Decimal numbers and measures

1 Some children are comparing their heights.

(a) Peter's height is 0.9 m.
Lucy is 0.3 m taller than Peter.
What is Lucy's height?

(b) Lee's height is 1.45 m.
Misha is 0.3 m shorter.
What is Misha's height?

(c) Zita's height is 1.7 m.
What is Zita's height in centimetres?

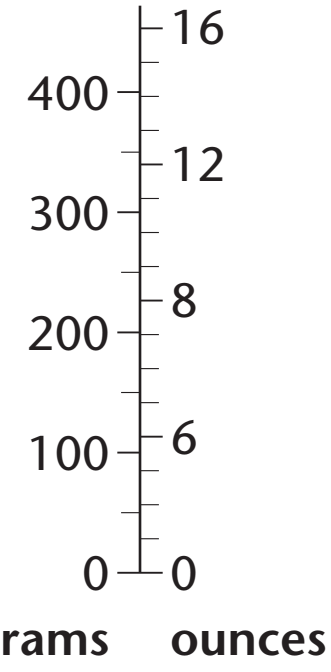
(2002, 4–6, P1, Q7)

2 A scale measures in grams and ounces.

(a) About how many ounces is 400 grams?

(b) About how many grams is 8 ounces?

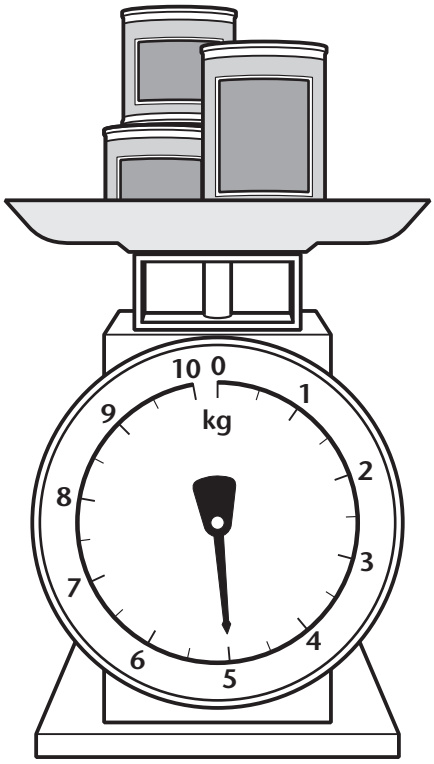
(c) About how many ounces is 1 kilogram?



(2002, 4–6, P2, Q7)

Weigh it up

There are two small tins and one big tin on these scales.



The two small tins each have the same mass.
The mass of the big tin is 2.6 kg.

What is the mass of one small tin?

Show your working.

(2003, 4–6, P1, Q7)

Car parking

Can you find all the different ways of paying **exactly** 70p?

(2003, 4–6, P1, Q10)

Travel passes

(a) I pay £16.20 to travel to work each week.
I work for 45 weeks each year.

How much do I pay each year?
Show your working.

(b) I buy a season ticket lasting 45 weeks.
It costs £630.

How much is that a week?

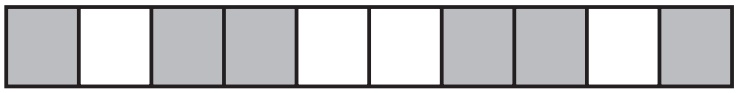
(c) Which way is cheaper?

(2003, 4–6, P1, Q15)

Shortcuts with percentages

1 Write down the percentage shaded in each of these.

75%



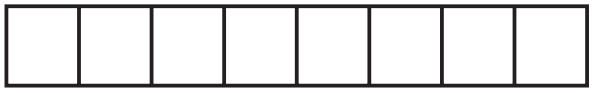
_____%

_____%

2 Is this true? Explain.

$12\frac{1}{2}\%$

3 Shade this bar correctly.



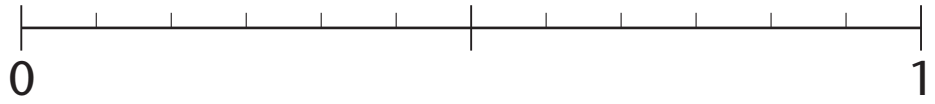
$37\frac{1}{2}\%$

(2003, 4–6, P2)

Adding, ordering and equivalents

1 Mark these fractions on a number line.

$\frac{1}{2}$ $\frac{1}{3}$ $\frac{5}{6}$



(2002, 4–6, P1)

2 Fill in the missing numbers.

(a) $\frac{2}{12} = \frac{\square}{6}$

(b) $\frac{1}{2} = \frac{12}{\square}$

(c) $\frac{1}{\square} = \frac{6}{24}$

3 Add $\frac{6}{10}$ and $\frac{6}{5}$.

Mark the result with an arrow (↓).

(2001, 4–6, P1, Q10 and 2003, 4–6, P1, Q18)

Ages

Paul is 14 years old. His sister is exactly 6 years younger, so this year she is 8 years old.

This year, the ratio of Paul's age to his sister's age is 14 : 8 or, more simply, 7 : 4.

(a) When Paul is 21, what will this ratio be? Write the ratio as simply as possible.

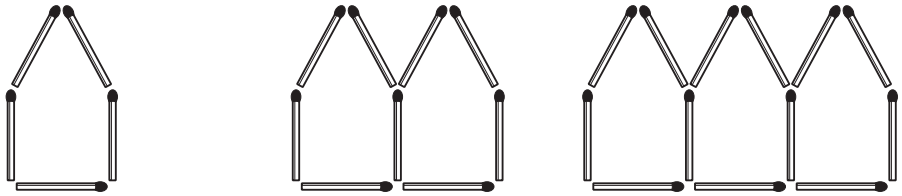
(b) When his sister is 36, what will the ratio be? Write it as simply as possible.

(c) Could the ratio of their ages ever be 7 : 7?
Tick (✓)
Yes ☐ or No ☐.
Explain how you know.

(2003, 4–6)

Huts

1 Simple huts



1 hut needs 5 matches.

2 huts need 9 matches.

3 huts need 13 matches.

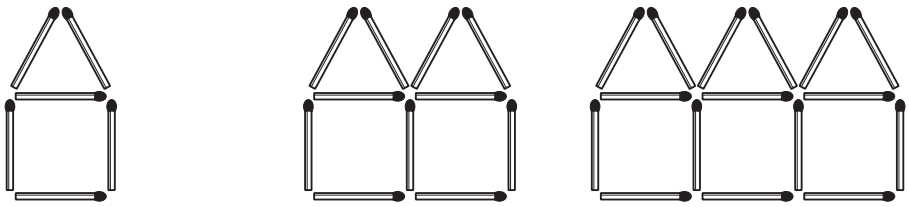
Rule $m = 4h + 1$

m is the number of matches.
h is the number of huts.

(a) 8 huts need _____ matches.

(b) _____ huts need 81 matches.

2 Elegant huts



1 hut needs 6 matches.

2 huts need 11 matches.

3 huts need 16 matches.

Rule $m =$ _____

(2000, 4–6, P2, Q7)

Substitution

1 If $x = 5$, find the values of these expressions:

(a) $2x + 13 =$ _____

(b) $5x - 5 =$ _____

(c) $3 + 6x =$ _____

2 Cooking times for a joint of meat

Microwave oven
Time = 12 × weight + 15 (minutes) (pounds)
Electric oven
Time = 30 × weight + 35 (minutes) (pounds)

(a) A 3 pound joint takes _____ minutes in a microwave oven.

(b) A 7 pound joint takes _____ minutes in an electric oven.

(2002, 4–6, P1, Q15 and 2001, 4–6, Q4)

Simplifying and solving

1 Simplify these expressions.

(a) $5k + 7 + 3k =$ _____

(b) $k + 1 + k + 4 =$ _____

2 Solve these equations.

(a) $8k - 1 = 15$

(b) $2m + 5 = 10$

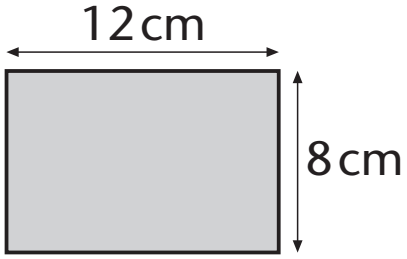
3 If $2y + 11 = 17$, find y.

Show your working.

(2003, 4–6, P1, Q9 and 2003, 4–6, P1, Q16 and 2002, 4–6, P1, Q15)

Folding rectangles

1 I have a paper rectangle.



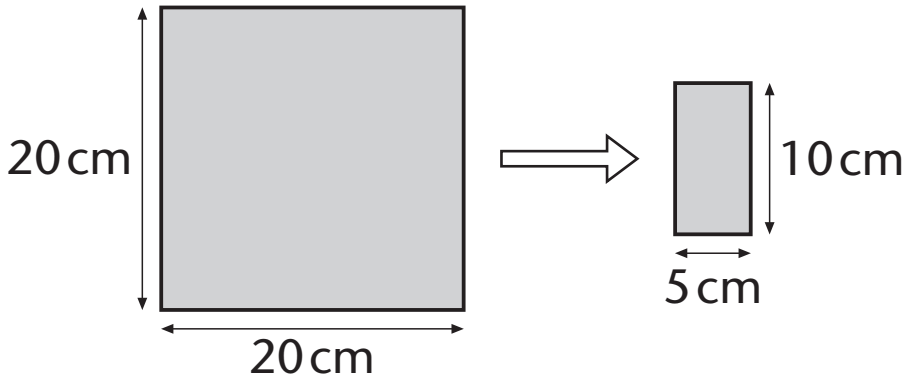
I fold it in half to make a smaller rectangle.

I can do this in two different ways:

1st way: _____ cm by _____ cm

2nd way: _____ cm by _____ cm

2 I have a paper square.
I keep folding it in half until I get this rectangle.

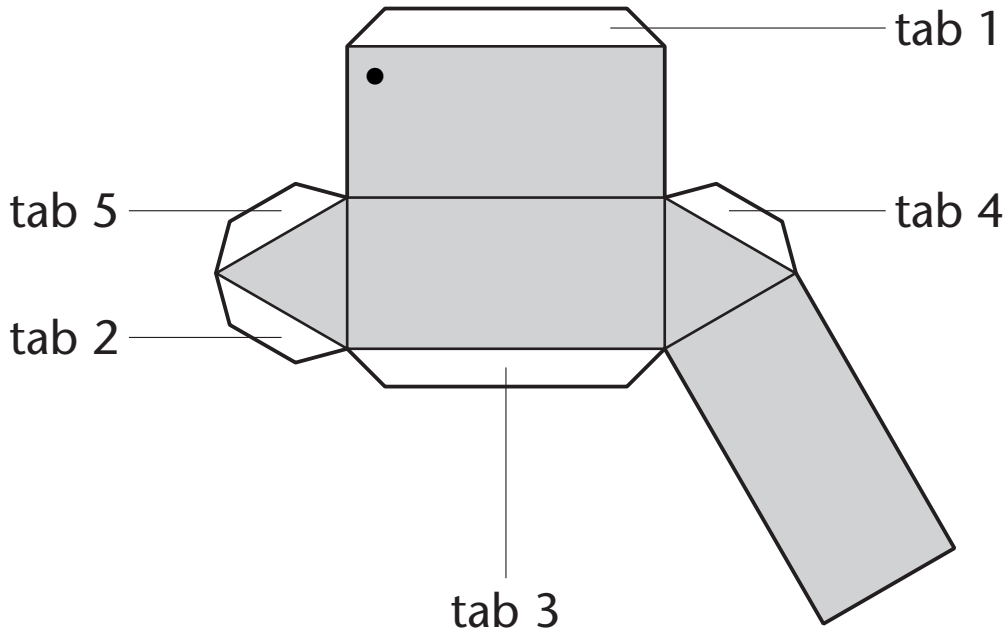


How many times did I fold it? _____

(2002, 4–6, P2, Q5)

It's in the net

The sketch shows the net of a triangular prism.



The net is folded up and glued to make the prism.

(a) Which edge is tab 1 glued to?
Label this edge A.

(b) Which edge is tab 2 glued to?
Label this edge B.

(c) The corner marked with a • meets two other corners.
Label them with a •.

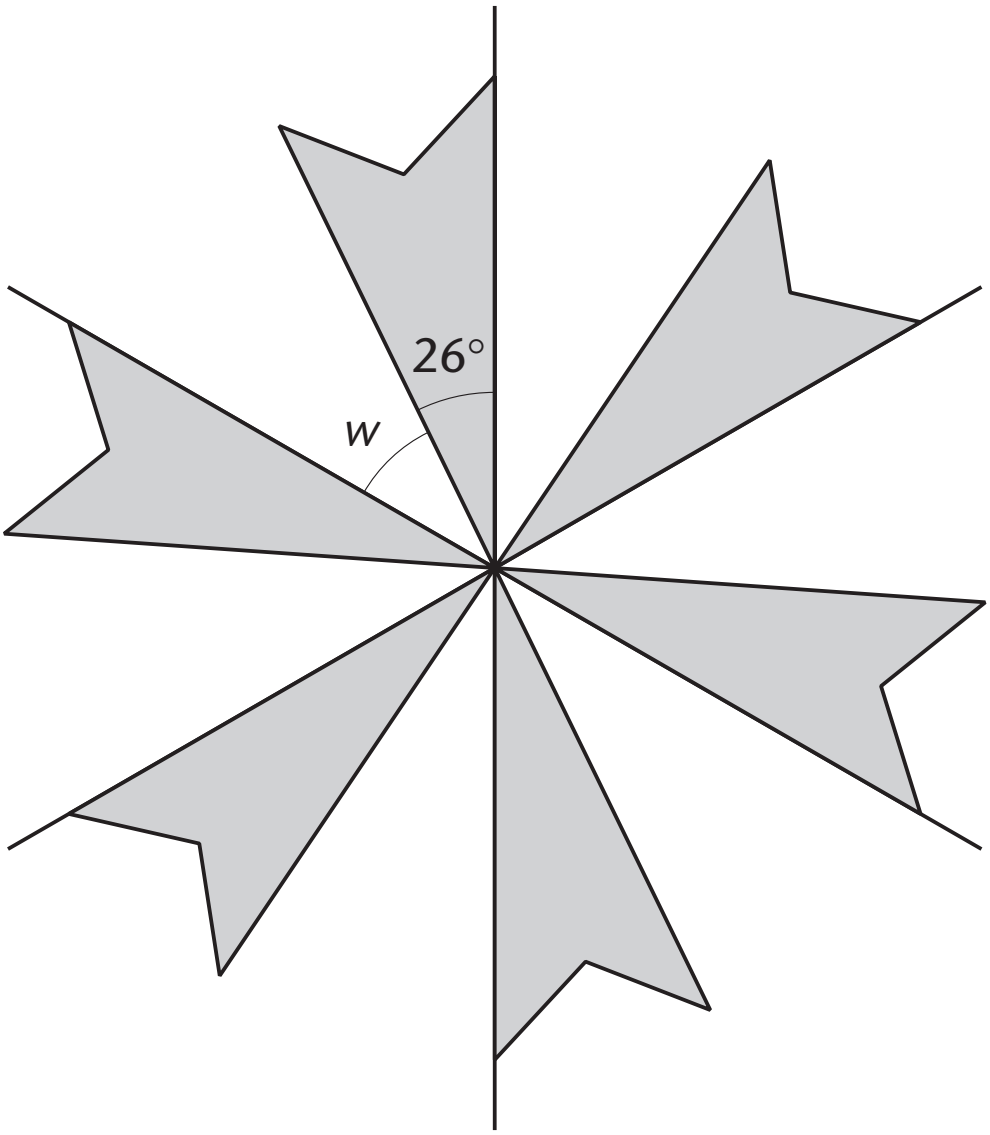
(2000, 4–6, P2, Q7)

Star pattern

This pattern has rotation symmetry of order 6.

Find angle *w*.

Show your working.



(2003, 4–6, P2, Q18)

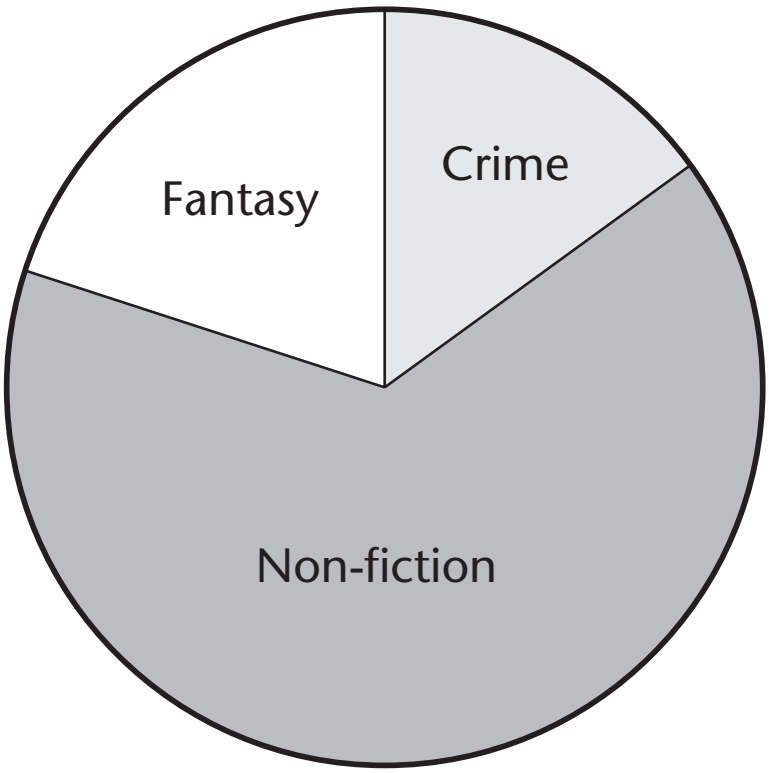
Favourite books: Class A

Class A were asked:

'What type of book is your favourite?'

Here are the results for Class A.

Type of book	Frequency	Angle
Crime	3	
Non-fiction	13	
Fantasy	4	



(2001, 4–6, P2, Q15)

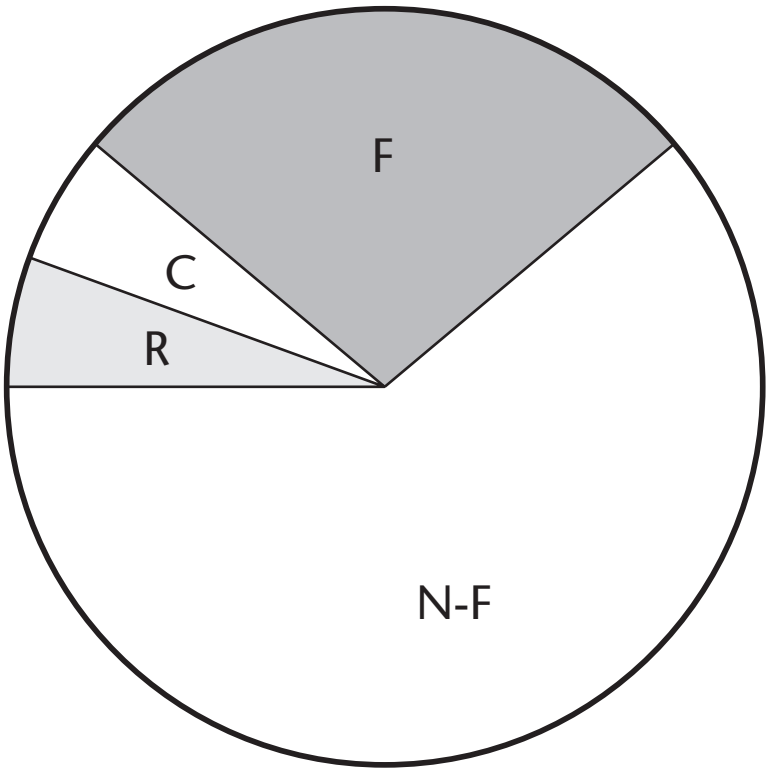
Favourite books: Class B

Class B were asked:

'What type of book is your favourite?'

Here are the results for Class B.

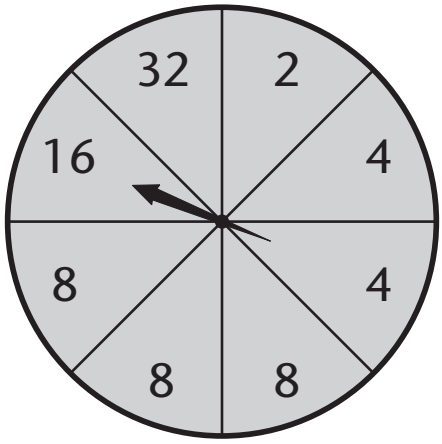
Type of book	Frequency	Angle
Crime		20°
Non-fiction		220°
Fantasy	5	100°
Romance		20°



(2001, 4–6, P2, Q15)

Fair games

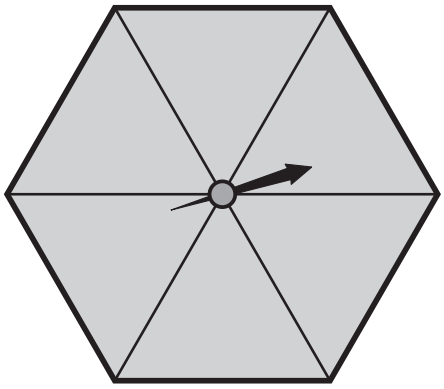
Game 1



What is the probability of scoring 4?

What is the probability of scoring an even number?

Game 2



What numbers could be on this spinner if …

(a) the probability of scoring 4 is $\frac{1}{3}$?

(b) the probability of scoring an even number is $\frac{2}{3}$?

(2002, 4–6, P1, Q8)

Game scores

Paula played four games in a competition.

In three games, she scored 8 points each time.
In the other game, she scored no points.

What was her mean score over the four games?

Jessie played two games:

Mean score: 3 points
Range: 4 points

What points did she score in her two games?

Ali played three games:

Mean score: 3 points
Range: 4 points

What points might Ali have scored in his three games?

Show your working.

(2000, 4–6, P2, Q13)