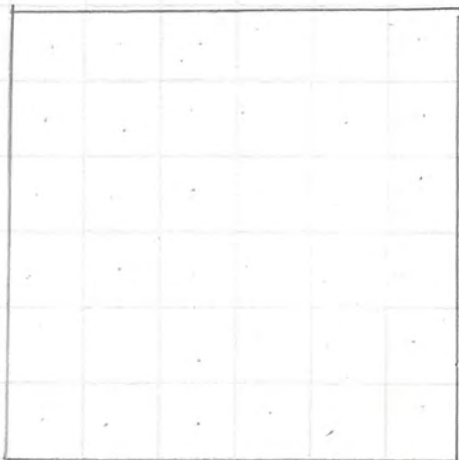
Wow you four I enjoyed this.

W.F.

To now use this method with 3-digit & 2-digit and with decimal numbers.



$$7 \times 7 = 7^2 = 49$$



$$6 \times 6 = 6^2 = 36$$

Understanding of
square numbers
shown as picture
form.

$$24 \cdot 2 \cdot 15$$

Factors

$$1 \times 36$$

$$2 \times 18$$

$$4 \times 9$$

$$6 \times 6$$

$$8 \times$$

$$12 \times 3$$

$$24 \times$$

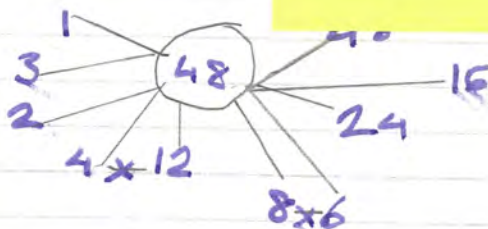
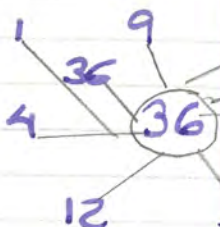
$$1 \times 48$$

$$2 \times 24$$

$$4 \times 12$$

$$8 \times 6$$

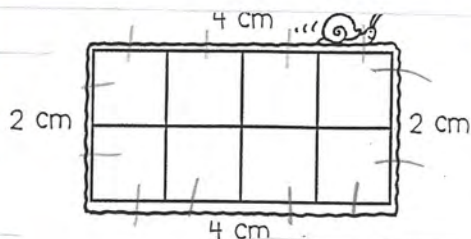
$$16 \times 3$$



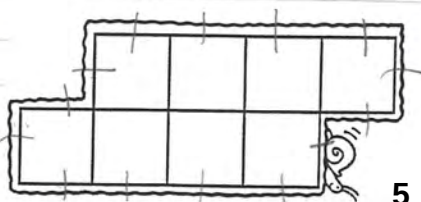
Factors identified using recall of pairs of multiplication facts.

Perimeter Use of multiplication facts to identify factors 😊. Well understood.

Perimeter is the ^{total} distance around the edge of something, add the answer would be a measurements.

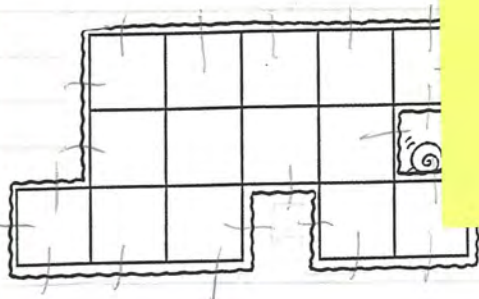
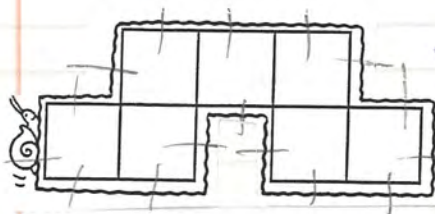


$$P = 12 \text{ cm}$$



$$P = 14 \text{ cm}$$

Simple perimeter
of shapes calculated.



1. $2\text{ cm} + 2\text{ cm} + 1\text{ cm} + 2\text{ cm} + 2\text{ cm} + 2\text{ cm} + 1\text{ cm}$
 $2\text{ cm} = 14\text{ cm}$ ✓

2. $5\text{ cm} + 5\text{ cm} + 5\text{ cm} = 15\text{ cm}$ ✓

3. $2\text{ cm} + 2\text{ cm} + 2\text{ cm} + 2\text{ cm} + 2\text{ cm} = 10\text{ cm}$ ✓

4. $3\text{ cm} + 3\text{ cm} + 3\text{ cm} + 3\text{ cm} = 16\text{ cm}$ ✓

5. Shape 2 has the biggest perimeter.

6. $15\text{ cm} - 10\text{ cm} = 5\text{ cm}$. There is 5 cm difference between the smallest and largest perimeter.

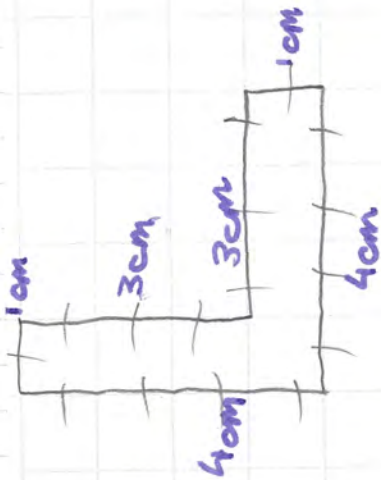
7. $160\text{ cm} < 40\text{ cm} + 40\text{ cm} + 40\text{ cm} + 40\text{ cm}$ ✓

8. 1 small square $= 0.5\text{ cm} \times 100 = 50\text{ cm} = 500\text{ mm}$

4 sides $\times 10 = 40\text{ cm} = 400\text{ mm} \times 4 = 160\text{ cm}$ ✓

$8\text{ cm} \times 10\text{ cm} = 80\text{ cm} = 800\text{ mm} \times 4 = 320\text{ cm}$

Creating own shapes
from a given
perimeter.



Perimeter = 16 cm

3.8.15

Perimeter Problem

Each side of this squared board is 40 cm.

Find the perimeter.

Find the perimeter of each small square.

Show how you did it.

Double the size of each small square.

Find the perimeter of the board now.



Double small square

$$4 \text{ cm} \times 10 = 40 \text{ cm} \times 4 = 160 \text{ cm}$$

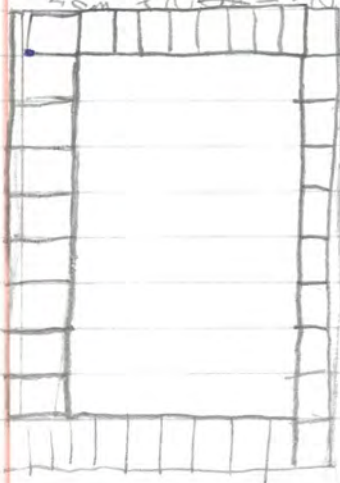
$$8 \text{ cm} \times 10 = 80 \text{ cm} \times 4 = 320 \text{ cm}$$

Doubled
x 2

$$40 \text{ cm} + 10 \text{ cm} = 50 \text{ cm} \times 4 =$$

$$40 \times 4 = 160 \text{ cm}$$

$$P = 160 \text{ cm}$$

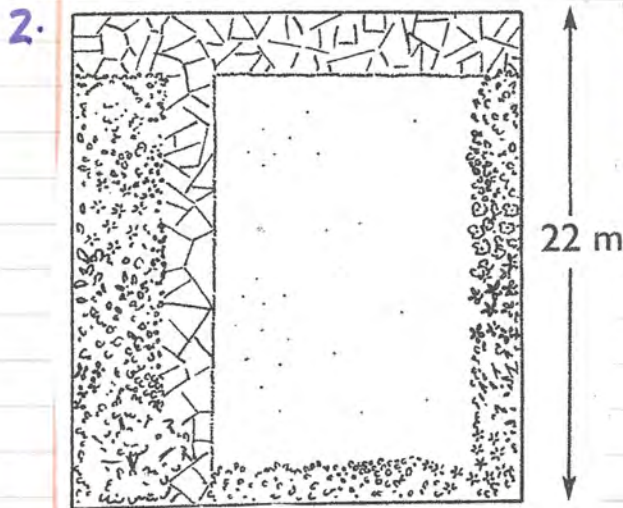
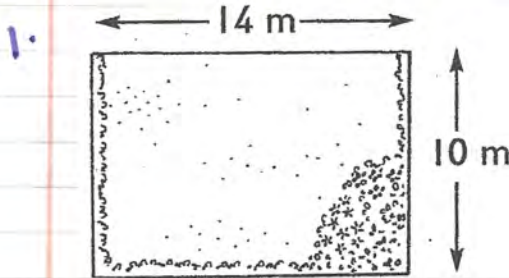


Pet Perimeter

How much fencing is escaping?
What is the cost

Using efficient method to calculate perimeter of rectangles.

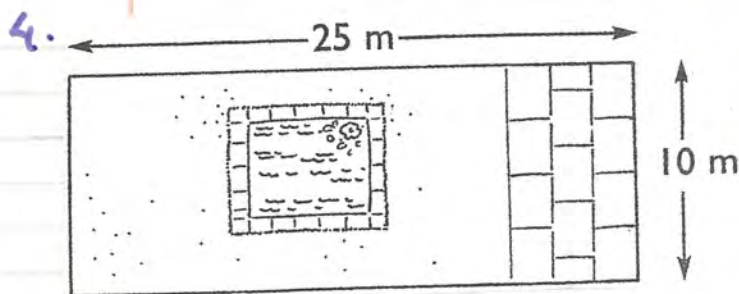
Calculating Cost using $\times$ by a multiple of 10.



$$\begin{aligned}
 P &= 22 \text{ m} \times 4 = 88 \text{ m} \\
 88 \text{ m} \times \text{£}3 &= \text{£}264 \\
 80 \text{ m} \times \text{£}3 &= \text{£}240 \\
 8 \text{ m} \times \text{£}3 &= \text{£}24
 \end{aligned}
 \quad \left. \begin{array}{l} \\ \\ \end{array} \right\} = \text{£}264$$



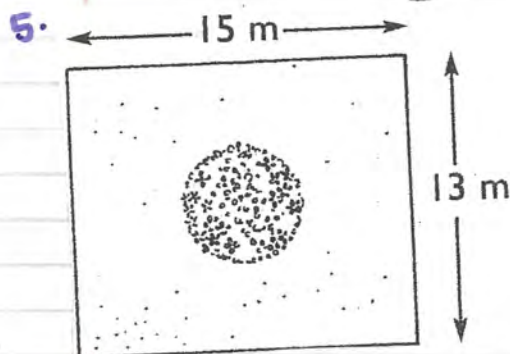
$$\begin{aligned}
 P &= (9 \text{ m} + 14 \text{ m}) \times 2 \\
 P &= 23 \text{ m} \times 2 = 46 \text{ m} \\
 46 \text{ m} \times \text{£}3 &= \text{£}138 \\
 40 \text{ m} \times \text{£}3 &= \text{£}120 \\
 6 \text{ m} \times \text{£}3 &= \text{£}18
 \end{aligned}
 \quad \left. \begin{array}{l} \\ \\ \end{array} \right\} = \text{£}138$$



$$P = (25\text{ m} + 10\text{ m}) \times 2$$

$$P = 35\text{ m} \times 2 = 70\text{ m}$$

$$70\text{ m} \times \text{£}3 = \text{£}210$$



$$P = (15\text{ m} + 13\text{ m}) \times 2$$

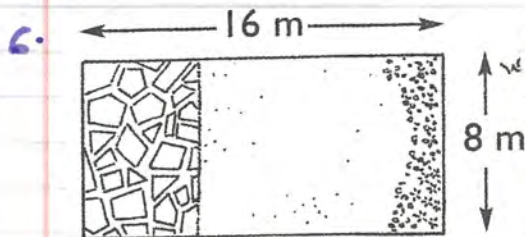
$$P = 28\text{ m} \times 2 = 56\text{ m}$$

$$56\text{ m} \times \text{£}3 =$$

$$50\text{ m} \times \text{£}3 = \text{£}150$$

$$4\text{ m} \times \text{£}3 = \text{£}12$$

$$\text{£}150 + \text{£}12 = \text{£}162$$



$$P = (16\text{ m} + 8\text{ m}) \times 2$$

$$P = 24\text{ m} \times 2 = 48\text{ m}$$

$$48\text{ m} \times \text{£}3 =$$

$$40\text{ m} \times \text{£}3 = \text{£}120$$

$$8\text{ m} \times \text{£}3 = \text{£}24$$

$$\text{£}120 + \text{£}24 = \text{£}144$$

Module 7 bk 2 pg 74

Well solved 😊
problems.

measuring to find perimeter of rectangles

1. P of A = $(1\text{ cm} + 12\text{ cm}) \times 2 = 26\text{ cm}$

2. P of B = $(8\text{ cm} + 2\text{ cm}) \times 2 = 20\text{ cm}$

3. P of C = $(3\text{ cm} + 3\text{ cm}) \times 2 = 16\text{ cm}$

4. P of D = $(6 \text{ cm} + 2 \text{ cm}) \times 2 = 16 \text{ cm}$

5. P of E = $(3 \text{ cm} + 4 \text{ cm}) \times 2 = 14 \text{ cm}$

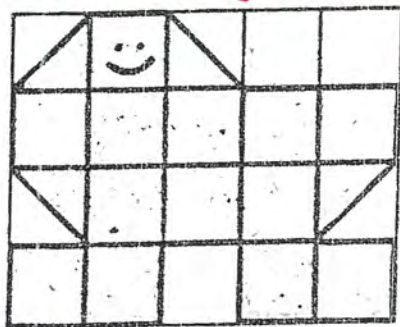
6. P of F = $(4 \text{ cm} + 4 \text{ cm}) \times 2 = 16 \text{ cm}$

7. Rectangles C, D and F have the same perimeter 16 cm.

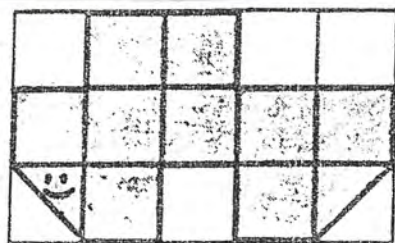
* You understand and have used an efficient method to find perimeter of rectangles. Do you?

5.3.15

Calculating area
of shapes by
counting squares.



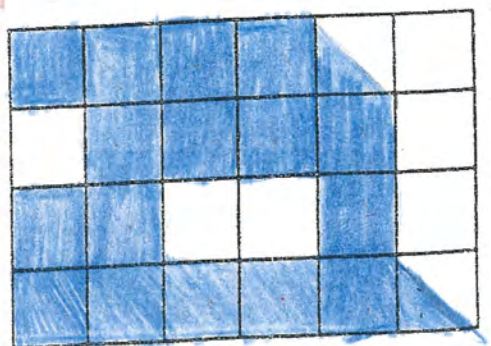
$A = 15 \text{ cm}^2$



$A = 10 \text{ cm}^2$



$A = 10 \text{ cm}^2$



$$17\text{cm}^2$$

$$A = 17\text{cm}^2$$

$$\text{Shape 1 } A = 15\text{cm}^2$$

$$\text{Shape 2 } A = 28\text{cm}^2$$

$$\text{Shape 3 } A = 30\frac{1}{2}\text{cm}^2$$

$$\text{Shape 4 } A = 16\text{cm}^2$$

~~Leaves~~

$$A = 16\text{cm}^2 \quad A = 17\text{cm}^2$$

$$A = 14\text{cm}^2 \quad A = 10\text{cm}^2$$

$$A = 10\text{cm}^2$$

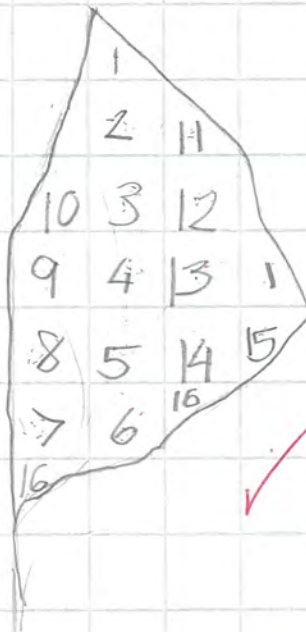
$$A = 13\text{cm}^2$$

$$A = 8\text{cm}^2$$

$$A = 13\text{cm}^2$$

You have found the area of irregular shapes by counting squares and using rule $\frac{1}{2}$ or more is 1 square.

$$A = 16 \text{ cm}^2$$



$$A = 16 \text{ cm}^2$$



This is
greater
than 16.

$$A = 24 \text{ cm}^2$$

I will check over
my work next

- Calculating area using $l \times w$.

- $\times 20 / \times 5$ shown

- Use of inverses to find missing measurements from given areas.

$$2,400 \text{ cm}^2$$

$$24 \text{ cm}^2 \times 100 = 2,400 \text{ cm}^2$$

$$28 \text{ cm}^2$$

$$28 \text{ cm}^2 \times 100 = 2,800 \text{ cm}^2$$

$$24 \text{ cm}^2$$

$$8 \text{ m} \times 3 \text{ m} = 24 \text{ m}^2 \times 1,000 = 24,000 \text{ m}^2$$

$$4. 143 \text{ m} \times 20 \text{ m} = 2,860 \text{ m}^2$$

$$143 \text{ m} \times 2 = 286 \text{ m}^2 \times 10 = 2,860 \text{ m}^2$$

$$5. 486 \text{ m} \times 5 =$$

$$486 \text{ m} \times 10 = 4,860 \text{ m}^2 \div 2 = 2,430 \text{ m}^2$$

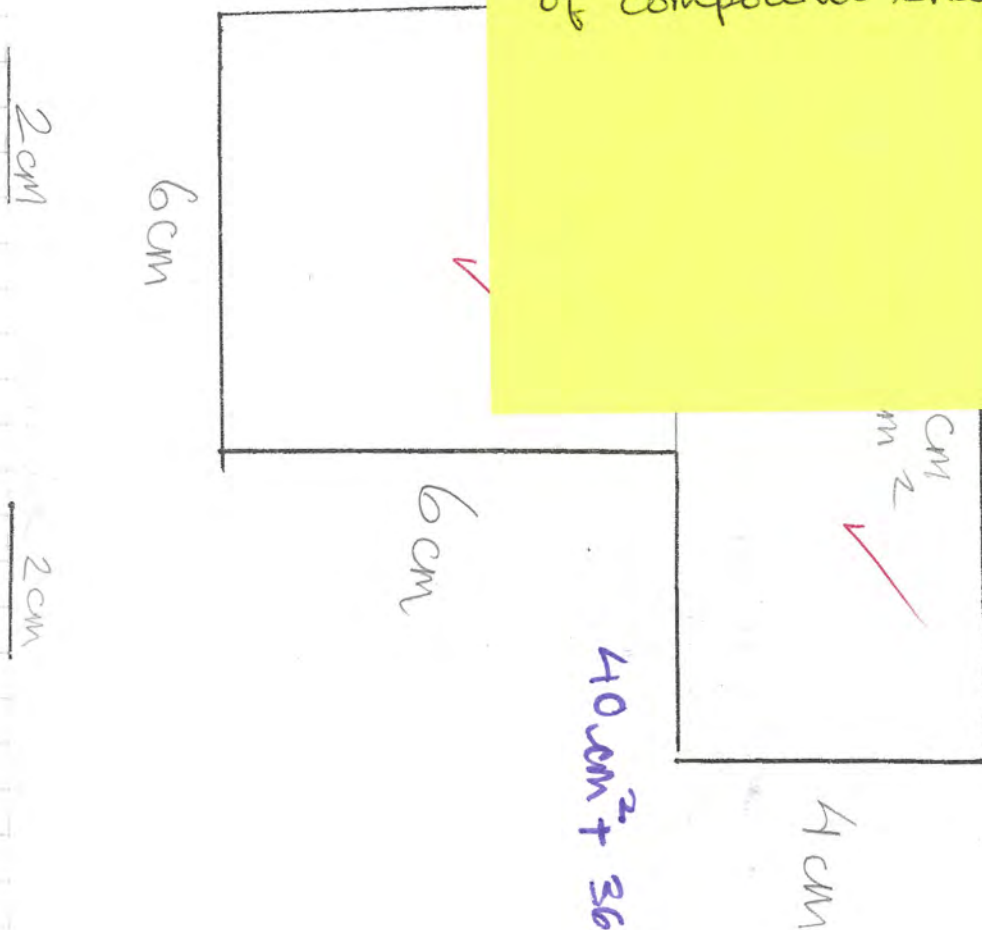
length	Width	Area
6 cm	6 cm	36 cm ²
9 m	7 m	63 m ²
8 m	6 m	48 m ²
80 m	40 m	3,200 m ²

Missing measurement found using inverse

Good use of a range of strategies shown to calculate these multiplications.

(10)

Calculating area
of compound shapes



$$40 \text{ cm}^2 + 36 \text{ cm}^2 = 76 \text{ cm}^2$$

You are able to find total area by dissecting shapes. (10) Wf Apply to a real life context.

10.3.15

Area Module 7 Bk 1 P29

The dining room = $72 \text{ cm}^2 = 6 \text{ cm} \times 12 \text{ cm}$

The living room = $10 \text{ cm} \times 14 \text{ cm} = 140 \text{ cm}^2$

The dining room = $72 \text{ cm}^2 + 140 \text{ cm}^2 = 212 \text{ cm}^2$

The bathroom = $6 \text{ cm} \times 6 \text{ cm} = 36 \text{ cm}^2$

The kitchen part 1 = $4 \text{ cm} \times 4 \text{ cm} = 16 \text{ cm}^2$

The kitchen part 2 = $8 \text{ cm} \times 8 \text{ cm} = 64 \text{ cm}^2$

The small bedroom = $6 \text{ cm} \times 4 \text{ cm} = 24 \text{ cm}^2$

$10 \text{ cm} \times 12 \text{ cm} = 120 \text{ cm}^2$

~~10 cm~~

The large bedroom = $4 \text{ cm} \times 4 \text{ cm} = 16 \text{ cm}^2$

$14 \text{ cm} \times 12 \text{ cm} = 168 \text{ cm}^2$

The hall = $8 \text{ cm} \times 8 \text{ cm} = 64 \text{ cm}^2$

You have used the house plan and calculated the area of each room that needed to be carpeted. Applied skills well. ☺

You understand how to find areas of rectangles.

12.3.15

Wrapping paper prob

1. $12\text{cm} \times 6\text{cm} = 36\text{cm}^2$ 36

2. $24\text{cm} \times 3\text{cm} = 18\text{cm}$

3. $4\text{cm} \times 9\text{cm} = 36\text{cm}^2$ ✓

4. $12\text{cm} \times 3\text{cm} = 36\text{cm}^2$ ✓

5. $6\text{cm} \times 6\text{cm} = 36\text{cm}^2$ ✓

Using knowledge of factors to identify measurements of a field with a given area.

There is 5 possible answers because there are 10 factors that go into 36cm^2 .

1. $1\text{cm} \times 48\text{cm}^2 = 48\text{cm}^2$

5. $4\text{cm} \times 12\text{cm} = 48\text{cm}^2$

2. $2\text{cm} \times 24\text{cm} = 48\text{cm}^2$

3. $6\text{cm} \times 8\text{cm} = 48\text{cm}^2$

4. $3\text{cm} \times 16\text{cm} = 48\text{cm}^2$ ✓✓

There are only 5 possible answers because there are 10 factors that go into 48cm^2 .

Da daun, you have used your knowledge of factors to help you identify the measurements of field with a given area. Good problem solving. ☺

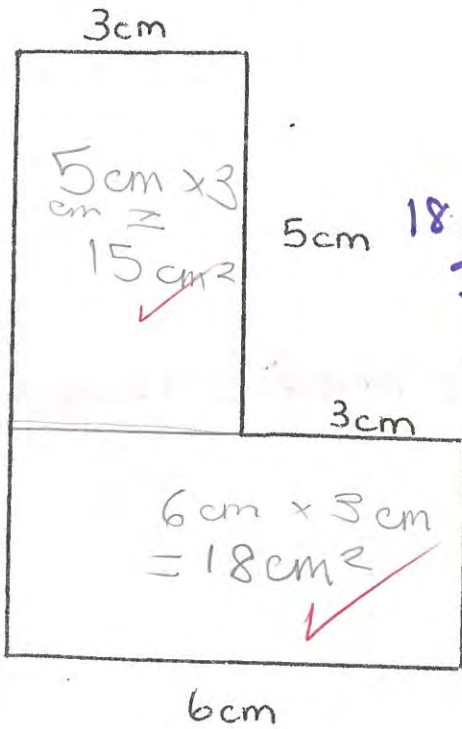
Areas of rectangles

<u>length</u>	<u>Width</u>	<u>Area</u>
50cm	7cm	350cm^2 ✓
900cm	3cm	$2,700\text{cm}^2$ ✓
6m	0.8cm	4.8m^2 ✓
60cm ✓	6cm	360cm^2
12cm ✓	20cm	240cm^2
11cm	4cm ✓	44cm^2
90cm	50cm ✓	4500cm^2
12cm ✓	5cm	60cm^2
9cm	9cm ✓	81cm^2
0.9m	9cm ✓	8.1cm^2

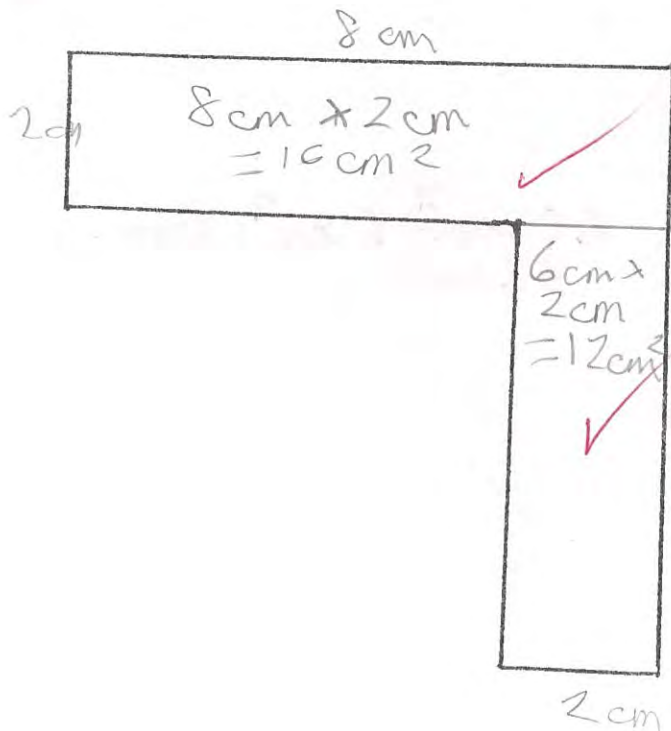
Total area

Diagrams are to scale

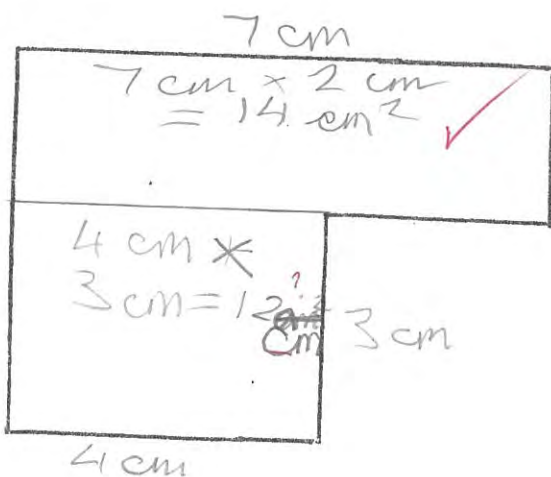
you will need to measure to find the missing measurements.



$$18 \text{ cm}^2 + 15 \text{ cm}^2 = 33 \text{ cm}^2$$

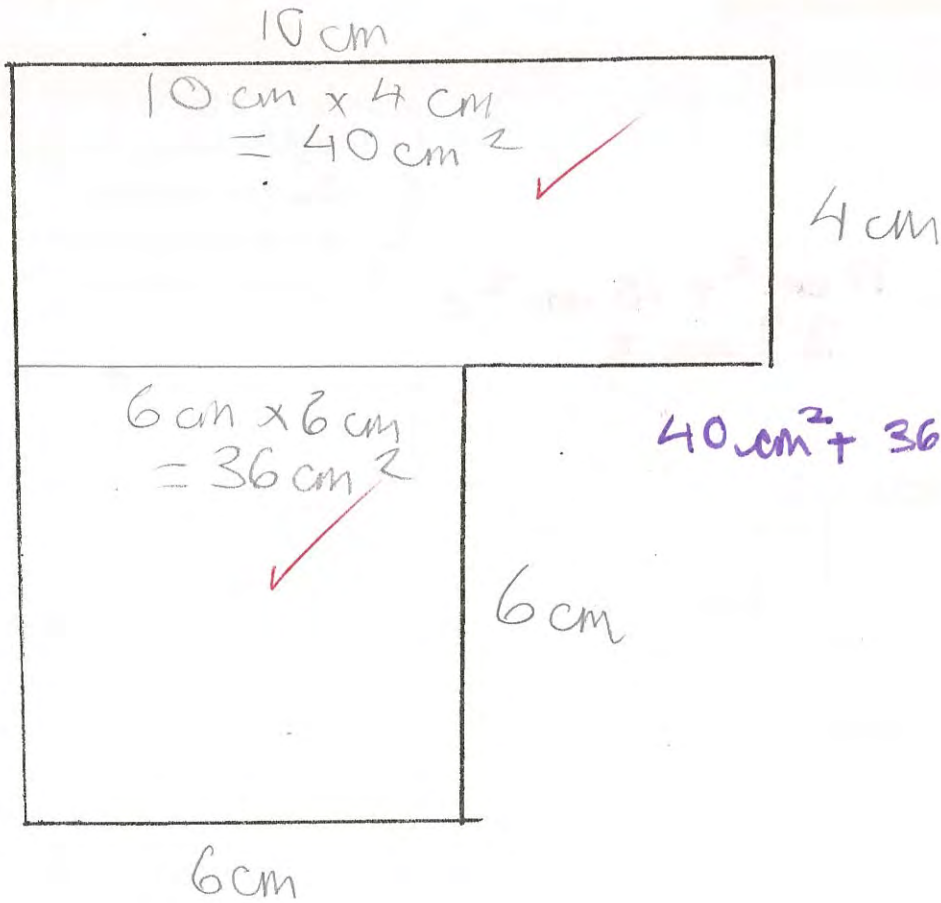


$$12 \text{ cm}^2 + 16 \text{ cm}^2 = 28 \text{ cm}^2$$



$$14 \text{ cm}^2 + 12 \text{ cm}^2 = 26 \text{ cm}^2$$

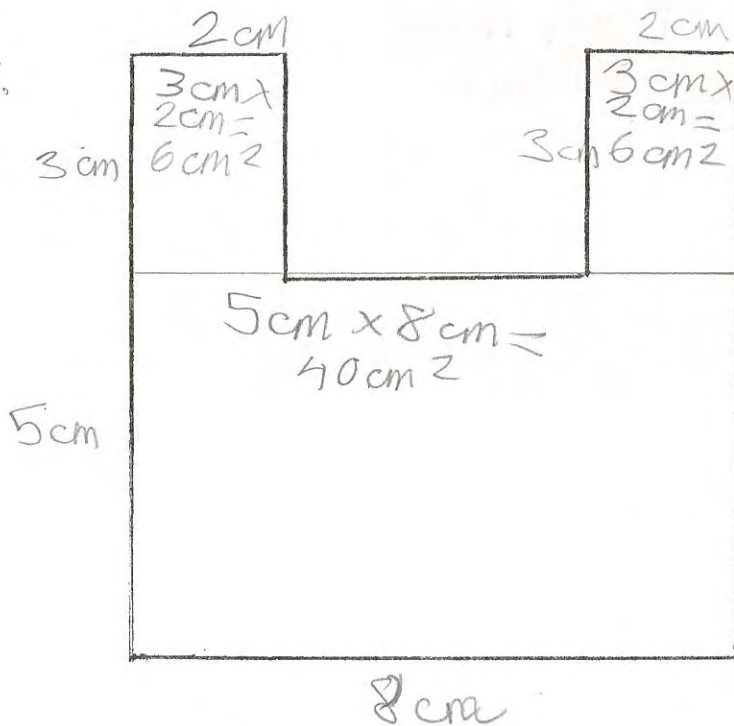
4.



$$40 \text{ cm}^2 + 36 \text{ cm}^2 = 76 \text{ cm}^2$$

You are able to find total area by dissecting shapes. (2) Apply to a real life context.

5.



$$40 \text{ cm}^2 + 6 \text{ cm}^2 + 6 \text{ cm}^2 = 52 \text{ cm}^2$$

Present problems

Using multiplication
table knowledge
(multiples / factors)
to solve problem
involving area.

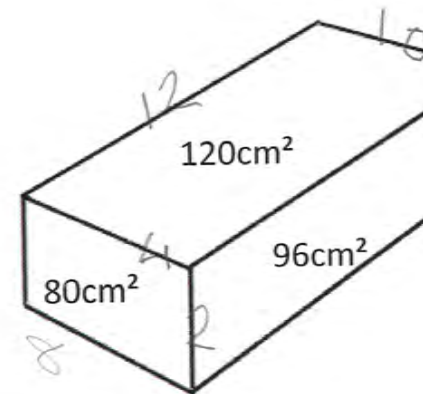


Present problem!

$\begin{array}{r} 120 \\ 12 \times 10 = 120 \\ 10 \times 12 = 120 \\ 1 \times 120 = 120 \\ 6 \times 20 = 120 \\ 20 \times 6 = 120 \end{array}$

- A rectangular box has a top area of 120cm^2 .
- The side area is 96cm^2 .
- The area of an end is 80cm^2 .

$$\begin{aligned}
 80\text{cm}^2 &= 8\text{cm} \times 10\text{cm} \\
 96\text{cm}^2 &= 8\text{cm} \times 12\text{cm} \\
 120\text{cm}^2 &= 10\text{cm} \times 12\text{cm}
 \end{aligned}$$



- What are the exact measurements of the box

Great perseverance shown - you got there in the end!
 Very well done!

$$16 \cdot 3 \cdot 15$$

Area of doors

1. Red ^{area of} door = 28 cm^2 ✓
2. Yellow area of door = 60 cm^2 ✓ $\left. \begin{array}{l} 60 \text{ cm}^2 - 28 \text{ cm}^2 \\ = 32 \text{ cm}^2 \end{array} \right\}$
3. Blue area of door = 60 cm^2 ✓ $\left. \begin{array}{l} 60 \text{ cm}^2 - 18 \text{ cm}^2 \\ = 42 \text{ cm}^2 \end{array} \right\}$
4. Green area of door = $9 \text{ cm}^2 \times 2 = 18 \text{ cm}^2$ ✓
5. Red area of door = 60 cm^2 ✓ $\left. \begin{array}{l} 60 \text{ cm}^2 - 24 \text{ cm}^2 \\ = 36 \text{ cm}^2 \end{array} \right\}$
6. White area of door = $4 \text{ cm}^2 + 20 \text{ cm}^2 = 24 \text{ cm}^2$ ✓
7. Black area of door = 60 cm^2 ✓ $\left. \begin{array}{l} 60 \text{ cm}^2 - 18 \text{ cm}^2 \\ = 36 \text{ cm}^2 \end{array} \right\}$
8. White area of door = $9 \text{ cm}^2 \times 2 = 18 \text{ cm}^2$ ✓
9. Orange area of door = 60 cm^2 ✓ $\left. \begin{array}{l} 60 \text{ cm}^2 - 16 \text{ cm}^2 \\ = 44 \text{ cm}^2 \end{array} \right\}$
10. Green area of door = $3 \text{ cm}^2 \times 2 = 6 \text{ cm}^2 + 5 \text{ cm}^2 \times 2 = 10 \text{ cm}^2 = 16 \text{ cm}^2$ ✓

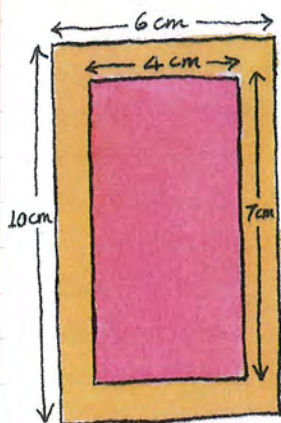
$$1.2 \text{ Area of yellow door} = 60 \text{ cm}^2 - 28 \text{ cm}^2 = 32 \text{ cm}^2$$

$$3.4. \text{ Blue door} = 60 \text{ cm}^2 - 18 \text{ cm}^2 = 42 \text{ cm}^2$$

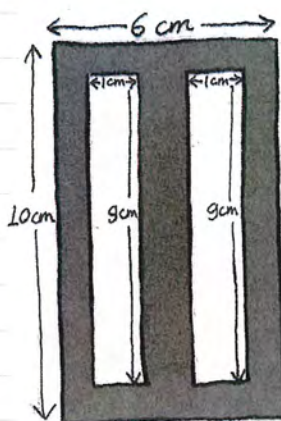
$$5.6 \text{ Red door} = 60 \text{ cm}^2 - 18 \text{ cm}^2 = 42 \text{ cm}^2$$

$$7.8 \text{ Black area} = 60 \text{ cm}^2 - 18 \text{ cm}^2 = 42 \text{ cm}^2$$

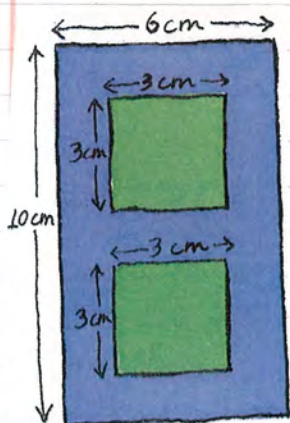
1. 2.



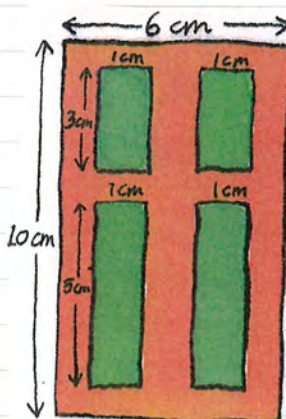
7. 8.



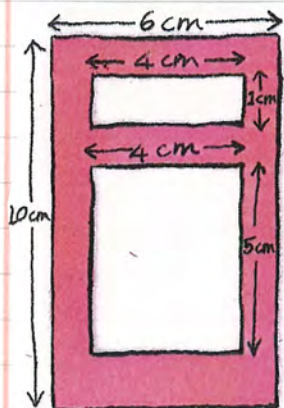
3. 4.



9. 10.



5. 6.



Calculating area
with missing parts.

Calculating area
of triangles

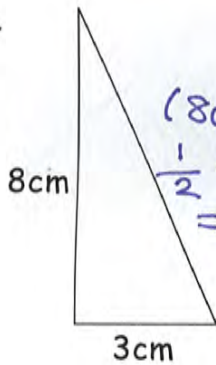
Area of triangles



To find the area of triangles.

(Triangles not drawn to scale)

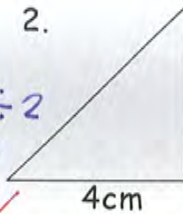
1.



$$(8\text{cm} \times 3\text{cm}) \div 2$$

$$\frac{1}{2} \text{ of } 24\text{cm}^2 = 12\text{cm}^2$$

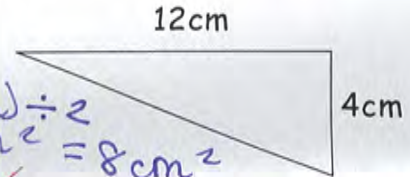
2.



$$(4\text{cm} \times 4\text{cm}) \div 2$$

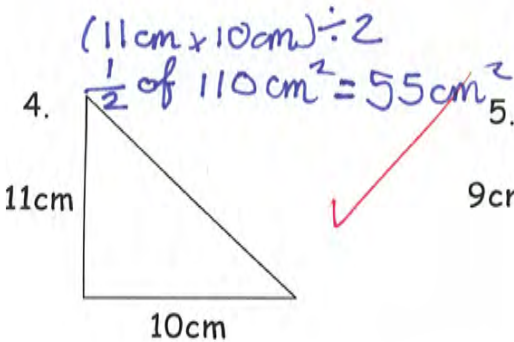
$$\frac{1}{2} \text{ of } 16\text{cm}^2 = 8\text{cm}^2$$

3.



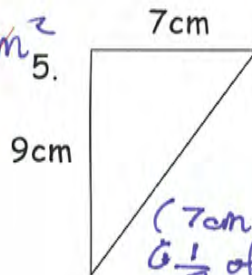
$$(12\text{cm} \times 4\text{cm}) \div 2$$

$$\frac{1}{2} \text{ of } 48\text{cm}^2 = 24\text{cm}^2$$



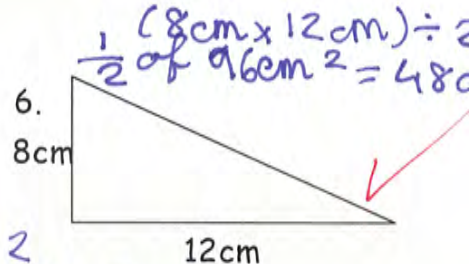
$$(11\text{cm} \times 10\text{cm}) \div 2$$

$$\frac{1}{2} \text{ of } 110\text{cm}^2 = 55\text{cm}^2$$



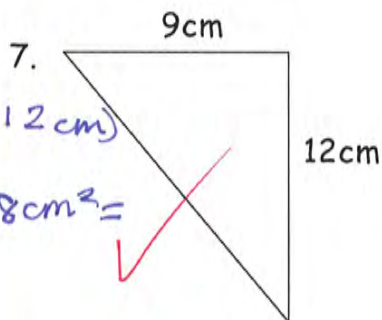
$$(7\text{cm} \times 9\text{cm}) \div 2$$

$$\frac{1}{2} \text{ of } 63\text{cm}^2 = 31.5\text{cm}^2$$



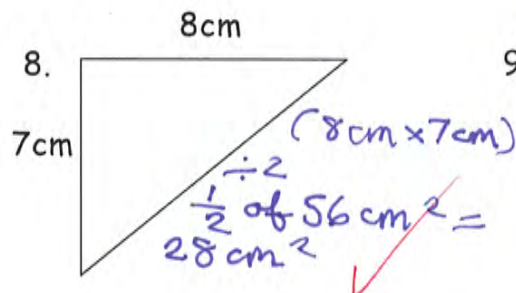
$$(8\text{cm} \times 12\text{cm}) \div 2$$

$$\frac{1}{2} \text{ of } 96\text{cm}^2 = 48\text{cm}^2$$



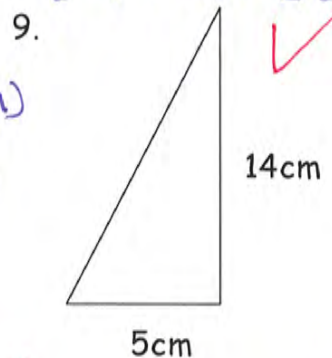
$$(9\text{cm} \times 12\text{cm}) \div 2$$

$$\frac{1}{2} \text{ of } 108\text{cm}^2 = 54\text{cm}^2$$



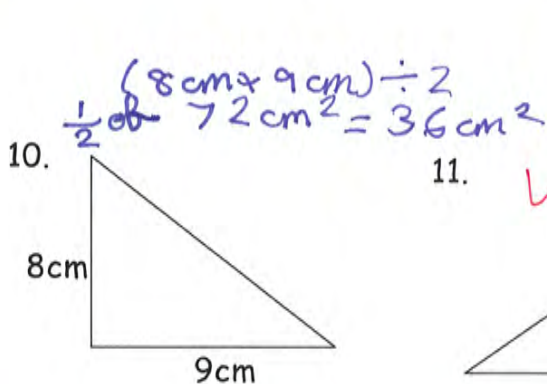
$$(8\text{cm} \times 7\text{cm}) \div 2$$

$$\frac{1}{2} \text{ of } 56\text{cm}^2 = 28\text{cm}^2$$



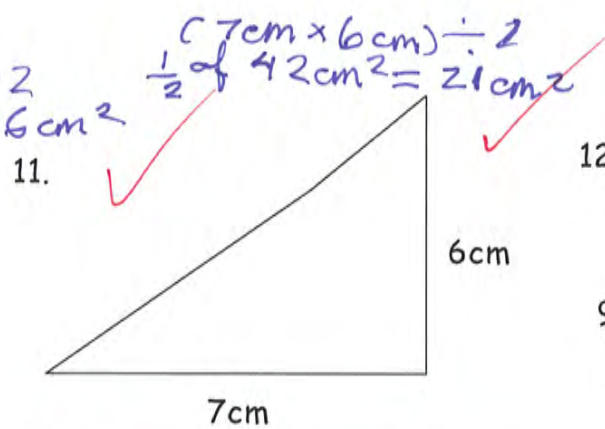
$$(5\text{cm} \times 14\text{cm}) \div 2$$

$$\frac{1}{2} \text{ of } 70\text{cm}^2 = 35\text{cm}^2$$



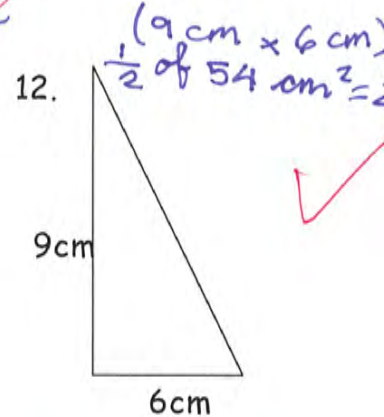
$$(8\text{cm} \times 9\text{cm}) \div 2$$

$$\frac{1}{2} \text{ of } 72\text{cm}^2 = 36\text{cm}^2$$



$$(7\text{cm} \times 6\text{cm}) \div 2$$

$$\frac{1}{2} \text{ of } 42\text{cm}^2 = 21\text{cm}^2$$



$$(9\text{cm} \times 6\text{cm}) \div 2$$

$$\frac{1}{2} \text{ of } 54\text{cm}^2 = 27\text{cm}^2$$

You were able to explain the rule for calculating area of triangles recognising that the triangle is half the area of a rectangle. (m)

TASK 2 – PITCH

The pitch is 120 m long and 79 m wide.

What is the area of the pitch?



Handwritten calculation for the area of the pitch:

$$120 \text{ m} \times 79 \text{ m} = 9,480 \text{ m}^2$$

	$\times 100$	20
70	7,000	1,400
9	900	180

Vertical addition:

$$\begin{array}{r} 7,000 \\ 1,400 \\ 900 \\ 180 \\ \hline 9,480 \end{array}$$

Final result:

$$9,480 \text{ m}^2$$

The pitch can be laid as pallets and turfed on top afterwards.

The pallet system operates 7,412 individual pallets. Each pallet is 1.3 m^2 .



What is the area that the pallets cover?

Handwritten calculation for the area covered by pallets:

$$7,412 \times 1.3 \text{ m}^2 =$$

	$\times 1$	0.3
7,000	7,000 ✓	$21,000 \div 10 = 2,100$ ✓
400	400 ✓	$1200 \div 10 = 120$ ✓
10	10 ✓	$30 \div 10 = 3$ ✓
2	2 ✓	$6 \div 10 = 0.6$ ✓

Vertical addition:

$$\begin{array}{r} 7,000 \\ 2,100 \\ 400 \\ 120 \\ 3 \\ 0.6 \\ \hline 9,635.6 \end{array}$$

Final result:

$$9,635.6 \text{ m}^2$$

What is the difference between the area of the pitch and the area of the pallets?

Handwritten calculation for the difference in area:

$$9,635.6 - 9,480 = 155.6$$

The final result is 155.6 m².

17.3.15

Negative numbers

Ordering

1. $-36, -32, 3, 11, 39, 42$

2. $-35, -22, -9, 4, 36$

3. $-43, -31, -2, 9, 26, 49$

4. $-44, -29, -5, 15, 39, 47$

5. $-38, -29, 2, 14, 28, 42$

Adding

1. $4^{\circ}\text{C} + 9^{\circ}\text{C} = 13^{\circ}\text{C}$

3. $2^{\circ}\text{C} - 15^{\circ}\text{C} = -13^{\circ}\text{C}$

2. $-3^{\circ}\text{C} + 12^{\circ}\text{C} = 9^{\circ}\text{C}$

4. $7^{\circ}\text{C} - 19^{\circ}\text{C} = -12^{\circ}\text{C}$

3. $-7^{\circ}\text{C} + 15^{\circ}\text{C} = 8^{\circ}\text{C}$

5. $-4^{\circ}\text{C} - 19^{\circ}\text{C} = -23^{\circ}\text{C}$

4. $-5^{\circ}\text{C} + 17^{\circ}\text{C} = 12^{\circ}\text{C}$

5. $-9^{\circ}\text{C} + 23^{\circ}\text{C} = 14^{\circ}\text{C}$

Subtracting

1. $5^{\circ}\text{C} - 3^{\circ}\text{C} = 2^{\circ}\text{C}$

2. $4^{\circ}\text{C} - 7^{\circ}\text{C} = -3^{\circ}\text{C}$

Order, add and subtract negative numbers

L5

Order, add and subtract negative numbers

19.3.15

Temperature

Extracting information
from temperature
graphs.

1. -2°C ✓
2. -7°C ✓
3. Dublin ✓
4. Melbourne ✓
5. Melbourne ✓
6. Helsinki ✓
7. 30°C , 23°C , 21°C , 2°C , -1°C , -2°C , -3°C , -7°C ,
 -9°C , -15°C . ✓
8. 11°C difference ✓
9. 13°C difference ✓
10. Melbourne ✓
11. Stockholm ✓
12. Because Melbourne is closer to the equator than Helsinki. ✓

You were able to read the scale on the graphs to identify the temperature of places at given times.

B1- The range is 6°C

Calculating range
from data given
on a graph.

B1- The range = 5°C

2. The range = 4°C

3. The range = 5°C

4. The range = 4°C

5. The range = 5°C

6. The range = 2°C

7. Birmingham = 26°C ²⁷ 23°C

8. York = 29°C

9. Belfast = 26°C

10. London = 24°C

11. Edinburgh = 22°C

12. Plymouth = 23°C

13. Cardiff ^{Cardiff} had the biggest range.

14. -12°C and $-6^{\circ}\text{C} = 6^{\circ}\text{C}$

15. -18°C and $-12^{\circ}\text{C} = 6^{\circ}\text{C}$

16. -18°C and $-6^{\circ}\text{C} = 12$

17. -12°C

18. -6°C

19. -24°C -18°C

20. 26°C

21. 32°C

22. 38°C

Reading temperature
from thermometers.

Using reading
to establish range

C1. human and penguin = 20°C

2. human and fox = 49°C

3. human and musk ox = 54°C

4. rattle snake and penguin = 42°C

5. rattle snake and arctic fox = 69°C

6. rattle snake and musk ox = 74°C

7. red kangaroo and penguin = 31°C

8. red kangaroo and arctic fox = 58°C

9. red kangaroo and musk ox = 63°C

10. 31°C in Moscow

11. Dawson City = -49°C

12. Verkhoyansk = -65°C

13.

Names	
Dawson City	-27°C to -49°C
Verkhoyansk	-47°C to -65°C
Wienipeg	-14°C to $26^{\circ}\text{C} = 40^{\circ}\text{C}$ ✓
Moscow	-7°C to $24^{\circ}\text{C} = 31^{\circ}\text{C}$ ✓
Anqmagssalik	-8°C to $11^{\circ}\text{C} = 19^{\circ}\text{C}$ ✓
Reykjavik	-1°C to $14^{\circ}\text{C} = 15^{\circ}\text{C}$ ✓

Calculating the range with negative numbers.

Ardderchog

You are able to calculate the range with negative numbers on temperature scales.

Do you find this level of maths is challenging that's why I like it.

23.3.15

Temperature range

Range - Find the difference

1. $-3^{\circ}\text{C} + 5^{\circ}\text{C} = 0^{\circ}\text{C} + 11^{\circ}\text{C} = 11^{\circ}\text{C}$
 $3^{\circ}\text{C} + 11^{\circ}\text{C} = 14^{\circ}\text{C}$

2. $-17^{\circ}\text{C} + 17^{\circ}\text{C} = 0^{\circ}\text{C} + 5^{\circ}\text{C} = 5^{\circ}\text{C}$
Range = $17^{\circ}\text{C} + 5^{\circ}\text{C} = 22^{\circ}\text{C}$

3. $-32^{\circ}\text{C} + 32^{\circ}\text{C} = 0^{\circ}\text{C} + 19^{\circ}\text{C} = 19^{\circ}\text{C}$
Range = $32^{\circ}\text{C} + 19^{\circ}\text{C} = 51^{\circ}\text{C}$

4. $-6^{\circ}\text{C} + 6^{\circ}\text{C} = 0^{\circ}\text{C} + 28^{\circ}\text{C} = 28^{\circ}\text{C}$
Range = $28^{\circ}\text{C} + 6^{\circ}\text{C} = 34^{\circ}\text{C}$

5. $-21^{\circ}\text{C} + 21^{\circ}\text{C} = 0^{\circ}\text{C} + 13^{\circ}\text{C} = 13^{\circ}\text{C}$
Range = $21^{\circ}\text{C} + 13^{\circ}\text{C} = 34^{\circ}\text{C}$

9. -7°C

10. 10 am and 2 pm

11. -3°C

12. 2°C

13. -8°C

14. It was exactly -7°C at midnight and it was exactly -1°C at 4 pm

13.4.15

Data - Mod 7 wk 2

1. The most popular
2. The least popular
3. 5 children liked
4. 4 children liked
5. ~~30~~ children took part in the survey.
- 6.

No. of children in a family.	1	2	3	4	5
No. of families	10	15	5	1	1

7. There are ~~30~~ families
8. The mean average is $60 \div 30 = 2$
9. Tues = 21 tickets
Wed = 15 tickets
Thurs = 30 tickets
Friday = 27 tickets
10. There were 6 tickets on Friday than Tuesday

Extracting information from graphs.

Extracting information from pictograms

21.4.15

Practise - test errors

1. $509 - 278$

$509 - 200 =$

$309 - 8 =$

$301 - 10 =$

231

$$\begin{array}{r} 509 \\ - 278 \\ \hline 231 \end{array}$$

2. $614 - 456$

$614 - 400 =$

$214 - 50 =$

$164 - 6 =$

158

$$\begin{array}{r} 614 \\ - 456 \\ \hline 158 \end{array}$$

3. $725 - 382$

$725 - 300 =$

$425 - 2 =$

$423 - 80 =$

343

$$\begin{array}{r} 725 \\ - 382 \\ \hline 343 \end{array}$$

4. $725 \div 5 = 145$

$140 \times 5 = 700 = 145$

$5 \times 5 = 25$

$145 \times 5 = 725$

10	20	30	40	50
50	100	150	200	250
300	350	400	450	500
550	600	650	700	750

5. $102 \div 6 =$

$16 \times 6 = 96$

$17 \times 6 = 102$

$17 \times 6 = 102$

22.4.15

Multipacks!

1. 8 bags cost £3

$$1 \text{ bag} = 40p \times 6 =$$

2. 7 bags cost £5

$$1 \text{ bag} = 80p \times 4 = 320p = £3.20$$

3. 6 bags cost £4.80. How much for 7 bags?

$$1 \text{ bag} = 80p \times 7 = 560p = £5.60$$

4. 4 bags cost £2.40. How much for 3 bags?

$$1 \text{ bag} = 60p \times 3 = 180p = £1.80$$

5. 6 bags cost £5.40. How much for 4 bags?

$$1 \text{ bag} = 90p \times 4 = 360p = £3.60$$

Well understood 2-step problems.

Our Questions

3 bags cost £6.30. How much for 9?

$$£6.30 \times 2 =$$

$$\begin{array}{r} \\ \\ \end{array}$$

$$£12.60$$

$$ $$

$$£12.60 + £6.30 = £18.90$$

• Recognising the amount for one item in order to calculate for multiple items.

Difference between

$$1. \quad 4.8 \xrightarrow{0.2+} 5 \xrightarrow{7} 12 \xrightarrow{0.7} 12.7 = 12.9$$

$$2. \quad 6.7 \xrightarrow{0.3+} 7 \xrightarrow{4} 11 \xrightarrow{0.2} 11.2 = 11.5$$

$$3. \quad 5.8 \xrightarrow{0.2+} 6 \xrightarrow{11} 17 \xrightarrow{0.3} 17.3 = 17.5$$

Grouped data

Ages of data in three families.

Age	Frequency	Total
0-9		7
10-19		3
20-29		6
30-39		3
40-49		4
		4
		2
		1

Collecting data in a frequency table showing grouped data

fully able to sort and into groups.

Age	Total
0-19	10
20-39	9
40-59	8
60-79	3 ✓

What's wrong

- 0-9
10-19
20-29
30-39
40-49

Over 50 years old people can't be included too young. ✓

- 0-9
10-39
40-79

There are odd numbers in each of the groups.
- groups need to be the same size.

- 0-20
20-40
40-60
60-80

If you are 20 years old you would be over-lapping into groups. ✓✓

You understand the criteria to successfully group data.

Understanding grouped-data and recognising why certain groupings don't work.

Data (recording, displaying)

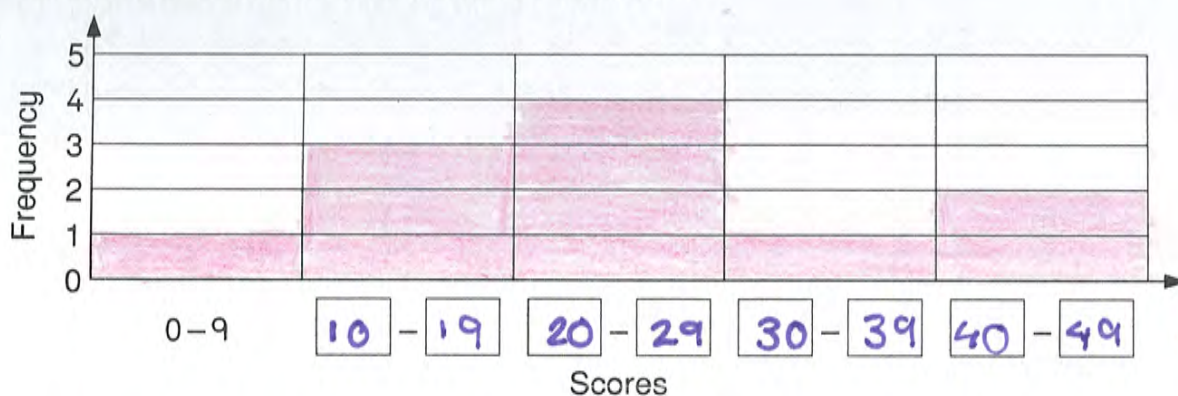
These are the scores for a cricket team.

Batsman	1	2	3	4	5	6	7	8	9	10	11
Score	29	12	31	40	5	47	23	15	21	19	27

- 1 Make a tally of the scores.

Score	0-9	10-19	20-29	30-39	40-49
Tally	1	III	IIII	I	II

- 2 Show the data on the frequency chart.



Make equal groups for these scores and complete the totals.

3

Score	0-4	5-9	10-14	15-19
Totals	II	II	II	II

1 5 11
17 14 19
8 3 2

4

Score	0-3	4-7	8-11	12-15	16-19
Totals	III	I	II	I	II

This chart shows the scores of three players.

Player 1	⊕ ⊕ ⊕ ⊕ ◐
Player 2	⊕ ⊕ ⊕ ⊕ ⊕ ◐
Player 3	⊕ ⊕ ⊕

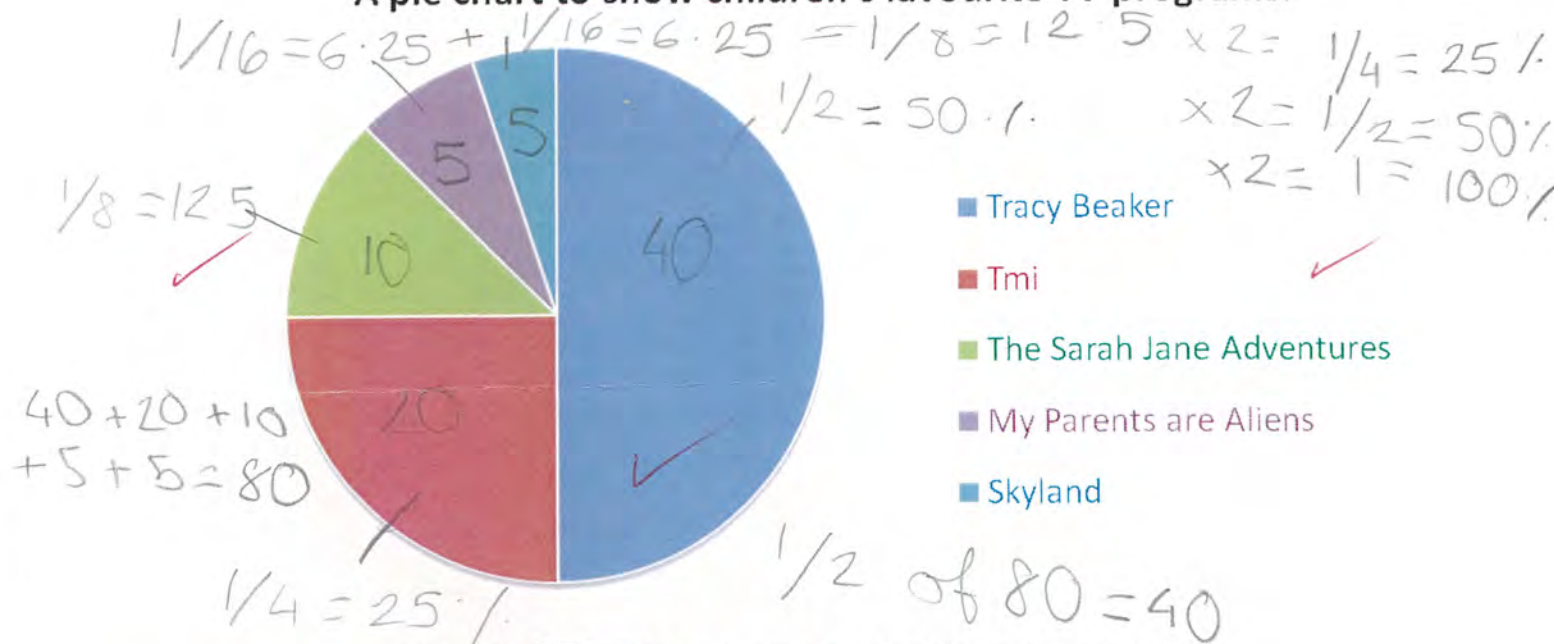
⊕ represents 4 runs

- 5 Write each player's score. 1. 18 + 2. 21 + 3. 11

- 6 How many runs were scored in altogether?

50

A pie chart to show children's favourite TV programs.



Altogether 80 children were asked what their favourite TV show is.

How many children chose Tracy Beaker? $1/2 \text{ of } 80 = 40$ children

How many children chose Tmi? $1/4 \text{ of } 80 = 20$ children

How many children chose The Sarah Jane Adventures? $1/8 \text{ of } 80 = 10$ children

How many children chose My Parents are Aliens? $1/16 \text{ of } 80 = 5$ children

How many children chose Skyland? $1/16 \text{ of } 80 = 5$ children

What conclusions can we draw from this data?

Imagine now that 104 children were asked but the pie chart stayed exactly the same.

How many children chose each programme this time?

The most popular TV programme is Tracy Beaker.
The least popular TV programme is Skyland and My parents are Aliens.

Tracy Beaker = $1/2 \text{ of } 104 = 52$

Tmi = $1/4 \text{ of } 104 = 26$

The Sarah Jane Adventures = $1/8 \text{ of } 104 = 13$

My Parents are Aliens = $1/16 \text{ of } 104 = 6.5$

Skyland = $1/16 \text{ of } 104 = 6.5$

$52 + 26 = 78 + 13 = 91 + 12.5 = 103.5$

A pie chart to show children's favourite drinks.



How many children chose **cola**? 20 children ✓

How many children chose **orange**? 10 children ✓

How many children chose **lemonade**? 5 children ✓

How many children chose **milk**? 5 children ✓

Which drink is the most popular? **cola** ✓

Which drinks are the least popular? **lemonade and milk** ✓

Imagine now that 120 children were asked but the pie chart stayed exactly the same. How many children chose each drink this time?

Cola = $20 \times 3 = 60$ ✓

Orange = ~~$10 \times 50 = 90$~~ $10 \times 3 = 30$ ✓

Lemonade = $5 \times 3 = 15$ ✓

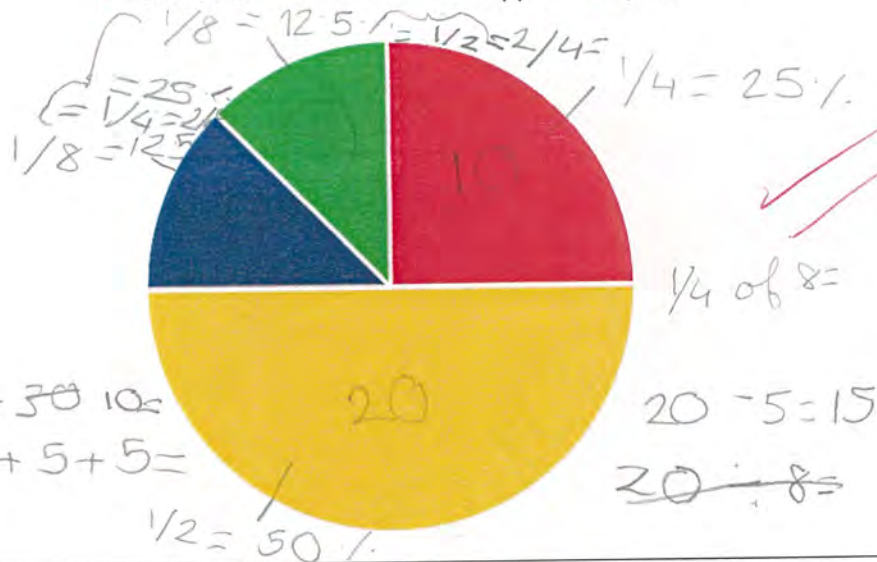
Milk = $5 \times 3 = 15$ ✓

Well spotted it would be 3x as many as
 $120 \div 40 = 3$ (circled)

$60 + 30 + 15 + 15 = 120$

A pie chart to show children's favourite fizzy drink

■ Coca-Cola ■ Fanta ■ Dr Pepper ■ Sprite



This pie chart represents **40 children**

1. How many children chose Coca-Cola as their favourite fizzy drink?

$\frac{1}{4} \text{ of } 40 = 10$ ✓

2. How many children chose Dr Pepper as their favourite fizzy drink?

$\frac{1}{8} \text{ of } 40 = 5$ ✓

3. How many more children chose Fanta than those who chose Sprite?

$20 - 5 = 15$ ✓

4. Using the information in the pie chart, if you had to buy some fizzy drinks for a party, and could only buy 8 bottles, how many of each would you buy?

Bottles of Fanta

4 ✓

Bottles of Sprite

2 ✓

Bottles of Coca Cola

1 ✓

Bottles of Dr Pepper

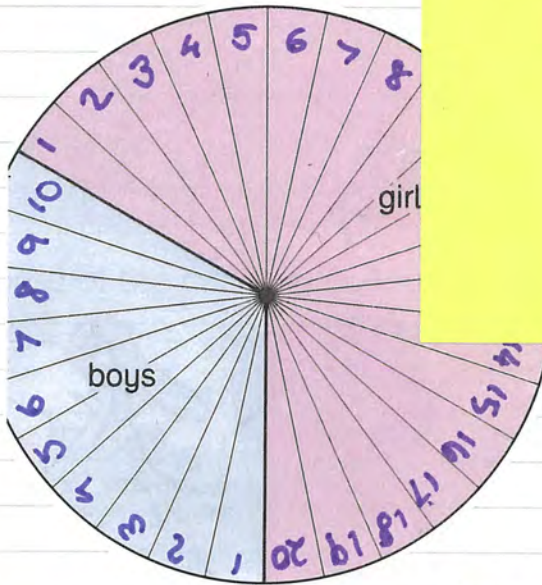
1 ✓

23-4-15

Data Pie charts.

Interpreting information
shown in pie charts

1.



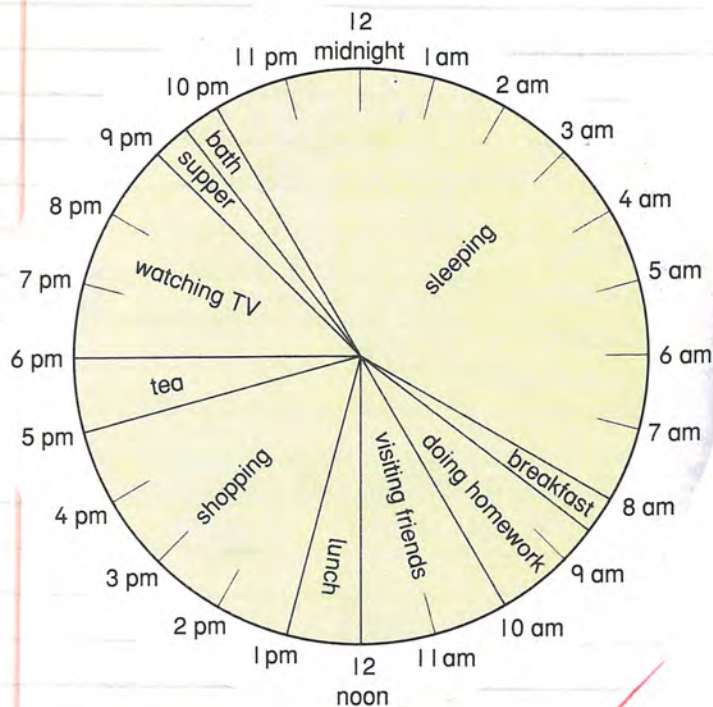
2. There are 30 children altogether. ✓

3. There are 10 boys = $\frac{1}{3}$. ✓

4. There are 20 girls = $\frac{2}{3}$. ✓



5. How will I am spent a day?



1. sleeping = 10 hours ✓
2. Eating = 3 hours ✓
3. Homework = 1 hour 30 mins ✓
4. Visiting friends = 2 hours ✓
5. Shopping = 4 hours ✓
6. watching TV = 3 hours ✓
7. Bath = 30 mins ✓
8. shopping = $24 \div 4 = 6$ hours

9. ~~Eating = $24 \div 3 = 8$ hours~~

Shopping is 4 out of 24 hours

$$\frac{4}{24} = \frac{1}{6}$$



(d).

Eating is 3 out of 24 hours

$$\frac{3}{24} = \frac{1}{8}$$



24.4.15

Cerys

Averages

Hey diddle diddle,
The median's the middle,
You add then divide for the mean,
The mode is the one you can see the most,
And the range is the difference between.

1. 1, 6, 7, 7, 10

$$\text{Range} = 10 - 1 = 9 \quad \checkmark$$

$$\text{Mode} = 7 \quad \checkmark$$

$$\text{Median} = 7 \quad \checkmark$$

$$\text{Mean} = 31$$

$$31 \div 5 =$$

$$6 \frac{1}{2} = \quad \checkmark$$

$$6$$

2. 4, 1, 4, 9, 10

$$\text{Range} = 10 - 1 = 9 \quad \checkmark$$

$$\text{Mode} = 4 \quad \checkmark$$

$$\text{Median} = 4 \quad \checkmark$$

$$\text{Mean} = 10 + 9 + 1 + 1 + 4 = 25 \div 5 = 5 \quad \checkmark$$

3. 1, 2, 5, 6, 6

$$\text{Range} = 6 - 1 = 5 \quad \checkmark$$

$$\text{Mode} = 6 \quad \checkmark$$

$$\text{Median} = 5 \quad \checkmark$$

$$\text{Mean} = 6 + 6 + 5 + 1 + 2 = 20 \div 5 = 4 \quad \checkmark$$

4.

4. 1, 5, 6, 6, 8, 8, 8

$$\text{Range} = 8 - 1 = 7$$

$$\text{Mode} = 8$$

$$\text{Median} = 6$$

$$\text{Mean} = 8 + 8 + 8 + 6 + 6 + 5 + 1 = 42 \div 7 = 6$$

5. 1, 1, 1, 2, 4, 9, 9, 9, 9

$$\text{Range} = 9 - 1 = 8$$

$$\text{Mode} = 9$$

$$\text{Median} = 4$$

$$\text{Mean} = 9 + 9 + 9 + 9 + 4 + 2 + 1 + 1 + 1 = 45 \div 9 = 5$$

6. 2, 4, 5, 6, 6, 7, 9, 9

$$\text{Range} = 9 - 2 = 7$$

$$\text{Mode} = 6, 9$$

$$\text{Median} = 6$$

$$\text{Mean} = 9 + 9 + 7 + 6 + 6 + 5 + 4 + 2 = 48 \div 8 = 6$$

7. 7, 13, 17, 19, 24

$$\text{Range} = 24 - 7 = 17$$

$$\text{Median} = 17$$

$$\text{Mode} = \text{No mode}$$

8. 6, 18, 18

$$\text{Range} = 18 - 6 = 12$$

$$\text{Median} = 18$$

$$\text{Mode} = 18$$

9. 15, 18, 22, 22, 23

$$\text{Range} = 23 - 15 = 8$$

$$\text{Median} = 22$$

$$\text{Mode} = 22$$

10. 4, 4, 4

Range = 0 ✓

Median = 4 ✓

Mode = 4 ✓

11. 1, 1, 8, 10, 20, 21, 30

Range = $30 - 1 = 29$ ✓

Median = 10 ✓

Mode = 1 ✓

12. 3, 23, 27, 27, 30

Range = $30 - 3 = 27$ ✓

Median = 27 ✓

Mode = 27 ✓

13. 1, 4, 9, 13, 17, 22, 25

Range = $25 - 1 = 24$ ✓

Median = 13 ✓

Mode = No mode ✓

14. 4, 4, 8, 17, 27

Range = $27 - 4 = 23$ ✓

Median = 8 ✓

Mode = 4 ✓

15. 7, 8, 15

Range = $15 - 7 = 8$ ✓

Median = 8 ✓

Mode = No mode ✓

gwyb

16. 5, 10, 11, 12, 12

Range = $12 - 5 = 7$ ✓

Median = 11 ✓

Mode = 12 ✓

You are able to identify and calculate all four averages.