



## Mathematics Department

*“Encourage each other and build each other up” (Thessalonians 5:11)*

### Year 6 Home Study Pack

- Lessons and activities are available on the Year 6 google classroom
  - Students should use Maths Whizz for at least 1 hour a week
    - Students should also use their SATS practice books
- If students are stuck they should use the stream on the google classroom.  
This will be checked regularly between 9:00 am and 3:00 pm on school days  
during term time

**The class code is: symixtq**

Pack 2 : Summer Term 1

Name: \_\_\_\_\_

# Multiplication Tic-Tac-Toe



Solve each multiplication problem. Then, write X or O over the corresponding numbers on the tic-tac-toe board. If you get three in a row, draw a line through it.

$$\begin{array}{r} 2 \\ X \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ O \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ X \times 3 \\ \hline \end{array}$$

2	4	6
8	10	12
14	16	18

$$\begin{array}{r} 2 \\ O \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ X \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ O \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ X \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ O \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ X \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ O \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ X \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ O \times 8 \\ \hline \end{array}$$

3	6	9
12	15	18
21	24	27

$$\begin{array}{r} 3 \\ X \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ O \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ X \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ O \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ X \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ O \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ X \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ O \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ X \times 7 \\ \hline \end{array}$$

4	8	12
16	20	24
28	32	36

$$\begin{array}{r} 4 \\ O \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ X \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ O \times 9 \\ \hline \end{array}$$

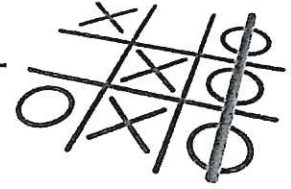
$$\begin{array}{r} 4 \\ X \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ O \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ X \times 4 \\ \hline \end{array}$$

Name: \_\_\_\_\_

## Multiplication Tic-Tac-Toe



Solve each multiplication problem. Then, write X or O over the corresponding numbers on the tic-tac-toe board. If you get three in a row, draw a line through it.

$$\begin{array}{r} 11 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ \times 2 \\ \hline \end{array}$$

11	22	33
44	55	66
77	88	99

$$\begin{array}{r} 12 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ \times 1 \\ \hline \end{array}$$

12	24	36
48	60	72
84	96	108

Name: \_\_\_\_\_

# Multiplication Tic-Tac-Toe



Solve each multiplication problem. Then, write X or O over the corresponding numbers on the tic-tac-toe board. If you get three in a row, draw a line through it.

$$\begin{array}{r} 8 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 1 \\ \hline \end{array}$$

8	16	24
32	40	48
56	64	72

$$\begin{array}{r} 9 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 3 \\ \hline \end{array}$$

9	18	27
36	45	54
63	72	81

$$\begin{array}{r} 10 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ \times 9 \\ \hline \end{array}$$

10	20	30
40	50	60
70	80	90

Name: \_\_\_\_\_

## Multiplication Tic-Tac-Toe



Solve each multiplication problem. Then, write X or O over the corresponding numbers on the tic-tac-toe board. If you get three in a row, draw a line through it.

$$\begin{array}{r} 5 \\ X \times 6 \end{array}$$

$$\begin{array}{r} 5 \\ O \times 9 \end{array}$$

$$\begin{array}{r} 5 \\ X \times 7 \end{array}$$

5	10	15
20	25	30
35	40	45

$$\begin{array}{r} 5 \\ O \times 3 \end{array}$$

$$\begin{array}{r} 5 \\ X \times 2 \end{array}$$

$$\begin{array}{r} 5 \\ O \times 4 \end{array}$$

$$\begin{array}{r} 5 \\ X \times 5 \end{array}$$

$$\begin{array}{r} 5 \\ O \times 1 \end{array}$$

$$\begin{array}{r} 5 \\ X \times 8 \end{array}$$

$$\begin{array}{r} 6 \\ O \times 3 \end{array}$$

$$\begin{array}{r} 6 \\ X \times 5 \end{array}$$

$$\begin{array}{r} 6 \\ O \times 6 \end{array}$$

6	12	18
24	30	36
42	48	54

$$\begin{array}{r} 6 \\ X \times 7 \end{array}$$

$$\begin{array}{r} 6 \\ O \times 1 \end{array}$$

$$\begin{array}{r} 6 \\ X \times 8 \end{array}$$

$$\begin{array}{r} 6 \\ O \times 9 \end{array}$$

$$\begin{array}{r} 6 \\ X \times 4 \end{array}$$

$$\begin{array}{r} 6 \\ O \times 2 \end{array}$$

$$\begin{array}{r} 7 \\ X \times 3 \end{array}$$

$$\begin{array}{r} 7 \\ O \times 5 \end{array}$$

$$\begin{array}{r} 7 \\ X \times 6 \end{array}$$

7	14	21
28	35	42
49	56	63

$$\begin{array}{r} 7 \\ O \times 1 \end{array}$$

$$\begin{array}{r} 7 \\ X \times 8 \end{array}$$

$$\begin{array}{r} 7 \\ O \times 7 \end{array}$$

$$\begin{array}{r} 7 \\ X \times 9 \end{array}$$

$$\begin{array}{r} 7 \\ O \times 2 \end{array}$$

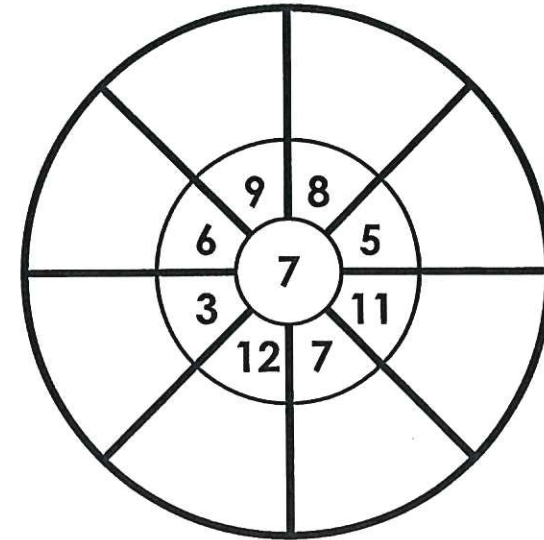
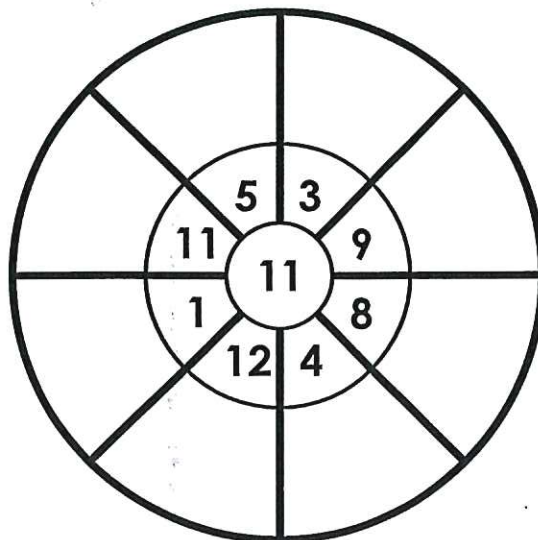
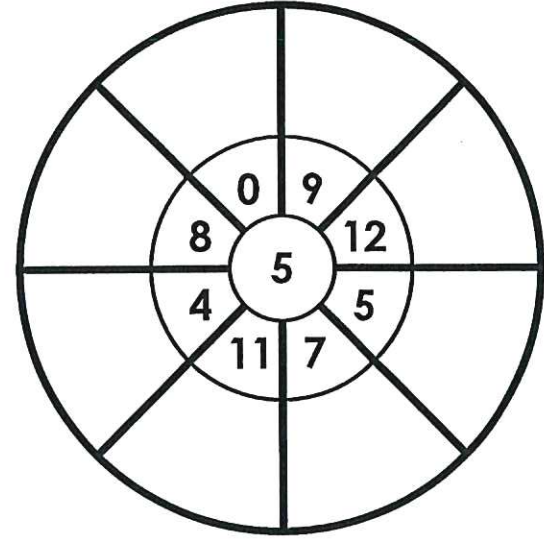
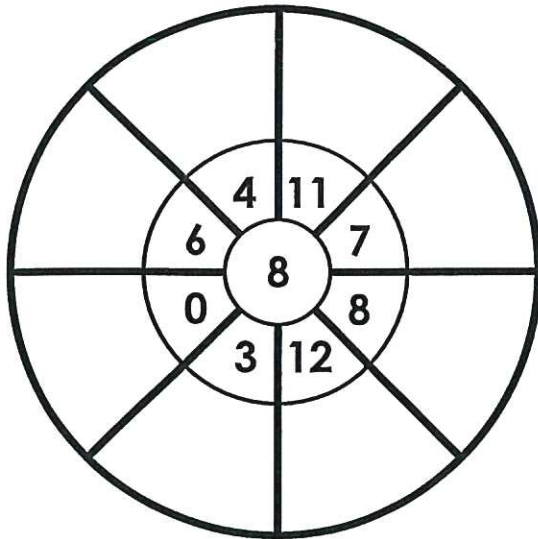
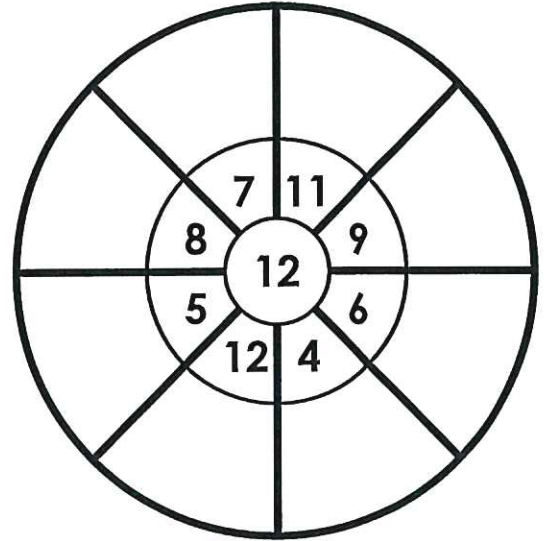
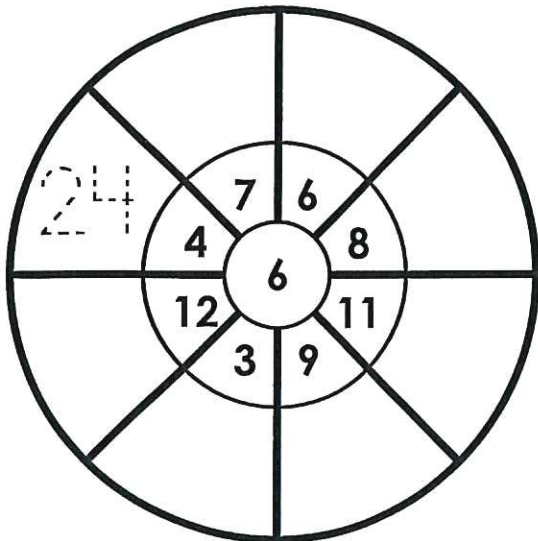
$$\begin{array}{r} 7 \\ X \times 4 \end{array}$$

Name: \_\_\_\_\_

Basic Facts 0-

# Multiplication Wheels

Multiply the number in the center circle by each of the factors surrounding it. Write the product on the outer circle.



# Day 1

## Number Chart

Starting at 9, skip-count by 9, and fill in the missing numbers.

9,	18,	_____	_____	_____
_____	_____	_____	_____	_____
_____	108,	_____	_____	135,
_____	153,	_____	_____	180,
189,	_____	_____	216,	_____
_____	_____	_____	261,	_____

# Day 1

## Math Worksheet

1 a.  $9 \times 6 = \underline{\hspace{2cm}}$

1 b.  $9 \times 3 = \underline{\hspace{2cm}}$

2 a.  $9 \times 11 = \underline{\hspace{2cm}}$

2 b.  $9 \times 9 = \underline{\hspace{2cm}}$

3 a.  $2 \times 9 = \underline{\hspace{2cm}}$

3 b.  $8 \times 9 = \underline{\hspace{2cm}}$

4 a.  $9 \times 4 = \underline{\hspace{2cm}}$

4 b.  $9 \times 5 = \underline{\hspace{2cm}}$

5 a.  $10 \times 9 = \underline{\hspace{2cm}}$

5 b.  $7 \times 9 = \underline{\hspace{2cm}}$

6 a.  $12 \times 9 = \underline{\hspace{2cm}}$

6 b.  $3 \times 9 = \underline{\hspace{2cm}}$

7 a.  $9 \times 8 = \underline{\hspace{2cm}}$

7 b.  $1 \times 9 = \underline{\hspace{2cm}}$

8 a.  $9 \times 1 = \underline{\hspace{2cm}}$

8 b.  $9 \times 6 = \underline{\hspace{2cm}}$

9 a.  $12 \times 9 = \underline{\hspace{2cm}}$

9 b.  $9 \times 2 = \underline{\hspace{2cm}}$

10 a.  $8 \times 9 = \underline{\hspace{2cm}}$

10 b.  $9 \times 9 = \underline{\hspace{2cm}}$



# Day 2

## Number Chart

Starting at 270, skip-count by 9, and fill in the missing numbers.

270,	261,	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	153,	_____
134,	_____	_____	108,	99,
_____	_____	72,	_____	_____
_____	_____	27,	_____	9,

Time yourself on this 9x table speed sheet.

I took \_\_\_\_\_ minutes

$3 \times 9 =$

$12 \times 9 =$

$9 \times 1 =$

$9 \times 2 =$

$90 \div 9 =$

$81 \div 9 =$

$36 \div 9 =$

$9 \div 9 =$

$6 \times 9 =$

$9 \times 9 =$

$6 \times 9 =$

$8 \times 9 =$

$4 \times 9 =$

$10 \times 9 =$

$4 \times 9 =$

$9 \times 12 =$

$63 \div 9 =$

$27 \div 9 =$

$72 \div 9 =$

$54 \div 9 =$

$1 \times 9 =$

$12 \times 9 =$

$9 \times 9 =$

$9 \times 7 =$

$2 \times 9 =$

$9 \times 8 =$

$9 \times 3 =$

$9 \times 11 =$

$108 \div 9 =$

$54 \div 9 =$

$0 \div 9 =$

$81 \div 9 =$

$5 \times 9 =$

$11 \times 9 =$

$9 \times 5 =$

$9 \times 10 =$

# Day 3

## Math Worksheet

1 a. \_\_\_\_\_  $\times 9 = 90$

1 b. \_\_\_\_\_  $\times 10 = 90$

2 a. \_\_\_\_\_  $\times 9 = 99$

2 b.  $9 \times$  \_\_\_\_\_  $= 36$

3 a. \_\_\_\_\_  $\times 9 = 54$

3 b. \_\_\_\_\_  $\times 9 = 45$

4 a.  $9 \times$  \_\_\_\_\_  $= 108$

4 b.  $9 \times$  \_\_\_\_\_  $= 27$

5 a.  $9 \times$  \_\_\_\_\_  $= 45$

5 b.  $9 \times$  \_\_\_\_\_  $= 1$

6 a.  $9 \times$  \_\_\_\_\_  $= 72$

6 b. \_\_\_\_\_  $\times 9 = 72$

7 a.  $9 \times$  \_\_\_\_\_  $= 63$

7 b. \_\_\_\_\_  $\times 11 = 99$

8 a.  $9 \times$  \_\_\_\_\_  $= 45$

8 b.  $9 \times$  \_\_\_\_\_  $= 36$

9 a. \_\_\_\_\_  $\times 9 = 27$

9 b.  $9 \times$  \_\_\_\_\_  $= 0$

10 a.  $9 \times$  \_\_\_\_\_  $= 108$

10 b.  $9 \times$  \_\_\_\_\_  $= 18$

# Day 3 – 15 mins

Test 1

## Multiplication challenge

Name:

Date:

1	$9 \times 9 =$		1	$9 \times 9 =$		1	$45 \div 9 =$		1	$108 \div 9 =$	
2	$0 \times 9 =$		2	$72 \div 9 =$		2	$63 \div 9 =$		2	$9 \times 9 =$	
3	$54 \div 9 =$		3	$18 \div 9 =$		3	$5 \times 9 =$		3	$9 \times 3 =$	
4	$27 \div 9 =$		4	$0 \times 9 =$		4	$9 \times 9 =$		4	$27 \div 9 =$	
5	$9 \times 9 =$		5	$36 \div 9 =$		5	$9 \times 2 =$		5	$6 \times 9 =$	
6	$63 \div 9 =$		6	$9 \times 9 =$		6	$81 \div 9 =$		6	$9 \times 9 =$	
7	$10 \times 9 =$		7	$9 \times 3 =$		7	$108 \div 9 =$		7	$54 \div 9 =$	
8	$12 \times 9 =$		8	$9 \div 9 =$		8	$9 \times 0 =$		8	$45 \div 9 =$	
9	$9 \times 9 =$		9	$9 \times 9 =$		9	$9 \times 9 =$		9	$9 \times 9 =$	
10	$54 \div 9 =$		10	$99 \div 9 =$		10	$99 \div 9 =$		10	$0 \times 9 =$	
11	$9 \times 6 =$		11	$45 \div 9 =$		11	$81 \div 9 =$		11	$18 \div 9 =$	
12	$63 \div 9 =$		12	$9 \times 0 =$		12	$27 \div 9 =$		12	$63 \div 9 =$	
13	$11 \times 9 =$		13	$9 \times 9 =$		13	$9 \times 5 =$		13	$9 \times 6 =$	
14	$12 \times 9 =$		16	$81 \div 9 =$		16	$18 \div 9 =$		16	$45 \div 9 =$	
15	$9 \times 0 =$		15	$36 \div 9 =$		15	$5 \times 9 =$		15	$90 \div 9 =$	
16	$27 \div 9 =$		16	$9 \times 12 =$		16	$9 \times 9 =$		16	$18 \div 9 =$	
17	$9 \times 9 =$		17	$9 \times 9 =$		17	$99 \div 9 =$		17	$5 \times 9 =$	
18	$9 \times 3 =$		18	$10 \times 9 =$		18	$54 \div 9 =$		18	$9 \times 3 =$	
19	$18 \div 9 =$		19	$9 \times 3 =$		19	$81 \div 9 =$		19	$10 \times 9 =$	
20	$6 \times 9 =$		20	$108 \div 9 =$		20	$36 \div 9 =$		20	$9 \times 11 =$	
21	$108 \div 9 =$		24	$11 \times 9 =$		24	$6 \times 9 =$		24	$9 \times 9 =$	
22	$90 \div 9 =$		22	$32 \div 9 =$		22	$9 \times 9 =$		22	$27 \div 9 =$	
23	$36 \div 9 =$		23	$9 \times 6 =$		23	$9 \times 12 =$		23	$99 \div 9 =$	
24	$9 \times 5 =$		24	$72 \div 9 =$		24	$0 \times 9 =$		24	$72 \div 9 =$	
25	$9 \times 9 =$		25	$9 \times 9 =$		25	$99 \div 9 =$		25	$9 \times 9 =$	
<b>Totals</b>			/25			/25			/25		/25

**Total**

**/100**

# Day 4 – 10 mins

Test 1

## Multiplication challenge

Name:

Date:

1	$9 \times 9 =$		1	$9 \times 9 =$		1	$45 \div 9 =$		1	$108 \div 9 =$	
2	$0 \times 9 =$		2	$72 \div 9 =$		2	$63 \div 9 =$		2	$9 \times 9 =$	
3	$54 \div 9 =$		3	$18 \div 9 =$		3	$5 \times 9 =$		3	$9 \times 3 =$	
4	$27 \div 9 =$		4	$0 \times 9 =$		4	$9 \times 9 =$		4	$27 \div 9 =$	
5	$9 \times 9 =$		5	$36 \div 9 =$		5	$9 \times 2 =$		5	$6 \times 9 =$	
6	$63 \div 9 =$		6	$9 \times 9 =$		6	$81 \div 9 =$		6	$9 \times 9 =$	
7	$10 \times 9 =$		7	$9 \times 3 =$		7	$108 \div 9 =$		7	$54 \div 9 =$	
8	$12 \times 9 =$		8	$9 \div 9 =$		8	$9 \times 0 =$		8	$45 \div 9 =$	
9	$9 \times 9 =$		9	$9 \times 9 =$		9	$9 \times 9 =$		9	$9 \times 9 =$	
10	$54 \div 9 =$		10	$99 \div 9 =$		10	$99 \div 9 =$		10	$0 \times 9 =$	
11	$9 \times 6 =$		11	$45 \div 9 =$		11	$81 \div 9 =$		11	$18 \div 9 =$	
12	$63 \div 9 =$		12	$9 \times 0 =$		12	$27 \div 9 =$		12	$63 \div 9 =$	
13	$11 \times 9 =$		13	$9 \times 9 =$		13	$9 \times 5 =$		13	$9 \times 6 =$	
14	$12 \times 9 =$		16	$81 \div 9 =$		16	$18 \div 9 =$		16	$45 \div 9 =$	
15	$9 \times 0 =$		15	$36 \div 9 =$		15	$5 \times 9 =$		15	$90 \div 9 =$	
16	$27 \div 9 =$		16	$9 \times 12 =$		16	$9 \times 9 =$		16	$18 \div 9 =$	
17	$9 \times 9 =$		17	$9 \times 9 =$		17	$99 \div 9 =$		17	$5 \times 9 =$	
18	$9 \times 3 =$		18	$10 \times 9 =$		18	$54 \div 9 =$		18	$9 \times 3 =$	
19	$18 \div 9 =$		19	$9 \times 3 =$		19	$81 \div 9 =$		19	$10 \times 9 =$	
20	$6 \times 9 =$		20	$108 \div 9 =$		20	$36 \div 9 =$		20	$9 \times 11 =$	
21	$108 \div 9 =$		24	$11 \times 9 =$		24	$6 \times 9 =$		24	$9 \times 9 =$	
22	$90 \div 9 =$		22	$32 \div 9 =$		22	$9 \times 9 =$		22	$27 \div 9 =$	
23	$36 \div 9 =$		23	$9 \times 6 =$		23	$9 \times 12 =$		23	$99 \div 9 =$	
24	$9 \times 5 =$		24	$72 \div 9 =$		24	$0 \times 9 =$		24	$72 \div 9 =$	
25	$9 \times 9 =$		25	$9 \times 9 =$		25	$99 \div 9 =$		25	$9 \times 9 =$	
<b>Totals</b>		/25			/25			/25			/25

**Total**

**/100**



## The Golden 100

1x3	2x5	4x9	10x6	7x9
8x3	2x7	4x7	10x1	9x9
1x7	2x1	4x4	1x6	7x7
5x3	9x5	4x1	10x10	8x9
1x1	2x6	6x9	4x6	7x3
1x10	2x9	4x5	10x7	7x1
3x3	2x8	4x10	10x5	8x9
1x2	2x10	10x9	10x2	7x5
2x3	1x5	4x2	3x6	3x9
1x4	2x2	1x9	7x6	8x6
1x8	2x4	4x8	10x4	7x4
4x3	8x5	6x5	10x3	7x8
9x3	9x4	3x6	6x6	5x6
8x7	5x5	3x7	10x8	7x2
5x8	9x6	3x2	5x7	7x10
9x7	6x2	3x8	3x10	5x2
5x4	6x4	8x4	9x5	9x1
3x5	6x1	8x8	5x10	3x2
5x1	8x2	8x10	9x2	8x1
9x10	6x8	3x4	6x7	6x10

Last month I scored

Today I scored

**My targeted 10 facts to learn are**

$15 \div 3 =$

$20 \div 4 =$

$8 \div 4 =$

$6 \times 4 =$

$20 \div 5 =$

$27 \div 3 =$

$20 \div 10 =$

$7 \times 5 =$

$0 \times 4 =$

$2 \times 3 =$

$100 \div 10 =$

$0 \div 2 =$

$12 \div 2 =$

$45 \div 5 =$

$35 \div 5 =$

$35 \div 5 =$

$7 \times 3 =$

$40 \div 4 =$

$8 \times 5 =$

$24 \div 3 =$

$9 \times 5 =$

$21 \div 3 =$

$18 \div 2 =$

$10 \div 5 =$

$9 \times 4 =$

$7 \times 4 =$

$50 \div 5 =$

$12 \div 3 =$

$5 \div 5 =$

$8 \times 5 =$

$25 \div 5 =$

$32 \div 4 =$

$27 \div 3 =$

$24 \div 4 =$

$28 \div 4 =$

$9 \times 3 =$

$9 \times 3 =$

$16 \div 4 =$

$10 \div 2 =$

$6 \times 5 =$

$25 \div 5 =$

$5 \times 4 =$

$72 \div 12 =$

$64 \div 8 =$

$45 \div 9 =$

$121 \div 11 =$

$45 \div 5 =$

$8 \times 9 =$

$42 \div 7 =$

$63 \div 7 =$

$27 \div 3 =$

$72 \div 8 =$

$18 \div 3 =$

$56 \div 8 =$

$54 \div 9 =$

$30 \div 6 =$

$9 \times 9 =$

$35 \div 7 =$

$6 \times 9 =$

$36 \div 6 =$

$48 \div 8 =$

$7 \times 8 =$

$40 \div 4 =$

$8 \times 8 =$

$49 \div 7 =$

$8 \times 6 =$

$32 \div 8 =$

$4 \times 8 =$

$32 \div 8 =$

$27 \div 9 =$

$81 \div 9 =$

$6 \times 7 =$

$28 \div 7 =$

$32 \div 4 =$

$63 \div 9 =$

$4 \times 9 =$

$28 \div 4 =$

$7 \times 9 =$

$54 \div 6 =$

$63 \div 7 =$

$28 \div 7 =$

$48 \div 6 =$

$56 \div 8 =$

$8 \times 7 =$



Name: \_\_\_\_\_

## Multiplication Scramble

Unscramble each set of digits to create a multiplication fact.

examples:

3	4
2	1

answer:  $3 \times 4 = 12$

6	6	1
0	0	

answer:  $10 \times 6 = 60$

3	2
1	7

answer: \_\_\_\_\_

1	4	8
7	2	

answer: \_\_\_\_\_

1	0	
0	9	9

answer: \_\_\_\_\_

1	1	5
5	5	

answer: \_\_\_\_\_

1	1	1	1
1	1	2	

answer: \_\_\_\_\_

9	8
1	9

answer: \_\_\_\_\_

0	0
1	

answer: \_\_\_\_\_

3	2	1	1
1	2	1	

answer: \_\_\_\_\_

Name: \_\_\_\_\_

Basic Multiplication Facts: 0

## Missing Factors

a. 
$$\begin{array}{r} 11 \\ \times \square \\ \hline 121 \end{array}$$

b. 
$$\begin{array}{r} 7 \\ \times \square \\ \hline 21 \end{array}$$

c. 
$$\begin{array}{r} \square \\ \times 9 \\ \hline 54 \end{array}$$

d. 
$$\begin{array}{r} 8 \\ \times \square \\ \hline 56 \end{array}$$

e. 
$$\begin{array}{r} 12 \\ \times \square \\ \hline 72 \end{array}$$

f. 
$$\begin{array}{r} \square \\ \times 8 \\ \hline 24 \end{array}$$

g. 
$$\begin{array}{r} \square \\ \times 6 \\ \hline 42 \end{array}$$

h. 
$$\begin{array}{r} \square \\ \times 4 \\ \hline 16 \end{array}$$

i. 
$$\begin{array}{r} \square \\ \times 3 \\ \hline 18 \end{array}$$

j. 
$$\begin{array}{r} \square \\ \times 3 \\ \hline 33 \end{array}$$

k. 
$$\begin{array}{r} 7 \\ \times \square \\ \hline 49 \end{array}$$

l. 
$$\begin{array}{r} 12 \\ \times \square \\ \hline 48 \end{array}$$

m. 
$$\begin{array}{r} 4 \\ \times \square \\ \hline 24 \end{array}$$

n. 
$$\begin{array}{r} \square \\ \times 8 \\ \hline 96 \end{array}$$

o. 
$$\begin{array}{r} 10 \\ \times \square \\ \hline 100 \end{array}$$

p. 
$$\begin{array}{r} \square \\ \times 1 \\ \hline 0 \end{array}$$

q. 
$$\begin{array}{r} \square \\ \times 8 \\ \hline 48 \end{array}$$

r. 
$$\begin{array}{r} 11 \\ \times \square \\ \hline 132 \end{array}$$

s. 
$$\begin{array}{r} \square \\ \times 9 \\ \hline 27 \end{array}$$

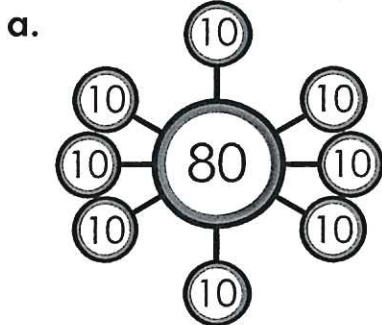
t. 
$$\begin{array}{r} 12 \\ \times \square \\ \hline 144 \end{array}$$

Name: \_\_\_\_\_

# Number Bonds

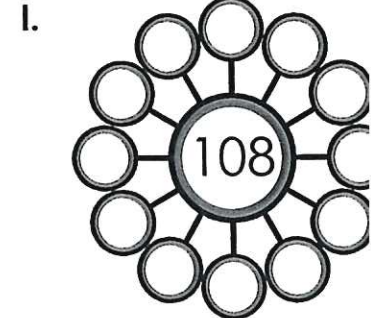
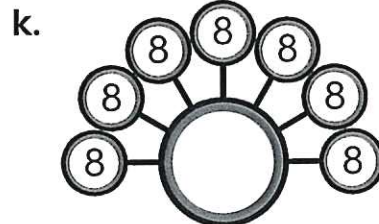
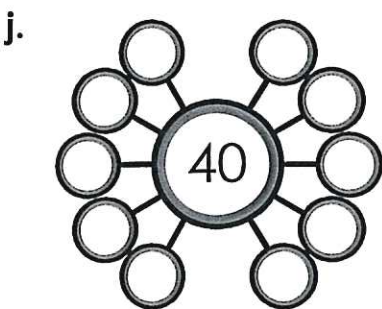
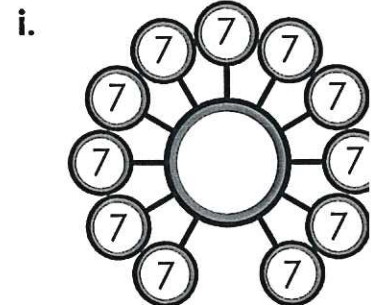
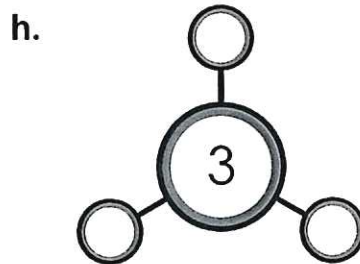
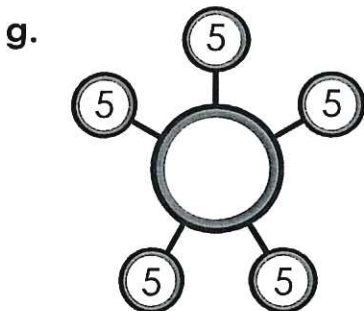
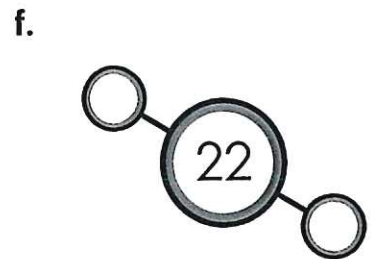
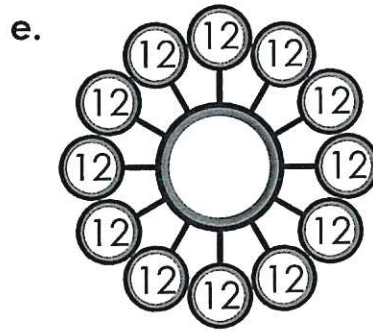
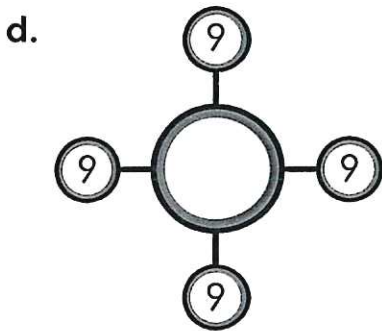
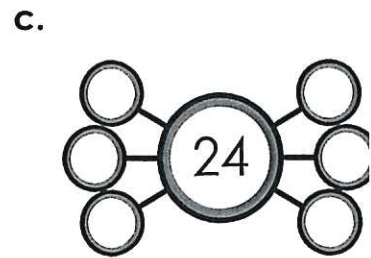
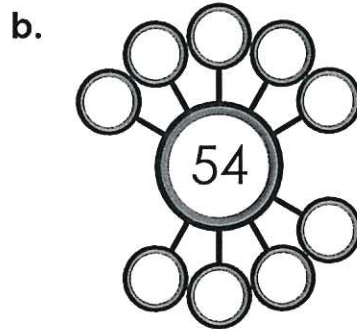
Multiplication & Division

Use multiplication and division to fill in the missing number or numbers of each number bond. Write the fact in the space provided.



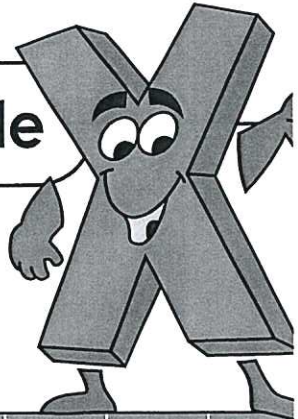
---

$$8 \times 10 = 80$$



Name: \_\_\_\_\_

## Mixed-Up Multiplication Table



Help Multiplication MaX fill in the empty squares.

	2	5	9	12	0	6	7	10	3	8	1	11	4
12									36		12		
1				12									4
5											5		
0									0				
8	16						56					88	
2													
4			36					40					
11						66							
7								70					
10										80			
3				36								33	
9							63						
6		30		72									

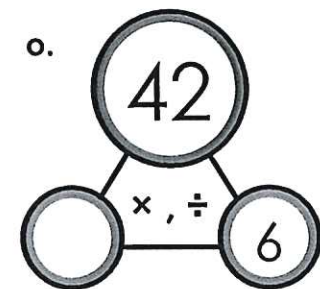
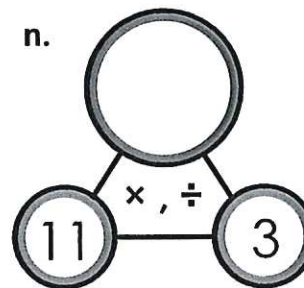
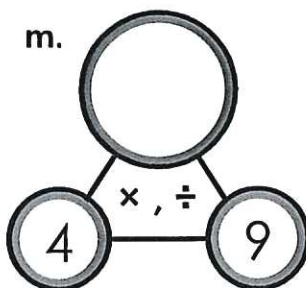
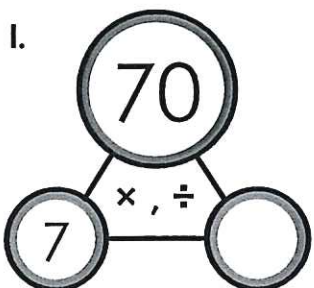
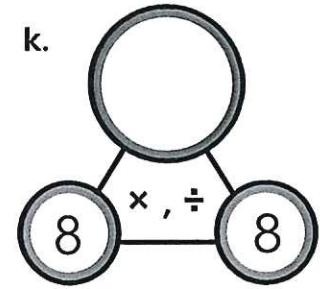
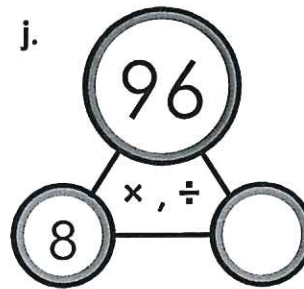
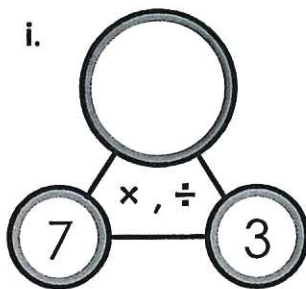
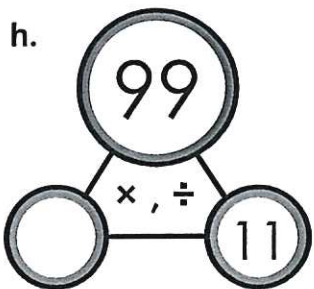
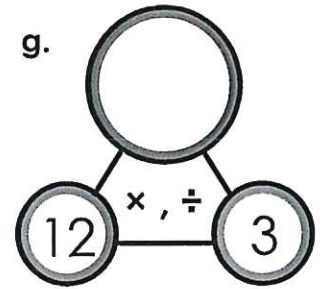
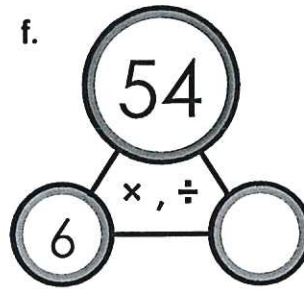
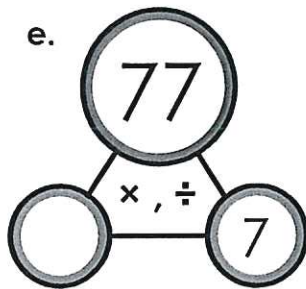
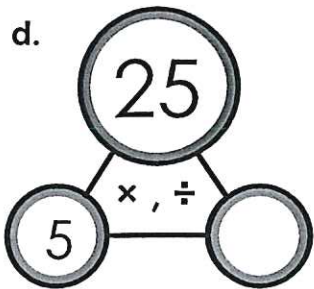
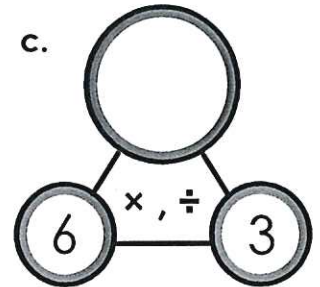
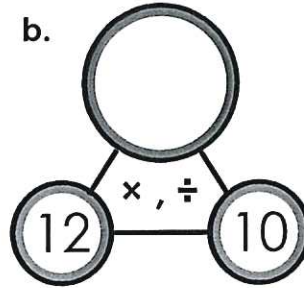
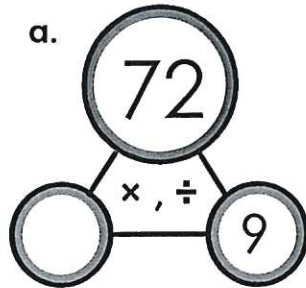
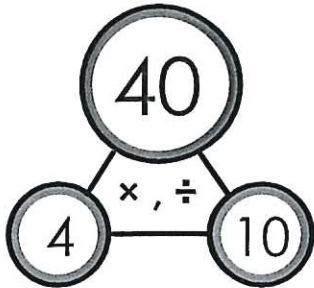
Name: \_\_\_\_\_

# Fact Families

Multiplication and Division

Use multiplication and division to fill in the missing number of each fact family.

example:



Name: \_\_\_\_\_

# Fact Family Street

Use multiplication and division to fill in the fact family living in each house.

a.

32  
x, ÷  
8 4

8	x	4	=	32
4	x	8	=	32
32	÷	8	=	4
32	÷	4	=	8

b.

132  
x, ÷  
12 11

	x		=	
	x		=	
	÷		=	
	÷		=	

c.

21  
x, ÷  
7 3

	x		=	
	x		=	
	÷		=	
	÷		=	

d.

120  
x, ÷  
12 10

	x		=	
	x		=	
	÷		=	
	÷		=	

e.

36  
x, ÷  
9 4

	x		=	
	x		=	
	÷		=	
	÷		=	

f.

54  
x, ÷  
9 6

	x		=	
	x		=	
	÷		=	
	÷		=	

g.

12  
x, ÷  
4 3

	x		=	
	x		=	
	÷		=	
	÷		=	

h.

56  
x, ÷  
8 7

	x		=	
	x		=	
	÷		=	
	÷		=	

i.

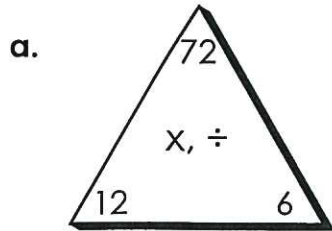
66  
x, ÷  
11 6

	x		=	
	x		=	
	÷		=	
	÷		=	

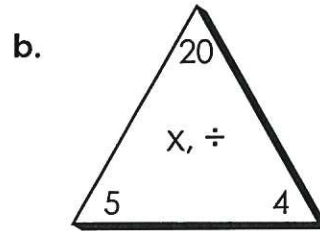
Name: \_\_\_\_\_

## Fact Families

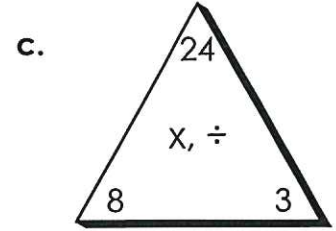
Use multiplication and division to write the fact family for each.



\_\_\_ x \_\_\_ = \_\_\_  
\_\_\_ x \_\_\_ = \_\_\_  
\_\_\_ ÷ \_\_\_ = \_\_\_  
\_\_\_ ÷ \_\_\_ = \_\_\_

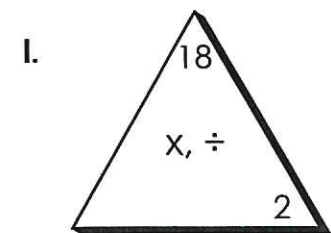
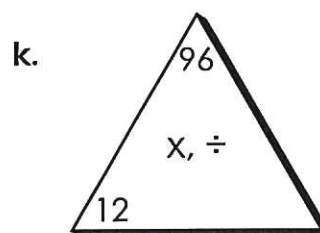
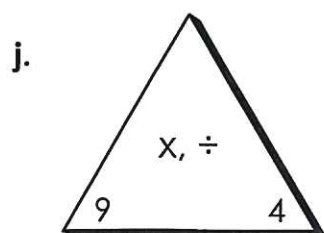
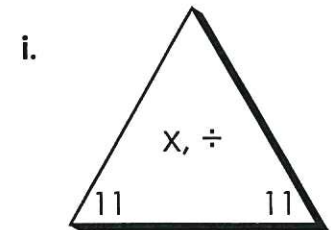
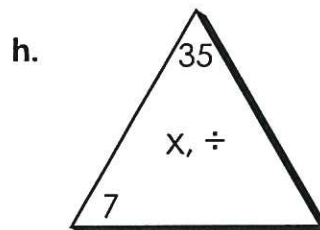
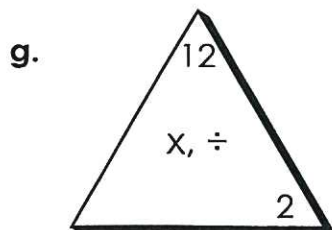
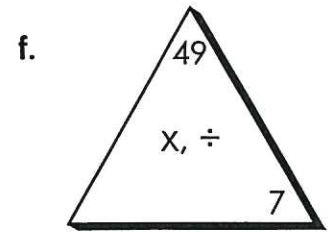
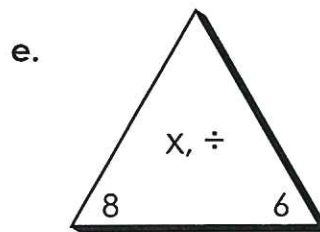
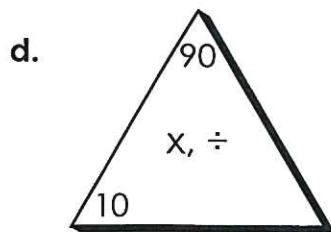


\_\_\_ x \_\_\_ = \_\_\_  
\_\_\_ x \_\_\_ = \_\_\_  
\_\_\_ ÷ \_\_\_ = \_\_\_  
\_\_\_ ÷ \_\_\_ = \_\_\_



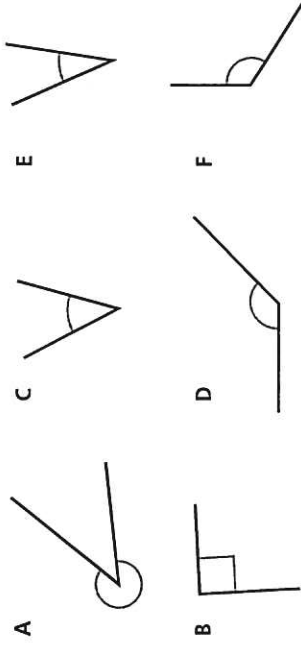
\_\_\_ x \_\_\_ = \_\_\_  
\_\_\_ x \_\_\_ = \_\_\_  
\_\_\_ ÷ \_\_\_ = \_\_\_  
\_\_\_ ÷ \_\_\_ = \_\_\_

Use multiplication and division to fill in the missing fact in each family.



# Measure with a protractor

1 Here are some angles.



a) Sort the angles into the table.

Acute angle	Obtuse angle	Right angle	Reflex angle

b) How did you decide where to place each angle?

---



---



---

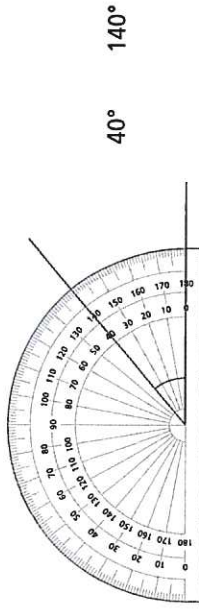
c) Estimate the size of each angle.

A	<input type="text"/>	C	<input type="text"/>	E	<input type="text"/>
B	<input type="text"/>	D	<input type="text"/>	F	<input type="text"/>

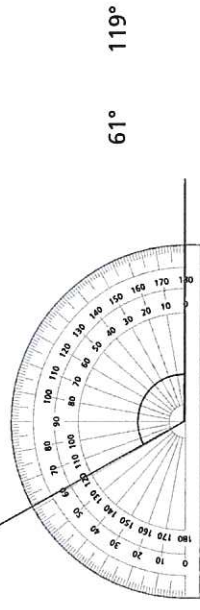
Compare answers with a partner.

2 What is the size of each angle? Circle your answer.

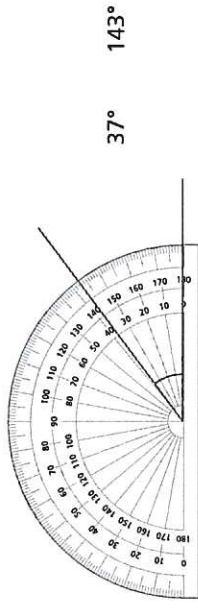
a)



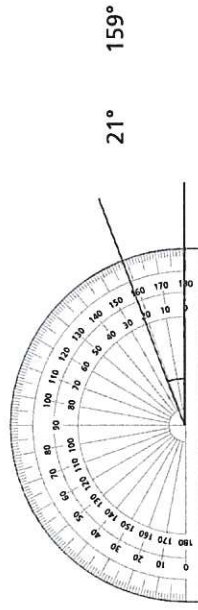
b)



c)



d)

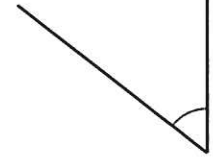



Look at the angles you have not circled.  
Why might somebody think they are correct?








3 Measure the size of each angle using a protractor.

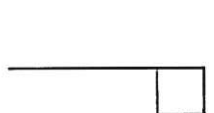
a) 


b) 

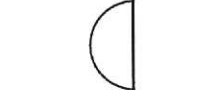
c) 

d) 

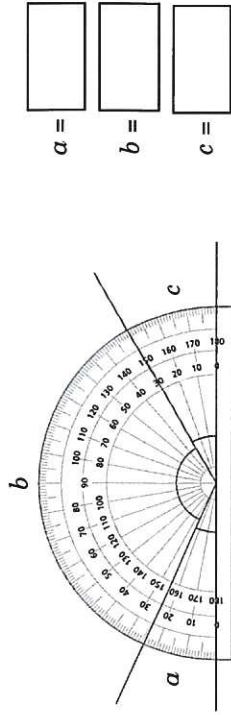
e) 

f) 

g) 

h) 

4 a) Work out the sizes of the angles.

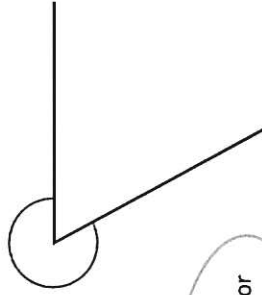



b) Discuss with a partner how you worked out each angle.

c) Find the total of your three angles.

What do you notice? \_\_\_\_\_

5 Rosie is measuring the size of this angle.



a)  I can't measure it because my protractor doesn't go that far.

Do you agree with Rosie? \_\_\_\_\_

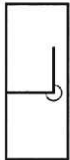
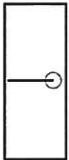
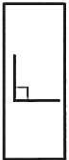

Explain your answer. \_\_\_\_\_

b) Measure the size of the angle.



# Introduce angles

1 Match each angle to its picture and number of right angles.

90°		1 right angle
180°		4 right angles
270°		3 right angles
360°		2 right angles

2 Complete the sentences.

- There is  right angle in a quarter turn.  
 A quarter turn is  degrees.  
 There are  right angles in a half turn.  
 A half turn is  degrees.  
 There are  right angles in a three-quarter turn.  
 A three-quarter turn is  degrees.  
 There are  right angles in a full turn.  
 A full turn is  degrees.

3 a) Jack is facing the direction that the arrow is pointing.

Jack 

He turns a half turn.

Draw on the diagram to show the direction he is now facing and the angle he turned through.

How many degrees did he turn through?

b) Dora is facing the direction that the arrow is pointing.


 Dora

She turns a quarter turn clockwise.

Draw on the diagram to show the direction she is now facing and the angle she turned through.

How many degrees did she turn through?

c) Teddy is facing the direction that the arrow is pointing.

 Teddy

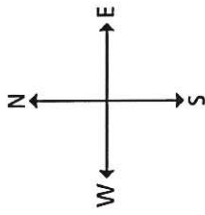
He turns a three-quarter turn.

Draw on the diagram to show the two directions he could now be facing and the angles he could have turned through.

How many degrees did Teddy turn through?



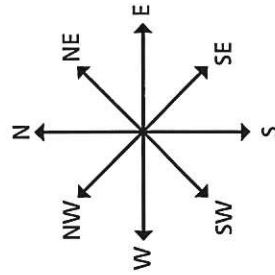
4 Here is a compass.



- a) Huan is facing north.  
He turns half a turn.  
What direction is he facing now? \_\_\_\_\_
- b) Whitney is facing east.  
She turns  $180^\circ$ .  
What direction is she facing now? \_\_\_\_\_
- c) Alex is facing west.  
She turns a quarter turn clockwise.  
What direction is she facing now? \_\_\_\_\_
- d) Amir is facing west.  
He turns  $90^\circ$  anticlockwise.  
What direction is he facing now? \_\_\_\_\_
- e) Kim is facing south.  
What angle does she need to turn through to face east?  
\_\_\_\_\_

Is there more than one answer?

5 Here is another compass.



- a) Dexter is facing north-east.  
He turns half a turn.  
What direction is he facing now? \_\_\_\_\_

- b) Esther is facing south-west.  
She turns  $270^\circ$  anticlockwise.

What direction is she facing now? \_\_\_\_\_

- c) Mo is facing south-west.  
He turns, and he is still facing south-west.  
How many degrees did he turn through?

6 Complete the statements.

- a)  $\frac{1}{2}$  of a full turn =
- b)  $\frac{1}{4}$  of a full turn =
- c)  $\frac{3}{4}$  of a full turn =
- d)  $1\frac{1}{4}$  turns =
- e)  $5\frac{3}{4}$  turns =

7



I did  $2\frac{1}{3}$  turns.

How many degrees did Eva turn through?

8

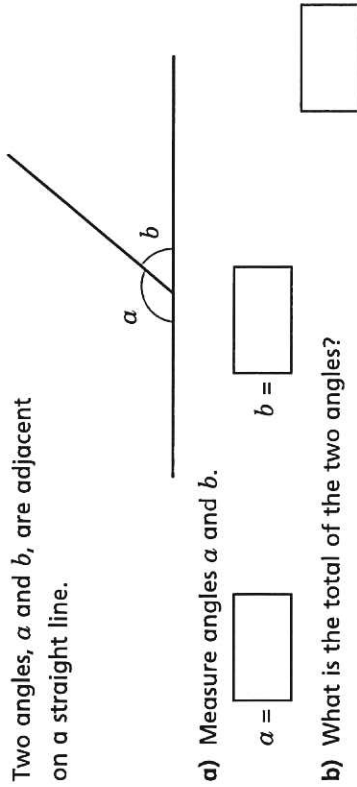
Nijjah looks at the clock at the start and at the end of her maths lesson.



How many degrees did the minute hand turn through during the lesson?

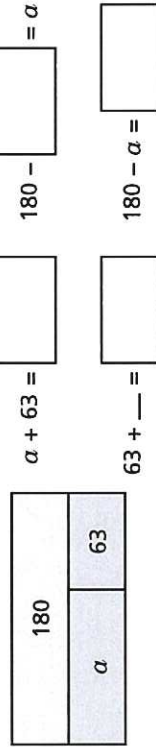
# Calculate angles

1 Two angles,  $a$  and  $b$ , are adjacent on a straight line.



c) Complete the sentence.  
 Adjacent angles on a straight line \_\_\_\_\_

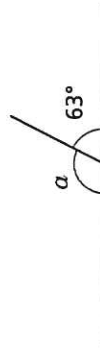
2 a) Complete the fact family for the bar model.



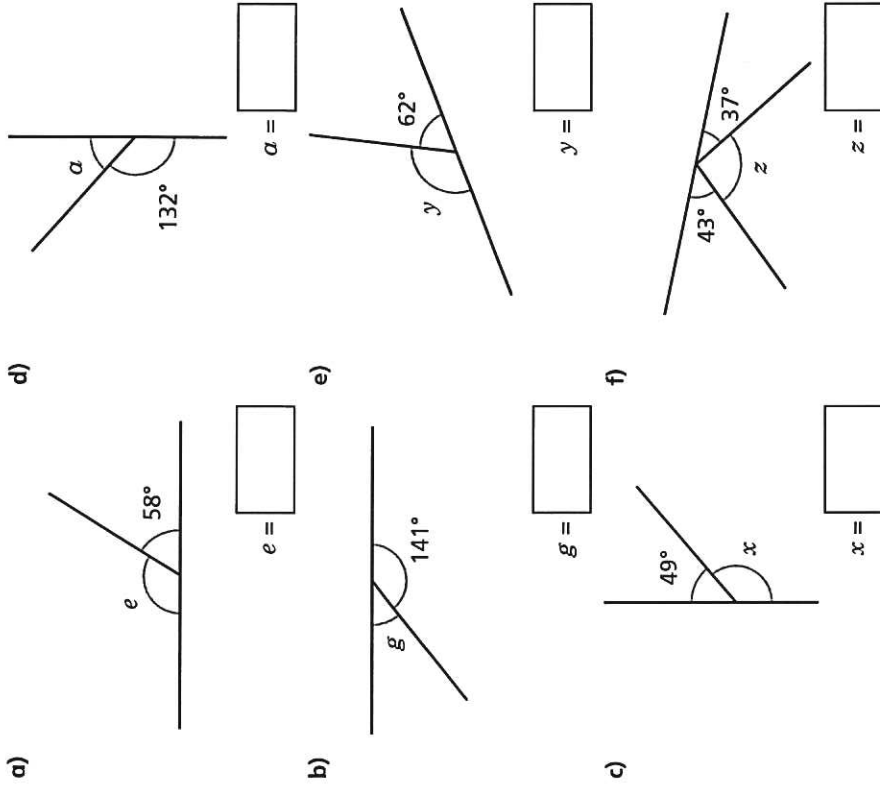
b) Tick the calculation in part a) that helps you work out the value of  $a$ .

c) Work out the value of  $a$ .  $a =$

d) How does the bar model help you to calculate angle  $a$ ?



3 Work out the unknown angles.



4 Dora is facing in the direction shown by the arrow. She does a full turn clockwise.



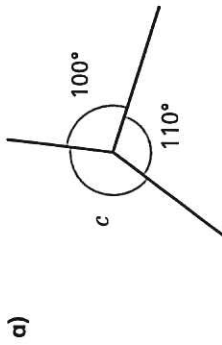
a) Show Dora's turn on the diagram.

b) How many degrees did Dora turn through?

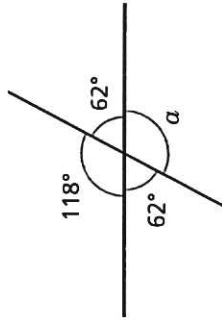
c) Use your answer to part b) to help you complete the sentence.

Angles around a point \_\_\_\_\_

5 Work out the unknown angles.



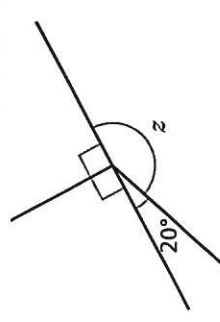
$c =$



$a =$

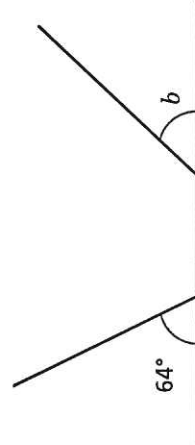
b)

$x =$



$z =$

6

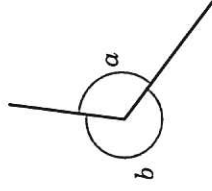


Tommy says: Angle  $b$  is  $116^\circ$  because angles on a straight line add up to  $180^\circ$ .

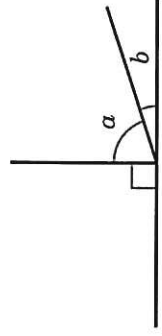
Do you agree with Tommy? \_\_\_\_\_  
 Explain your answer. \_\_\_\_\_

7 Use the information to work out the unknown angles.

- a) Angle  $a$  is half the size of angle  $b$ .  
 b) Angle  $a$  is four times the size of angle  $b$ .

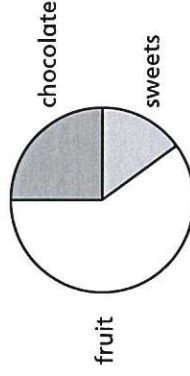


$a =$    
 $b =$



$a =$    
 $b =$

8 The pie chart shows some children's favourite snacks.



A quarter of the children said chocolate was their favourite snack. Five times as many children voted for fruit as voted for sweets.

Work out the size of the angle for each sector in the pie chart.

chocolate

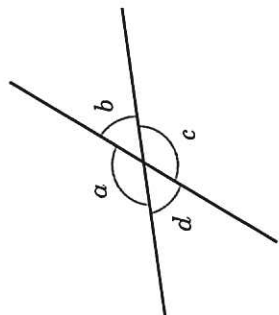
sweets

fruit



# Vertically opposite angles

1 The diagram shows four angles formed by two straight lines.



a) Measure the sizes of the angles.  
 $a =$    $b =$    $c =$    $d =$

b) What is the total of angles  $a$  and  $b$ ?

Explain why.  
 \_\_\_\_\_  
 \_\_\_\_\_

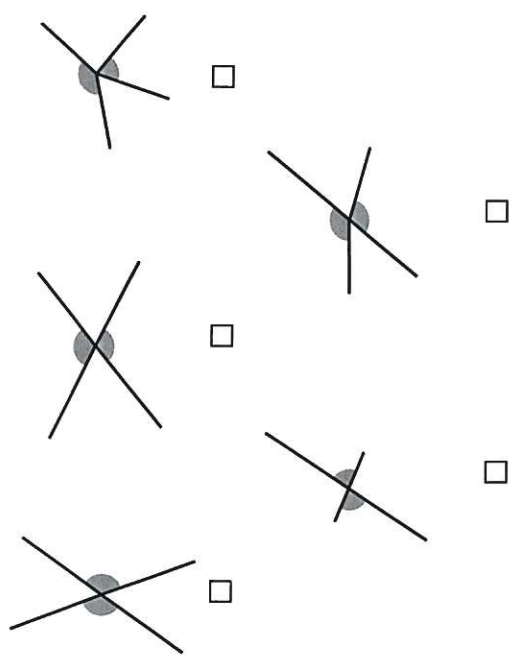
Do any other pairs of angles have this same total?  
 \_\_\_\_\_

c) Angles  $a$  and  $c$  are vertically opposite angles.  
 What do you notice about the sizes of angles  $a$  and  $c$ ?  
 \_\_\_\_\_  
 \_\_\_\_\_

d) Angles  $b$  and  $d$  are also vertically opposite angles.  
 What do you notice about the sizes of angles  $b$  and  $d$ ?  
 \_\_\_\_\_  
 \_\_\_\_\_

e) Complete the sentence.  
 Vertically opposite angles \_\_\_\_\_  
 \_\_\_\_\_

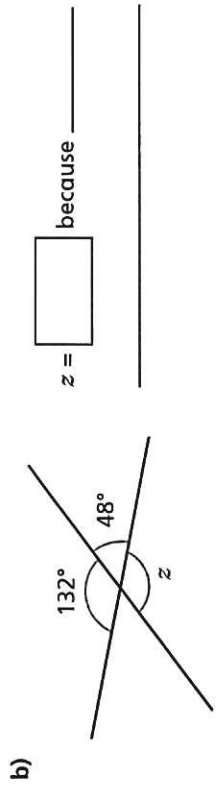
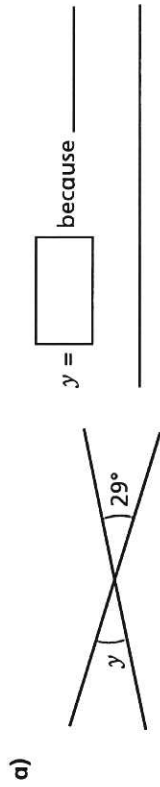
2 Tick the pairs of angles that are vertically opposite.



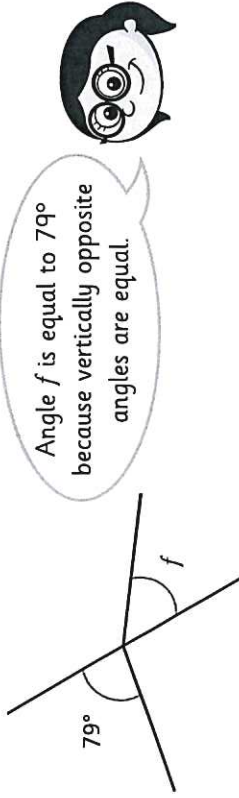
Compare answers with a partner.

3 Work out the sizes of the unknown angles.

Give reasons for your answers.

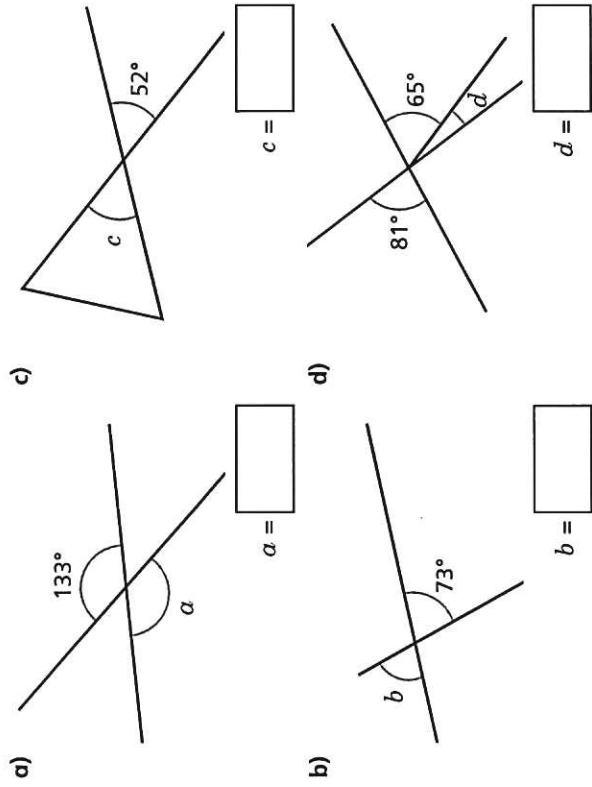


- 4 Annie is working out the size of angle  $f$ .

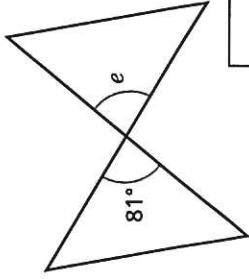


Do you agree with Annie? \_\_\_\_\_  
 Explain your answer. \_\_\_\_\_

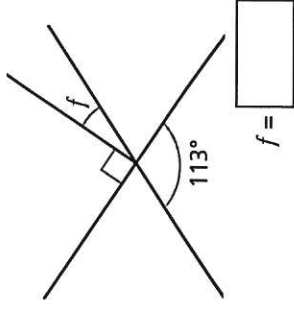
- 5 Work out the unknown angles.



- e)   $e =$

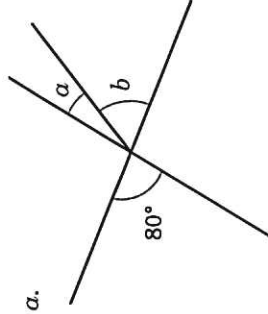


- f)   $f =$



Talk about your reasons with a partner.

- 6 Angle  $b$  is three times the size of angle  $a$ .

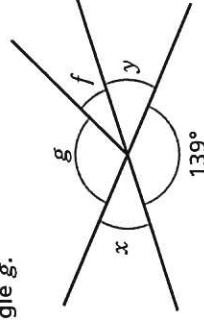


Work out the sizes of angles  $a$  and  $b$ .

$a =$    $b =$

- 7 Angle  $f$  is one quarter of the size of angle  $g$ .

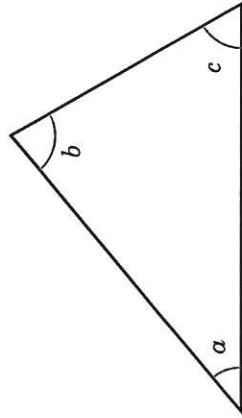
Angle  $f$  is  $28^\circ$ .



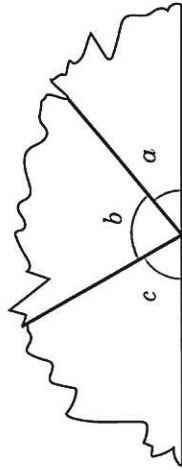
Are angles  $x$  and  $y$  vertically opposite? \_\_\_\_\_  
 Explain your answer. \_\_\_\_\_

# Angles in a triangle

1 Here is a triangle.



a) The three vertices are torn off the triangle and arranged on a straight line.



What is the sum of the three angles?

How do you know?

---

b) Now measure the sizes of angles  $a$ ,  $b$  and  $c$  in the triangle.

$a =$

$b =$

$c =$

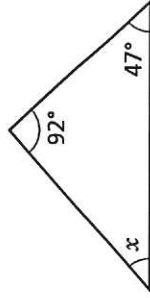
c) What is the total of angles  $a$ ,  $b$  and  $c$ ?

d) Complete the sentence.

Angles in a triangle \_\_\_\_\_

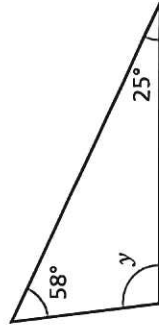
2 Work out the sizes of the unknown angles. Give reasons for your answers.

a)



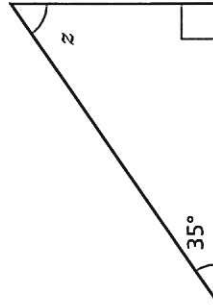
$x =$   because \_\_\_\_\_

b)



$y =$   because \_\_\_\_\_

c)



$z =$   because \_\_\_\_\_

d)



$w =$   because \_\_\_\_\_



3 Work out the unknown angles.



$q =$

b)  $r =$

$r =$

Discuss your reasons with a partner.

4 a) Two angles in a triangle are  $42^\circ$  and  $57^\circ$ .

What is the size of the third angle?

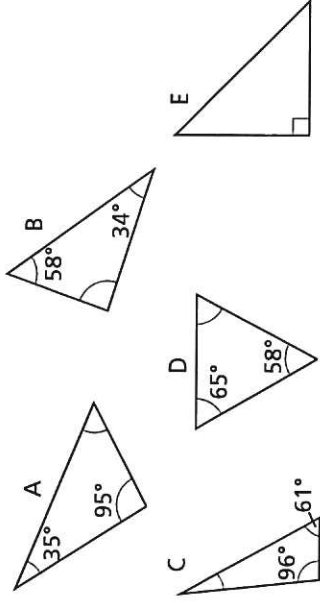
b) Two of the angles in a triangle are  $12^\circ$ .

What is the size of the third angle?

c) One of the angles in a triangle is  $38^\circ$ . Another angle is twice the size of the first angle.

What is the size of the third angle?

5 Sort the triangles into the table.



0 acute angles	1 acute angle	2 acute angles	3 acute angles

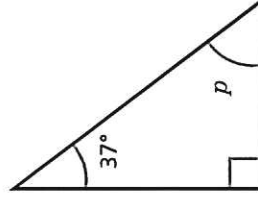
Are any of the columns empty? Why?

---



---

6



$p = 143^\circ$  because angles in a triangle sum to  $180^\circ$  and  $180 - 37 = 143$



Do you agree with Ron? \_\_\_\_\_

Explain your answer.

---

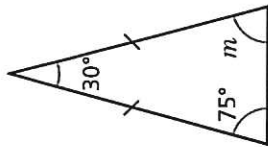


---



# Angles in a triangle – special cases

1 Here is a triangle.



a) What type of triangle is it?

\_\_\_\_\_

How do you know?

\_\_\_\_\_

\_\_\_\_\_

b) Work out the size of angle  $m$ .

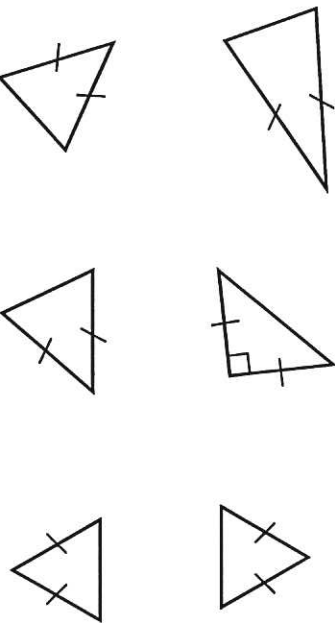
\_\_\_\_\_

c) What do you notice?

d) Complete the sentence to describe the angles in an isosceles triangle.

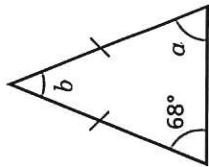
In an isosceles triangle \_\_\_\_\_

2 Identify and label the angles that will be equal in each triangle.



3 Work out the sizes of the unknown angles.

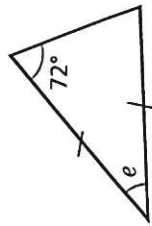
a)



$a =$  \_\_\_\_\_

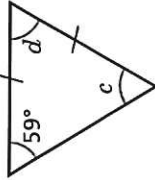
$b =$  \_\_\_\_\_

c)



$e =$  \_\_\_\_\_

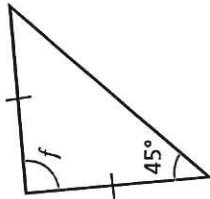
b)



$c =$  \_\_\_\_\_

$d =$  \_\_\_\_\_

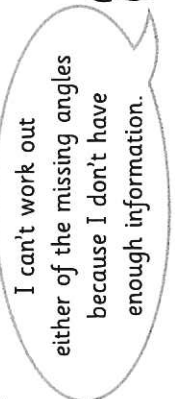
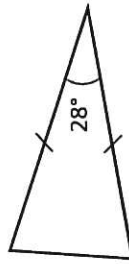
d)



$f =$  \_\_\_\_\_

Talk about your reasons with a partner.

4 Dexter is working out the unknown angles in triangles.



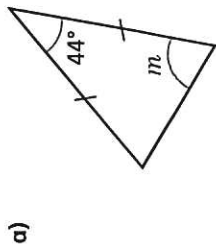
Do you agree with Dexter? \_\_\_\_\_

Explain your answer.

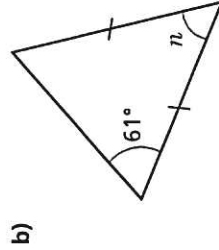
\_\_\_\_\_

\_\_\_\_\_

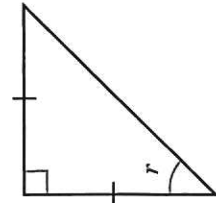
5 Work out the sizes of the unknown angles.



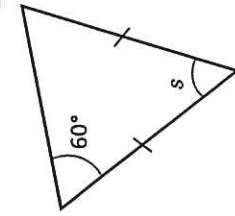
$m = \boxed{\phantom{00}}$



$n = \boxed{\phantom{00}}$

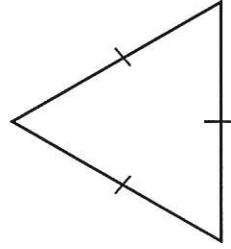


$r = \boxed{\phantom{00}}$



$s = \boxed{\phantom{00}}$

6 Whitney and Jack are working out the angles in this triangle.



I can't work out the angles in this triangle because I don't know any of them.



Whitney

I know the size of all the angles in this triangle.



Jack

Who do you agree with? \_\_\_\_\_  
Talk about it with a partner.

7 Are the statements true or false?

- a) Every isosceles triangle is equilateral. \_\_\_\_\_
- b) Every equilateral triangle is isosceles. \_\_\_\_\_
- c) A right-angled triangle can be equilateral. \_\_\_\_\_
- d) A right-angled triangle can be isosceles. \_\_\_\_\_

Explain your answers to a partner.

8 Two angles in a triangle are  $43^\circ$  and  $74^\circ$ .

Is the triangle isosceles? \_\_\_\_\_

Show your workings.

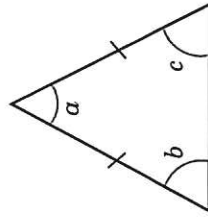
9 One angle in an isosceles triangle is  $29^\circ$ .

What could the other angles be? Give two possible answers.

\_\_\_\_\_

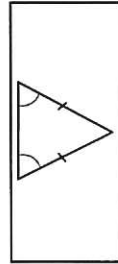
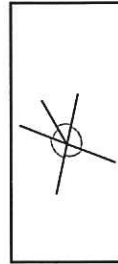
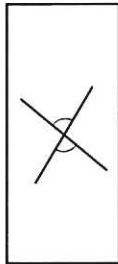
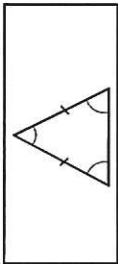
10 Angle  $b$  is twice the size of angle  $a$ .

Work out the size of angle  $c$ .



# Angles in a triangle – missing angles

1 Match each diagram to the correct rule.



Angles on a straight line sum to  $180^\circ$

Angles around a point sum to  $360^\circ$

Angles in a triangle sum to  $180^\circ$

In an isosceles triangle, two angles are equal

Vertically opposite angles are equal

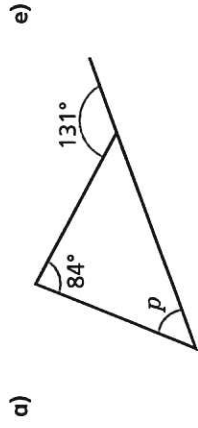
2 Work out the sizes of the unknown angles. Give reasons for each stage of your working.

a)   
 $a =$   because \_\_\_\_\_   
 $b =$   because \_\_\_\_\_

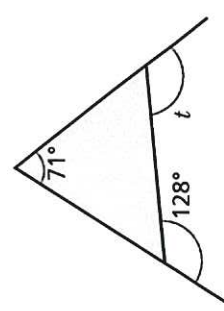
b)   
 $d =$   because \_\_\_\_\_   
 $e =$   because \_\_\_\_\_   
 $f =$   because \_\_\_\_\_

c)   
 $g =$   because \_\_\_\_\_   
 $h =$   because \_\_\_\_\_   
 $i =$   because \_\_\_\_\_

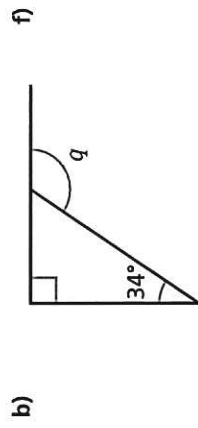
3 Work out the sizes of the angles marked with letters.



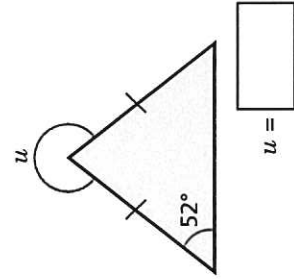
$p =$



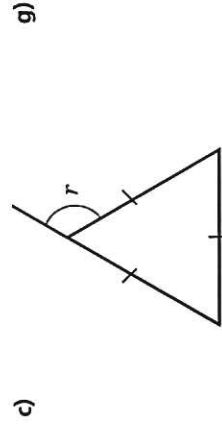
$t =$



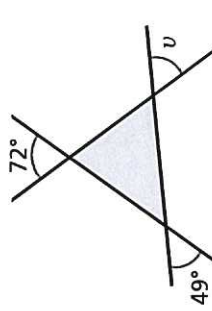
$q =$



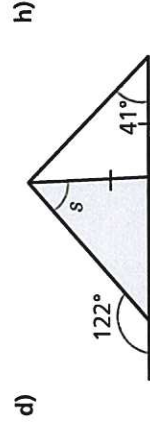
$u =$



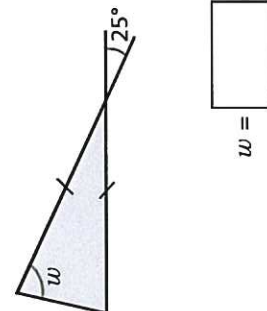
$r =$



$v =$



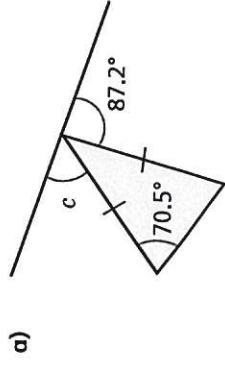
$s =$



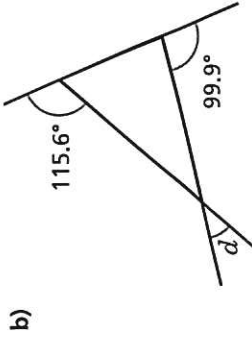
$w =$

Talk about your reasons with a partner.

4 Work out the sizes of the unknown angles.

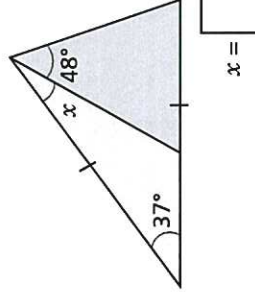


$c =$



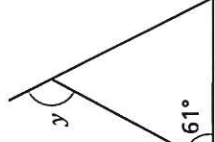
$d =$

5 Work out the size of angle  $x$ .



$x =$

6 Here is an isosceles triangle. Find two possible sizes of angle  $y$ .

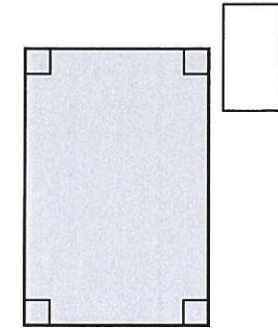
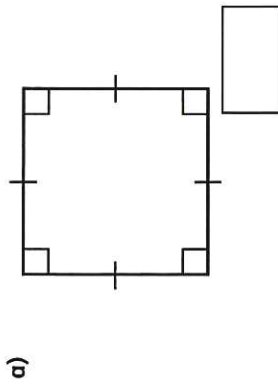


$y =$   or



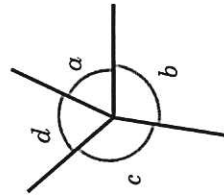
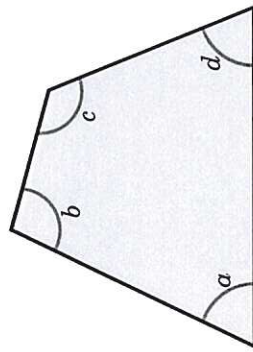
# Angles in special quadrilaterals

1 Work out the sum of the angles in each shape.



What do you notice?

2 The diagrams show the four vertices of a quadrilateral arranged around a point.

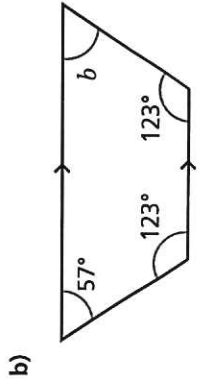
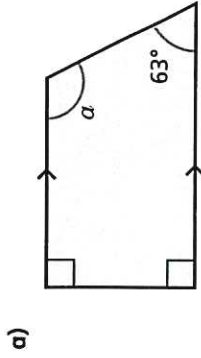


What do the diagrams illustrate about the sum of the angles in a quadrilateral?

Complete the sentence.

Angles in a quadrilateral \_\_\_\_\_

3 Work out the size of the unknown angle in each trapezium.

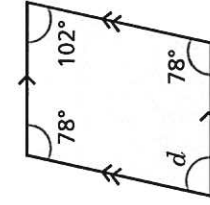
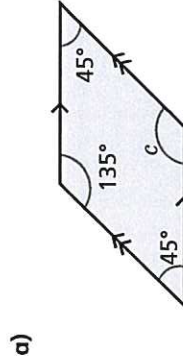


$a =$

$b =$

c) What is the same and what is different about the trapeziums?

4 Work out the sizes of the unknown angles.



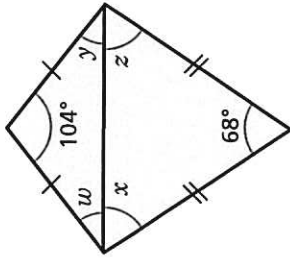
$c =$

$d =$

c) What do you notice about opposite angles in a parallelogram?

\_\_\_\_\_

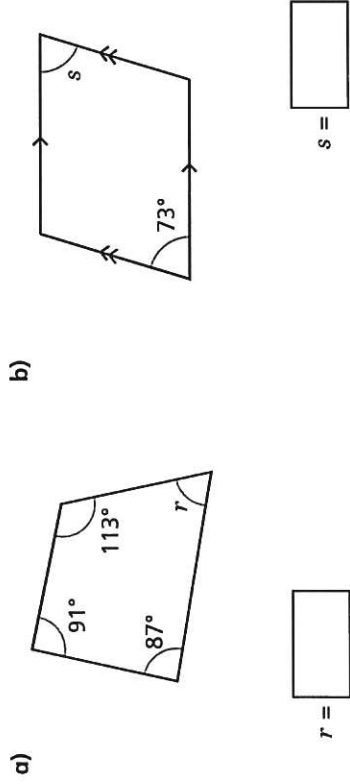
- 5 Two isosceles triangles are joined to form a kite.  
 a) Work out the sizes of the unknown angles.



- $w =$       $y =$       $z =$    
 b) Work out  $w + x$ .          
 c) Work out  $y + z$ .

What do you notice? Talk about it with a partner.

- 6 Work out the sizes of the unknown angles.



- c)  $t =$
- d)  $u =$

Compare your reasoning with a partner.

- 7 Teddy is drawing a quadrilateral.



My quadrilateral has exactly three right-angles.

Is Teddy's quadrilateral possible? \_\_\_\_\_  
 Explain your answer.

---



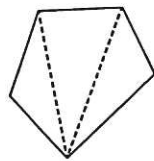
---



---

# Angles in regular polygons

1 The sum of the interior angles of a triangle is  $180^\circ$ . Split the polygons into triangles to work out the sum of their interior angles. Your lines should not overlap. The first one has been done for you.



a) number of sides = 5  
 number of triangles = 3  
 $3 \times 180 = 540$

The sum of the interior angles of a pentagon is  $540^\circ$



b) number of sides =   
 number of triangles =   
  $\times 180 =$

The sum of the interior angles of a hexagon is



c) number of sides =   
 number of triangles =   
  $\times 180 =$

The sum of the interior angles of a heptagon is

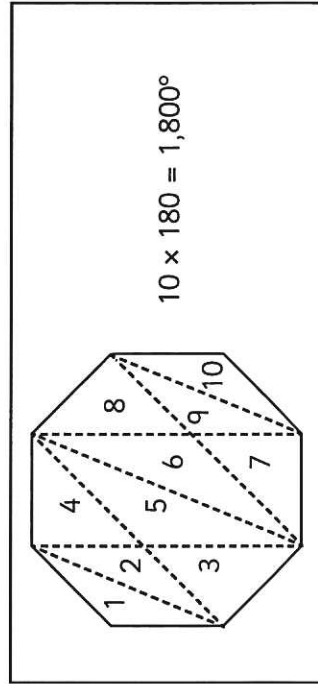
What do you notice about the number of sides compared to the number of triangles?

2 Complete the table.

Shape	Number of sides	Number of triangles	Sum of interior angles
quadrilateral	4	2	$360^\circ$
pentagon			
nonagon			
decagon			
	6		
		6	
			$1,800^\circ$

Compare answers with a partner.

3 Dani is working out the sum of the interior angles of a polygon. Here are her workings.



Do you agree with Dani? \_\_\_\_\_  
 Explain your answer.





4 Rosie, Amir and Eva are drawing polygons.

a)



Rosie

I have split my polygon into four triangles.

What polygon has Rosie drawn? \_\_\_\_\_

b)



Amir

The sum of the interior angles of my polygon is  $1,080^\circ$ .

What polygon has Amir drawn? \_\_\_\_\_

c)



Eva

My polygon has more sides than Rosie's but fewer than Amir's.

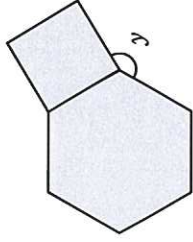
What is the sum of the interior angles of Eva's polygon? \_\_\_\_\_

5

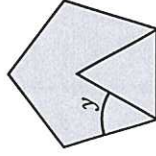
Each compound shape is made up of regular polygons.

Work out angle  $y$  in each case.

a)

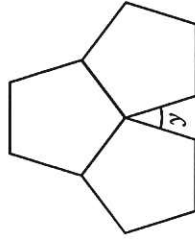


d)

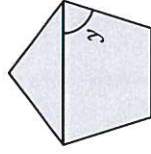




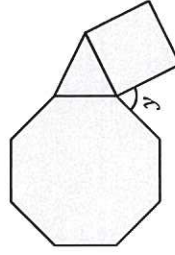
b)



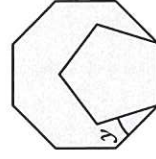
e)



c)



f)



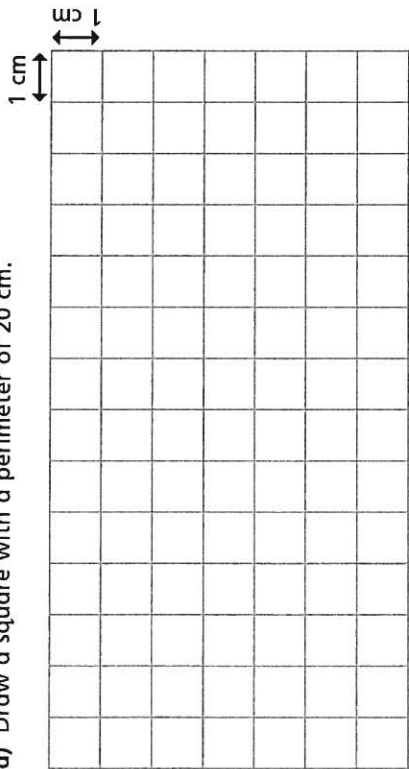




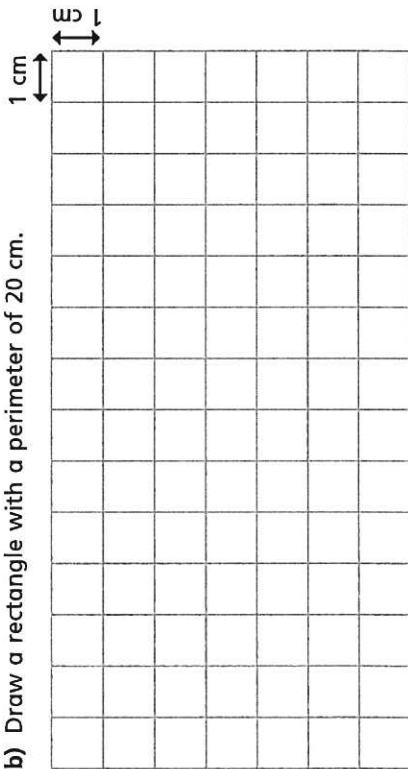

# Draw shapes accurately

1

a) Draw a square with a perimeter of 20 cm.



b) Draw a rectangle with a perimeter of 20 cm.

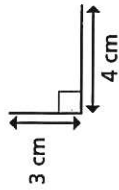


Talk about your method with a partner.

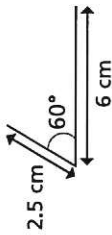
2

Draw the diagrams accurately.

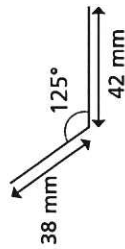
a)



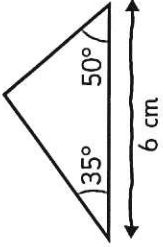
b)



c)



3 Aisha draws a triangle.



Make an accurate drawing of Aisha's triangle.



I have drawn a right-angled triangle. The two shorter sides are 4.5 cm and 6 cm.

a) Make an accurate drawing of Tommy's triangle.

b) Use your drawing to find the length of the longest side.

 cm

5 Draw the triangle accurately.

a)

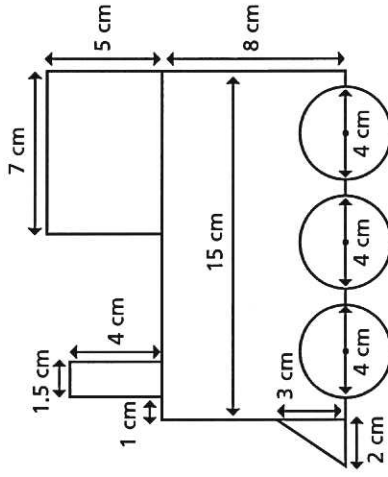
b) Measure the vertical height of the triangle.

 cm

c) Work out the area of the triangle.

 cm<sup>2</sup>

6 Here is a technical drawing of a toy train.

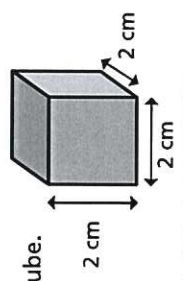


Make an accurate drawing of the toy train on a sheet of squared paper.

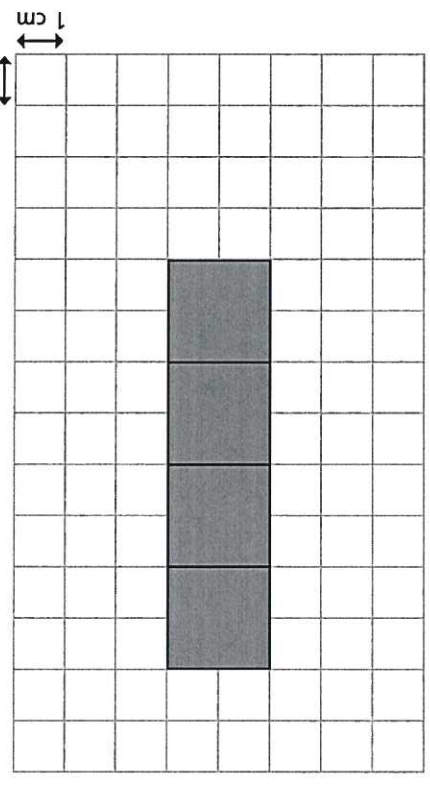


# Draw nets of 3D shapes

1 Ron is drawing the net of this cube.

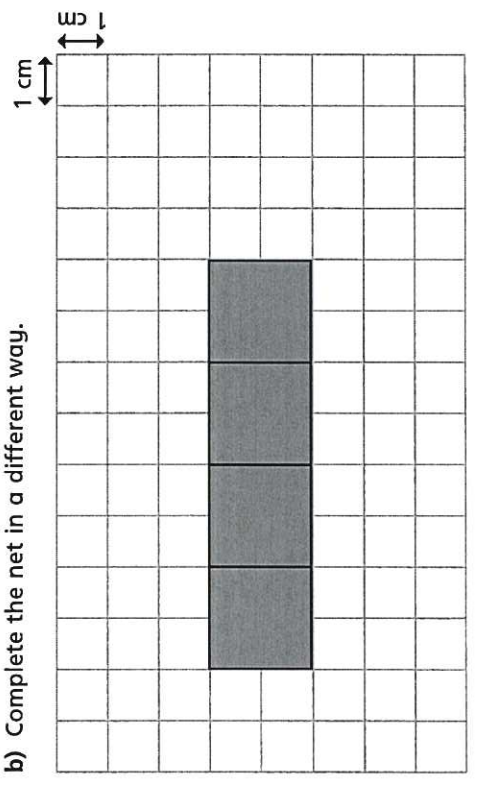


a) Here is part of his net.

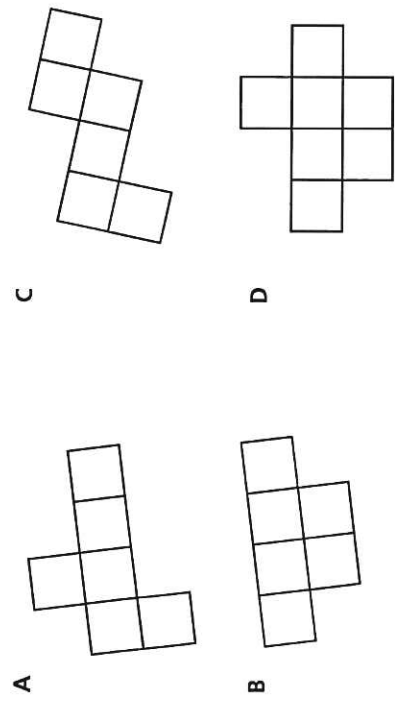


Complete the net.

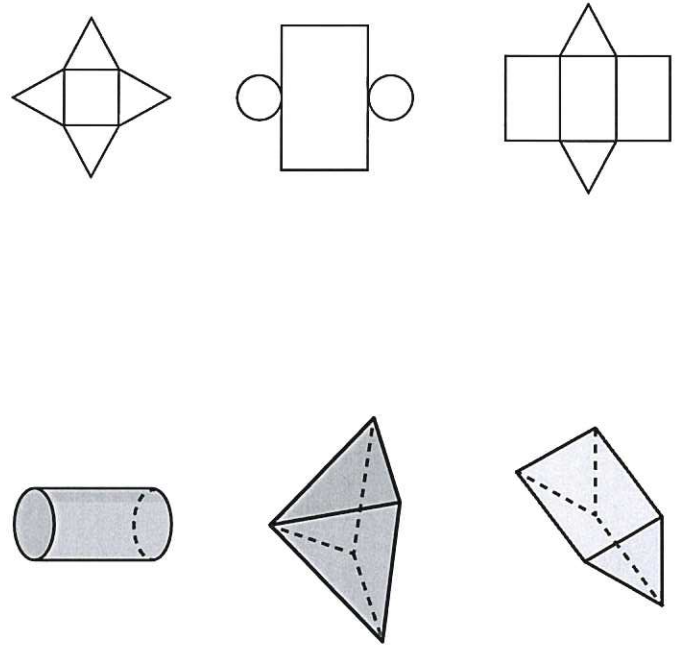
b) Complete the net in a different way.



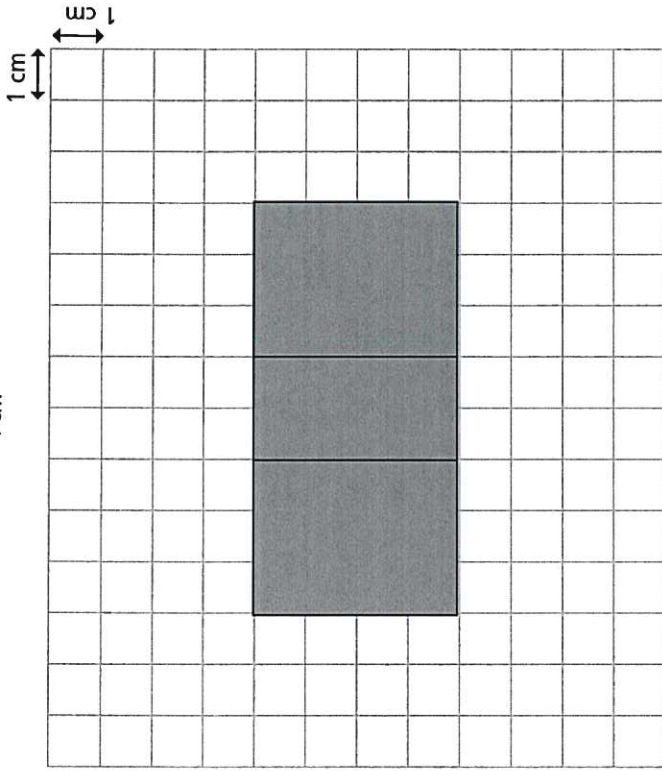
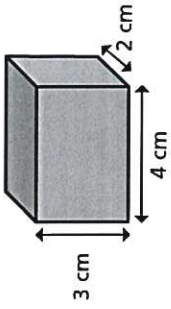
2 Tick the nets that will make a cube.



3 Match each net to its 3D shape.



4 Complete the net of the cuboid.

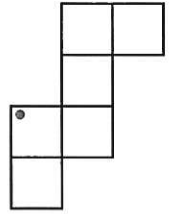


5 Here is the net of a cube.

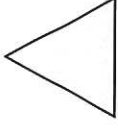
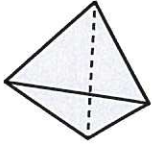
The net is made into a cube.

Which two corners will meet the corner marked with ●?

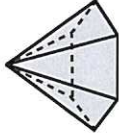
Mark them with a cross.



6 a) Complete a drawing of the net for the tetrahedron.

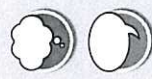
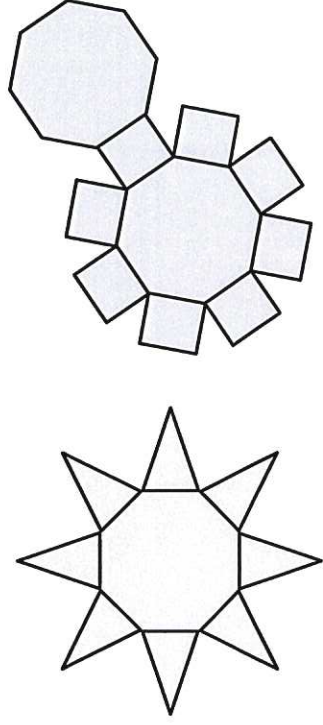


b) Draw the net of this hexagonal pyramid.



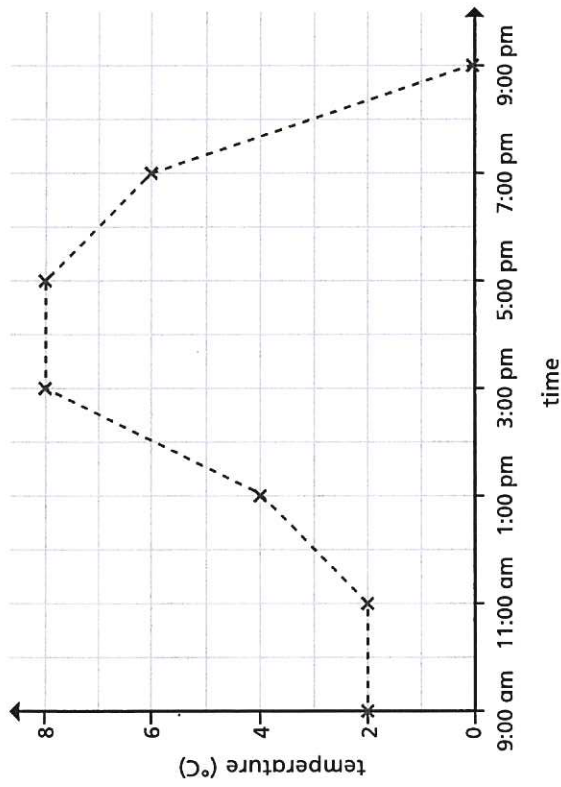
7 Which of these shapes is the net of a prism? Tick your answer.

Talk about your reasoning with a partner.



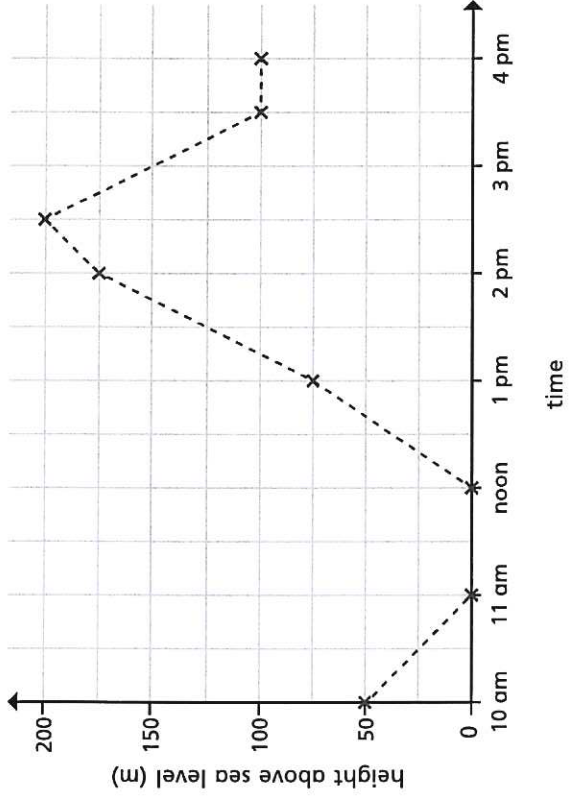
# Read and interpret line graphs

1 The graph shows the temperature in Birmingham on one day.



- a) What was the temperature at 1:00 pm?
- b) What was the difference in temperature between 11:00 am and 1:00 pm?
- c) Between which times was the temperature increasing? \_\_\_\_\_
- d) How often was the temperature recorded? \_\_\_\_\_

2 Aisha goes for a walk. The graph shows the height above sea level during her walk.

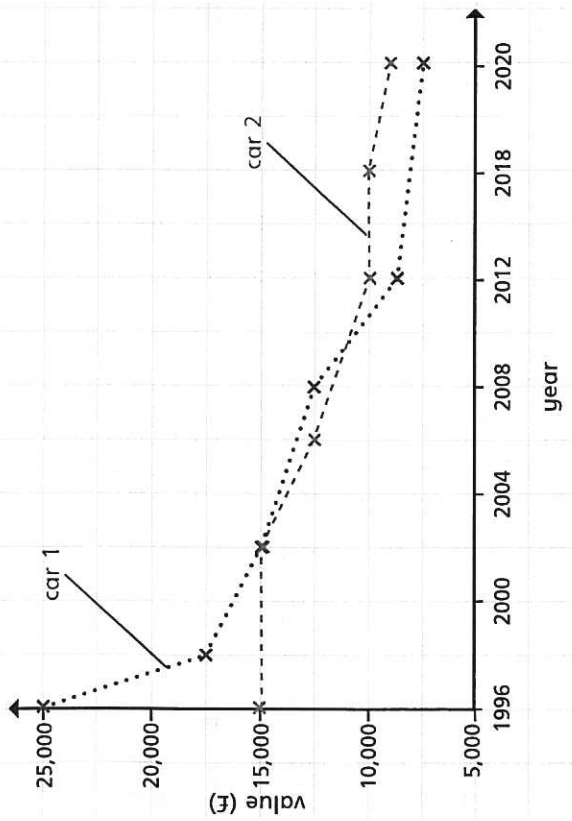


- a) What was the height above sea level where Aisha was walking at 2 pm?
- b) At what time in Aisha's walk was she standing 200 m above sea level?
- c) Part of the walk was along a beach. Between which times did Aisha walk along the beach? \_\_\_\_\_
- d) How do you know? Talk about it with a partner. \_\_\_\_\_
- Did the walk start and finish in the same place? Explain how you know. \_\_\_\_\_



3

The graph shows the values of two cars over time.



- In which year was the recorded value of the cars the same?
- In which two years was the difference in the recorded values of the two cars the same? \_\_\_\_\_
- Which car's value decreased the most between 1996 and 2020? \_\_\_\_\_
- For approximately how many years was the value of car 2 greater than the value of car 1? \_\_\_\_\_

approximately  years

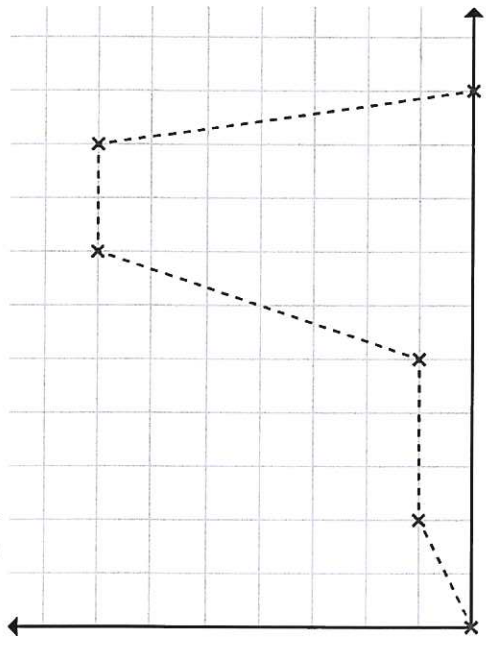


The value of car 2 halved between 1996 and 2012

Do you agree with Jack? \_\_\_\_\_  
 Explain your answer. \_\_\_\_\_

4

Here is a line graph.



- What could be happening in the graph?  
 Write a story to match it. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

b) What would the x-axis be labelled for your story? \_\_\_\_\_

c) What would the y-axis be labelled for your story? \_\_\_\_\_

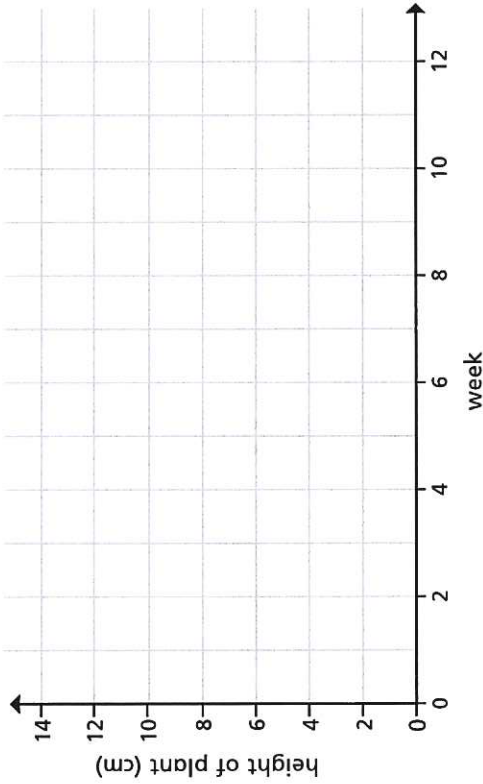
d) Write two questions that you could ask a partner about your story. \_\_\_\_\_  
 \_\_\_\_\_

# Draw line graphs

1 The table shows the height of a plant recorded over a number of weeks.

Week	2	4	6	8	10	12
Height of plant (cm)	2	3	4	7	12	14

a) Complete the line graph to show the height of the plant over time.



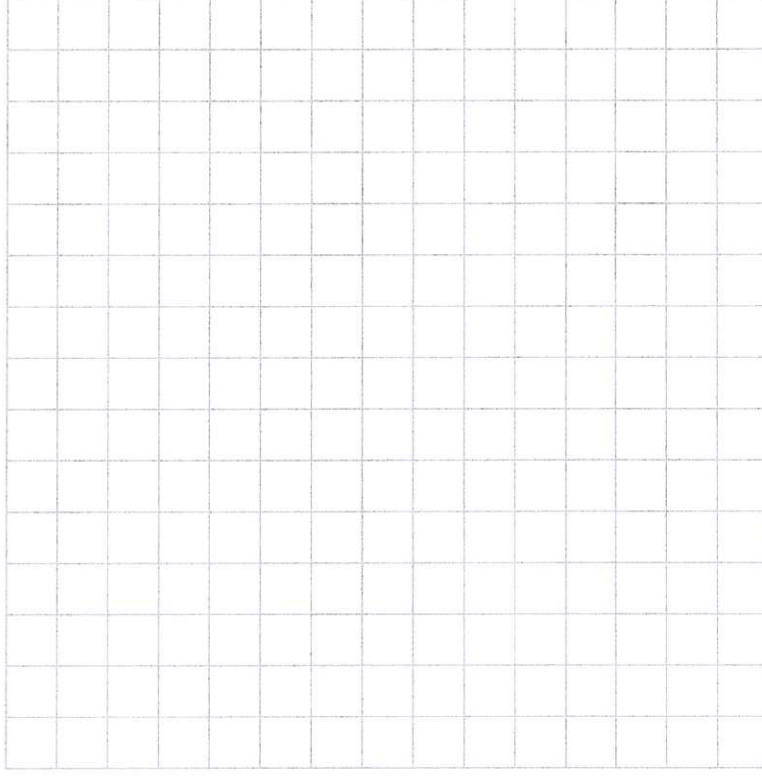
b) In week 7, the plant was approximately 5 cm tall.

Do you agree with Whitney? \_\_\_\_\_  
 Explain your answer.

2 The table shows the amount of water in 2 tanks during a day.

Time	Water in tank 1 (litres)	Water in tank 2 (litres)
6:00 pm	3,000	2,500
9:00 pm	3,500	3,100
noon	4,250	4,000
3:00 am	5,500	5,100
6:00 am	6,000	5,800
9:00 am	2,000	3,100
midnight	2,250	2,500
3:00 pm	2,750	2,900

Draw a line graph to represent the information.

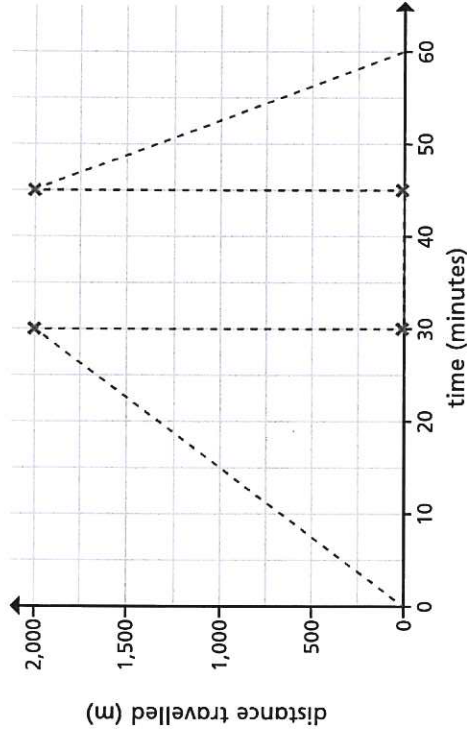




**3** Amir goes for a walk.

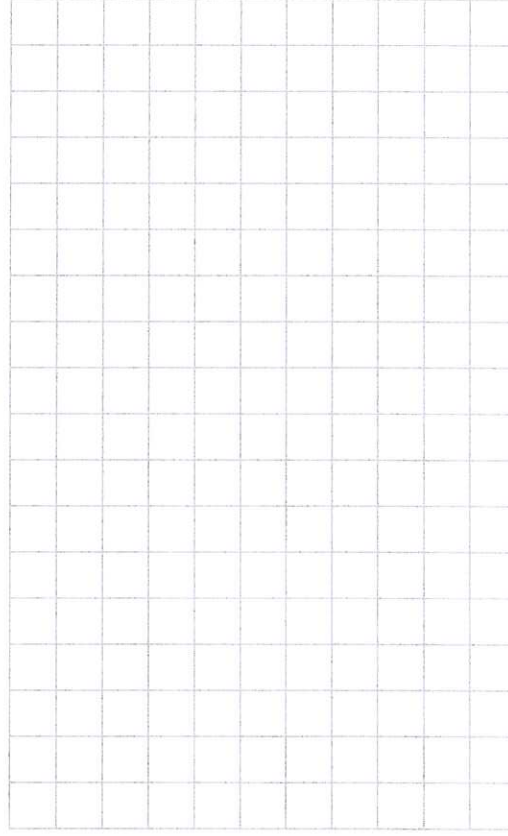
He walks for half an hour before stopping to rest for 15 minutes. Then he jogs 2 km back to his house.

He draws a line graph showing his journey.



a) Explain one mistake that Amir has made.

b) Draw the correct line graph to represent Amir's journey.



Discuss your line graph with a partner.

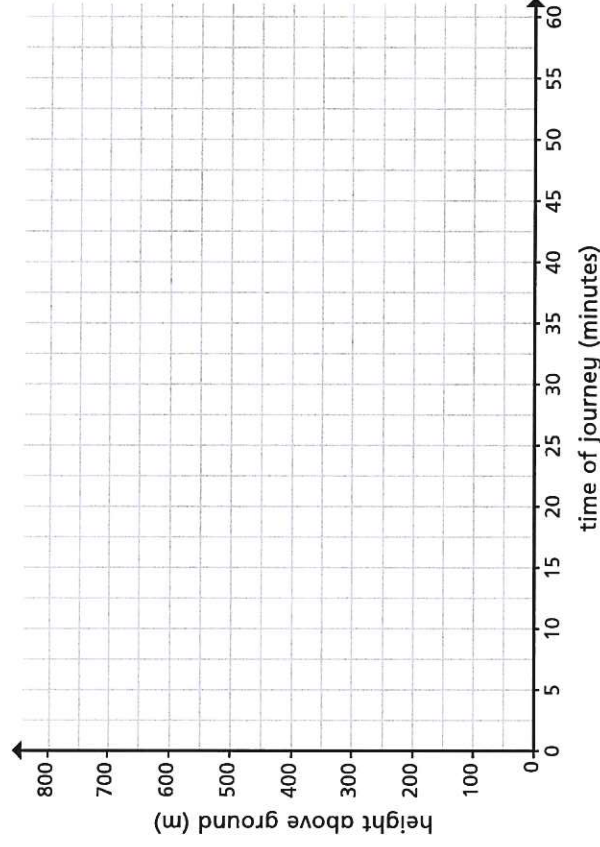
How are they the same? How are they different?

**4**

The height of a hot air balloon is recorded over 60 minutes.

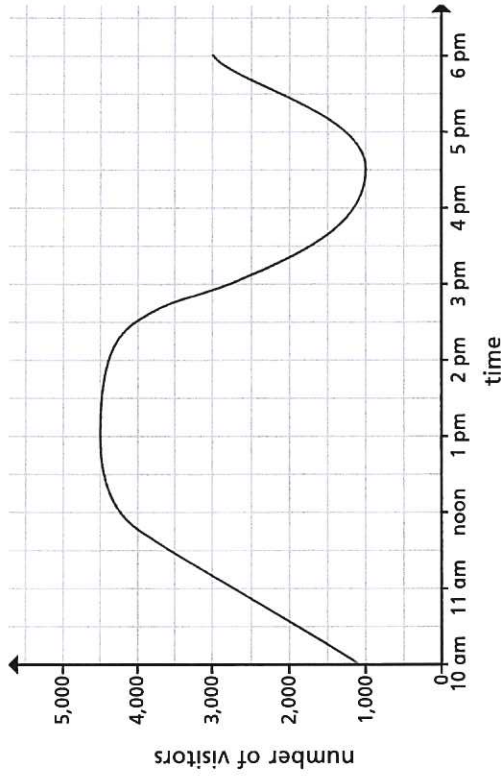
- The hot air balloon starts from the ground at 0 minutes and rises at a steady rate.
- After 15 minutes the hot air balloon is 500 m above the ground.
- It stays at this height for 10 minutes.
- The hot air balloon then gradually rises to 750 m over the next 15 minutes.
- It stays at this height for 10 minutes.
- For the remainder of the time, the hot air balloon gradually returns to the ground.

Draw the graph of the hot air balloon's journey.



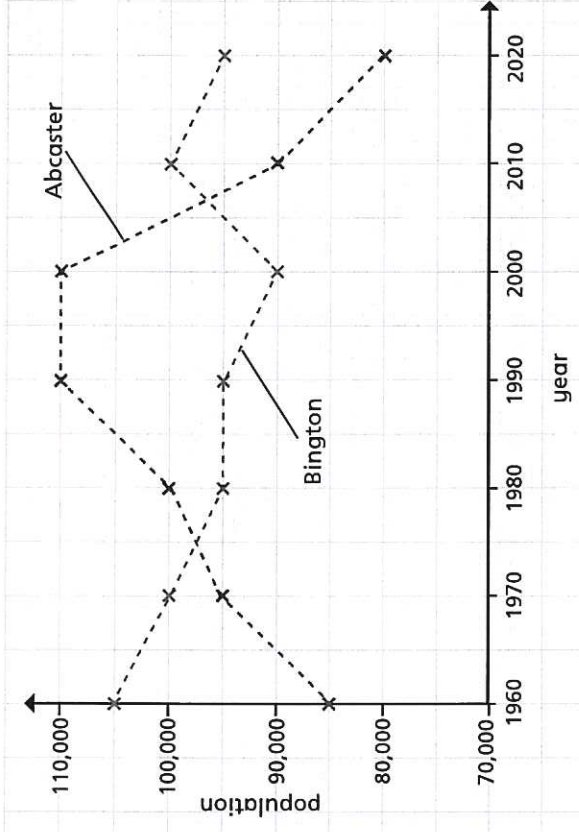
# Use line graphs to solve problems

1 The graph shows the number of visitors to a shopping centre during one day.



- a) At what time was the greatest number of visitors at the shopping centre? \_\_\_\_\_
- b) What was the difference between the number of visitors at noon and 3 pm?
- c) For how long were there 4,000 or more visitors at the shopping centre? \_\_\_\_\_
- d) Approximately how many visitors were at the shopping centre at 2 pm?

2 The graph compares the populations of two towns between 1960 and 2020

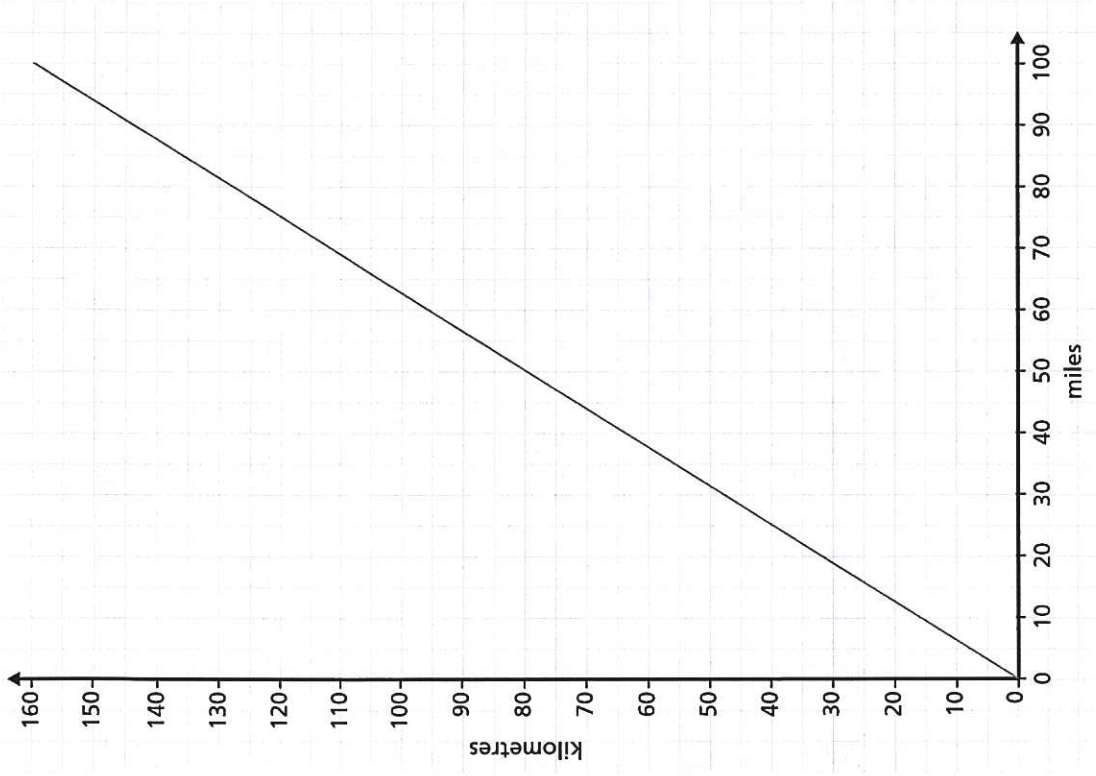


- a) How often was the population recorded? \_\_\_\_\_
  - b) Which town had the greater population in 1974? \_\_\_\_\_
  - c) Estimate the two years in which the populations were the same in both towns. \_\_\_\_\_
  - d) In which years was the difference between the populations greatest? \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Talk to a partner about the accuracy of your answers.



3 The graph shows the conversion between miles and kilometres.



- a) How many kilometres are there in 45 miles?  km
- b) How many miles are there in 128 kilometres?  miles

c) Mo and Eva want to know how far 240 miles is in kilometres.

Eva

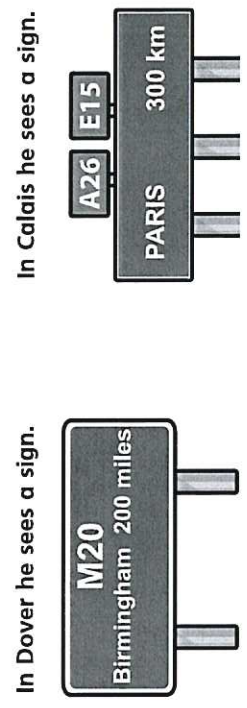
I'm going to convert 60 miles to kilometres and multiply my answer by 4

Mo

I'm going to convert 80 miles to kilometres and multiply my answer by 3

Who will find the correct answer? \_\_\_\_\_  
 Explain why.  
 Convert 240 miles to kilometres.  km

d) A coach driver can drive a maximum of 400 miles in one day.  
 A coach driver is driving from Birmingham to Paris.  
 He gets a ferry from Dover in England to Calais in France.



Is the coach driver allowed to drive from Birmingham to Paris in one day?

\_\_\_\_\_

Talk about your reasons with a partner.

# Circles

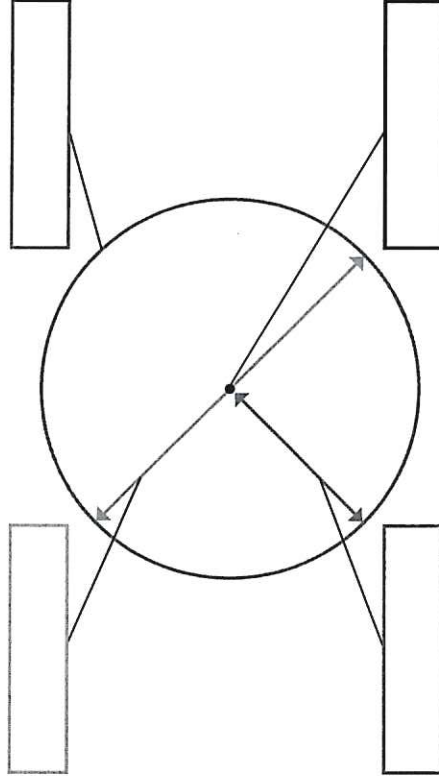
1 Use the words to label the parts of the circle.

radius

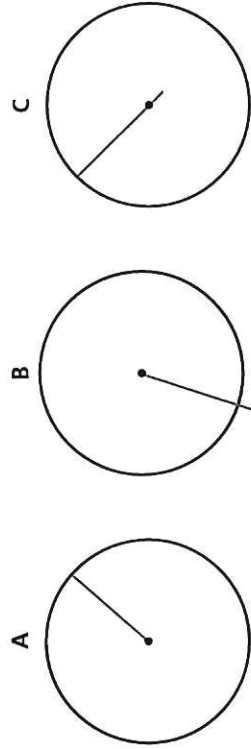
diameter

circumference

centre

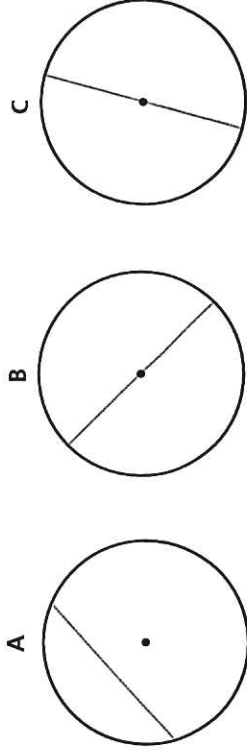


2 All the circles show a radius.



Is the statement true or false? \_\_\_\_\_  
Explain your answer.

3 All the circles show a diameter.



Is the statement true or false? \_\_\_\_\_  
Explain your answer.

4



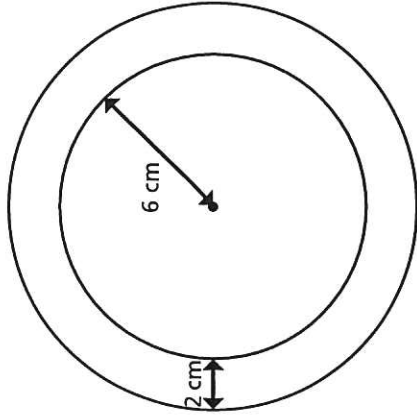
I know the radius of a circle is 12 cm, so the diameter must be 6 cm.

Do you agree with Dexter? \_\_\_\_\_  
Explain your answer.

5 Complete the table.

Radius	Diameter
4 cm	
	12 m
	9 mm
3.5 km	
	12.6 cm

- 6 The two circles have the same centre.



Complete the sentences.

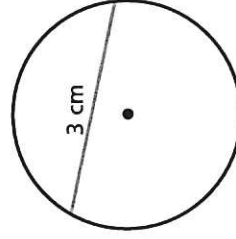
The radius of the inner circle is

The diameter of the inner circle is

The radius of the outer circle is

The diameter of the outer circle is

- 7 Annie thinks she has accurately measured and labelled the diameter of the circle.



- a) Is Annie correct? \_\_\_\_\_  
Explain your answer.

- b) Is the diameter greater or less than 3 cm?  
Explain how you know to a partner.

8

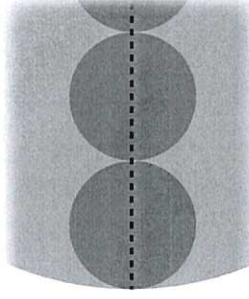


The diameter of a circle is always greater than the radius.

Is Dora correct? \_\_\_\_\_  
Explain your answer.

9

- Filip has a large circle with a diameter of 20 cm. He also has several smaller circles with a radius of 2 cm. He places the small circles along the diameter of the larger circle as shown.

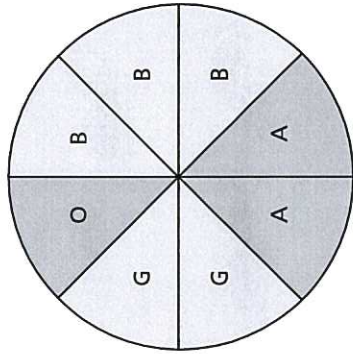


How many small circles will fit across the larger circle?

small circles

# Read and interpret pie charts

1 The pie chart shows the favourite fruit of 48 children.



- banana (B)
- apple (A)
- grapes (G)
- orange (O)

a) How many children chose banana?

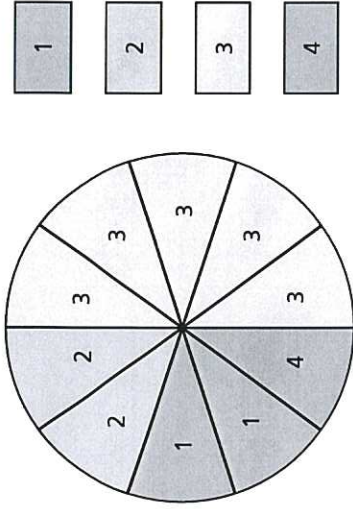
b) How many children chose apple?

c) What fraction of the children chose orange?

d) What fraction of the children chose grapes?

2 A survey asked 1,200 people how many televisions they have in their home.

The results are shown in the pie chart.



- 1
- 2
- 3
- 4

a) How many people have two televisions in their home?

people

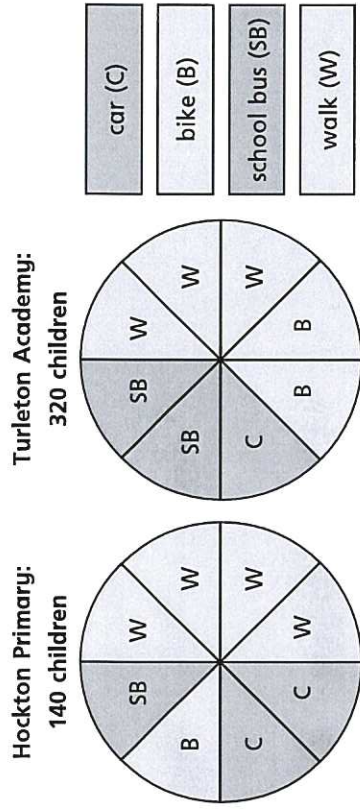
b) How many people have more than two televisions in their home?

people

c) What fraction of the people have fewer than three televisions in their homes?

Give your answer in its simplest form.

- 3 Children from two schools were asked how they travel to school. The results are shown in the pie charts.



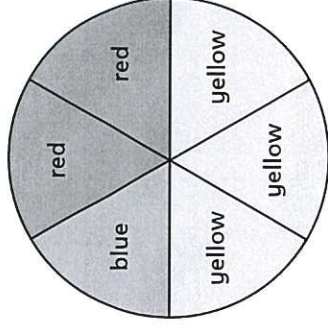
- a)  More children from Hockton Primary walk to school because more pieces show 'walk'.

Do you agree with Tommy? \_\_\_\_\_  
 Explain your answer.  
 \_\_\_\_\_  
 \_\_\_\_\_

- b) How many children from each school travel by car?

Hockton Primary   
 Turleton Academy

- 4 A bag contains red, yellow and blue counters. The pie chart shows the proportion of counters of each colour.



- a) There are 30 red counters in the bag. How many counters are in the bag in total?

counters

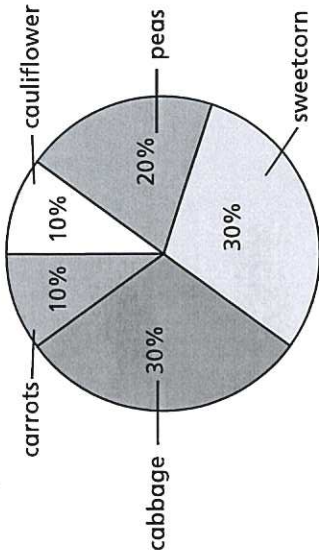
- b) What is the difference between the number of blue counters and the number of yellow counters?

counters

- c) Complete the sentences.  
 There are half as many \_\_\_\_\_ counters as \_\_\_\_\_ counters.  
 There are three times as many \_\_\_\_\_ counters as \_\_\_\_\_ counters.

# Pie charts with percentages

- 1 60 children were asked to choose their favourite vegetable from five options.



- a) Work out the number of children who chose each vegetable.

carrots

peas

sweetcorn

cabbage

cauliflower

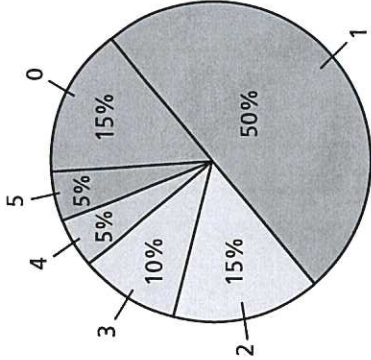
- b) How many more people chose peas than cauliflower?

Compare methods with a partner.

- c) How many more people chose sweetcorn or cabbage than chose carrots?

Compare methods with a partner.

- 2 160 people were asked how many siblings they have. The results are shown in the pie chart.

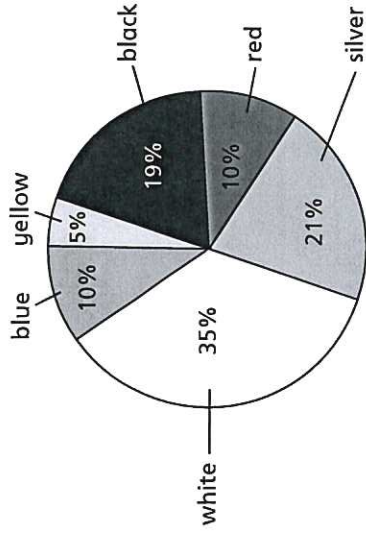


Complete the table. Show each step of your workings.

Siblings	Frequency



- 3 The pie chart shows the colours of cars in a car park on one day. There were 30 yellow cars.



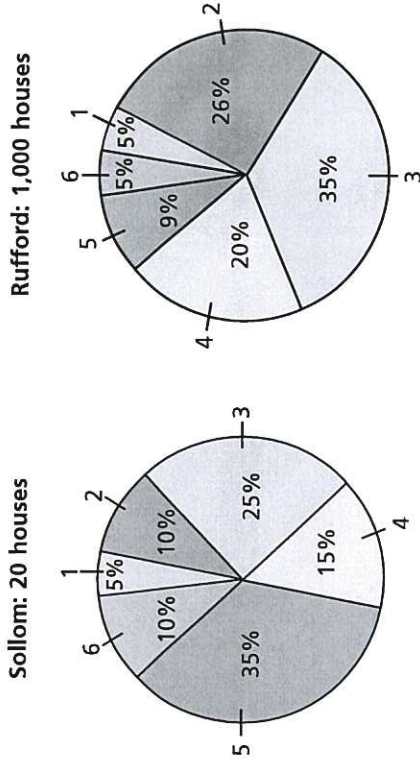
- a) How many cars were in the car park in total?

- b) Complete the table.

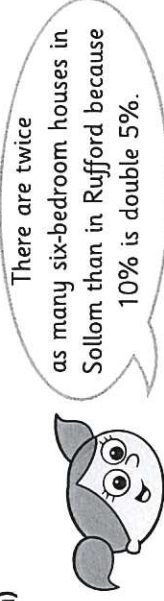
Colour of car	Frequency
yellow	30
black	
red	
silver	
white	
blue	

How can you check your answers?

- 4 The pie charts show the number of bedrooms in the houses in Sollom and Rufford.



- a)



Do you agree with Alex? \_\_\_\_\_

Explain why.

---



---

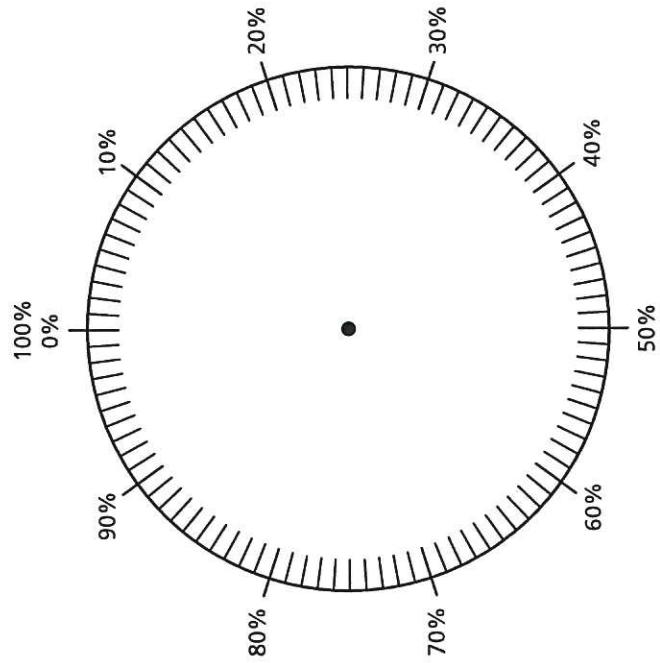
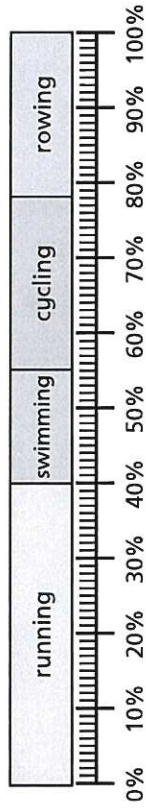
- b) How many more one-bedroom houses are there in Rufford compared to Sollom?

# Draw pie charts

1 Members of a leisure club were asked which was their favourite sport.

The results are shown in the percentage bar model.

Complete the pie chart to represent the data.



2 Year 6 children were asked which sport they liked best.

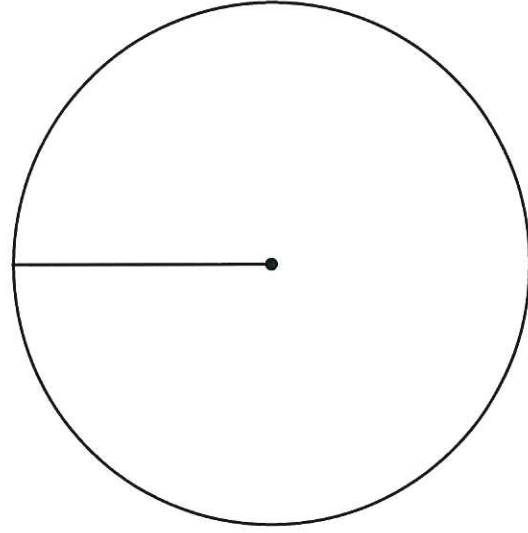
The table shows the results.

a) Complete the table to show the number of degrees in each sector of a pie chart.

Sport	Number of children	Number of degrees
Tennis	7	$7 \times 10 = 70^\circ$
Netball	8	
Football	12	
Hockey	5	
Rugby	4	
<b>Total</b>	<b>36</b>	<b><math>36 \times 10 = 360^\circ</math></b>

b) Draw a pie chart to represent the data.

Clearly label your pie chart.



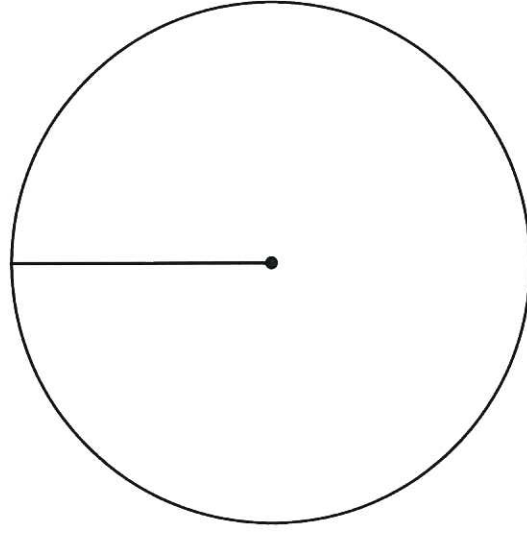
- 3 A garage recorded the different types of car they worked on in one day.

The results are shown in the table.

- a) Complete the table to show the number of degrees in each sector of a pie chart.

Fuel type	Frequency	Number of degrees
Diesel	11	
Petrol	20	
Electric battery	8	
Hydrogen fuel cell	1	
<b>Total</b>	<b>40</b>	$40 \times \square = 360^\circ$

- b) Draw a pie chart to represent the data.  
Clearly label your pie chart.

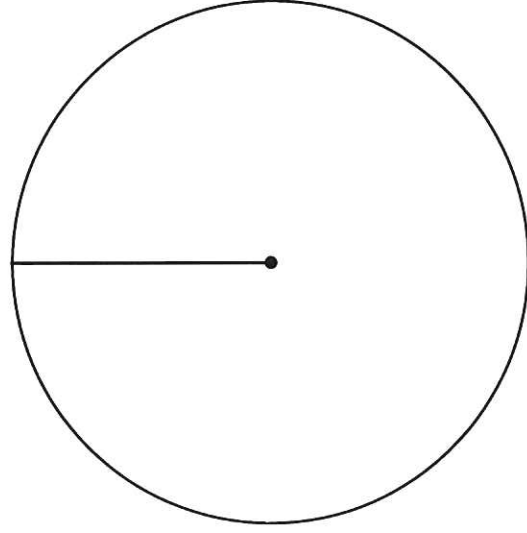


- 4 The table shows the meal choices of the customers in a restaurant one lunchtime.


- a) Complete the table.


Meal choice	Frequency	Number of degrees
Meat	20	
Fish		96°
Vegetarian	13	78°
Vegan		
Gluten free	4	
<b>Total</b>	<b>60</b>	<b>360°</b>


- b) Draw a pie chart to represent the data.  
Clearly label your pie chart.



# The mean

- Scott has 2 counters. 

Dani has 7 counters. 

Kim has 3 counters. 

Share the counters evenly in order to find the mean number of counters.

The mean number of counters is

- Find the mean of each set of numbers.

a)  3  2  7  4  4

b)  12  8  15  11  6  2

c)  5  2  2  9  7  5  6  5  3  7

- Huan collects football cards.

The table shows how many he collected over four years.

Year	Number of cards
2016	56
2017	104
2018	81
2019	103

Work out the mean number of cards collected per year.

- The mean of four numbers is 9

What is the total of the four numbers?

- Write an example of what the four numbers could be if none of them are 9

Compare answers with a partner.

How many different solutions can you find?



- 5 The table shows how many pets a number of children have. One value is missing.

Name	Number of pets
Brett	4
Nijah	0
Rosie	1
Teddy	2
Esther	
Tom	7

The mean number of pets is 3  
How many pets does Esther have?

- 6 Six numbers are written on cards. The mean of the numbers is 12. Fill in the two missing numbers if one is double the other.

13			4	16	6	
----	--	--	---	----	---	--

- 7 A basketball team played four games. The mean number of points was 45
- a) How many points did they score in total in the four games?

- b) After the fifth game, the mean increased to 50. How many points did they score in the fifth game?

8

- A group of children have a mean height of 1.4 m. Another child joins the group.
- a) What will happen to the mean if the child is 1.5 m tall?

---



---

- b) What will happen to the mean if the child is 1.4 m tall?

---



---

- c) What will happen to the mean if the child is 1.3 m tall?

---



---

