White Rose Answers (Year 6)

Monday

Area and perimeter

1 Use the words to complete the sentences.

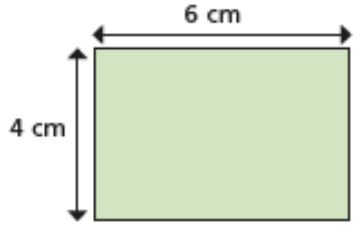
perimeter | cm² | cm | m | area | m² | inside | around

Area is the amount of space inside a two-dimensional shape. It can be measured in units such as cm² or m²

Perimeter is the distance around a two-dimensional shape. It can be measured in units such as cm or m

2 Work out the areas and perimeters of the shapes.

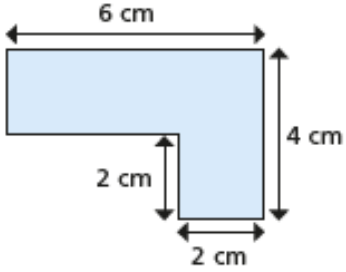
a)



perimeter = 20 cm

area = 24 cm²

b)

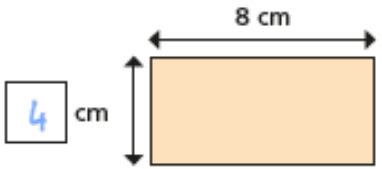


perimeter = 20 cm

area = 16 cm²

3 Work out the missing values.

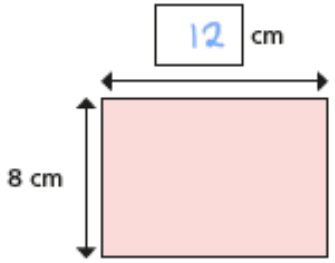
a)



area = 32 cm²

perimeter = 24 cm

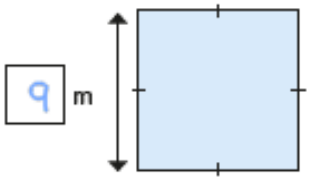
b)



area = 96 cm²

perimeter = 40 cm

c)

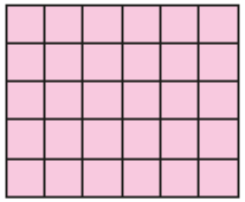


area = 81 m²

perimeter = 36 m

4 Work out the areas and perimeters of the shapes.

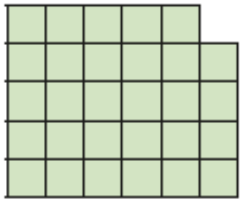
Shape A



area = 30 cm²

perimeter = 22 cm

Shape B



area = 29 cm²

perimeter = 22 cm

What do you notice?

5

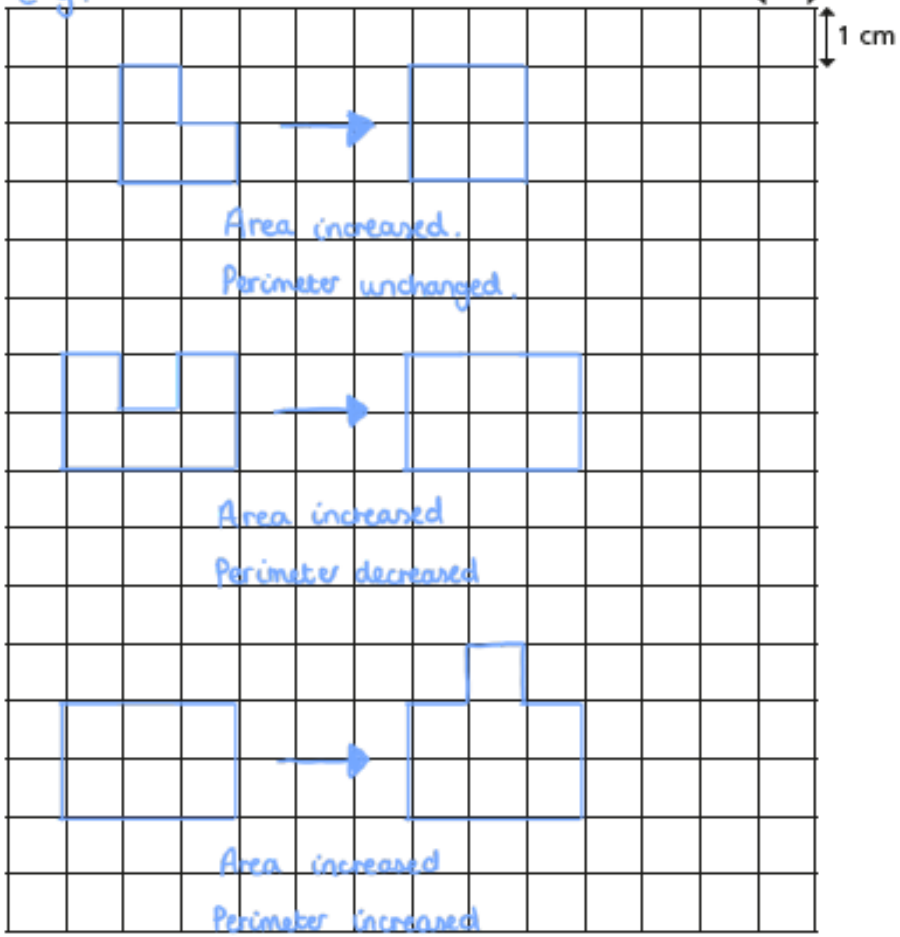
Tommy: If you start with a rectilinear shape, when you increase the area, the perimeter will increase.

Amir: It depends on the shape.

Who do you agree with? Amir

Draw some examples to support your answer.

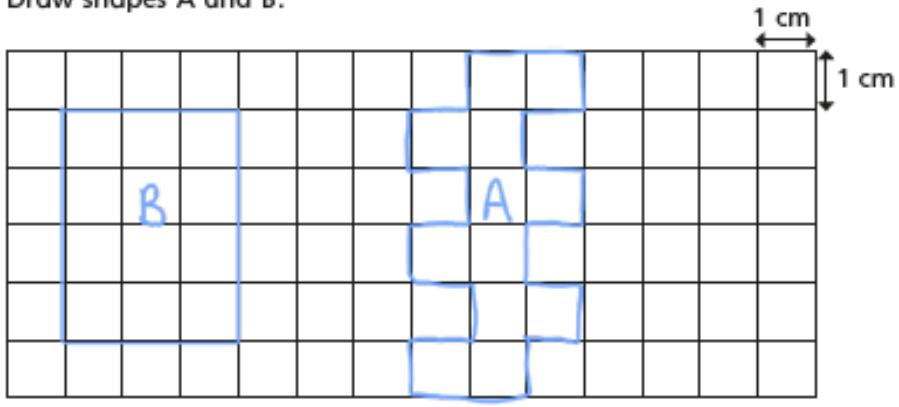
e.g.



6 Two rectilinear shapes, A and B, each have an area of 12 squares.

- Shape A has the largest perimeter possible.
- Shape B has the smallest perimeter possible.

Draw shapes A and B.



What do you notice?

7 Mr Jones has 50 m of fencing.

He wants to make a rectilinear enclosure using all the fencing.

a) Draw an example of a shape he could make. Give units on your diagram.

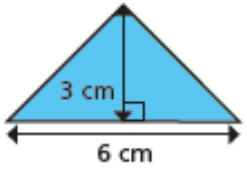
b) What is the greatest possible area of the enclosure? 156 m^2

c) What is the smallest possible area of the enclosure? 24 m^2

Tuesday

Area of a triangle (3)

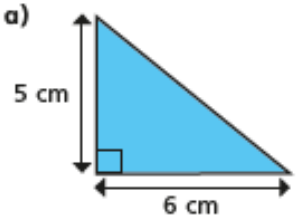
1 Calculate the area of the triangle.



area = 9 cm²

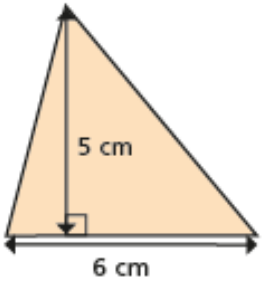
2 Calculate the area of the triangles.

a)



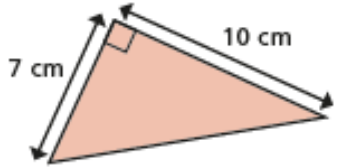
area = 15 cm²

c)



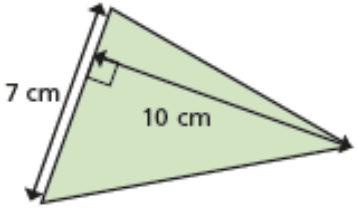
area = 15 cm²

b)



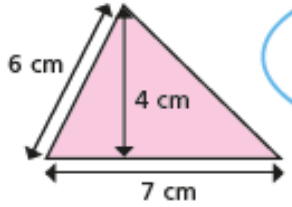
area = 35 cm²

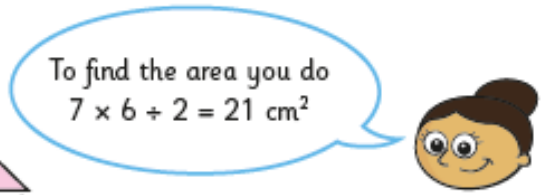
d)



area = 35 cm²

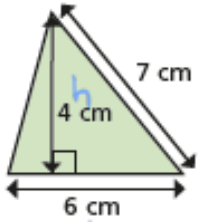
3 What mistake has Dora made?

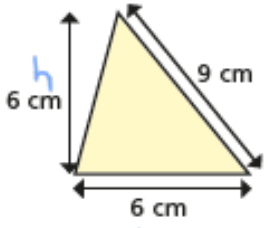


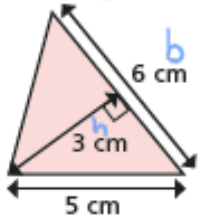


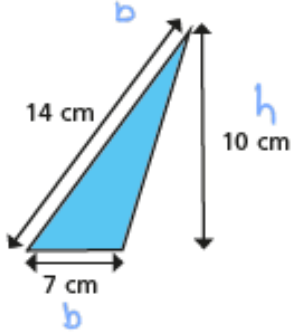
4 Label the base of each triangle b.

Label the perpendicular height h.







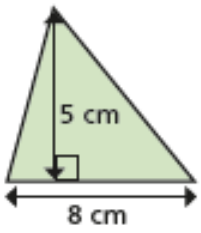


5 Are the statements always, sometimes or never true?

The side at the bottom of a triangle is the base.	The perpendicular height is equal to the vertical height.
Sometimes	Sometimes

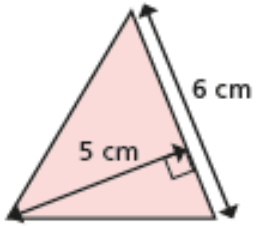
6 Calculate the area of the triangles.

a)



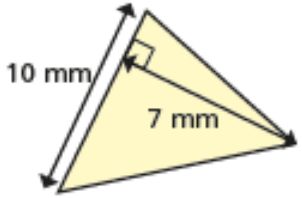
area = 20 cm²

b)



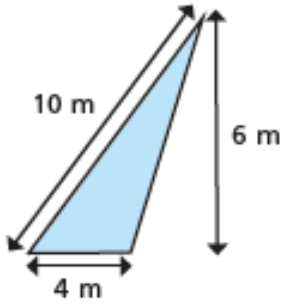
area = 15 cm²

c)



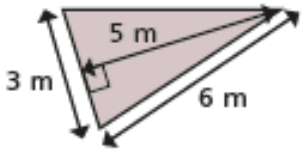
area = 35 mm²

d)



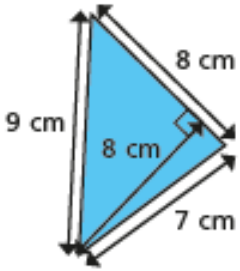
area = 12 m²

e)



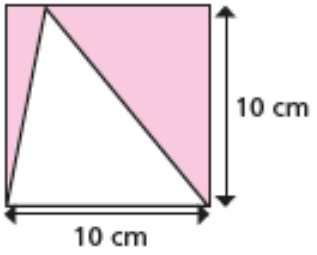
area = 7·5 m²

f)



area = 32 cm²

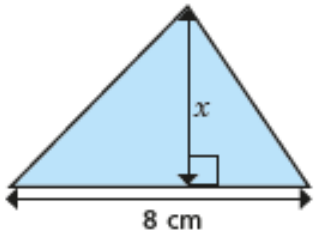
7 Find the area of the shaded region.



area = 50 cm²

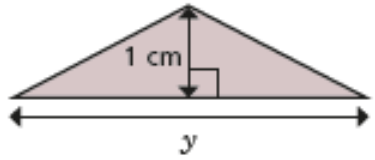
8 The area of each triangle is 12 cm². Find the missing lengths.

a)



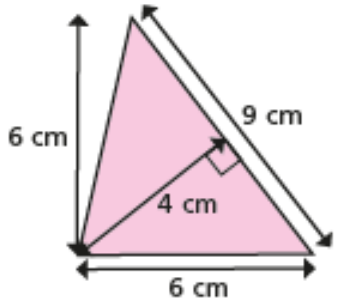
x = 3 cm

b)



y = 24 cm

9 Show two ways you can work out the area of the triangle.



$\frac{9 \times 4}{2} = 18\text{cm}^2$

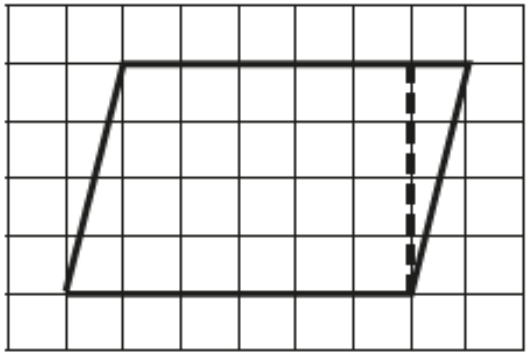
$\frac{6 \times 6}{2} = 18\text{cm}^2$

Compare answers with a partner.

Wednesday

Area of a parallelogram

1 On a piece of squared paper, copy this parallelogram and cut it out.



a) Create a rectangle by cutting off the right-angled triangle and moving it.

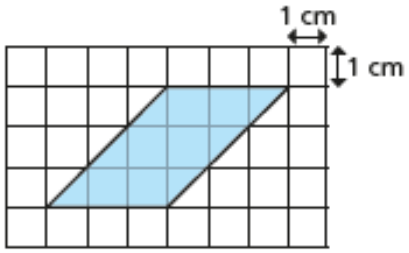
b) Complete the sentences.

The area of the rectangle is [24] squares.

The area of the parallelogram is [24] squares.

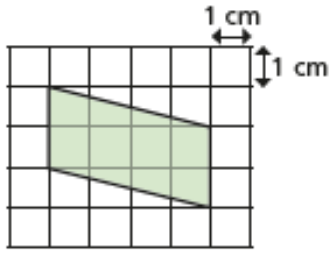
2 Calculate the areas of the parallelograms.

a)



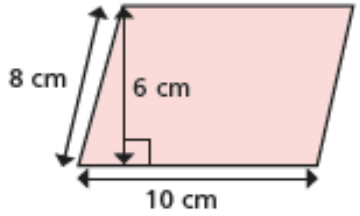
area = [9] cm²

b)



area = [8] cm²

3 Huan is finding the area of the parallelogram.



$10 \times 8 = 80$ cm²

a) What mistake has Huan made?

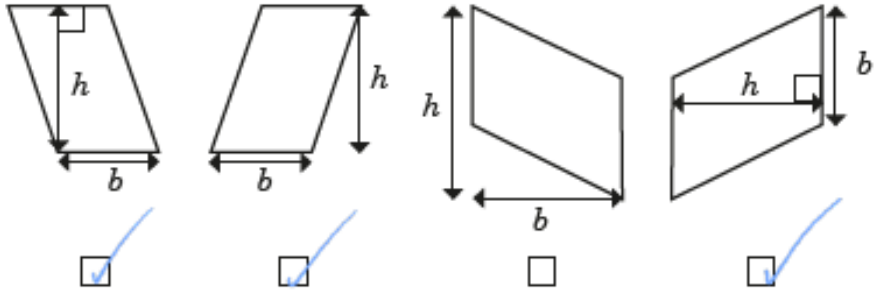
He hasn't used the perpendicular height.

b) What is the correct answer?

area = [60] cm²

4 Esther has labelled the bases and heights for four parallelograms.

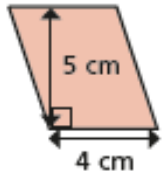
Three are correct; one is incorrect. Tick the shapes that have been correctly labelled.



Explain to a partner why one is incorrect.

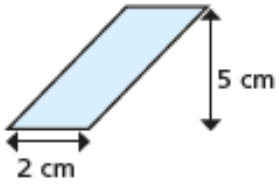
5 Calculate the areas of the parallelograms.

a)



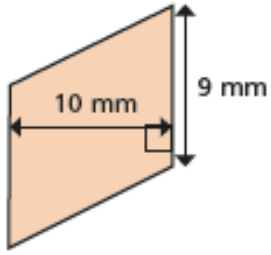
area = 20 cm²

b)



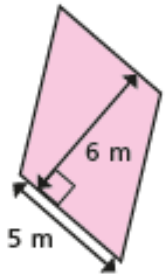
area = 10 cm²

c)



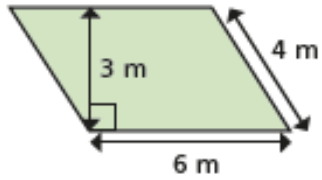
area = 90 mm²

d)



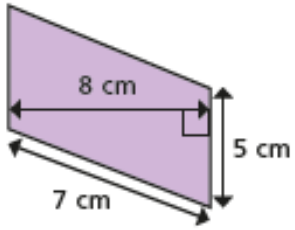
area = 30 m²

e)



area = 18 m²

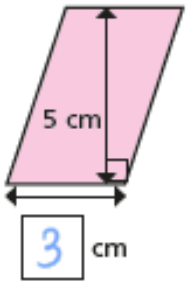
f)



area = 40 cm²

6 Find the missing lengths.

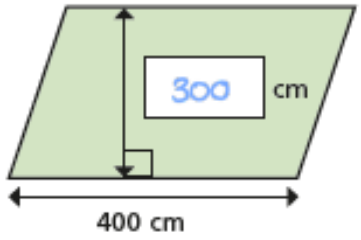
a)



3 cm

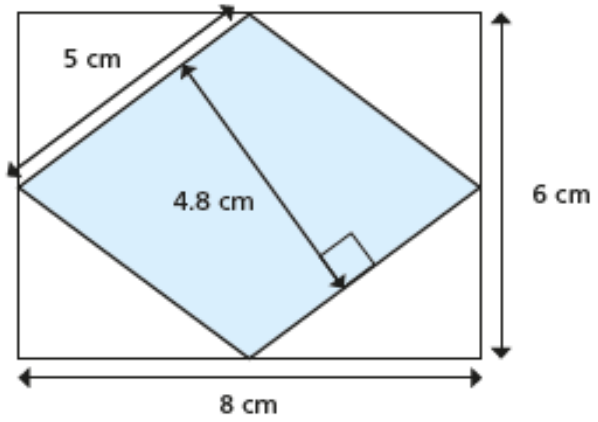
area = 15 cm²

b)



area = 12 m²

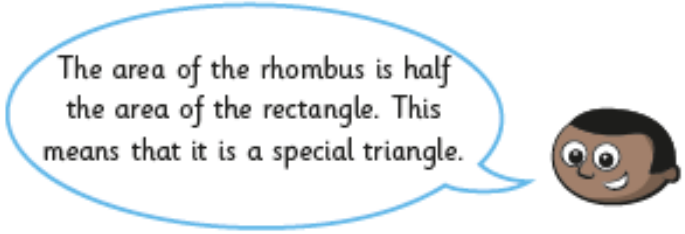
7 Here is a rhombus inside a rectangle.



a) Calculate the area of the rhombus.

area = 24 cm²

b)

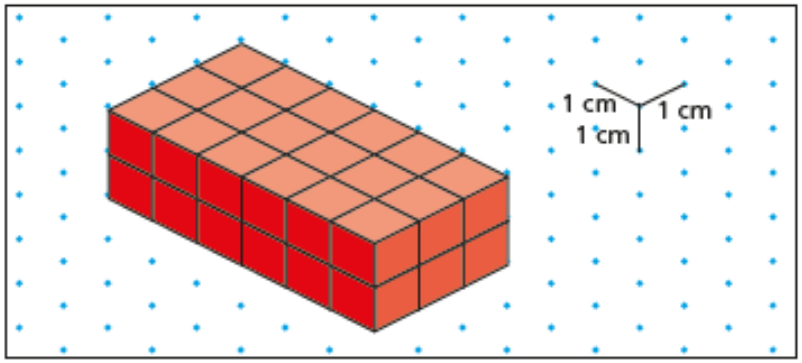


Explain to a partner why Mo is wrong.

Thursday

Volume of a cuboid

1 Here is a cuboid made up of cubes.

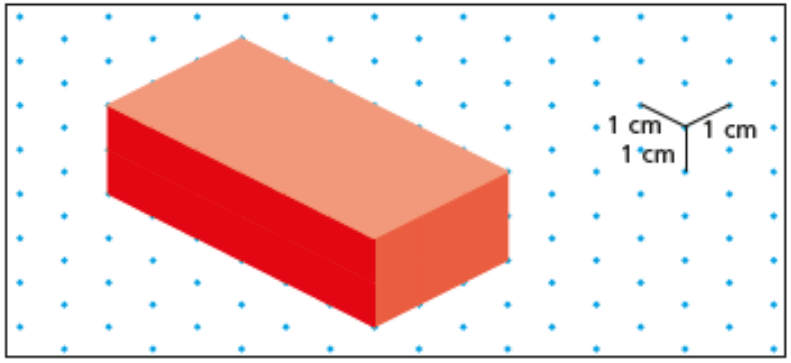


a) What is the volume of the cuboid?

volume = 36 cm³

b) Explain your method for finding the volume.

c) What is the volume of this cuboid?



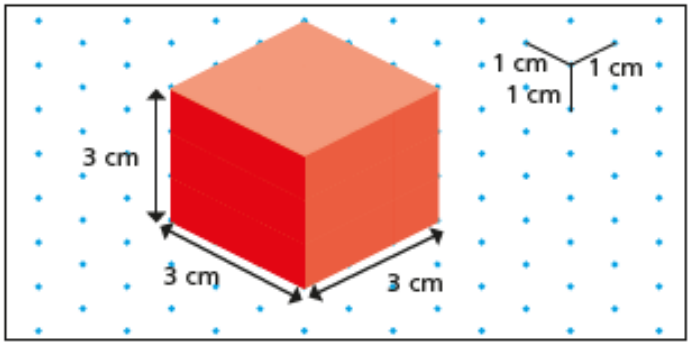
volume = 36 cm³

d) What is the same and what is different about the cuboids?

2 Find the volume of the cuboids.

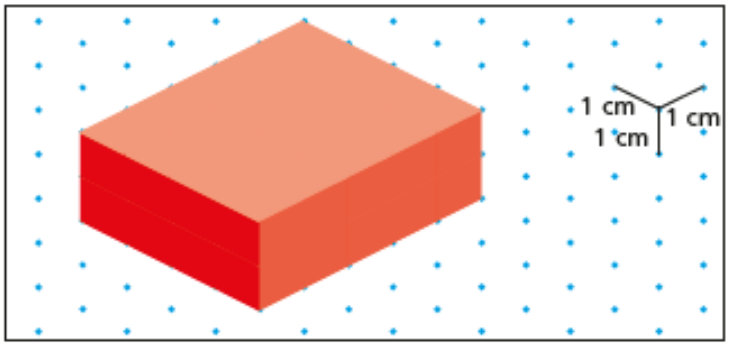
You can make them with cubes if it helps.

a)



volume = 27 cm³

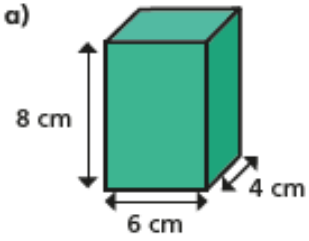
b)



volume = 40 cm³

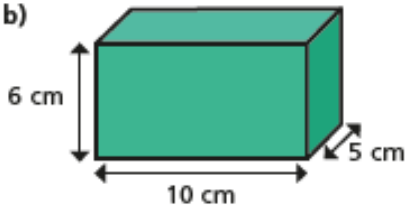
3 Calculate the volumes of the cuboids.

a)



volume = 192 cm³

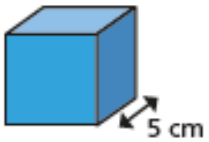
b)



volume = 300 cm³

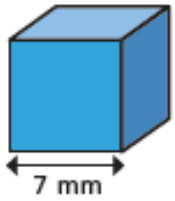
4 Calculate the volumes of the cubes.

a)



volume = 125 cm³

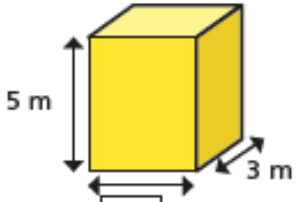
b)



volume = 343 mm³

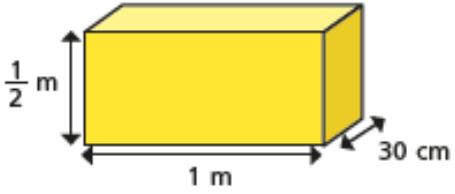
5 The volume of the cuboid is 60 m³

Find the missing length.



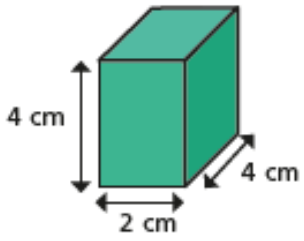
4 m

6 Calculate the volume of the cuboid.

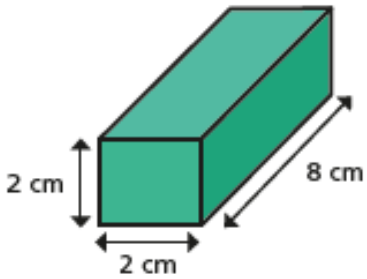


volume = 150,000 cm³

7 a) Calculate the volumes of the two cuboids.



32 cm³

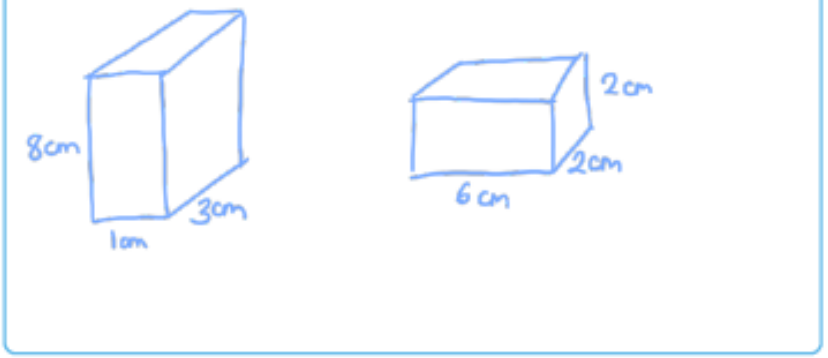


32 cm³

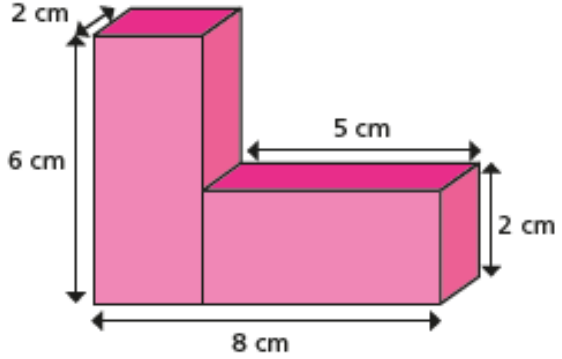
What do you notice?

b) Draw two different cuboids that have a volume of 24 cm³

e.g.



8 Calculate the total volume of the shape.



volume = 56 cm³

Was there another method you could have used?

White Rose Answers (Year 5)

Monday

Subtracting decimals with the same number of decimal places

1 Use a place value chart and counters to help you complete the subtractions.

Tens	Ones	Tenths	Hundredths
10	1 1 1 1 1 1	0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	0.01 0.01 0.01

a) 14.83 − 12.12 = 2.71

b) 14.83 − 12.14 = 2.69

c) 14.83 − 12.92 = 1.91

d) 14.83 − 12.94 = 1.89

e) Which calculation was easier? Talk about it with a partner.

f) What happens when you don't have enough counters in a column to take away?

You need to make an exchange.

2 Complete the sentences.

1 ten can be exchanged for 10 ones.

1 one can be exchanged for 10 tenths.

1 tenth can be exchanged for 10 hundredths.

3 Annie is calculating 2.42 − 1.17 using the column method.

She uses a place value chart to help her.

Ones	Tenths	Hundredths
1 1	0.1 0.1 0.1 0.1	0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01

	2	3 4	1 2	
−	1	1	7	
	1	2	5	

How does the place value chart support the column method?

Talk about it with a partner.

4 Complete the column subtractions.

a)

		5	6	4
	−	3	1	2
		2	5	2

c)

		7 8	1 0	9
	−	3	8	1
		4	2	8

b)

		5	5 6	1 4
	−	3	1	5
		2	4	9

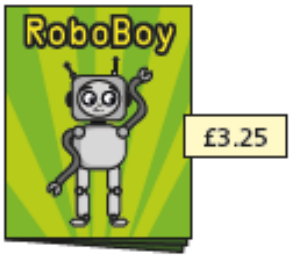
d)

		1	2 1	1 0	1 2
	−	1	1	3	8
		0	0	6	4

5 Whitney has £8.52

She buys this comic.

How much money does she have left?



£ 5·27

6 Here are some items for sale in a shop.


£2.27


£9.10


£4.91


£1.09

a) How much more does a scarf cost than a bag of marbles?

£ 2·64

b) Esther has £15.31

She buys a pair of headphones and a bag of marbles.

How much money does she have left?

£ 3·94

c) Tom has £7.01

He buys one item and has £5.92 left.

What did he buy?

Tom bought a keyring.

7 Ron and Dora are doing a sponsored walk.

Ron walks 3.12 miles.

Dora walks 5.49 miles.

How much further does Dora walk than Ron?

Dora walks 2.37 miles further than Ron.

8 Tommy has three pieces of string.

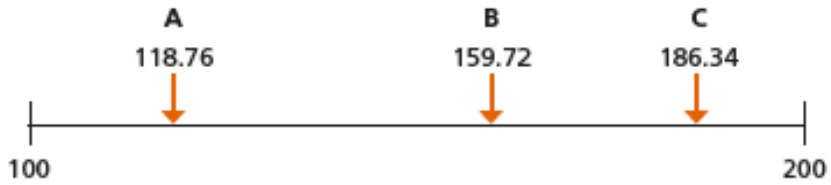
- The first piece is 0.78 m long.
- The second piece is 0.24 m shorter than the first piece.
- The third piece is 0.07 m shorter than the second piece.

What is the total length of all three pieces of string?

Give your answer in metres and centimetres.

1 m and 79 cm

9 A, B and C are points on a number line.



How much greater is the difference between A and C than the difference between B and C?

40·96

Compare methods with a partner.

Tuesday

Subtracting decimals with a different number of decimal places

1 Use place value counters to help you work out the subtractions.

Ones	Tenths	Hundredths
●●● ●●	●●●	●●● ●●●

a)

		5	.	3	6
	−	1	.	2	
		4	.	1	6

c)

		~~5~~ 4	.	13	6
	−	3	.	8	
		1	.	5	6

b)

		~~5~~ 4	.	13	6
	−	3	.	5	
		1	.	8	6

d)

		~~5~~ 4	.	13	6
	−	4	.	7	
		0	.	6	6

2 Alex is using counters to help her work out 4.7 − 1.35

I can't do this as I don't have any hundredths counters.

Do you agree with Alex? No

Talk about it with a partner.

3 Complete the subtractions.

a)

		~~2~~ 1	.	13	6
	−	1	.	4	
		0	.	9	6

c)

		7	.	~~3~~ 2	10
	−	1	.	1	5
		6	.	1	5

b)

		~~6~~ 5	.	11	5
	−	3	.	8	
		2	.	3	5

d)

		2	4	~~4~~ 3	10
	−		3	1	2
		2	1	2	8

4 Use the column method to work out the subtractions.

a) 13.59 − 1.82

			2		
	1	~~3~~	.	5	9
−		1	.	8	2
	1	1	.	7	7

c) 5.6 − 1.39

			5		
		5	.	~~6~~ 5	10
−	1	.	3	9	
	4	.	2	1	

b) 73.84 − 9.2

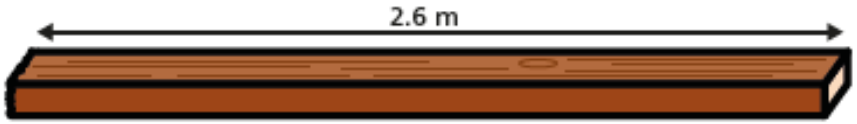
		6			
	~~7~~	13	.	8	4
−		9	.	2	
	6	4	.	6	4

d) 18.2 − 3.64

			11		
	1	~~8~~ 7	.	~~2~~ 1	10
−		3	.	6	4
	1	4	.	5	6

5 A plank of wood measures 2.6 m.

A carpenter cuts a piece of wood from the plank that is 0.52 m long.



a) What is the length of the remaining plank?

2·08 m

b) The carpenter cuts a second piece of wood from the plank.

She now has 0.3 m of the plank remaining.

What is the length of the second piece of wood that she cut?

1·78 m

6 The mass of a bag of marbles is 54.3 g.

These two marbles are removed from the bag.

What is the mass of the bag of marbles now?

32·56 g

7 Work out the missing digits.

1 3.4 – 2.5 9 = 10.81

8 Use the column method to work out the subtractions.

a) 14 – 2.7

	1	$\overset{3}{4}$	$\overset{1}{0}$			
–		2	7			
	1	1	3			

d) 26 – 3.91

	2	$\overset{5}{6}$	$\overset{1}{0}$	$\overset{1}{0}$		
–		3	9	1		
	2	2	0	9		

b) 8 – 3.65

	$\overset{7}{8}$	$\overset{1}{0}$	$\overset{1}{0}$			
–	3	6	5			
	4	3	5			

e) 25 – 3.842

	2	$\overset{4}{5}$	$\overset{1}{0}$	$\overset{1}{0}$	$\overset{1}{0}$	
–		3	8	4	2	
	2	1	1	5	8	

c) 20 – 2.85

	$\overset{1}{2}$	$\overset{9}{0}$	$\overset{9}{0}$	$\overset{1}{0}$		
–		2	8	5		
	1	7	1	5		

f) 90 – 0.821

	$\overset{8}{9}$	$\overset{9}{0}$	$\overset{9}{0}$	$\overset{9}{0}$	$\overset{1}{0}$	
–		0	8	2	1	
	8	9	1	7	9	

Wednesday

Multiplying decimals by 10, 100 and 1,000

1 Complete the multiplications.

a)

H	T	O	Tths	Hths
		3	7	

3.7 × 10 = 37

b)

H	T	O	Tths	Hths
	1	4	5	

14.5 × 10 = 145

c)

H	T	O	Tths	Hths
		1	5	8

1.58 × 10 = 15·8

d)

H	T	O	Tths	Hths
	1	3	0	6

13.06 × 10 = 130·6

What do you notice when you multiply a number by 10?

2 Complete the multiplications.

a) 1.7 × 10 = 17

b) 1.75 × 10 = 17·5

c) 1.73 × 10 = 17·3

d) 13.4 × 10 = 134

e) 10 × 13.04 = 130·4

f) 130.4 × 10 = 1,304

3 Complete the multiplications.

a)

H	T	O	Tths	Hths
		4	1	

4.1 × 100 = 410

b)

H	T	O	Tths	Hths
		4	1	5

4.15 × 100 = 415

c)

H	T	O	Tths	Hths
	1	4	5	

14.5 × 100 = 1,450

d)

H	T	O	Tths	Hths
		4	0	5

4.05 × 100 = 405

What do you notice when you multiply a number by 100?

4 Complete the calculations.

a) 7.2 × 100 = 720

b) 3.4 × 100 = 340

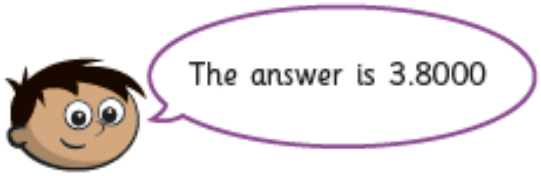
c) 19.5 × 100 = 1,950

d) 1.89 × 100 = 189

e) 73.57 × 100 = 7,357

f) 1.317 × 100 = 131·7

5 Amir has multiplied 3.8 by 1,000



a) What mistake has Amir made?

He has just added zeros.

b) Work out the correct answer. 3.8 × 1,000 = 3,800

6 Complete the multiplications.

a) 4.7 × 10 = 47

4.7 × 100 = 470

4.7 × 1,000 = 4,700

b) 19.3 × 10 = 193

19.3 × 100 = 1,930

1,000 × 19.3 = 19,300

c) 5.84 × 10 = 58.4

5.84 × 100 = 584

5.84 × 1,000 = 5,840

d) 18.06 × 10 = 180.6

100 × 18.06 = 1,806

18.06 × 1,000 = 18,060

How did you work out the answers? Talk to a partner.

7 Complete the calculations.

a) 7.7 × 100 = 770

b) 195 × 10 = 1,950

c) 11.5 × 10 = 115

d) 1,000 × 11.5 = 11,500

e) 8.032 × 10 = 80.32

f) 100 × 18.3 = 1,830

g) 195.32 × 10 = 1,953.2

h) 7.2 × 1,000 = 7,200

8 Tommy is 1.4 m tall.

A tree is 10 times as tall as Tommy.

A building is 100 times as tall as Tommy.

a) How tall is the tree? 14 m

b) How much taller is the building than the tree?

126 m

9 Match the multiplications to the descriptions.

× 10 × 10	multiply by 100
× 10 × 10 × 10	multiply by 1,000
× 100 × 10	multiply by 1,000
× 10 × 100	multiply by 1,000
× 10 × 1	multiply by 10

Thursday

Dividing decimals by 10, 100 and 1,000

1 Complete the divisions.

a)

H	T	O	Tths	Hths
		5		

5 ÷ 10 = 0·5

b)

H	T	O	Tths	Hths
	1	5		

15 ÷ 10 = 1·5

c)

H	T	O	Tths	Hths
		3	8	

3.8 ÷ 10 = 0·38

d)

H	T	O	Tths	Hths
	1	3	8	

13.8 ÷ 10 = 1·38

What do you notice when you divide a number by 10?

2 Complete the calculations.

a) 7 ÷ 10 = 0·7

b) 7.8 ÷ 10 = 0·78

c) 7.86 ÷ 10 = 0·786

d) 16 ÷ 10 = 1·6

e) 16.4 ÷ 10 = 1·64

f) 16.48 ÷ 10 = 1·648

3 Complete the divisions.

a)

H	T	O	Tths	Hths	Thths
	1	7			

17 ÷ 100 = 0·17

b)

H	T	O	Tths	Hths	Thths
		9	4		

9.4 ÷ 100 = 0·094

c)

H	T	O	Tths	Hths	Thths
2	7	6			

276 ÷ 100 = 2·76

d)

H	T	O	Tths	Hths	Thths
	3	2	5		

32.5 ÷ 100 = 0·325

What do you notice when you divide a number by 100?

4 Complete the divisions.

a) 7 ÷ 100 = 0·07

7.2 ÷ 100 = 0·072

7.25 ÷ 100 = 0·0725

b) 109 ÷ 100 = 1·09

10.9 ÷ 100 = 0·109

10.95 ÷ 100 = 0·1095

5 Use a place value chart to work out 136 ÷ 1,000

H	T	O	Tths	Hths	Thths
1	3	6			

Complete the calculation.

136 ÷ 1,000 = 0·136

Talk to a partner about your method.

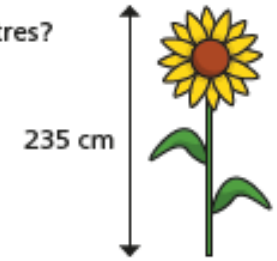
6 Use your knowledge of measure to work out the answers.

a) What is the mass of the box in kilograms?

2,340 ÷ 1,000 = 2·34

b) What is the height of the sunflower in metres?

235 ÷ 100 = 2·35



c) What is the amount of juice in litres?

380 ÷ 1,000 = 0·38

7 Complete the calculations.

a) 147 ÷ 10 = 14·7

147 ÷ 100 = 1·47

147 ÷ 1,000 = 0·147

b) 21 ÷ 10 = 2·1

21 ÷ 100 = 0·21

21 ÷ 1,000 = 0·021

c) 3,200 ÷ 10 = 320

3,200 ÷ 100 = 32

3,200 ÷ 1,000 = 3·2

d) 5,006 ÷ 10 = 500·6

5,006 ÷ 100 = 50·06

5,006 ÷ 1,000 = 5·006

8 Complete the divisions.

a) 83 ÷ 100 = 0.83

b) 9·5 ÷ 10 = 0.95

c) 39 ÷ 10 = 3.9

d) 68 ÷ 1,000 = 0.068

e) 1,799 ÷ 100 = 17.99

f) 1,180 ÷ 100 = 11.8

g) 178 ÷ 10 = 17.8

h) 3.18 ÷ 10 = 0.318

Dip and Pick 18 Answers

A m^3 box =
100cm x 100cm x 100cm =
1,000,000cm^3
1,000,000 ÷ 1,000 = 1,000cm^3

Each cube = 1000cm^3
10cmx 10cm x 10cm = 1000cm^3
Each cube's dimensions are 10cm x 10cm x 10cm.

One possible approach...

The cubes are 8cm^3.

The m^3 box will hold 125,000 cubes.

Investigate other sizes of cubes that will fill the m^3 box.

The volume of the box will be 2000cm^3.

The combination of cubes to fill the box taking up the same volume =

1000cm^3
8 x 125cm^3

1500cm^3
4 x 125cm^3

The volume of the plastic box will be 5 x 5 x 10 = 250cm^3.

The box will hold 250 cubic centimetres.

One box holds 250 cubes.

$2\frac{1}{2}$ boxes will hold 625 cubes.

One box holds 250 cubes.

$2\frac{1}{2}$ boxes will hold 625 cubes.

This is true as there will be enough space for 4 layers of 4 cubes.

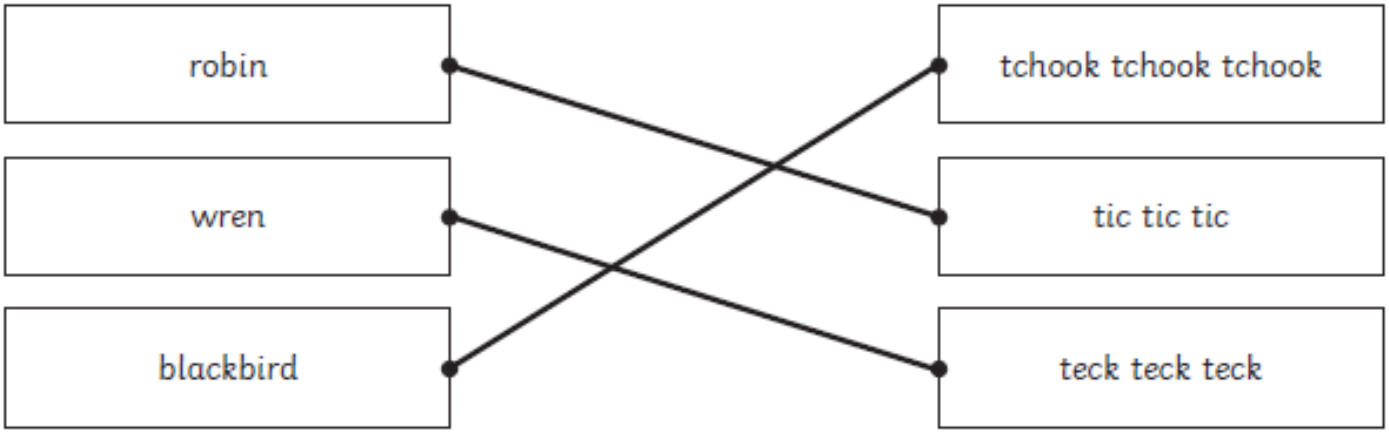
Reading Answers

Answers

1. What is the Latin name of the wren? Tick one.

   ○ Luscinia megarhynchos
   ✓ **Troglodytes troglodytes**
   ○ Turdus merula
   ○ Erithacus rubecula

2. Draw **three** lines to match each bird to its song.



3. What does **trill** mean?

   A trill is a quavering note.

4. Find and copy **two** things that robins will eat.
   Accept any two of the following: insects and their larvae; spiders; worms; weeds; seeds; fruit; berries; nuts; oats; mealworms.

5. What is the problem with using nets in a garden?
   The problem with using nets in a garden is that birds can become tangled in them.

6. Why do you think wrens are so good at hiding?
   Pupils' own responses, such as: They are very small and brown in colour so they blend in to the bushes and trees that they build their nests in.

7. Summarise the information from the third paragraph in 40 words or fewer.
   Pupils' own responses, such as: Robins are seen in cities, towns and villages; they will nest anywhere, in their cup-shaped mossy nest, from May to July, laying 4-6 white eggs with sandy or red freckles up to three times per year.

8. Which of the threats do you think is the most problematic? What could you do to help the problem?
Pupils' own responses, such as: I think that weed killers are the most problematic threat because they can kill birds or their food, meaning that the birds could starve.

9. Why do you think that robins are Britain's favourite bird? Give at least two reasons.
Pupils' own responses, such as: Robins are very distinctive with their red breast and people associate them with Christmastime; they are also very friendly and will sometimes feed out of people's hands.

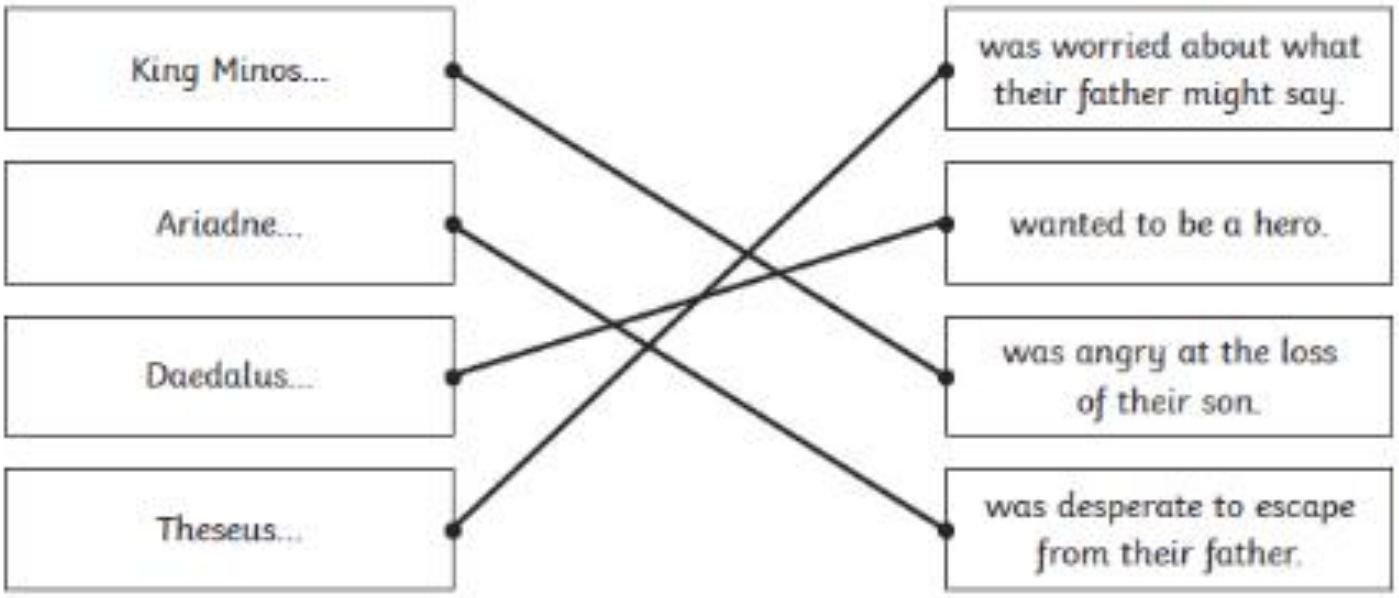
10. Can you think of any other threats to garden birds? What could you do to help the problem?
Pupils' own responses, such as: I think that pets are a threat to garden birds, especially cats because they often catch and kill small birds or destroy their nests. It is difficult to control cats, but people with pet cats should try to make sure that they don't attack birds by giving them plenty of toys to play with.

Answers

1. Who did Theseus promise to take away from Crete? Tick one.

- ○ King Minos
- ○ King Aegeus
- ⊘ **Ariadne**
- ○ Daedalus

2. Draw **four** lines and complete each sentence.



3. Why did Aegeus eventually give in to Theseus?

Aegeus eventually gave in to Theseus because his arguments had run dry.

4. **...forgetting all about the promise that he had made to his father.**
What promise had Theseus made?

Theseus had promised to change his sails to white if he was successful.

5. Look at the paragraph beginning "**I will await the news...**"
Find and copy one word which means the same as appears.

materialises

6. Argue that Theseus was foolish to defeat the Minotaur.

Pupils' own responses, such as: Theseus was foolish to defeat the Minotaur because now King Minos is likely to start waging war against Athens again. Defeating the Minotaur has probably made Minos angrier and more likely to hurt innocent citizens.

7. Imagine that you are Aegeus watching Theseus's ship appear over the horizon.
Describe how you feel, using the text to support your answer.

Pupils' own responses, such as: I feel so sad. When the ship came over the horizon, I was excited but then I saw that the sails were black and now I am devastated because this means that Theseus has been defeated by the Minotaur.

8. Using 25 words or fewer, write a suitable next sentence for the text.

Pupils' own responses, such as: Aegeus stood on the cliff and peered at the boat in the distance; a tear rolled down his face as he recognised the black sails.

9. Do you think that Aegeus was right to strike a deal with Minos? Tick one.

Accept either a 'yes' or a 'no' response provided that a full explanation is given below.

Fully explain your answer.

Pupils' own responses, such as: Yes, I think that Aegeus was right to strike a deal with Minos because he was able to prevent lots of people from being injured when the city was being stormed.

10. Which of the following words do you think best describes King Minos? Tick one.

Accept any ticked word provided that a full explanation is given below.

Fully explain your answer.

Pupils' own responses, such as: I think that the word cruel best describes King Minos. This is because he waged war against an entire city which was probably full of innocent people. He was also happy to offer 14 children to the Minotaur and even cleaned them and prepared them beforehand.

Answers

1. 'Stephen Hawking was an English scientist, cosmologist, teacher and author. He is best known for discovering how the universe was formed and predicting what might happen to it in the future.'
   What does **predicting** mean? Tick one.

   ○ describing
   ✓ **speculating**
   ○ understanding
   ○ knowing

2. Who helped Stephen to build a computer? Tick one.

   ○ Frank Hawking
   ○ Jane Wilde
   ○ Isobel Walker
   ✓ **Dikran Tahta**

3. Find and copy a phrase from the text which shows that Stephen wasn't afraid of danger.

   Accept: 'he was said to be a daredevil because of the risks he took in the boat' only.

4. Find and copy **two** things that Stephen enjoyed doing as a child.

   Accept any two of the following answers: watching the stars; playing board games; making model aeroplanes and boats; building a computer.

5. Why do you think people called Stephen 'Einstein' at school?

   Pupil's own responses, such as: Stephen was interested in science and started school a year early: this is similar to Einstein as he was a scientist and was very clever.

6. Find and copy **two** things that Stephen used to help him carry on with his career as his ALS progressed.

   Accept: 'a wheelchair' and 'voice synthesis technology' only.

7. Summarise Stephen's discoveries about black holes in 50 words or fewer.

   Accept any reasonable summary linked to the text, e.g. Stephen discovered a type of radiation that is able to escape from black holes, despite the fact that nothing else can; he used this knowledge to show that space and time began with the Big Bang and would end in black holes.

8. Why do you think Stephen was keen to teach and share his knowledge?

   Pupil's own responses, e.g. Stephen was passionate about space and had discovered amazing things about the universe which he wanted to share with people; he taught others so that further studies could be carried out in the future.

9. Why do you think Stephen tried to explain events in space using objects on earth (such as the waterfall)?

   Pupil's own responses, e.g. The discoveries that Stephen made were very complicated. By explaining them with everyday language, he was making his knowledge accessible to all.

10. Which part of Stephen's life do you think was the most important? Give evidence to support your answer.

    Pupil's own responses with any reasonable explanation linked to text, e.g. I think that his time as a child watching the stars was the most important, because, without this inspiration, he might never have gone on to study the universe.