

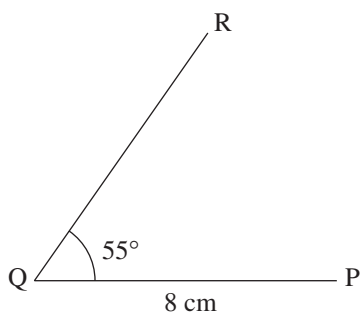
# UNIT 4

## 4.1 Constructing triangles

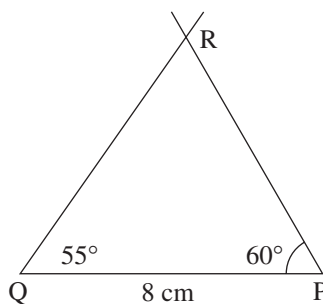
**HWK 1M**
**Main Book page 204**

You must use a protractor and ruler to draw each diagram below.

- 1 a Draw  $PQ = 8\text{ cm}$  and  $\hat{PQR} = 55^\circ$  as shown below.

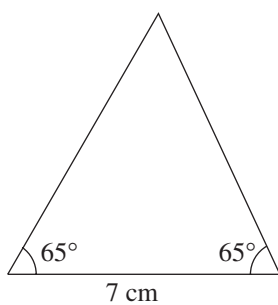


- b Put the centre of the protractor on P and measure an angle of  $60^\circ$  as shown below.

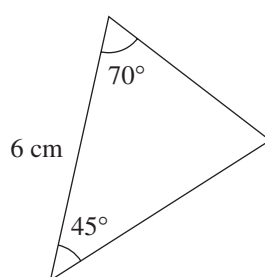


- c Measure  $\hat{QR}P$ . It should be  $65^\circ$

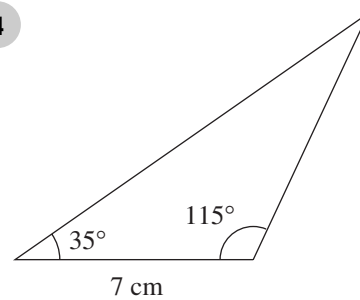
2



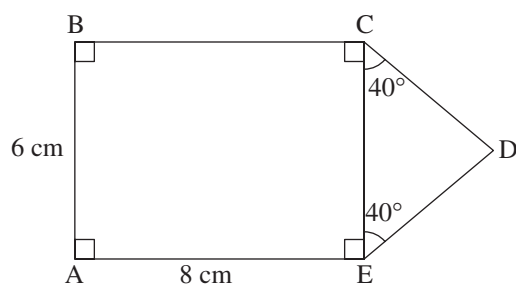
3



4



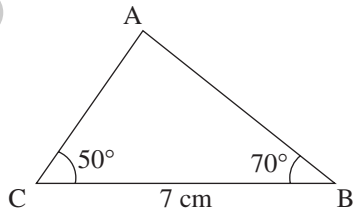
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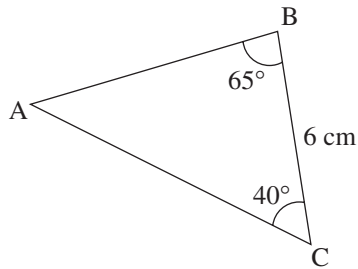
Measure the length AD.

Use a protractor and ruler to construct each triangle and measure the length AB each time.

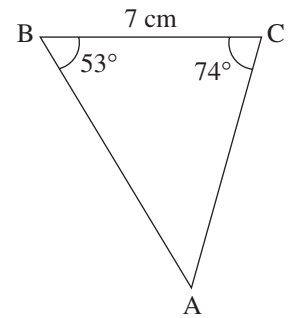
1



2

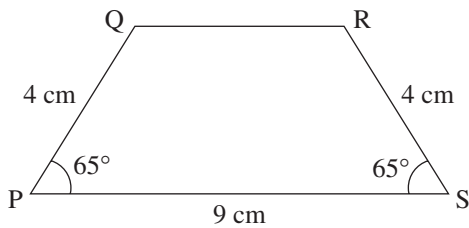


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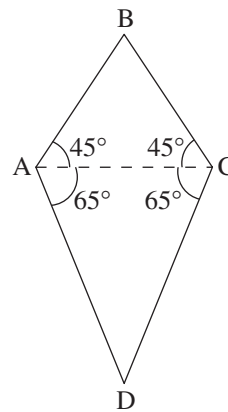
Construct the rhombus shown below.



Measure  $\widehat{PQR}$ .

5

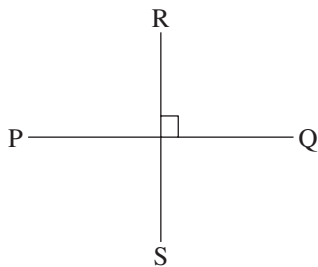
Construct the kite shown below.  $AC = 5\text{ cm}$ .



Measure the lengths of AB and AD.

## 4.2 Two dimensional shapes

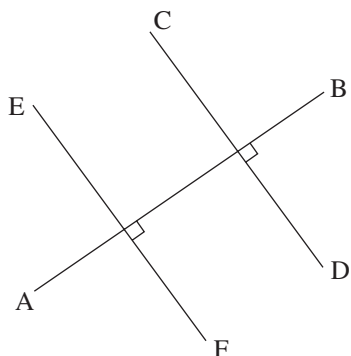
1



Answer true or false.

'PQ is perpendicular to RS'

2



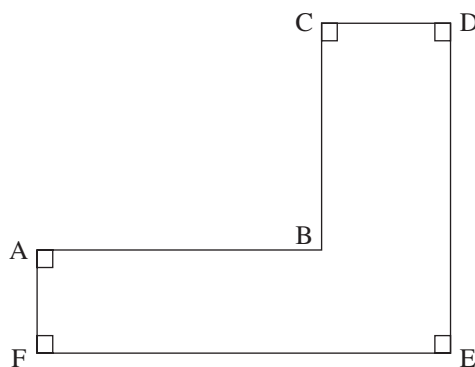
Answer true or false.

'CD is perpendicular to EF'

3

a Write down the names of all the sides which are parallel to AB.

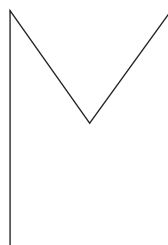
b Write down the names of all the sides which are parallel to AF.



4

a How many parallel lines does this letter have?

b How many perpendicular lines does this letter have?



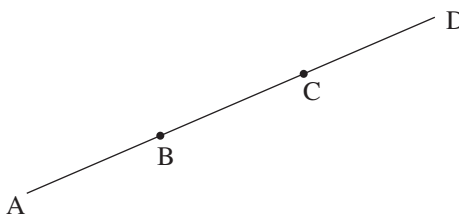
5

Copy this diagram.

a Draw a line through B which is perpendicular to AD.

b Draw a line through C which is parallel to the line you have just drawn.

c Is your last line parallel or perpendicular to AD?



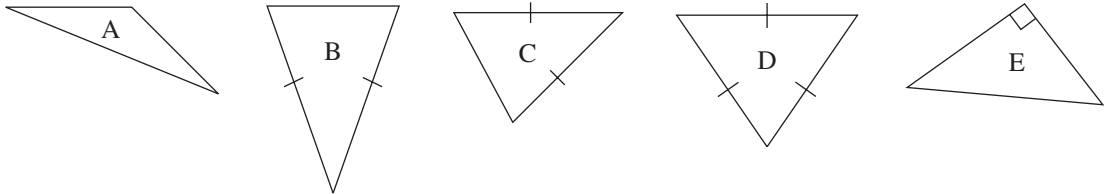
6

Name an object in this room which has at least two parallel sides.

7

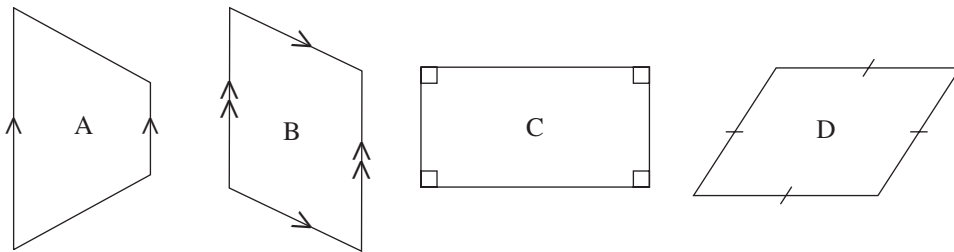
Draw any design of your own which has at least two parallel lines and two perpendicular lines. If possible, show the parallel lines in one colour and the perpendicular lines in a different colour.

- 1 Which triangle below is equilateral?



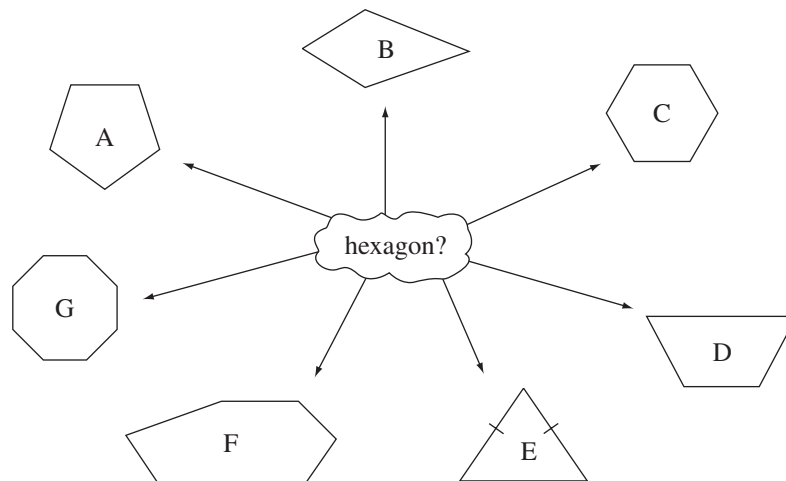
- 2 What is the name of a triangle with three different sides and three different angles?

- 3 Which quadrilateral below is a trapezium?



- 4 Draw a parallelogram (use a ruler!)

- 5 Name the shapes below which are hexagons.

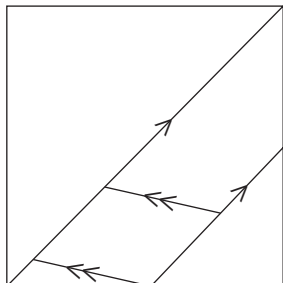


- 6 Draw any quadrilateral which has no parallel sides.

- 7 Write down the names of any quadrilaterals which have right angles inside them.

- 8 Draw a regular pentagon.

- 9 How many trapeziums can you see in this diagram?



### 4.3 Percentages

**HWK 1M**

**Main Book page 215**

- 1 Copy and fill in the empty boxes.

a  $48\% = \frac{\square}{100} = \frac{\square}{25}$

b  $\frac{3}{20} = \frac{\square}{100} = \square\%$

c  $0.37 = \frac{\square}{100} = \square\%$

d  $0.4 = \frac{\square}{10} = \frac{\square}{100} = \square\%$

e  $\frac{4}{25} = \frac{\square}{100} = 0.\square\square$

f  $67\% = \frac{\square}{100} = 0.\square\square$

- 2 Change these decimals into fractions. Cancel fractions down if you can.

a 0.6

b 0.24

c 0.59

d 0.35

e 0.64

- 3 Change these percentages into decimals.

a 49%

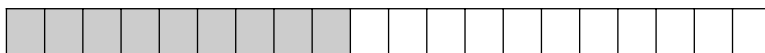
b 40%

c 8%

d 13%

e 85%

- 4 How much of this rectangle is shaded?  $\textcircled{45\%}$  or  $\textcircled{0.35}$



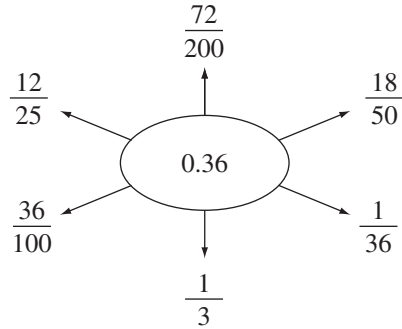
- 5 Coleen sells 200 ice creams. 88 of the ice creams are chocolate.

a What fraction of the ice creams sold are chocolate?

b What percentage of the ice creams sold are *not* chocolate?

**HWK 1E****Main Book page 216**

- 1 Which fractions are equivalent to the given decimal?



- 2 Holly owns 12 spanners. She uses 3 of these spanners when mending her bike. What percentage of the spanners did she use?

- 3 Which number is the larger?  $\left(\frac{2}{25}\right)$  or  $(9\%)$

- 4 Which number is the larger?  $\left(\frac{13}{20}\right)$  or  $(0.64)$

- 5 Write the numbers below in order of size, smallest first

a  $\frac{3}{10}$ , 0.4,  $\frac{1}{4}$

b  $\frac{2}{5}$ , 38%, 0.39

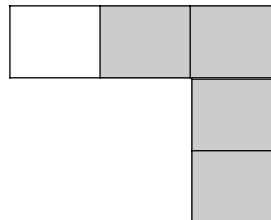
c 0.7,  $\frac{18}{25}$ , 69%

- 6 There are five pairs of equivalent numbers below. Match each pair and write them down.

$\frac{4}{25}$	95%	0.75	0.16	20%
$\frac{19}{20}$	0.3	$\frac{1}{5}$	30%	$\frac{3}{4}$

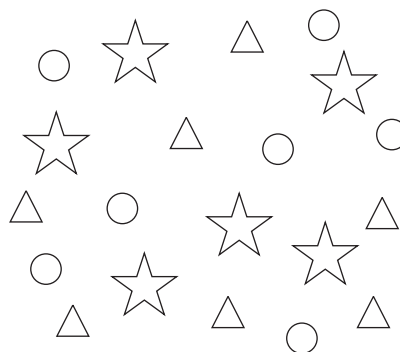
**HWK 2M****Main Book page 217**

- 1 What percentage of this shape is shaded?



- 2 Draw your own shape and shade in exactly 70%.

- 3 What percentage of these shapes are stars?



- 4 Terry has finished  $\frac{2}{5}$  of his homework. What *percentage* of his homework does he still have to do?
- 5 Carol has washed  $\frac{7}{20}$  of her car. What *percentage* of her car does she still have to wash?
- 6 Donna has used up  $66\frac{2}{3}\%$  of her petrol. What *fraction* of her petrol does she have left?
- 7 Write down what percentage full each tube is.



(a)



(b)



(c)



(d)

**HWK 3M**
**Main Book page 219**

- 1 Find the odd one out  
**a** 10% of £90                      **b** 25% of £32                      **c** 5% of £180
- 2 Find the odd one out  
**a** 30% of £80                      **b** 75% of £32                      **c**  $33\frac{1}{3}\%$  of £45
- 3 Alan scores in 70% of the football matches that he plays in. One season Alan plays in 40 football matches. How many matches does he score in?
- 4 Work out  
**a** 80% of £50                      **b** 5% of 60 kg                      **c** 70% of £160

- 5 240 people are on a train. 40% of the people get off at Manchester and 15% get off at Birmingham. How many people are now on the train if nobody else gets on?
- 6 Work out the answers then put these questions in order of size, starting with the smallest.
- A 20% of £350      B 15% of £400      C 80% of £80
- 7 A worm measures 60 mm. Two months later it has grown by 40%. How long is the worm now?

**HWK 3E****Main Book page 220**

- 1 Jackie weighs 70 kg. She follows a diet and loses 5% of her weight. How much does she weigh now?
- 2 Nazim has a puppy which is 32 cm long. Over the next few weeks the puppy grows by 25%. How long is the puppy now?
- 3 Abbie has 600 pieces of lego. Her uncle gives her a lego set at Christmas. This increases her number of lego pieces by 20%. How many lego pieces does she have now?

4



Noel has £35 to spend in the sales. Which of the above items could he buy if he wanted to?

- 5 Josh earns £300 each week and is given a pay increase of 15%. Diane earns £340 each week and is given a pay increase of 5%. Who earns the most money now and by how much?
- 6 Norman is trying to sell his car for £8000 but nobody will buy it. He reduces the price by 15% and Alice buys the car from him. How much does Alice pay for the car?
- 7 Make up your own question which uses the numbers £80, 20% and the word 'decreases'.

**HWK 4M****Main Book page 222**

*Use a calculator when needed.*

- 1 Find 1% of:
- a £4900      b £36000      c £780      d £585
- 2 a Find 1% of £3200      b Find 7% of £3200
- 3 Work out
- a 9% of £5300      b 24% of £470      c 42% of £650

- 4  $12\%$  of £49 is smaller than  $14\%$  of £47.  
What is the difference between them? (i.e. subtract the answers)
- 5 Work out  
 a  $38\%$  of 220 km                      b  $73\%$  of 1700 g                      c  $53\%$  of 490 kg
- 6 Mrs Williams has a fortune of £2348 800. She gives  $37\%$  of her fortune to a charity.  
How much money does she have left?

**HWK 4E****Main Book page 222***Use a calculator when needed.*

- 1 a Increase £6800 by  $6\%$ .                      b Decrease £560 by  $8\%$ .  
 c Reduce £730 by  $14\%$ .                      d Increase £310 by  $43\%$ .
- 2 Jackie has a piece of wood 120 cm long. She cuts off  $16\%$  of the wood. How long is the piece of wood now?
- 3 Hal has £230 to spend on holiday. If he spends  $84\%$  of his money, how much does he have left?
- 4
- |           |            |           |
|-----------|------------|-----------|
| A         | B          | C         |
| Shirt     | Shirt      | Shirt     |
| £38       | £42        | £37       |
| $9\%$ off | $12\%$ off | $6\%$ off |
- a Which shirt is the cheapest to buy?  
 b Which shirt is the most expensive to buy?  
 c What is the difference between the cheapest and the most expensive price?
- 5 Helen is 1.5 m tall. How tall is she if she grows another  $6\%$ ?
- 6 Ollie buys a 330 ml can of coke and drinks  $72\%$  of the coke.  
How much coke is left in the can?

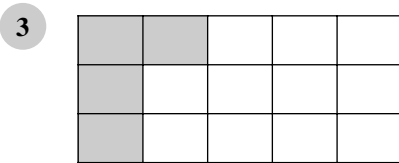
**4.4 Proportion and ratio****HWK 1M****Main Book page 224**

- 1 Find the cost of 8 plates if 2 plates cost £12.
- 2 Four lemons cost 92p. How much will 7 lemons cost?
- 3 Six footballs cost £48. How much will 5 footballs cost?

- 4 Find the cost of 9 pens if 5 pens cost £6.50.
- 5 If 8 computers cost £3600, how much will 10 computers cost?
- 6 Five digital radios cost £235. How much will 3 digital radios cost?
- 7 The total cost of 9 exercise books is £4.68. What is the total cost of 8 exercise books?
- 8 A car travels 200 km in 120 minutes. How long will it take to travel 50 km?
- 9 In a supermarket you can buy 4 toilet rolls for £1.68 or 6 toilet rolls for £2.58. Which is the cheaper price per toilet roll?
- 10 In a fruit and veg shop you can buy 5 onions for 85p or 8 onions for £1.12. Which is the best deal per onion?

**HWK 1E****Main Book page 225**

- 1 A 160 g sausage roll contains 40 g meat. What proportion of the sausage roll is meat?
- 2 There are 50 children in a playground. 29 children are girls. What proportion of the children are boys?

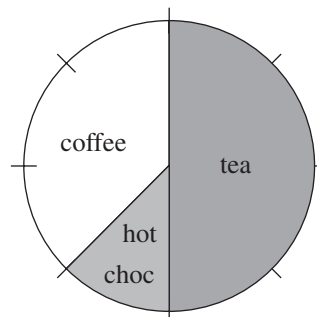


What proportion of this rectangle is shaded?

- 4
- |    |    |   |   |    |
|----|----|---|---|----|
| 😊  | ☹️ | 😊 | 😊 | ☹️ |
| ☹️ | 😊  | 😊 | 😊 | 😊  |
- What proportion of these faces seem to be happy?

- 5 £40 can be exchanged for 65 euros. How many euros can be exchanged for £160?
- 6 If £1 is worth 1.88 dollars, how many dollars will you get for £1000?
- 7 The pie chart shows the favourite hot drink for the teachers in a school.

- a What proportion prefer tea?
- b What proportion prefer coffee?



- 8 A painter uses 108 pots of paint to finish painting 24 houses. How many pots of paint will he use to finish painting 72 houses?