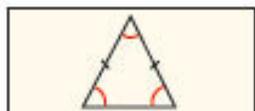


Angles in a triangle – missing angles

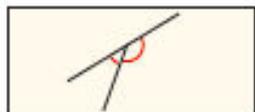
1 Match each diagram to the correct rule.



Angles on a straight line sum to 180°



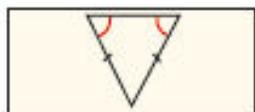
Angles around a point sum to 360°



Angles in a triangle sum to 180°



In an isosceles triangle, two angles are equal

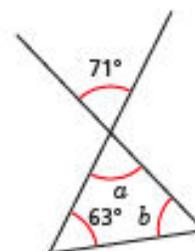


Vertically opposite angles are equal

2 Work out the sizes of the unknown angles.

Give reasons for each stage of your working.

a)



$a = \square$ because _____

$b = \square$ because _____

b)

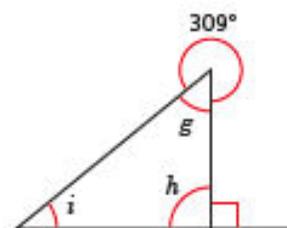


$d = \square$ because _____

$e = \square$ because _____

$f = \square$ because _____

c)

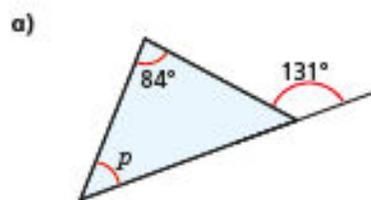


$g = \square$ because _____

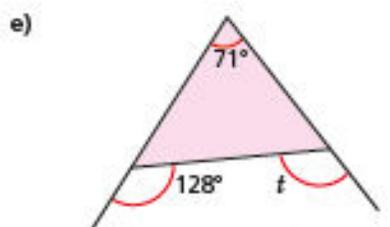
$h = \square$ because _____

$i = \square$ because _____

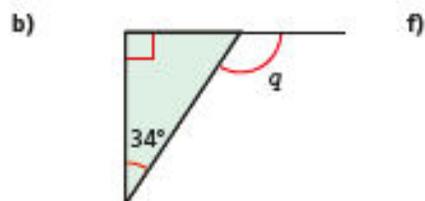
3 Work out the sizes of the angles marked with letters.



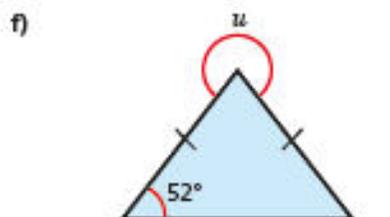
$p = \square$



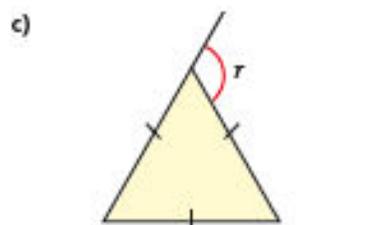
$t = \square$



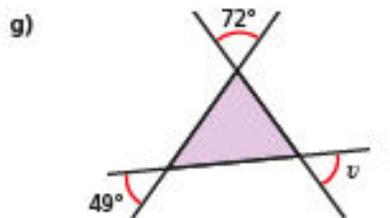
$q = \square$



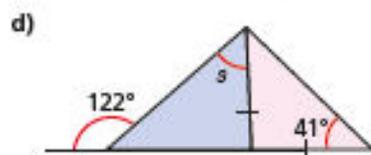
$u = \square$



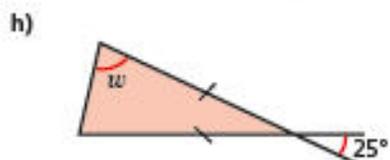
$r = \square$



$v = \square$



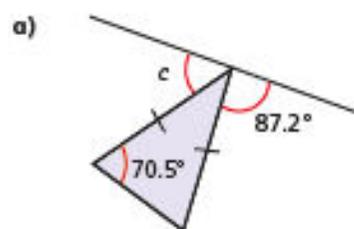
$s = \square$



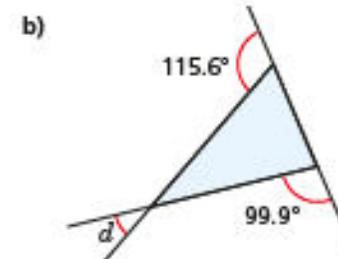
$w = \square$

Talk about your reasons with a partner.

4 Work out the sizes of the unknown angles.

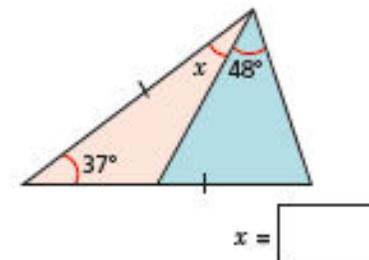


$c = \square$

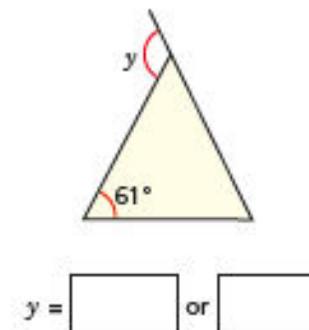


$d = \square$

5 Work out the size of angle x .



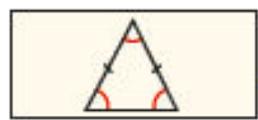
6 Here is an isosceles triangle. Find two possible sizes of angle y .



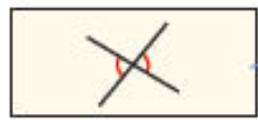
Angles in a triangle – missing angles



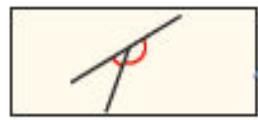
1 Match each diagram to the correct rule.



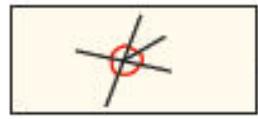
Angles on a straight line sum to 180°



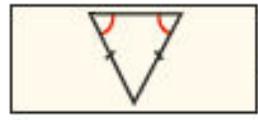
Angles around a point sum to 360°



Angles in a triangle sum to 180°

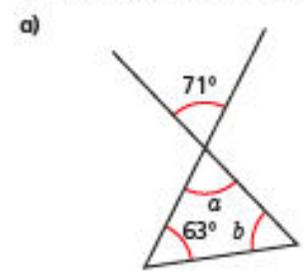


In an isosceles triangle, two angles are equal

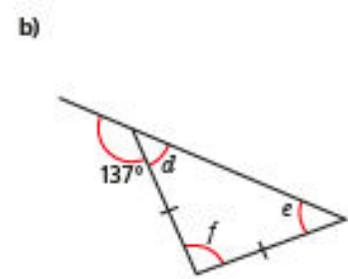


Vertically opposite angles are equal

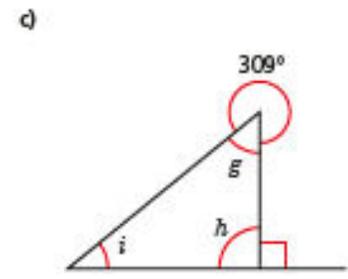
2 Work out the sizes of the unknown angles. Give reasons for each stage of your working.



$a = 71^\circ$ because vertically opposite angles are equal
 $b = 46^\circ$ because angles in a triangle sum to 180°

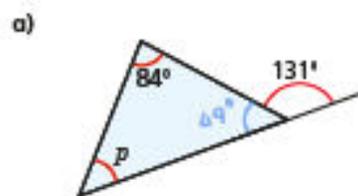


$d = 43^\circ$ because angles on a straight line sum to 180°
 $e = 43^\circ$ because in an isosceles triangle two angles are equal
 $f = 94^\circ$ because angles in a triangle sum to 180°

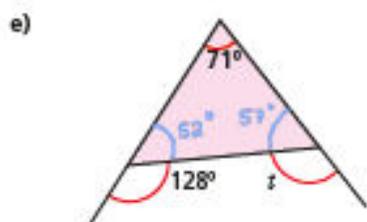


$g = 51^\circ$ because angles around a point sum to 360°
 $h = 90^\circ$ because angles on a straight line sum to 180°
 $i = 39^\circ$ because angles in a triangle sum to 180°

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



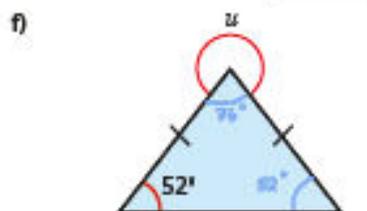
$p = 47^\circ$



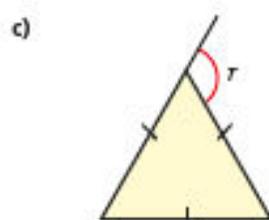
$t = 123^\circ$



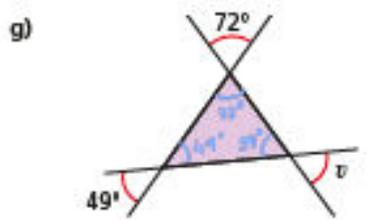
$q = 124^\circ$



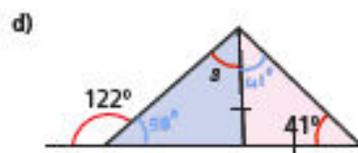
$u = 284^\circ$



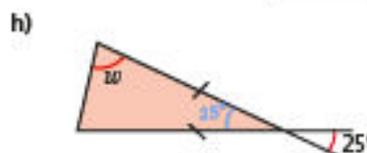
$r = 120^\circ$



$v = 59^\circ$



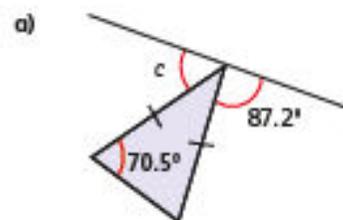
$s = 40^\circ$



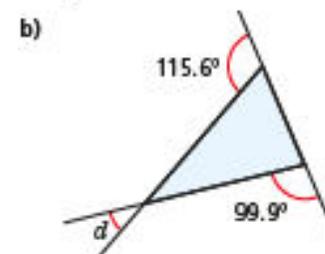
$w = 77.5^\circ$

Talk about your reasons with a partner.

4 Work out the sizes of the unknown angles.



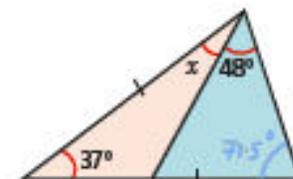
$c = 53.8^\circ$



$d = 35.5^\circ$

5 Work out the size of angle x.

$180 - 37 = 143$
 $143 \div 2 = 71.5$
 $71.5 - 48 = 23.5$



$x = 23.5^\circ$

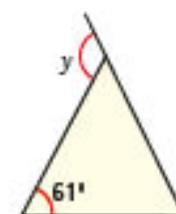
6 Here is an isosceles triangle. Find two possible sizes of angle y.



$61 + 61 = 122$
 $180 - 122 = 58$
 $y = 180 - 58 = 122$



$180 - 61 = 119$
 $119 \div 2 = 59.5$
 $y = 180 - 59.5 = 120.5$



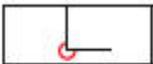
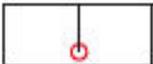
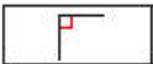
$y = 122^\circ$ or 120.5°



Write

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.

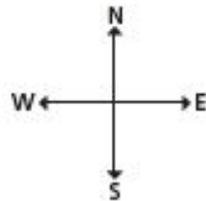
↑
Teddy

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° .
What direction is she facing now? _____

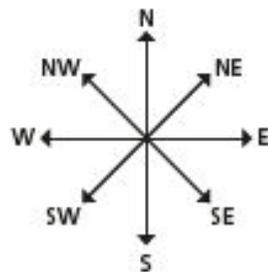
- c) Alex is facing west.
She turns a quarter turn clockwise.
What direction is she facing now? _____

- d) Amir is facing west.
He turns 90° 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° 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.

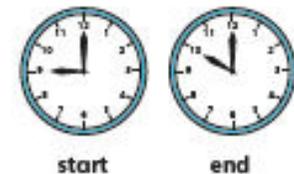
- a) $\frac{1}{2}$ of a full turn = d) $1\frac{1}{4}$ turns =
b) $\frac{1}{4}$ of a full turn = e) $5\frac{3}{4}$ turns =
c) $\frac{3}{4}$ of a full turn =

- 7



How many degrees did Eva turn through?

- 8 Nijah 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?

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.



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.

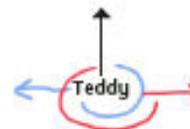


She turns a quarter turn clockwise.

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.



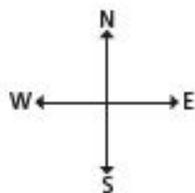
He turns a three-quarter turn.

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?

South

b) Whitney is facing east.
She turns 180° .
What direction is she facing now?

West

c) Alex is facing west.
She turns a quarter turn clockwise.
What direction is she facing now?

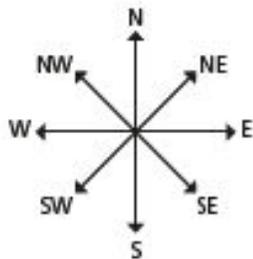
North

d) Amir is facing west.
He turns 90° anticlockwise.
What direction is he facing now?

South

e) Kim is facing south.
What angle does she need to turn through to face east?
 90° anticlockwise or 270° clockwise
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?

South-west

b) Esther is facing south-west.
She turns 270° anticlockwise.
What direction is she facing now?

North-west

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

360°

6 Complete the statements.

- a) $\frac{1}{2}$ of a full turn = 180° d) $1\frac{1}{4}$ turns = 450°
b) $\frac{1}{4}$ of a full turn = 90° e) $5\frac{3}{4}$ turns = 2070°
c) $\frac{3}{4}$ of a full turn = 270°

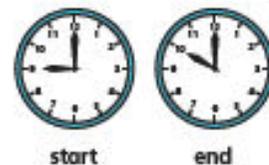
7



How many degrees did Eva turn through?

840°

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

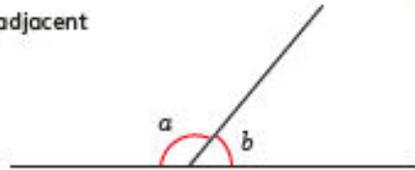


How many degrees did the minute hand turn through during the lesson?

360°

Calculate angles

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



- a) Measure angles a and b .

$a =$

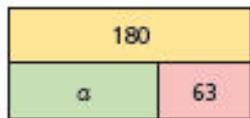
$b =$

- b) What is the total of the two angles?

- c) Complete the sentence.

Adjacent angles on a straight line _____

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



$a + 63 =$

$180 -$ $= a$

$63 +$ $=$

$180 - a =$

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

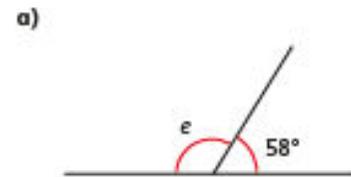
- c) Work out the value of a .

$a =$

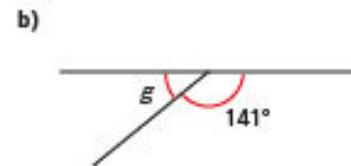
- d) How does the bar model help you to calculate angle a ?



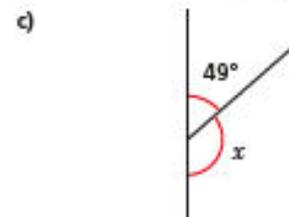
- 3 Work out the unknown angles.



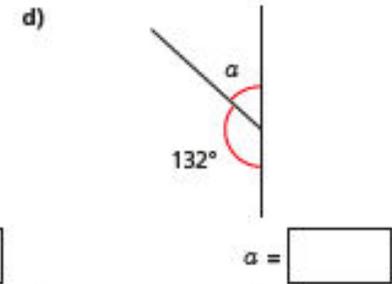
$e =$



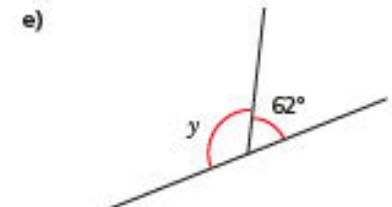
$g =$



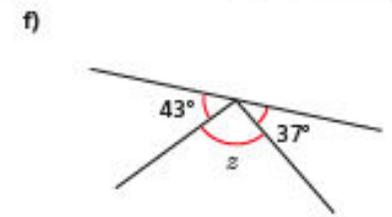
$x =$



$\alpha =$



$y =$



$z =$

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



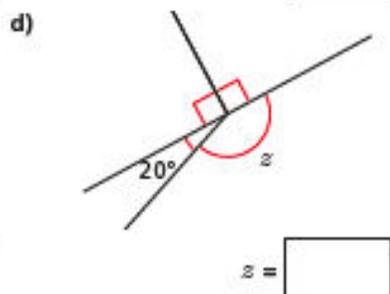
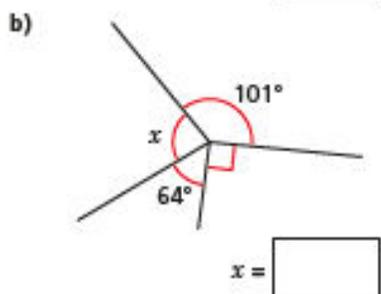
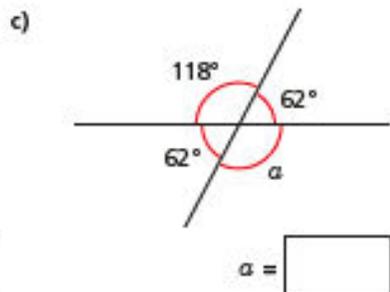
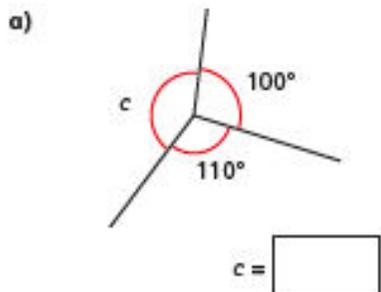
- a) Show Dora's turn on the diagram.

- b) How many degrees did Dora turn through?

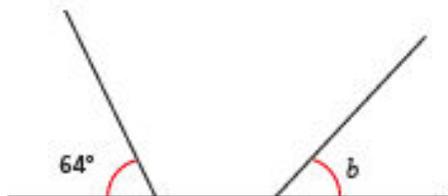
- c) Use your answer to part b) to help you complete the sentence.

Angles around a point _____

5 Work out the unknown angles.



6



Angle b is 116° because angles on a straight line add up to 180° .

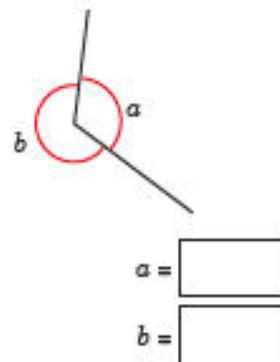


Do you agree with Tommy? _____

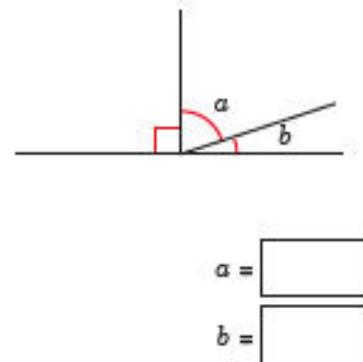
Explain your answer.

7 Use the information to work out the unknown angles.

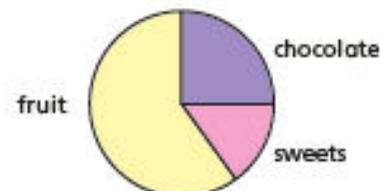
a) Angle a is half the size of angle b .



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



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.

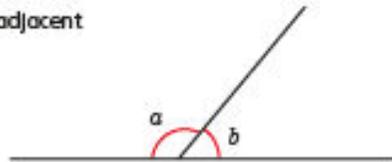
chocolate $\boxed{}$

sweets $\boxed{}$

fruit $\boxed{}$

Calculate angles

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



- a) Measure angles a and b .

$a = 130^\circ$ $b = 50^\circ$

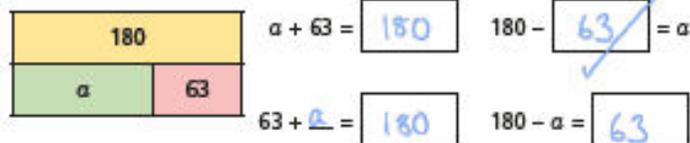
- b) What is the total of the two angles?

180°

- c) Complete the sentence.

Adjacent angles on a straight line sum to 180°

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

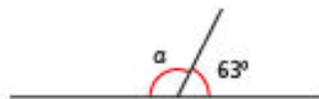


- b) Tick the calculation in part a) that helps you work out the value of a .

- c) Work out the value of a .

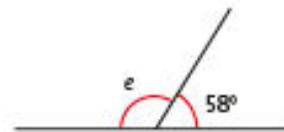
$a = 117$

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



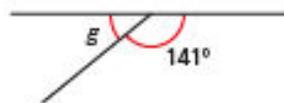
- 3 Work out the unknown angles.

- a)



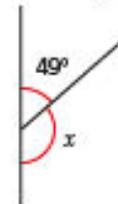
$e = 122^\circ$

- b)



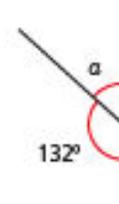
$g = 39^\circ$

- c)



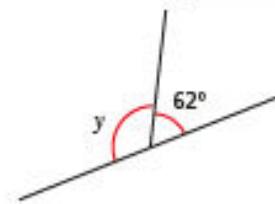
$x = 131^\circ$

- d)



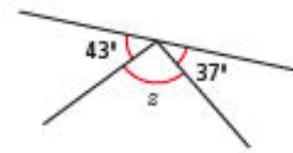
$a = 48^\circ$

- e)



$y = 118^\circ$

- f)



$z = 100^\circ$

- 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.

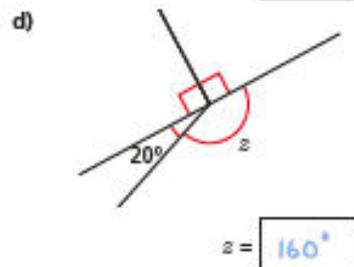
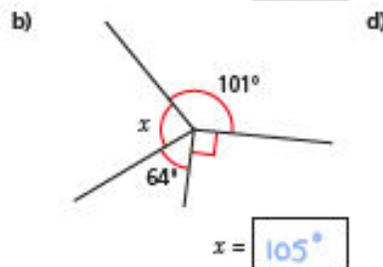
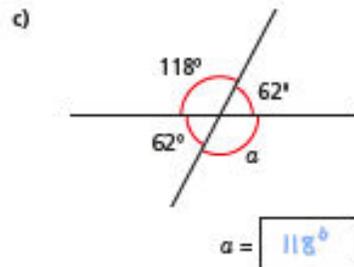
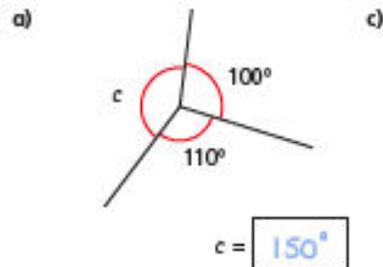
- b) How many degrees did Dora turn through?

360°

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

Angles around a point sum to 360°

5 Work out the unknown angles.



6



Angle b is 116° because angles on a straight line add up to 180° .



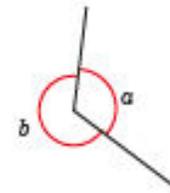
Do you agree with Tommy? No

Explain your answer.

The angles are not adjacent. There is not enough information to work out the size of angle b .

7 Use the information to work out the unknown angles.

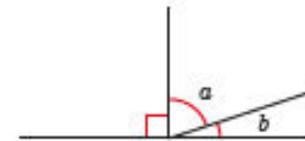
a) Angle a is half the size of angle b .



$$a = 120^\circ$$

$$b = 240^\circ$$

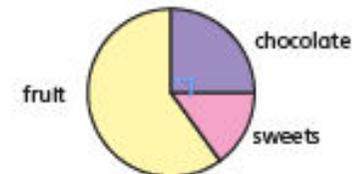
b) Angle a is four times the size of angle b .



$$a = 72^\circ$$

$$b = 18^\circ$$

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 90° sweets 45° fruit 225°

Challenge 1

Can you work out the values of each shape?

$$\star + \star = 20$$

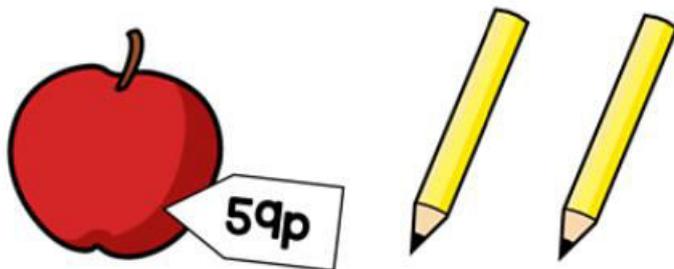
$$\heartsuit - \star = 7$$

$$\heartsuit - \heartsuit = \blacktriangle$$

Challenge 2

Tom has six 10p coins and three 5p coins. He buys an apple for 59p and two pencils.

He has no money left. How much does a pencil cost?



Challenge 3

Here are some digit cards.



Amir and Donna each make a three-digit number using all the cards.

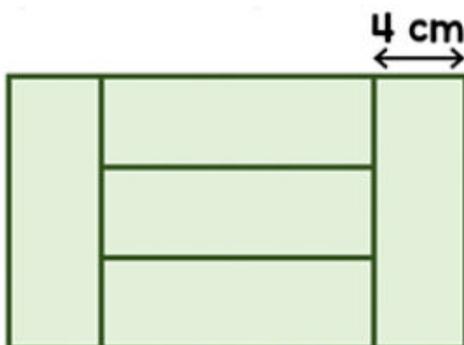
Amir notices that when he subtracts his number from Donna's number he gets an answer greater than 300 but less than 400.

What numbers did they make?

Challenge 4

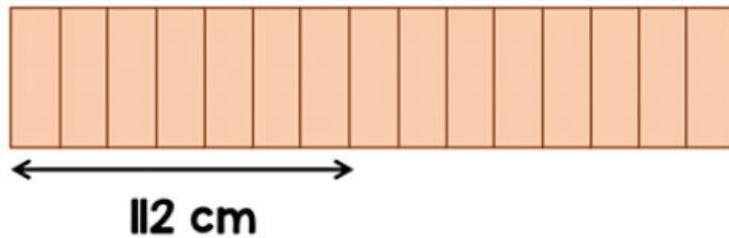
Five identical rectangles are put together to make a large rectangle.

The width of one rectangle is 4cm. Work out the perimeter of the large rectangle.



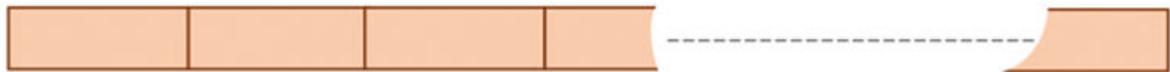
Challenge 5

15 identical blocks are lined up as shown.



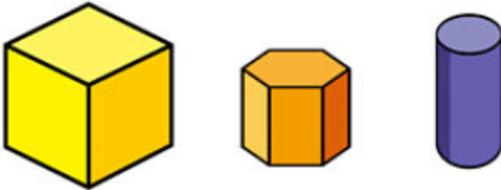
The length of each individual block is twice the width.

If all 15 blocks are then laid end to end lengthways, what is the total length of the blocks altogether now?

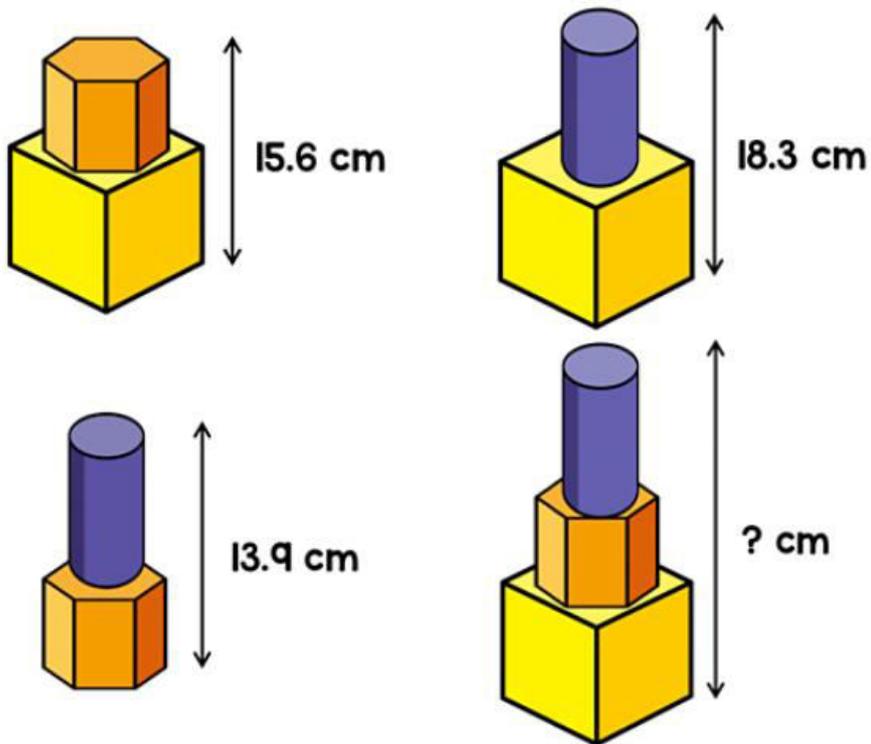


Challenge 6

Liam has these three shapes.



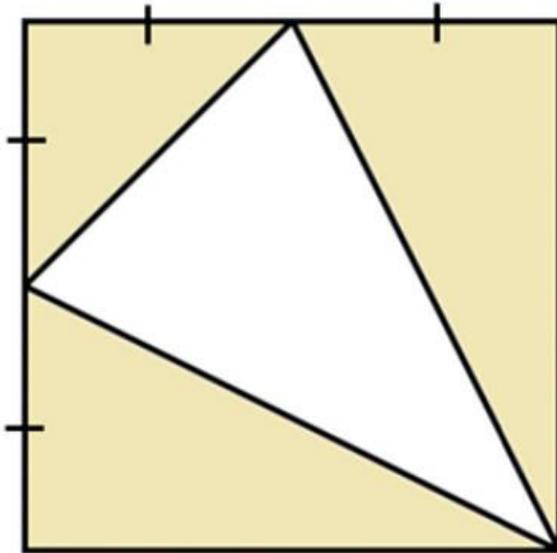
He uses them to make different towers. He measures the height of each tower he makes.



Liam stacks all three shapes to make one tall tower. How tall is the tower?

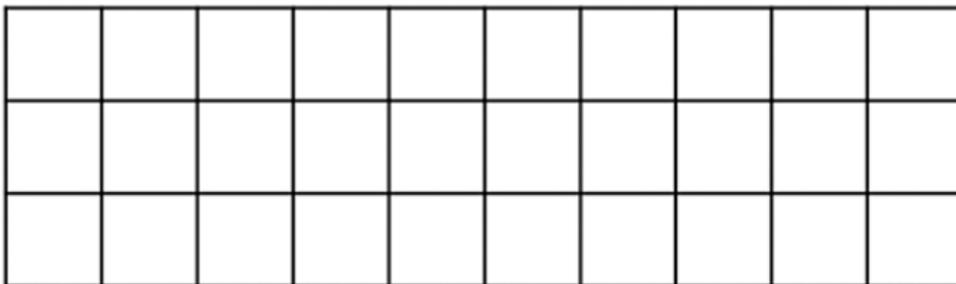
Challenge 7

The diagram shows a square. The square has been divided into 4 triangles. What fraction of the square is shaded?



Challenge 8

Lisa has this squared grid.



She shades some squares green so that the ratio of green squares to white squares is **1:2**.

She shades some more squares green so that the ratio of green squares to white squares is **4:1**.

How many more squares did Lisa need to shade?

Challenge 9

Mo is reading a book.

- On Monday he reads $\frac{2}{5}$ of the book.
- On Tuesday he reads $\frac{1}{2}$ of the remaining pages.
- On Wednesday he reads $\frac{5}{9}$ of the remaining pages.
- On Thursday he reads the rest of the book.

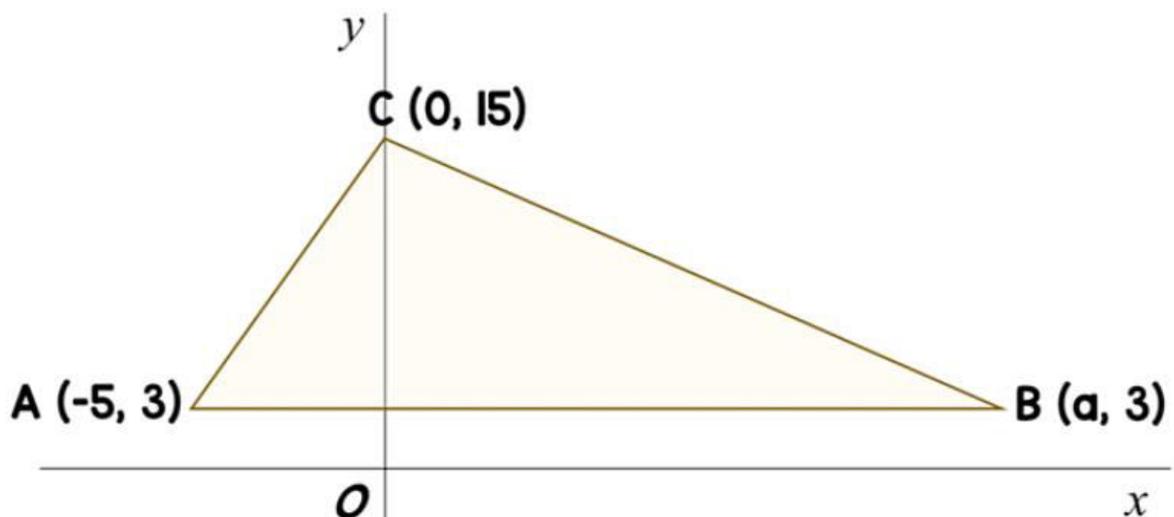
Mo read 68 more pages on Tuesday than Wednesday.

How many pages are there in the book?



Challenge 10

Triangle ABC is shown.



The area of ABC is 126 units².

Find the perimeter of triangle ABC.

Week 1: Special Places

A Special Place

<https://www.youtube.com/watch?v=IO8v1yFoAwo>

Watch this clip. How can we tell how Lucy feels?

Thinking Harder

- o A special place I'd love to visit is..... because.....
- o A place where I feel very good is..... because.....
- o A place that is sacred for others, but not for me is.....
- o Some people think the whole earth is sacred because..... I think.....
- o I believe that religious buildings are all sacred / are not all sacred because.....

Complete these sentences with your opinions.



How can we tell that these 4 different centres of faith are important to their believers?

Week 2: How do Mosque places of worship express Islamic Beliefs and values. What makes a fine mosque?

Activity 1

There are over 1750 mosques in Britain. Below are 9 reasons for so many. Try to rank these numbered explanations in order of importance. Cutting them out may help if you can.

1 Every religion has a holy building of its own, and Muslims like to build their own buildings to worship Allah.	2 Muslim people have moved to Britain from all over the world in the last 50 years. They have opened mosques to keep their communities strong.	3 The Prophet Muhammad built mosques wherever he went, so Muslim followers today do the same. It is about following the Prophet's example.
4 There are thousands of British Muslims born and bred in this country. They give generously to help the poor, and also to build local mosques.	5 If you are a small or minority community, religion is a way of 'sticking together' and a mosque matters as a focus for this.	6 The Prophet said "Whoever builds a mosque for Allah – though it be the size of the ground nest of a sandgrouse – Allah will build for him a house in Paradise."
7 Praying together is easier than praying on your own.	8 Any community likes to have a place to meet and share their life. A mosque is for the whole Ummah to share.	9 The mosque is a symbol of Muslim identity and belonging.

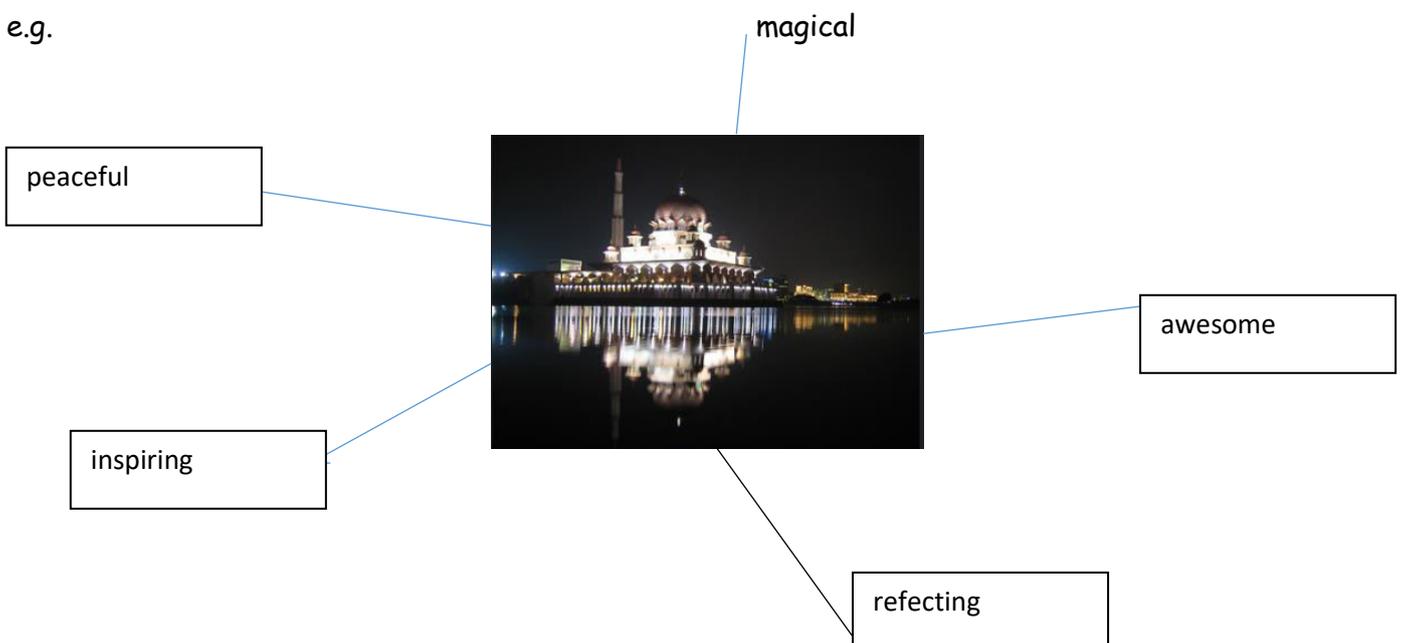
Activity 2

Download 6 pictures from this website of different mosques.

<https://www.safesearchkids.com/safe-image-search/#.XqFn3WhKjIU>

Label them with 5 words to either describe them or to explain how they make you feel

e.g.



YEAR 6

TERM 5

Is it better to express your religion in arts and architecture or in charity and generosity?

Week 3 Poetry about faith.

*“He in his essence is one, without any partner.
Single without any similar
Eternal without any opposite.
Separate without any like
He is one, prior with nothing before him
From eternity without any beginning
Abiding in existence without any after him
To eternity without an end
Subsisting without ending
Abiding without termination
Measure does not bind him
Boundaries do not contain him.”
Al Ghazali*

.This poem was written nearly 1000 years ago about the beliefs of Allah/God.

Your challenge today is to write/type 12 lines of what your believe/hope for about yourself and your world. It does not have to rhyme!

e.g

I am glad that I am me.

There is nothing else like me

And I celebrate what I am good at and try to better my weaknesses

The world needs me

And I need this wonderful, confusing and awesome world.

The only thing that can make me happen is me

The only thing that can stop me is me.

My family and loved ones are so precious to me

And I to them.

I will do all in my power

To make them proud

And to be me

Why don't you try to present it as a poster or something you can hang and celebrate-you are special!



TalkforWriting

Year 6

Talk for Writing Home-school booklet

Doors – the world of possibility

by Jamie Thomas



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www.talk4writing.com



Doors

-the world of possibility

Year 6 Workbook

by Jamie Thomas



Introduction

Have you ever looked at a door and wondered what might be on the other side? Where may it lead? What may be hiding within? At first glance, a door is just a piece of wood, glass or metal that is opened and closed so that people can get in and out of a room, a vehicle or a space. But in the hands of a writer, a door represents a world of possibility, a world where things are not only hidden but often closed off and restricted. Together, through poetry, text games and narrative, we shall explore the potential that a door offers to you, the writer.



Activity 1: The world we live in

As I write this, the world is in lockdown, shut behind doors for our own safety and the safety of everyone else. Covid-19 has closed schools, closed shops and temporarily closed some of the things we take for granted, like playing in the park with our friends.

★ **Make a list of all the things that you miss doing. You may like to think about some of the following categories:**

- seeing family
- seeing friends
- day to day things
- playing sports
- exploring your interests
- places you love to visit

Throughout these sessions, you may like to use these personal reflections to inspire and influence your writing.

Activity 2: I opened the magical door and saw ...

This is an idea inspired by Kit Wright's poem 'The Magic Box' (you could search for this on the internet to read his poem). In the poem, Kit imagines what may be contained inside a magical box. We can use this idea to connect to what could be behind the magical door.

★ **Before you begin, brainstorm a list of ideas for what might be behind the door. Let your imagination run wild as there is no wrong answer. Once you have your list, have a go at writing a poem, using the repeating opener: *I opened the magical door and saw ...***

Here's an example to help you get going:

I opened the magical door and saw shadows dancing.

I opened the magical door and saw a rainbow leading to another world.

I opened the magical door and saw people crying.

I opened the magical door and saw a magical fairground flooded in lights.

Once you have got your ideas, go back and see if you can add to them. You could add more description or bring the thing to life through action, e.g.

I opened the magical door and saw a shoal of hungry shadows, tangoing through busy streets.

★ Have fun adding to your ideas and let your imagination run wild. Have a read of this poem I created with some Y6 children to help you get ideas:

The Magical Door

I opened the magical door and saw ...
a world turned upside down:
the sea, now a floating ceiling,
the clouds, an inviting carpet.

I opened the magical door and saw ...
the reflection of myself:
standing, searching, staring,
questioning how this was possible.

I opened the magical door and saw ...
a sweet-treat paradise:
clouds of candy floss,
drifting across a bubble gum sky.

I opened the magical door and saw ...
a field of waves:
blue potatoes were leaping,
playing in white foam,
as puzzled farmers watched from sunny shores

I opened the magical door and saw ...
The image of a street I used to know,
But as I entered, everything changed;
As I reached out, everything had gone.



continued ...

I opened the magical door and saw ...

A forest of mirrors,
surrounding me in dazzling white light,
leading me into a world of mystery.

I opened the magical door and saw...

A feast of my favourite foods
Guarded by monster chips
Waiting to fight off all invaders.

I opened the magical door and saw ...

Monstrous mobile phones
Herding people into little houses
And laughing, laughing, laughing.

I opened the magical door and saw...

The future.

- ★ Reread what you have written and change some of the words so that it says exactly what you want it to say. You may want to look at the writing challenge below and add in some of these ideas.

Writing Challenge:

- ★ Can you explore more of the senses? You may like to try the following pattern:

I opened the magical door and saw ...
I opened the magical door and heard ...
I opened the magical door and smelt ...
I opened the magical door and touched ...
I opened the magical door and found ...

Activity 3: Artistic challenge

Doors are not only exciting for what may lie behind them, they can be designed to invite you into their world. A few years ago, a derelict area of Funchal in Madeira was transformed by local artists who decided to bring the dead doors to life. The beauty of the art opened new doors, and soon homes, shops and restaurants flourished there. Here are a few of those doors.



★ Have a go at drawing, painting or creating your own door. What design would you choose? What would it represent?

Activity 4: Idioms

An idiom is a common word or phrase which means something different from its literal meaning but can be understood because of its popular use, e.g.

Idiom	Meaning
Beat around the bush	Avoid saying what you mean, usually because it is uncomfortable
Bite the bullet 	To get something over with because it is inevitable

★ Below is a list of idioms about doors. Can you work out what they mean?

Idiom	Meaning
as one door closes, another opens	
at death's door	
behind closed doors	
through the back door	
dead as a doornail	
foot in the door	
keep the wolf from the door	
knocking on heaven's door	
leave the door open	
show somebody the door	
slam the door in somebody's face	

Activity 5: 'The Door'

In this session, we are going to consider the importance of fluency and expression when we read. Begin by reading Miroslav Holub's poem *The Door*. You may like to listen to these two contrasting performances:

<https://www.youtube.com/watch?v=bazJvnuOLMM>

<https://www.bbc.co.uk/programmes/p011kx3r>

★ **Decide which reading you prefer and why and jot down your response.**



Now make some notes on the poem:

- What did you like about the poem? What was your favourite line and why?
- How did the poem make you feel?
- Which line in the poem did you find the most interesting and why?
- Are there any parts of the poem that leave you with unanswered questions?
- What questions would you like to ask the poet, Miroslav Holub?

★ **Decide how you would perform this out loud and have a go at performing at home.**

The Door

by Miroslav Holub

Go and open the door.
Maybe outside there's
a tree, or a wood,
a garden,
or a magic city.
Go and open the door.
Maybe a dog's rummaging.
Maybe you'll see a face,
or an eye,
or the picture
of a picture.

Go and open the door.
If there's a fog
it will clear.

Go and open the door.
Even if there's only
the darkness ticking,
even if there's only
the hollow wind,
even if
nothing
is there,
go and open the door.

At least
there'll be
a draught.

Miroslav Holub, 'The door' trans. Ian Milner, *Poems Before & After: Collected English Translations* (Bloodaxe Books, 2006)
www.bloodaxebooks.com

★ Activity 6: Comprehension

Read this extract from *The Snow-Walker's Son* by Catherine Fisher. You can listen to the extract here: <https://soundcloud.com/talkforwriting/doors>

The door was the last one in the corridor.

As the flames flickered over it, they showed it was barred; a hefty iron chain hung across it, and the mud floor beneath was red with rust that had flaked off in the long years of locking and unlocking.

The keeper hung his lantern on a nail, took the key from a dirty string around his neck, and fitted it into the keyhole. Then he looked behind him.

'Get on with it!' the big man growled. 'Let me see what she keeps in there!'

The keeper grinned; he knew fear when he heard it. With both hands he turned the key, then tugged out the red chain in a shower of rust and pushed the door. It opened, just a fraction. Darkness and a damp smell oozed through the black slit.

He stepped well back, handed the stranger the lantern, and jerked his head. He had no tongue to speak with; she'd made sure he kept her secrets.

The stranger hesitated; a draught moved his hair and he gazed back up the stone passageway as if he longed suddenly for warmth and light. And from what I've heard, the keeper thought, you won't be seeing much of those ever again.

Then the man held up the lantern and pushed the door. The keeper watched his face intently in the red glow, and his great hand, as it clutched a luck-stone that swung at his neck. The man went in, slowly. The door closed.

© Catherine Fisher 2011 from *The Snow Walker's Son*, published by Red Fox, by permission of the author.

1. ***The door was the last one in the corridor.***

What is the significance of the word *last*? Can you think of another context where the word *last* has a significant meaning? e.g. *the last chance*.

2. How do the opening lines (highlighted above) set the mood of the story? What are your immediate impressions?

3. Having spent a great deal of time reflecting on the significance of doors and their appearance, what does this description suggest to you?

4. Why has Fisher described the iron chain as being 'hefty'? What could the significance of this word be in the context of the story?

5. ***Darkness and a damp smell oozed through the black slit.***

How does this make you feel as a reader? What is the relevance of both darkness and a damp smell? Do either of these surprise you; if so, why?

Activity 7: Grammar & Sentence Work

a. Pattern of three:

Fisher uses the **pattern of three** actions in a sentence to advance the action and inject a sense of pace into her writing. This helps to balance description, action and dialogue. e.g.

- The keeper **hung** his lantern on a nail, **took** the key from a dirty string around his neck, and **fitted** it into the keyhole.
- With both hands he **turned** the key, then **tugged** out the red chain in a shower of rust and **pushed** the door.
- He **stepped** well back, **handed** the stranger the lantern, and **jerked** his head.

★ Can you come up with three of your own sentences using this skill?

b. Semicolon for independent clauses

A semicolon can be used between independent clauses that are closely related in theme. In the following sentences, Catherine Fisher chooses to use semicolons in both of these sentences rather than using a joining word (conjunction) like *because*.

- The keeper grinned; he knew fear when he heard it.
- He had no tongue to speak with; she'd made sure he kept her secrets.

★ In your opinion, why has she made this choice and what impact does it have on you as the reader?

★ Can you write two or three sentences of your own that illustrate the power of the semicolon over the use of a conjunction?

c. Adverbs – roving reporters

In the sentences below, the adverb 'slowly' is used to describe how the man enters the room. Adverbs are like roving reporters – they can be moved around the sentence, e.g.

- a. The man went in, slowly
- b. Slowly, the man went in.
- c. The man went slowly in.
- d. The man slowly went in.



By changing the position of the adverb, we can often either alter the meaning or add emphasis to a sentence. In this instance, by placing the *slowly* at the end, we infer that the character has a heightened awareness of the situation they are in and therefore deliberately enters with caution.

★ Try playing around with the adverb position in the following sentences. Consider how it alters the meaning and where the emphasis is best placed.

1. Cautiously, Samantha crept towards the door that stood before her.

2. Sadly, the boy stared out of the window.

★ Now try this out with a sentence of your own.

Activity 8: Through the eyes of a character



One of the things I love exploring when I'm writing is what must be going on in a character's mind. Whenever I read great portal stories, I always try to put myself into the shoes of the character, to try to imagine how they must be feeling as they discover this passageway to a new world. How must Alice have been feeling as she fell through the never-ending tunnel into Wonderland?

First, think of your character – it's easier if you base this on someone you know.

- What are they called?
- What do they look like?
- What sort of a person are they (miserable/friendly/kind/aggressive)?
- What do they say?
- What do they do?
- How do they treat other people?
- How do other people treat them?

Now compose a short piece of descriptive writing based on seeing a mysterious door through the eyes of your character. To do this, we will use a simple opener to drop the reader straight into the action:

Samantha stared. ...

Ali hesitated. ...

We will also try to use some of the tools we explored in *The Snow Walker's Son*. Look at this example:

Samantha stared. There, rising out of the cliff, was an unfamiliar door; its metallic panels were tarnished in rust. Paint flaked off the brittle walls that made up its frame and the door handle rattled in the bitter breeze. Slowly, Samantha gazed all around her, took a deep breath and stepped forward.

Here are the tools I used:

<ul style="list-style-type: none"> Show the setting through the eyes of the main character (MC) 	Samantha stared.
<ul style="list-style-type: none"> Describe the door/portal. (You may like to use two sentences that are closely linked in meaning and connect them with a semicolon.) 	There, rising out of the cliff, was an unfamiliar door; its metallic panels were tarnished in rust.
<ul style="list-style-type: none"> Add some more detail. 	Paint flaked off the brittle walls that made up its frame and the door handle rattled in the bitter breeze.
<ul style="list-style-type: none"> Include an adverb to hint at how the MC feels. Remember, you can move the position within the sentence. 	Slowly,
<ul style="list-style-type: none"> Use the pattern of three to advance the action and inject a sense of pace into your writing. 	Samantha gazed all around her, took a deep breath and stepped forward.



★ **Now Imagine your main character is walking along the road when they come across a mysterious doorway. Describe this through their eyes. Use my model above to help you.**

Session 9: Planning a portal story

Nearly all portal stories follow a similar pattern:

• Main character (MC) finds magical portal & enters new world
• Describe new world
• MC explores this new world & encounters a problem
• MC has to escape & return through the portal
• MC cannot find portal again (sometimes brings back a memento of new world)

Once you have identified the pattern of the story, the possibilities are endless. Let your imagination run free. Brainstorm lots of ideas and then decide which captures your interest as a writer. Before you start, take a look at my top tips.

Top tips for story writing:

- **Start in a world/a setting that you know well** – it is far easier to describe something familiar to you, e.g. a garden, your school, your local town, etc.
- **Use a stimulus (e.g. picture) for the new world** – an image will help you focus in on the detail and describe what is there.
- **Let your ideas flow** – don't worry about spelling, handwriting or presentation ... you can go back and edit this later.

Here are a couple of ideas to open your mind to the world of possibility:

Underlying Pattern	Story idea 1	Story idea 2
Main character (MC) finds magical portal and enters new world	Elif is playing in her Grandmother's garden and notices a small fairy door. Touches door and shrinks/ enters.	Josh and Archie playing hide and seek in their house. Archie opens hatch in the roof and discovers new world.

Describe new world	Arrives in an underground world full of caves, giant toadstools and magical creatures.	Transported to life onboard an enormous sailing ship in Tudor England.
MC explores new world and encounters a problem	Elif explores new world and enters an area strictly forbidden. Picks magical flower.	Ship is thrown into battle.
MC has to escape and return through the portal	Alarms sound and Elif runs. She is chased through the magical world by unknown threat and escapes.	Archie desperately searches for portal and way back to own world.
MC cannot find portal again (sometimes has brought back a memento of new world)	Elif cannot find fairy door again, but the cut flower lives on forever reminding her of her journey.	Archie escapes with small pouch of gunpowder in his pocket.

★ Using this underlying pattern, plan a few portal stories of your own. You may like to draw upon your own personal experience as well as your wider reading and imagination. I have also included two pictures in case they help you.



Session 10: Writing your own story

You now have all of the tools required to write your own portal story. You may like to write about a more traditional portal that leads you to a magical world, or you may prefer to draw upon your personal experiences, as we have explored throughout this unit.

To recap on all the key points we've been learning:

- a. **Describe the portal in detail.** You may want to show the portal through the eyes of the main character.
- b. **Think about what lies on the other side of the door.** Allow yourself the opportunity to write about what interests you and what is important to you.
- c. **Great writers steal ideas ('magpie') from other great writers.** Reflect upon the portal stories that you have loved reading and consider what made these so engaging. Try to bring in some of these skills and techniques into your own work.
- d. **Enjoy it.** Writing is all about sharing a passion for words, stories and the world of possibility. If you love the story you are writing – so too will your reader.

★ **Now write your portal story, drawing on all that you have learned. Don't forget to share or publish your work – great writing deserves an audience!**



This workbook has helped me learn ...

Happy reading and writing!



© Jamie Thomas for Talk for Writing

Jamie Thomas, former Deputy Head and Head of Warren Teaching School Alliance, now works with Talk for Writing to help schools develop the approach.

To find out more about Talk for Writing, visit www.talk4writing.com.

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Thanks to Jon Ralphs for the cartoons: jonralphs.com

Thanks again to Catherine Fisher for granting us permission to use the extract from *The Snow-Walker's Son*



Focus: Consolidating

Look Say Cover Write Check

Spellings	1 st Attempt	2 nd Attempt	3 rd Attempt	4 th Attempt	5 th Attempt
<i>disappointment</i>					
<i>opportunity</i>					
<i>explanation</i>					
<i>enthusiasm</i>					
<i>apprehension</i>					
<i>opportunity</i>					
<i>re-enter</i>					
<i>re-form</i>					
<i>exaggerate</i>					
<i>independent</i>					
<i>happiness</i>					
<i>speculation</i>					



Focus: Consolidating

Look Say Cover Write Check

Spellings	1 st Attempt	2 nd Attempt	3 rd Attempt	4 th Attempt	5 th Attempt
<i>co-ordinate</i>					
<i>suspicious</i>					
<i>accommodate</i>					
<i>accommodation</i>					
<i>embarrass</i>					
<i>confidential</i>					
<i>commercial</i>					
<i>recommend</i>					
<i>significance</i>					
<i>ferocious</i>					
<i>de-ice</i>					
<i>re-examine</i>					



Focus: Consolidating

Look Say Cover Write Check

Spellings	1 st Attempt	2 nd Attempt	3 rd Attempt	4 th Attempt	5 th Attempt
<i>parliament</i>					
<i>success</i>					
<i>willingness</i>					
<i>innocence</i>					
<i>appearance</i>					
<i>recommend</i>					
<i>co-operate</i>					
<i>aggressive</i>					
<i>co-own</i>					
<i>re-educate</i>					
<i>determination</i>					
<i>enhancement</i>					
<i>disastrous</i>					



Focus: Consolidating

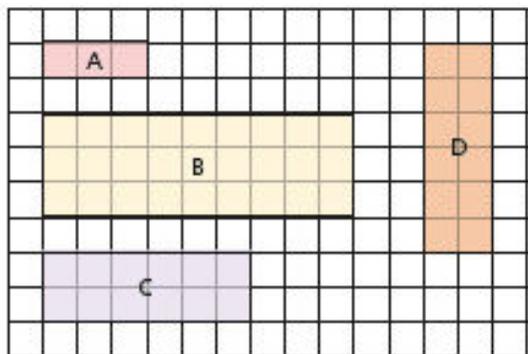
Look Say Cover Write Check

Spellings	1 st Attempt	2 nd Attempt	3 rd Attempt	4 th Attempt	5 th Attempt
<i>aggressive</i>					
<i>graciousness</i>					
<i>appreciate</i>					
<i>consideration</i>					
<i>co-author</i>					
<i>disturbance</i>					
<i>successfully</i>					
<i>worthlessness</i>					
<i>programme</i>					
<i>co-pilot</i>					
<i>artificial</i>					
<i>frequently</i>					
<i>necessary</i>					



Calculating scale factors

1 Complete the sentences.

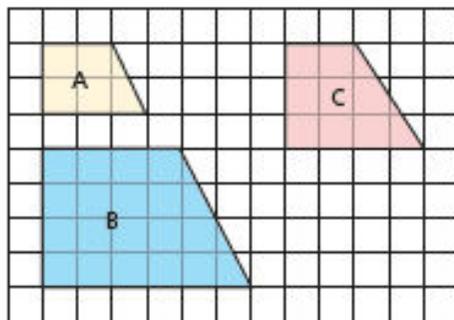


Shape B is an enlargement, by a scale factor of , of shape A.

Shape C is an enlargement, by a scale factor of , of shape A.

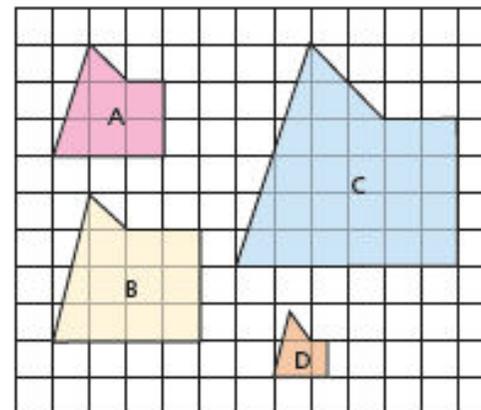
Shape D is an enlargement, by a scale factor of , of shape A.

2 Shape B is an enlargement of shape A. Shape C is not an enlargement of shape A.



Talk to a partner about why this is the case.

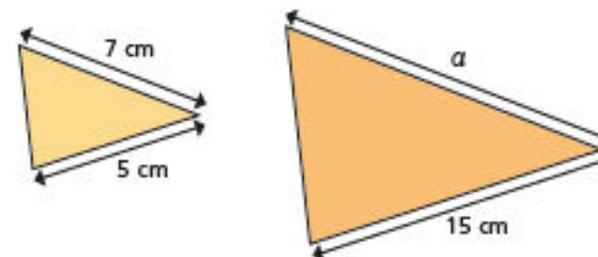
3 Tick all the shapes that are an enlargement of shape A.



How do you know which shapes are enlargements?

4 The two triangles are similar.

Find the length of a .

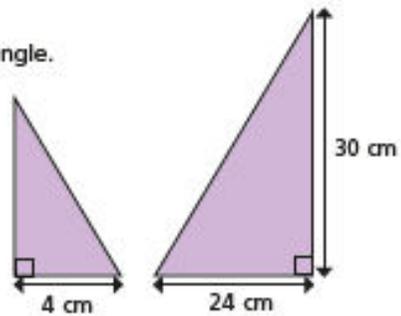


$a =$ cm



- 5 The two triangles are similar.

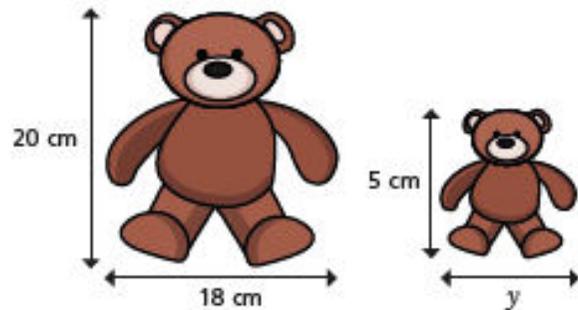
Find the area of the smaller triangle.



area = cm²

- 6 These two children's toys are similar.

Find the length marked y .

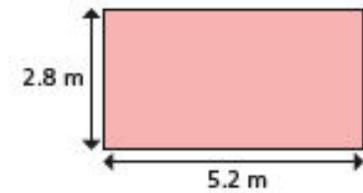


$y =$ cm

- 7 The rectangle is enlarged by a scale factor.

The perimeter of the enlarged rectangle is 64 m.

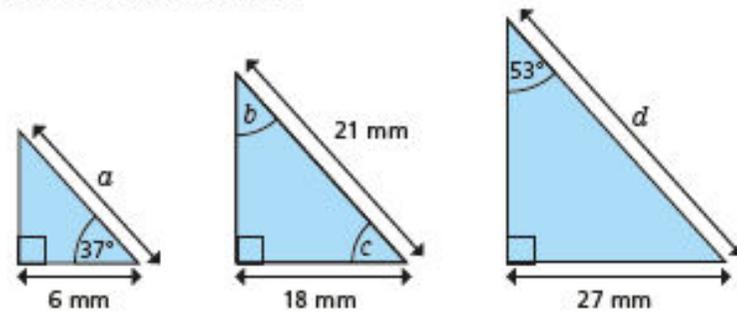
What is the scale factor of enlargement?



scale factor =

- 8 The diagram shows three similar triangles.

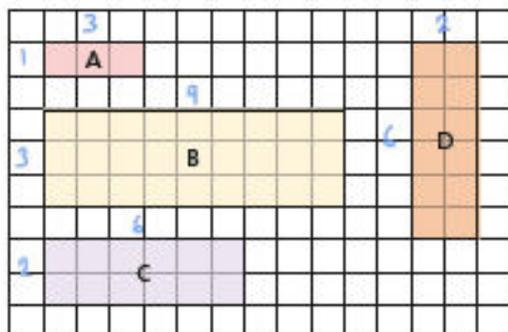
Calculate the missing values.



$a =$ $b =$ $c =$ $d =$

Calculating scale factors

- 1 Complete the sentences.

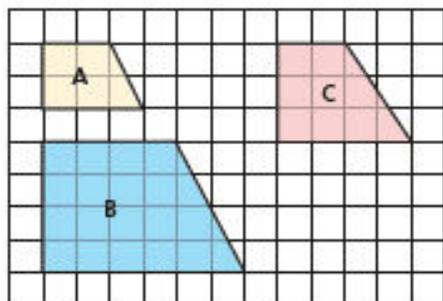


Shape B is an enlargement, by a scale factor of , of shape A.

Shape C is an enlargement, by a scale factor of , of shape A.

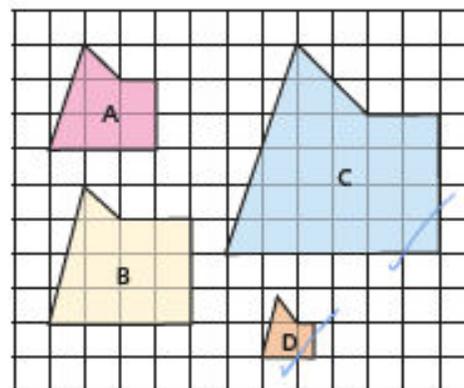
Shape D is an enlargement, by a scale factor of , of shape A.

- 2 Shape B is an enlargement of shape A. Shape C is not an enlargement of shape A.



Talk to a partner about why this is the case.

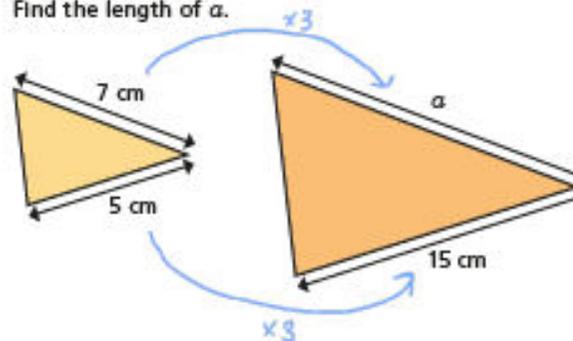
- 3 Tick all the shapes that are an enlargement of shape A.



How do you know which shapes are enlargements?

- 4 The two triangles are similar.

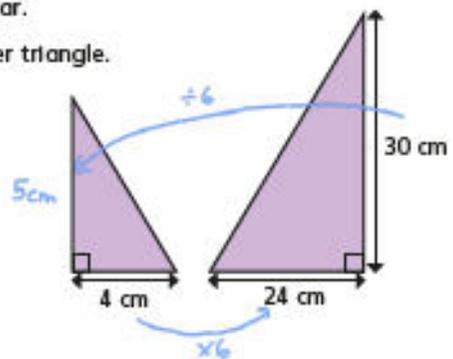
Find the length of a .



$$a = \text{21} \text{ cm}$$

- 5 The two triangles are similar.

Find the area of the smaller triangle.

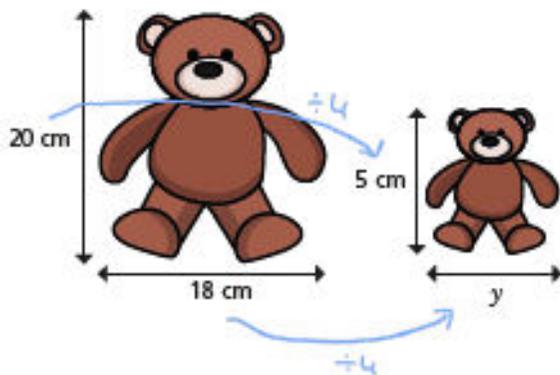


$$\frac{5 \text{ cm} \times 4 \text{ cm}}{2} = \frac{20 \text{ cm}^2}{2} = 10 \text{ cm}^2$$

area = cm^2

- 6 These two children's toys are similar.

Find the length marked y.

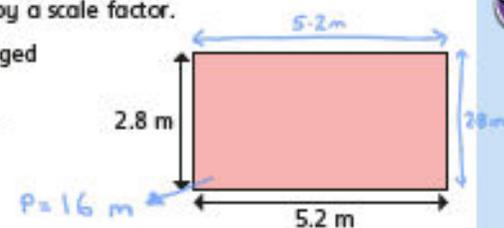


y = cm

- 7 The rectangle is enlarged by a scale factor.

The perimeter of the enlarged rectangle is 64 m.

What is the scale factor of enlargement?

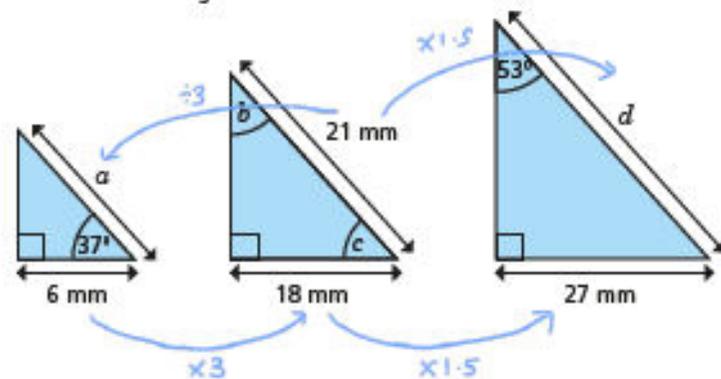


$$\frac{16 \text{ m}}{4} = 4 \text{ m}$$

scale factor =

- 8 The diagram shows three similar triangles.

Calculate the missing values.

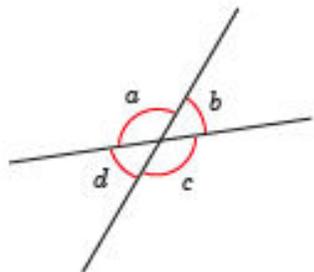


a = b = c = d =

Vertically opposite angles



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



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

b) What is the total of angles a and b ? \square
 Explain why.

Do any other pairs of angles have this same total?

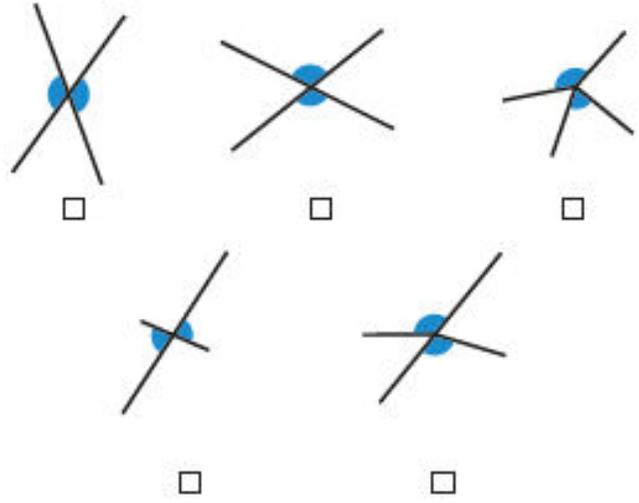
c) Angles a and c are vertically opposite angles.
 What do you notice about the sizes of angles a and c ?

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 _____

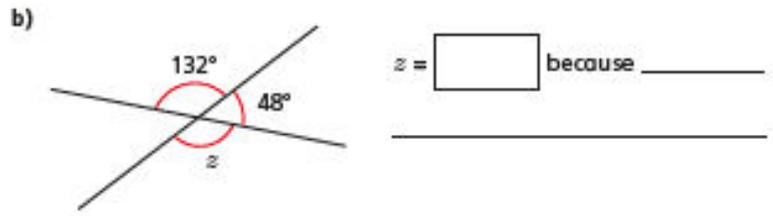
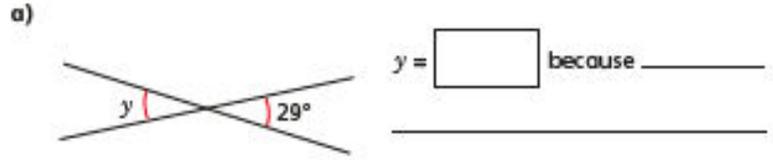


2 Tick the pairs of angles that are vertically opposite.

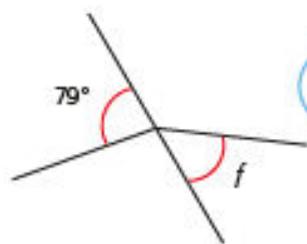


Compare answers with a partner.

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



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



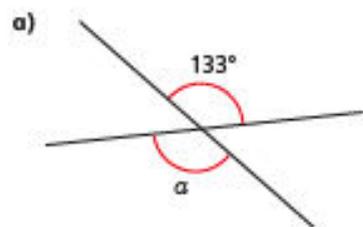
Angle f is equal to 79° because vertically opposite angles are equal.



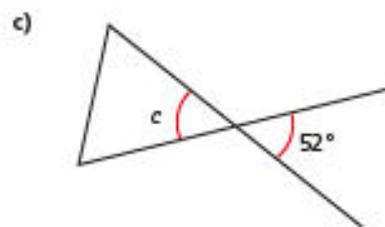
Do you agree with Annie? _____

Explain your answer.

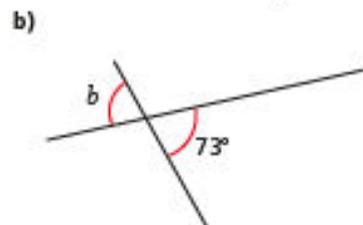
- 5 Work out the unknown angles.



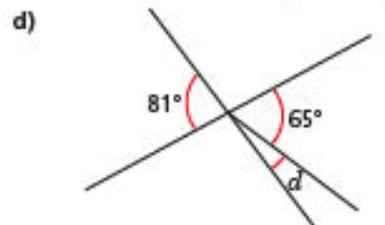
$a =$



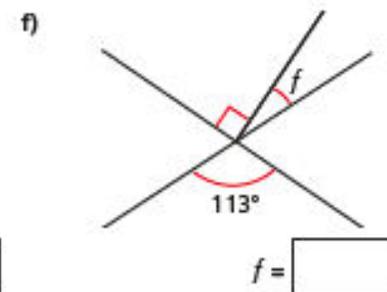
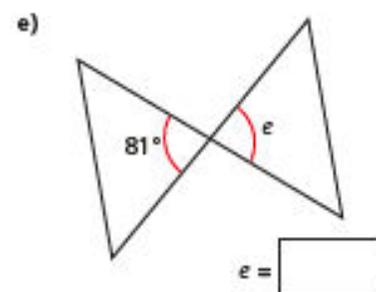
$c =$



$b =$

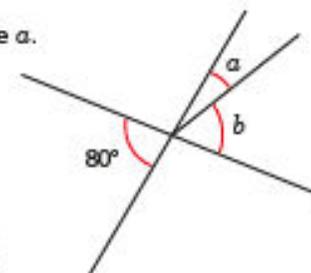


$d =$



Talk about your reasons with a partner.

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



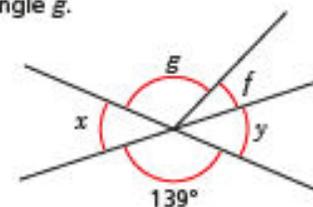
Work out the sizes of angles a and b .

$a =$

$b =$

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

Angle f is 28° .



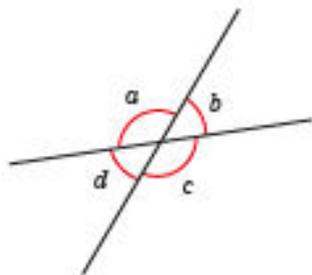
Are angles x and y vertically opposite? _____

Explain your answer.

Vertically opposite angles



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



a) Measure the sizes of the angles.

$a = 130^\circ$ $b = 50^\circ$ $c = 130^\circ$ $d = 50^\circ$

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

180°

Explain why.

Adjacent angles on a straight line sum to 180°

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 ?

They are equal.

d) Angles b and d are also vertically opposite angles.

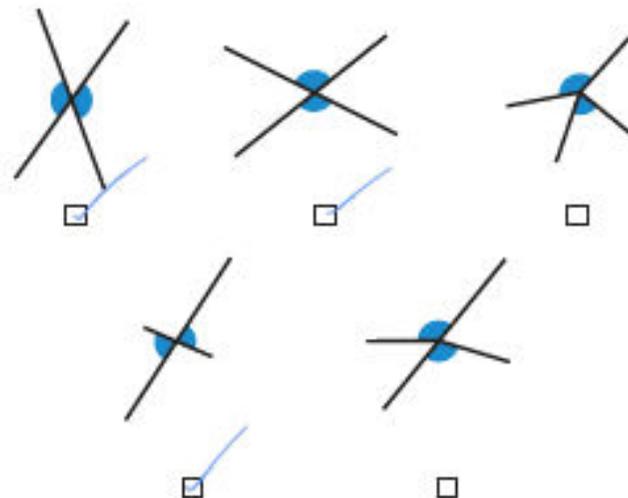
What do you notice about the sizes of angles b and d ?

They are equal.

e) Complete the sentence.

Vertically opposite angles are equal.

2 Tick the pairs of angles that are vertically opposite.

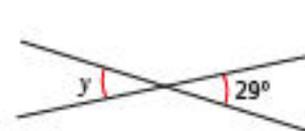


Compare answers with a partner.

3 Work out the sizes of the unknown angles.

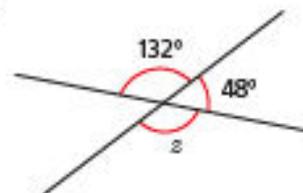
Give reasons for your answers.

a)



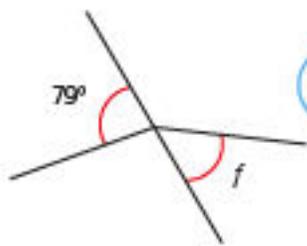
$y = 29^\circ$ because vertically opposite angles are equal.

b)



$z = 132^\circ$ because vertically opposite angles are equal.

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



Angle f is equal to 79° because vertically opposite angles are equal.

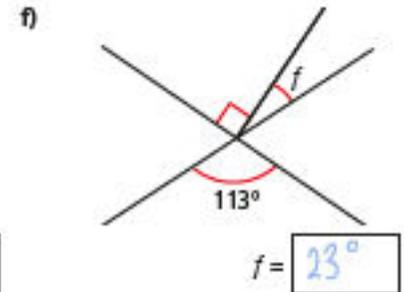
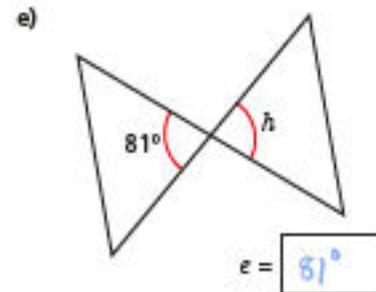
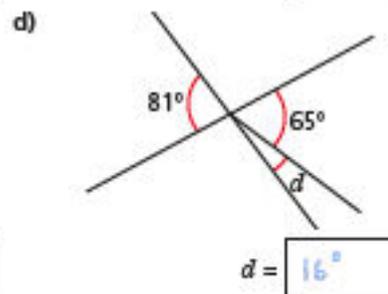
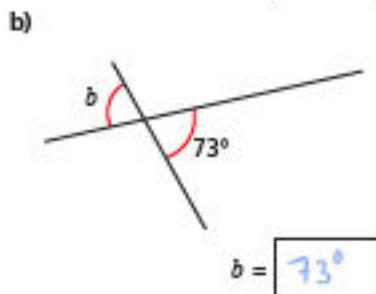
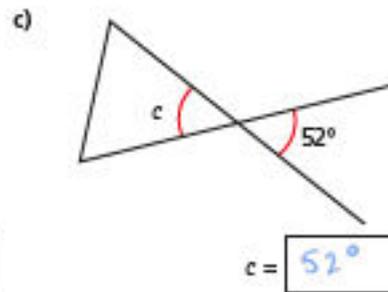
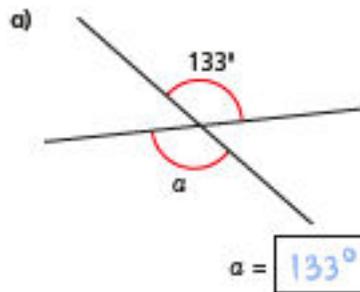


Do you agree with Annie? No

Explain your answer.

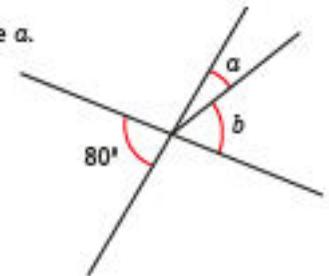
The diagram doesn't show two straight lines crossing so the angles are not vertically opposite.

- 5 Work out the unknown angles.



Talk about your reasons with a partner.

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

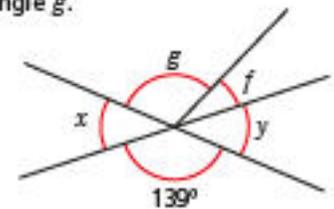


Work out the sizes of angles a and b .

$a = \boxed{20^\circ}$ $b = \boxed{60^\circ}$

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

Angle f is 28° .



Are angles x and y vertically opposite? No

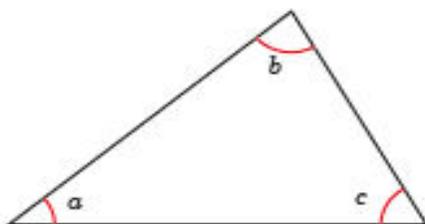
Explain your answer.

$28 \times 4 = 112$ so $g = 112^\circ$
 $112 + 28 = 140$

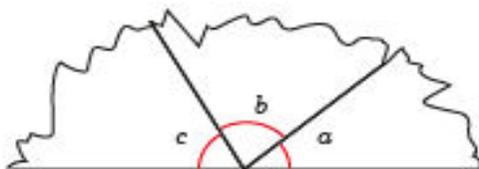
$139 \neq 140$ therefore the diagram does not show vertically opposite angles.

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 ?

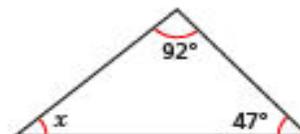
d) Complete the sentence.

Angles in a triangle _____

2 Work out the sizes of the unknown angles.

Give reasons for your answers.

a)



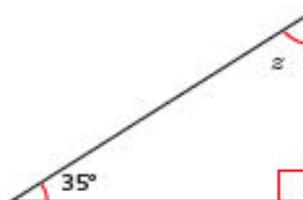
$x =$ because _____

b)



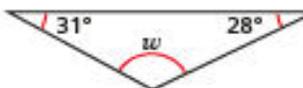
$y =$ because _____

c)



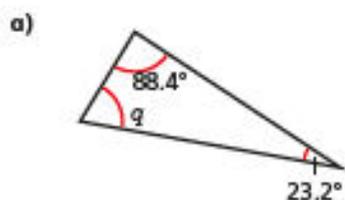
$z =$ because _____

d)

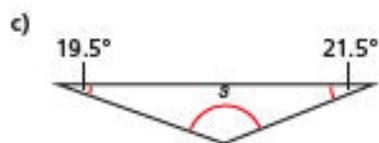


$w =$ because _____

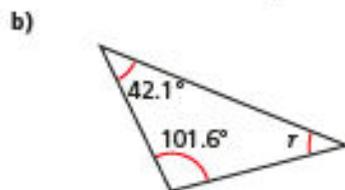
3 Work out the unknown angles.



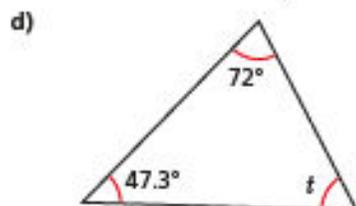
$q =$



$s =$



$r =$



$t =$

Discuss your reasons with a partner.



4 a) Two angles in a triangle are 42° and 57° .

What is the size of the third angle?

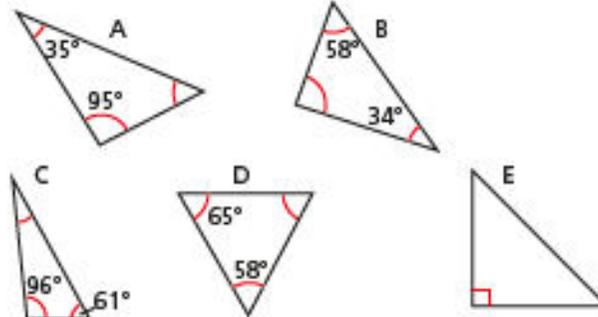
b) Two of the angles in a triangle are 12° .

What is the size of the third angle?

c) One of the angles in a triangle is 38° . Another angle is twice the size of the first angle.

What is the size of the third angle?

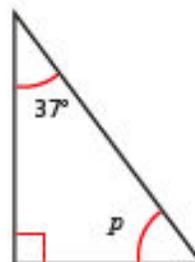
5 Sort the triangles into the table.



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° and $180 - 37 = 143$

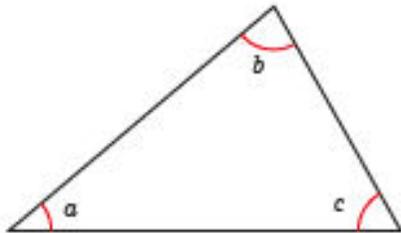


Do you agree with Ron? _____

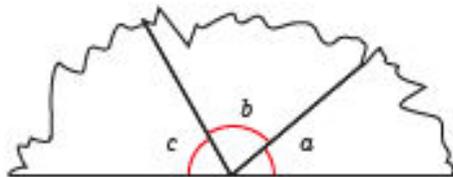
Explain your answer.

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?

180°

How do you know?

Adjacent angles on a straight line sum to 180°

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

$a = 40^\circ$

$b = 80^\circ$

$c = 60^\circ$

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

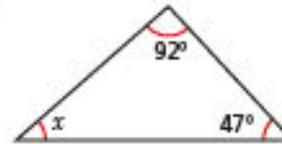
180°

d) Complete the sentence.

Angles in a triangle sum to 180°

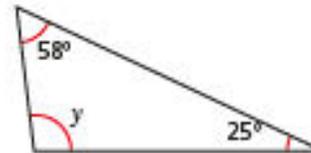
2 Work out the sizes of the unknown angles.
Give reasons for your answers.

a)



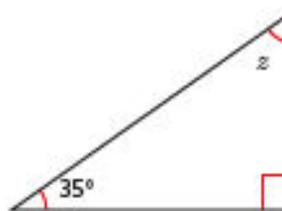
$x = 41^\circ$ because angles in a triangle sum to 180°

b)



$y = 97^\circ$ because angles in a triangle sum to 180°

d)



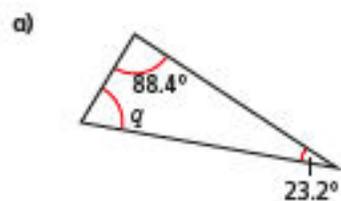
$z = 55^\circ$ because angles in a triangle sum to 180°

d)

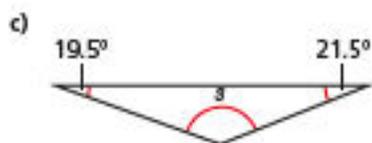


$w = 121^\circ$ because angles in a triangle sum to 180°

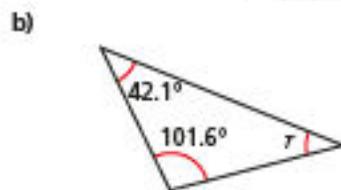
3 Work out the unknown angles.



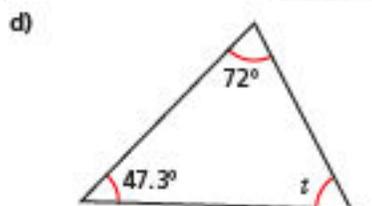
$q = 68.4^\circ$



$s = 159^\circ$



$r = 36.3^\circ$



$t = 60.7^\circ$

Discuss your reasons with a partner.

4 a) Two angles in a triangle are 42° and 57° .

What is the size of the third angle?

81°

b) Two of the angles in a triangle are 12° .

What is the size of the third angle?

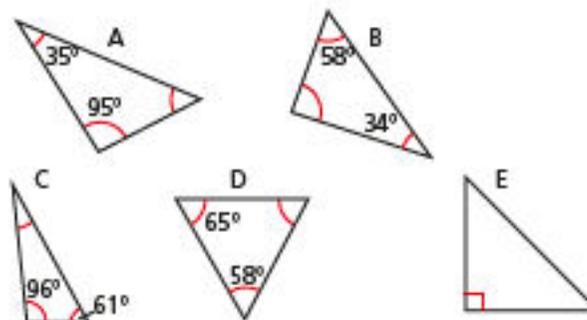
156°

c) One of the angles in a triangle is 38° . Another angle is twice the size of the first angle.

What is the size of the third angle?

66°

5 Sort the triangles into the table.

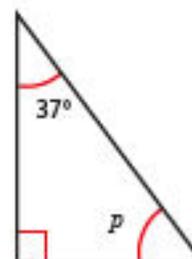


0 acute angles	1 acute angle	2 acute angles	3 acute angles
		A C E	B D

Are any of the columns empty? Why?

The sum of the angles in a triangle is 180° so there has to be at least 2 acute angles.

6



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



Do you agree with Ron? no

Explain your answer.

He hasn't included the right angle. $p = 53^\circ$

Ratio and proportion problems

1 Whitney buys 6 cans of lemonade for £3

a) How much do 12 cans cost?

b) How much do 3 cans cost?

c) How much do 15 cans cost?



2 The ratio of red to green grapes in a bowl is 3:1

a) Explain what this means.

b) There are 12 more red grapes than green grapes.

What is the total number of grapes in the bowl?

3 Amir is making some chocolate chip biscuits.

He has this list of ingredients to make 6 biscuits.

Chocolate chip biscuits (makes 6)

120 g butter

72 g sugar

180 g plain flour

60 g chocolate chips

a) How much of each ingredient does Amir need to make 2 biscuits?

butter g

plain flour g

sugar g

chocolate chips g

b) How much of each ingredient does Amir need to make 10 biscuits?

butter g

plain flour g

sugar g

chocolate chips g

c) Amir has 240 g of chocolate chips.

What is the maximum number of biscuits he can make?

- 4 Dexter has some 20p and 50p coins in a jar.
For every three 20p coins he has one 50p coin.
There are 12 coins in the jar in total.
How much money is in the jar?

- 5 A drink is made using 3 parts orange juice to 2 parts lemonade.
Esther makes 1.2 litres of this drink.
How much orange juice does she need?

 ml

- 6 Two shops sell the same cereal but in different-sized boxes.

Shop A 500 g of cornflakes £2.10	Shop B 750 g of cornflakes £3.30
---	---

Which shop is better value for money? Shop _____

Explain why.

- 7 Dora draws two similar rectangles.

My larger rectangle is
4 times the size of the
smaller one.



The perimeter of the
larger rectangle is 48 cm.

The length and width of both rectangles are even numbers.
What is the largest possible area for the small rectangle?

 cm²

- 8 Aisha has two boxes of sweets.

- In the first box, the ratio of red sweets to green sweets is 3:1
- In the second box, for every 2 orange sweets there are 3 yellow sweets.
- There is the same number of sweets in each box.
- There are 12 yellow sweets in the second box.

How many sweets are in the first box?

Ratio and proportion problems



1 Whitney buys 6 cans of lemonade for £3

a) How much do 12 cans cost?

£6

b) How much do 3 cans cost?

£1.50

c) How much do 15 cans cost?

£7.50



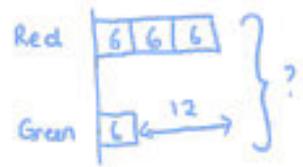
2 The ratio of red to green grapes in a bowl is 3:1

a) Explain what this means.

For every 3 red grapes there is 1 green grape.

b) There are 12 more red grapes than green grapes.

What is the total number of grapes in the bowl?



$12 \div 2 = 6$
 $4 \times 6 = 24$

24

3 Amir is making some chocolate chip biscuits.

He has this list of ingredients to make 6 biscuits.

Chocolate chip biscuits (makes 6)

120 g butter

72 g sugar

180 g plain flour

60 g chocolate chips

a) How much of each ingredient does Amir need to make 2 biscuits? $6 \div 3 = 2$

butter $\frac{120 \div 3}{40}$ g

plain flour $\frac{180 \div 3}{60}$ g

sugar $\frac{72 \div 3}{24}$ g

chocolate chips $\frac{60 \div 3}{20}$ g

b) How much of each ingredient does Amir need to make 10 biscuits? $2 \times 5 = 10$

butter $\frac{40 \times 3}{200}$ g

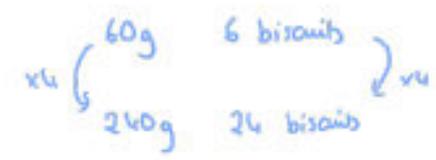
plain flour $\frac{60 \times 3}{300}$ g

sugar $\frac{24 \times 3}{120}$ g

chocolate chips $\frac{20 \times 3}{100}$ g

c) Amir has 240 g of chocolate chips.

What is the maximum number of biscuits he can make?



24

- 4 Dexter has some 20p and 50p coins in a jar.

For every three 20p coins he has one 50p coin.

There are 12 coins in the jar in total.

How much money is in the jar?

Handwritten solution for Question 4:

Diagram: A jar containing 9 20p coins and 3 50p coins. A bracket indicates a total of 12 coins.

Calculations:

$$12 \div 4 = 3$$

$$3 \times 3 = 9$$

$$9 \times 20p = \pounds 1.80$$

$$3 \times 50p = \pounds 1.50$$

$$\pounds 1.80 + \pounds 1.50 = \pounds 3.30$$

Answer: $\pounds 3.30$

- 5 A drink is made using 3 parts orange juice to 2 parts lemonade.

Esther makes 1.2 litres of this drink.

How much orange juice does she need?

Handwritten solution for Question 5:

Diagram: A large container labeled '1,200 ml' containing 3 parts orange juice (O) and 2 parts lemonade (L). The O part is divided into 3 smaller boxes, and the L part into 2 smaller boxes.

Calculations:

$$1,200 \div 5 = 240$$

$$3 \times 240 = 720$$

Answer: 720 ml

- 6 Two shops sell the same cereal but in different-sized boxes.

Shop A 500 g of cornflakes £2.10	Shop B 750 g of cornflakes £3.30
---	---

Which shop is better value for money? Shop A

Handwritten solution for Question 6:

Comparison of value per gram:

$$\frac{500g}{\pounds 2.10} \approx 238 \text{ g/}\pounds$$

$$\frac{750g}{\pounds 3.30} \approx 227 \text{ g/}\pounds$$

Since $238 > 227$, Shop A is better value.

Answer: Shop A

- 7 Dora draws two similar rectangles.

My larger rectangle is 4 times the size of the smaller one.



The perimeter of the larger rectangle is 48 cm.

The length and width of both rectangles are even numbers.

What is the largest possible area for the small rectangle?

Handwritten solution for Question 7:

Perimeter (larger) $48 \text{ cm} \div 4 = 12$

Perimeter (smaller) 12 cm



Answer: 8 cm^2

- 8 Aisha has two boxes of sweets.

- In the first box, the ratio of red sweets to green sweets is 3:1
- In the second box, for every 2 orange sweets there are 3 yellow sweets.
- There is the same number of sweets in each box.
- There are 12 yellow sweets in the second box.

How many sweets are in the first box?

Handwritten solution for Question 8:

Diagram 1: 1st box with 3 red (R) and 1 green (G) sweet.

Diagram 2: 2nd box with 4 orange (O) and 6 yellow (Y) sweets.

Calculations:

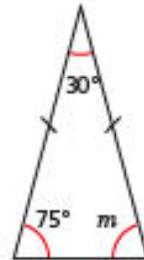
$$12 \div 3 = 4$$

$$5 \times 4 = 20$$

Answer: 20

Angles in a triangle – special cases

1 Here is a triangle.



a) What type of triangle is it?

How do you know?

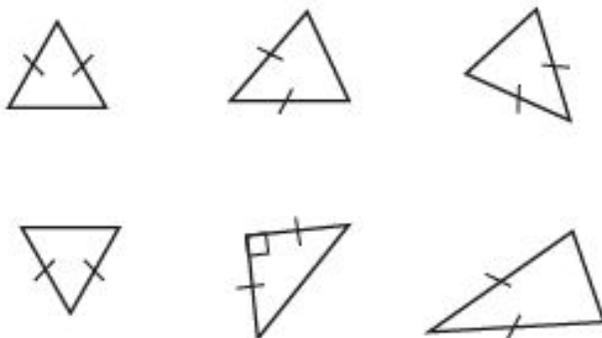
b) Work out the size of angle m .

c) What do you notice?

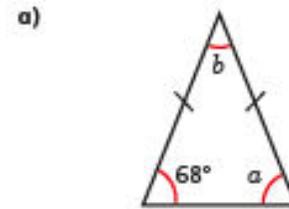
d) Complete the sentence to describe the angles in an isosceles triangle.

In an isosceles triangle _____

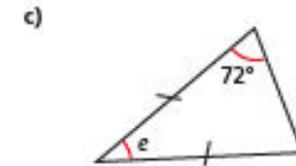
2 Identify and label the angles that will be equal in each triangle.



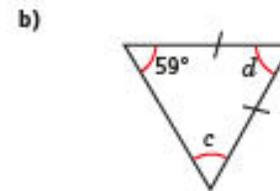
3 Work out the sizes of the unknown angles.



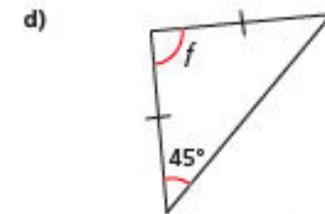
$a =$ $b =$



$e =$



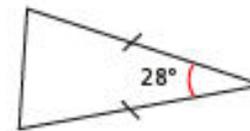
$c =$ $d =$



$f =$

Talk about your reasons with a partner.

4 Dexter is working out the unknown angles in triangles.



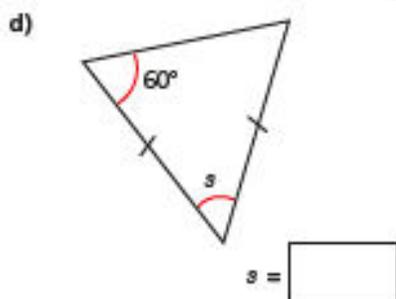
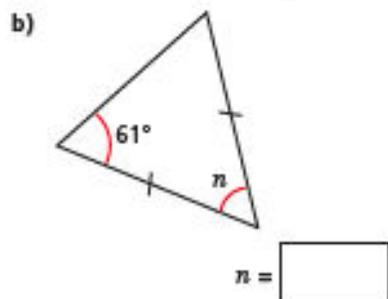
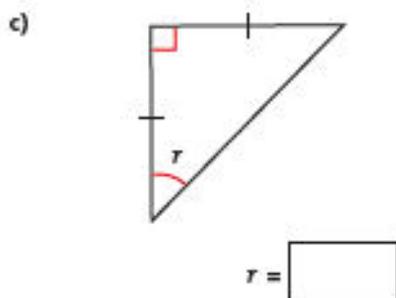
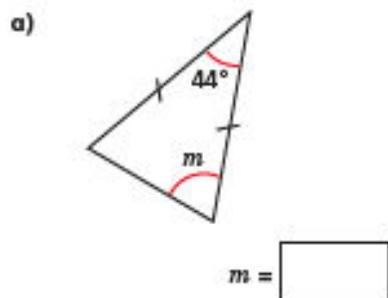
I can't work out either of the missing angles because I don't have enough information.



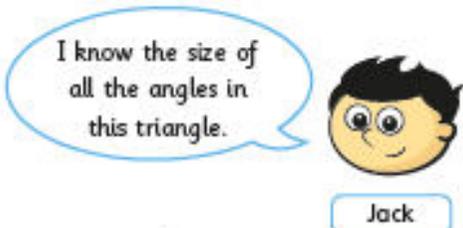
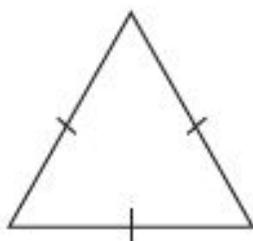
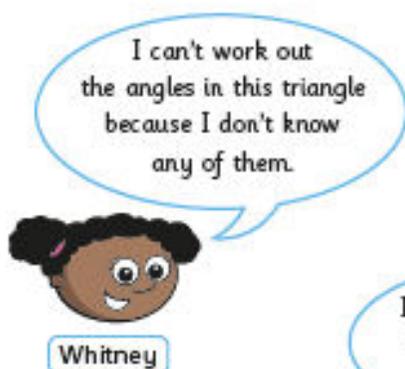
Do you agree with Dexter? _____

Explain your answer.

5 Work out the sizes of the unknown angles.



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



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° and 74° .

Is the triangle isosceles? _____

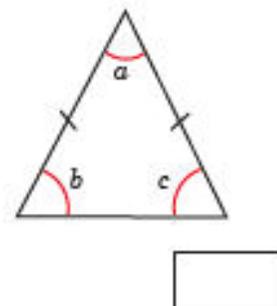
Show your workings.

9 One angle in an isosceles triangle is 29° .

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

10 Angle b is twice the size of angle a .

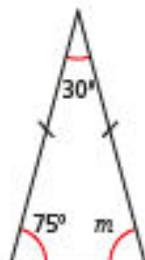
Work out the size of angle c .



Angles in a triangle – special cases



1 Here is a triangle.



a) What type of triangle is it?

Isosceles

How do you know?

There are two sides of equal length.

b) Work out the size of angle m .

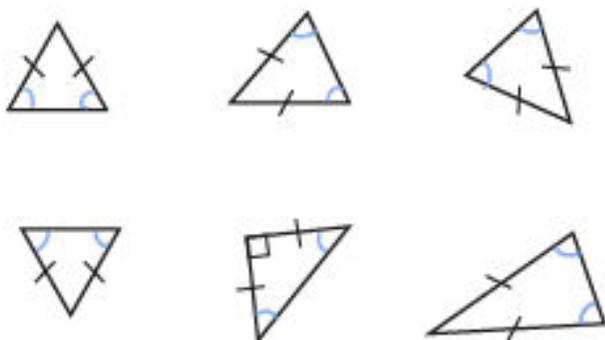
75°

c) What do you notice?

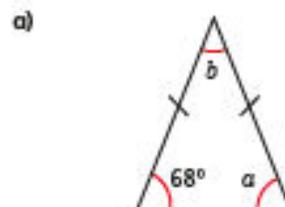
d) Complete the sentence to describe the angles in an isosceles triangle.

In an isosceles triangle two angles are equal.

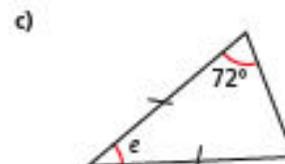
2 Identify and label the angles that will be equal in each triangle.



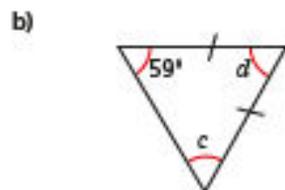
3 Work out the sizes of the unknown angles.



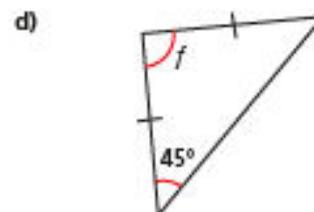
$a = 68^\circ$ $b = 44^\circ$



$e = 36^\circ$



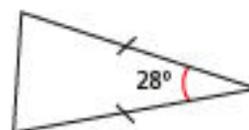
$c = 59^\circ$ $d = 62^\circ$



$f = 90^\circ$

Talk about your reasons with a partner.

4 Dexter is working out the unknown angles in triangles.



I can't work out either of the missing angles because I don't have enough information.

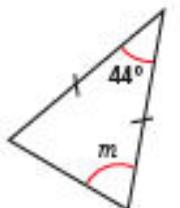
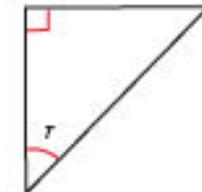


Do you agree with Dexter? No

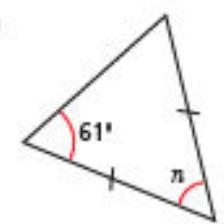
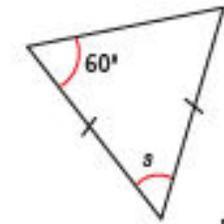
Explain your answer.

Both unmarked angles are equal so $180 - 28 = 152$ and $152 \div 2 = 76$. Each missing angle is 76° .

5 Work out the sizes of the unknown angles.

a)  c) 

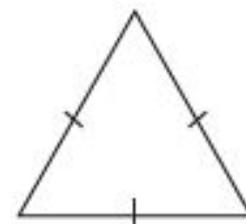
$m = 68^\circ$ $r = 45^\circ$

b)  d) 

$n = 58^\circ$ $s = 60^\circ$

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.



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

Whitney Jack

Who do you agree with? Jack

Talk about it with a partner.

7 Are the statements true or false?

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

Explain your answers to a partner.

8 Two angles in a triangle are 43° and 74° .

Is the triangle isosceles? no

Show your workings.

$$43 + 74 = 117$$

$$180 - 117 = 63$$

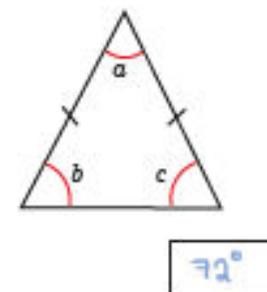
9 One angle in an isosceles triangle is 29° .

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

29° and 122° or 75.5° and 75.5°

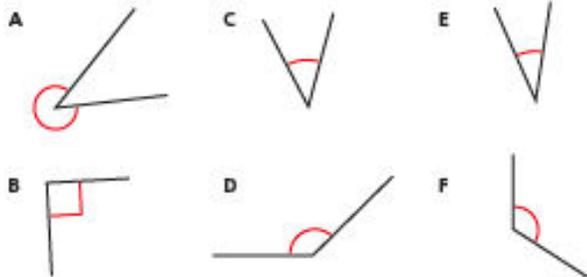
10 Angle b is twice the size of angle a .

Work out the size of angle c .



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.

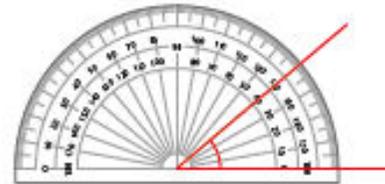
A	<input type="text"/>	C	<input type="text"/>	E	<input type="text"/>
B	<input type="text"/>	D	<input type="text"/>	F	<input type="text"/>

Compare answers with a partner.



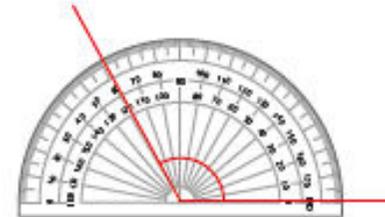
2 What is the size of each angle? Circle your answer.

a)



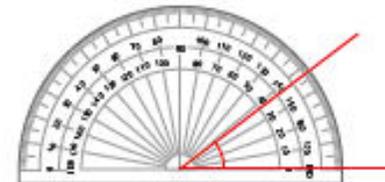
40° 140°

b)



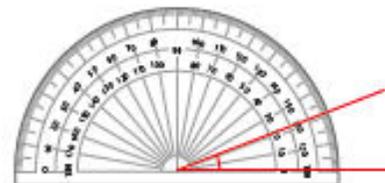
61° 119°

c)



37° 143°

d)

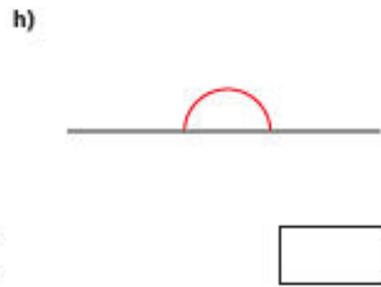
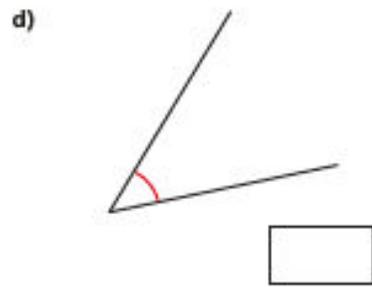
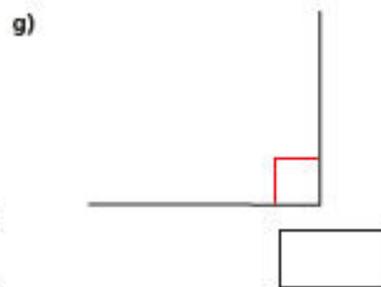
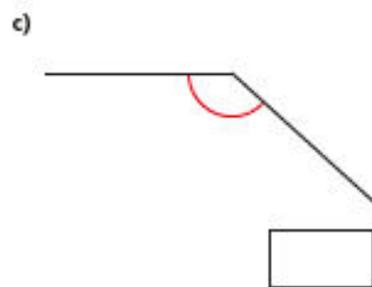
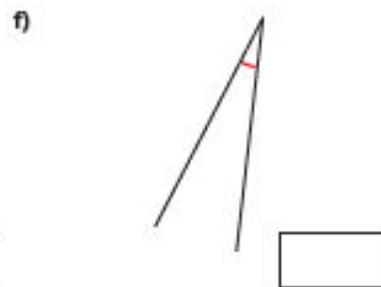
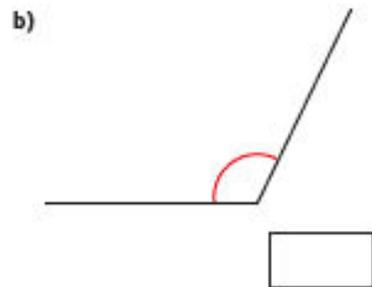
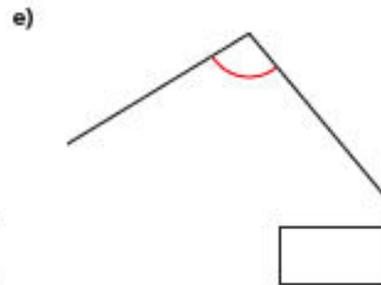
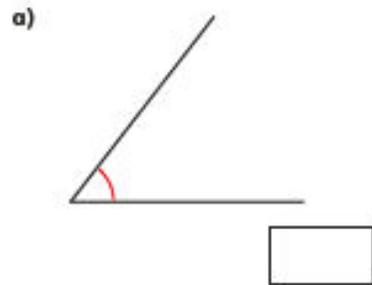


21° 159°

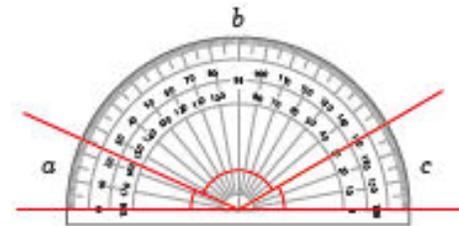
Look at the angles you have not circled.
Why might somebody think they are correct?



3 Measure the size of each angle using a protractor.



4 a) Work out the sizes of the angles.



a =

b =

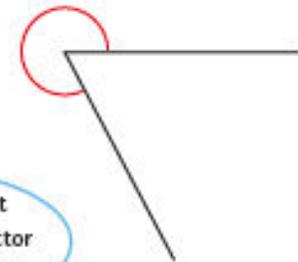
c =

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? _____

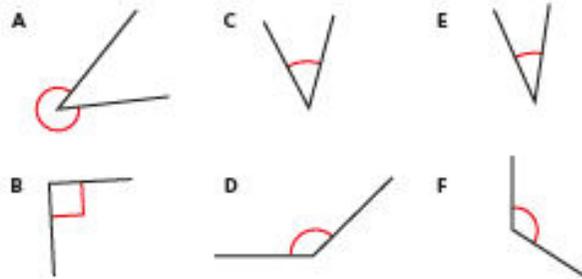
Explain your answer.

b) Measure the size of the angle.



Measure with a protractor

1 Here are some angles.



a) Sort the angles into the table.

Acute angle	Obtuse angle	Right angle	Reflex angle
C E	D F	B	A

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

Various answers

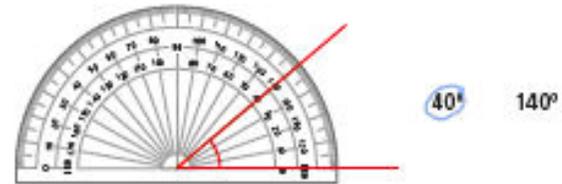
c) Estimate the size of each angle.

A 315°	C 40°	E 30°
B 90°	D 135°	F 132°

Compare answers with a partner.

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

a)



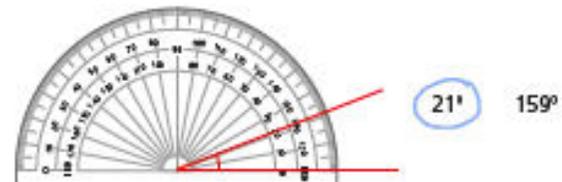
b)



c)



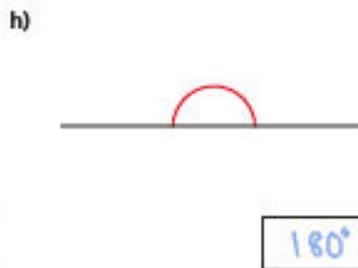
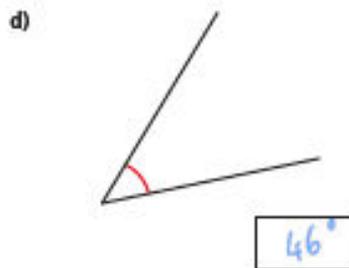
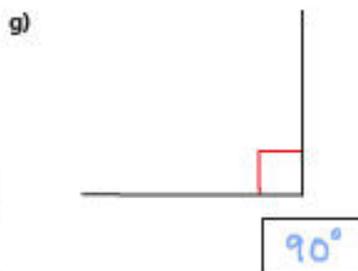
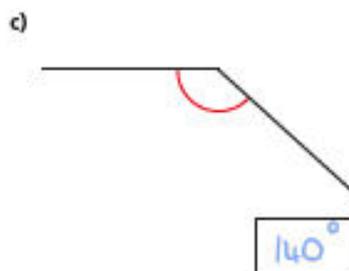
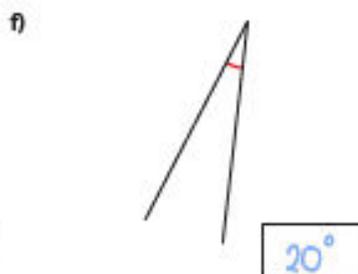
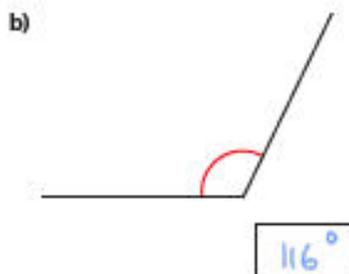
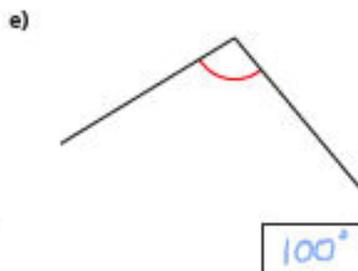
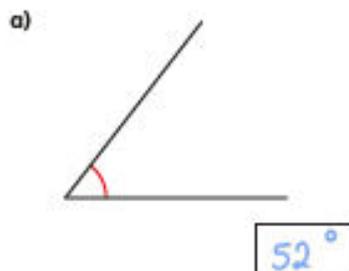
d)



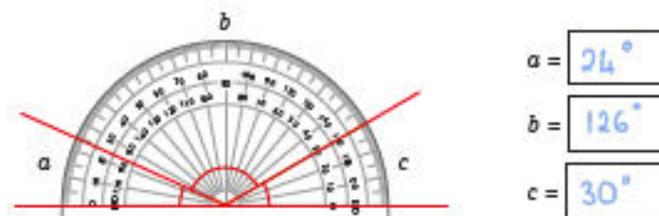
Look at the angles you have not circled.
Why might somebody think they are correct?



3 Measure the size of each angle using a protractor.



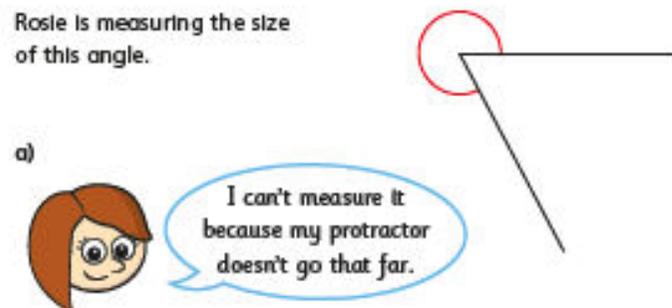
4 a) Work out the sizes of the angles.



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

c) Find the total of your three angles. 180°
 What do you notice?
They add up to 180° because they're on a straight line.

5 Rosie is measuring the size of this angle.



Do you agree with Rosie? No

Explain your answer.

Various answers.

b) Measure the size of the angle. 298°