

Shapes and measurements



Topic	By the end of the lesson the students will be able to:	Vocabulary	Structures	Learning strategies
1. Common shapes	<ul style="list-style-type: none"> identify the shapes of different objects as triangles, rectangles or circles write a sentence to describe each shape. 	Triangle; rectangle; circle; sides; circular; triangular; rectangular	This/That is a ... ; It is circular/ rectangular/triangular; How many sides does it have?; A triangle/ rectangle has three/four (straight) sides; A circle has no sides.	<ul style="list-style-type: none"> Completing gaps Working in pairs.
2. Four-sided shapes	<ul style="list-style-type: none"> identify and name four-sided shapes classify everyday objects into types of four-sided shapes describe the differences between four-sided shapes. 	Quadrilateral; rectangle; square; parallelogram; rhombus; trapezium; opposite; parallel; 90 degrees; four-sided; sides	This is a...; All/none of the sides are/aren't the same length; Two of the four sides are longer/shorter; The angles measure/don't measure 90 degrees.	<ul style="list-style-type: none"> Listening for gist before listening for more detail.
3. Three-sided shapes	<ul style="list-style-type: none"> identify, name and sketch triangular shapes. 	Triangle; scalene; isosceles; equilateral; same length; different lengths	What type of triangle is this/that?; This/that is a... triangle; How many of these shapes are (scalene/isosceles/ equilateral)?; One/two/three/four... of these shapes are...	<ul style="list-style-type: none"> Thinking about ways of recording vocabulary.
4. Angles	<ul style="list-style-type: none"> identify and name acute, right and obtuse angles sketch acute, right and obtuse angles describe acute, right and obtuse angles. 	Angle; acute; right; obtuse; degrees; rotate; exactly	The larger/smaller angle is...; What kind of angle is that?; It's a...; Smaller/bigger/greater than; Between... and...	<ul style="list-style-type: none"> Using objects and models visually to show a concept.

Topic 5: Shapes and Measurements

5. Circular shapes	<ul style="list-style-type: none"> list everyday circular objects label the radius/diameter and circumference of a circle identify and calculate the radius/diameter and circumference of a circle. 	Circle; circular; diameter; radius; circumference; label; distance; centre; edge; pi	This/that is a circle; Show the diameter/radius/circumference of...; What is the radius/diameter/circumference of a circle?	<ul style="list-style-type: none"> Guessing Listing Mathematical calculations.
6. Instruments for measuring	<ul style="list-style-type: none"> list the common measuring instruments describe each instrument orally and in writing. 	Measuring; instrument; tape measure; beam balance; spring balance; ruler; clock; weight; height; width; depth; time; mass; measuring cylinder	What is this/that?; This is a...; What do you use it for?; A... is used to measure...	<ul style="list-style-type: none"> Thinking about displaying learning in a visual way.
7. Measuring time	<ul style="list-style-type: none"> describe different ways of measuring time tell the time in hours and minutes using o'clock, half past, quarter past and quarter to. 	Clock; half past; quarter past; quarter to; nearly; exactly; a.m.; p.m.; in the morning; in the afternoon; cell phone; sundial; the sun; watch	How can you tell time?; What is the time?; The time is...; It is... a.m.; It is ...p.m.	<ul style="list-style-type: none"> Talking about time linked to daily routine Making an object to manipulate in the lesson.
8. Measuring length	<ul style="list-style-type: none"> name different instruments for measuring length state the length and heights of different objects/people in millimetres, centimetres and metres use a metre ruler, ruler and tape measure. 	Millimetre, centimetre, metre, ruler, metre rule, tape measure	How long/tall/high/wide is the...?; It is... long/tall/high/wide; Which/who is the shortest/tallest? How many... in a...? How far from... to...?	<ul style="list-style-type: none"> Comparing Estimating.
9. Measuring mass	<ul style="list-style-type: none"> name the units for measuring mass use a beam balance to find the masses of various objects. 	Mass; kilogram (kg); gram (g); milligram (mg); weight; weigh	Which has the biggest mass? The X has a bigger mass than the Y; The mass of the X is more than the mass of the Y	<ul style="list-style-type: none"> Carrying out a practical weighing activity.
10. Measuring volume	<ul style="list-style-type: none"> state the units of measurement of volume state the volume of a liquid contained in a measuring cylinder. 	Volume; meniscus; litres; millilitres; liquid; container; measuring cylinder	How much liquid is in ...?; How many litres/millilitres are there?; There are litres/millilitres	<ul style="list-style-type: none"> Reconstructing a text from memory.

Topic 5: Shapes and Measurements

Lesson 1: Common shapes

Vocabulary: Triangle; rectangle; circle; sides; circular; triangular; rectangular

Structures: This/That is a ...; It is circular/rectangular/triangular; How many sides does it have?; A triangle/rectangle has three/four (straight) sides; A circle has no sides.

Lesson content objectives:

By the end of the lesson the students will be able to:

- identify the shapes of different objects as triangles, rectangles or circles
- write a sentence to describe each shape.

Learning strategies: Completing gaps; working in pairs.

Preparation: You will need a plate and a protractor.

Introduction (5 mins)



- Say: 'Good morning/afternoon. How are you?' Wait for the students to reply.
- Say: 'I spy with my eye something starting with w. Who can guess what it is?'
- Encourage the students to put up their hands and guess the object. (Answer – Wall.)
- Repeat this for other objects found in the classroom. Possible objects are: *d* for desk, door; *b* for book, ball; *r* for ruler; *c* for cupboard; *g* for globe; *s* for set square; *w* for window, wall; *p* for protractor. Try to find objects of different shapes to guess.
- Write the words on top right hand side of the board when they have guessed them.
- Ask: 'What shape is a window?' Ask the same questions about the rest of the objects that the students mention.

Note: It is a good idea to keep the top right hand side of the board as a place for vocabulary and translations. This way the students know where to look when they need help with a word. If anyone in the class asks for a spelling or translation then you can write it here so that it is there for the rest of the class. Make sure that you let the class know what kind of word each is: (n) = noun; (v) = verb; (adv) = adverb; (adj) = adjective, etc.

Presentation (10 mins)



- Organise students into small groups. Ask: 'How many sides does a... have?'

- The students decide on the answer for any three of the following objects: *desk, set square, door, ruler, window, wall*. Keep the answers to the 2D context.
- Invite students from groups to read aloud their answers. (Answers – e.g. A ruler has four sides.)
- Show a protractor and a plate to students and say: ‘How many sides does a plate have?’ (Answer – None.) ‘How many sides does a protractor have?’ (Answer – One.)
- Create the table below on the board and write the titles in the table but no words.

Object/sides	noun	adjective
The desk has four sides.	It is a rectangle.	It’s rectangular.
A plate has no sides.	It is a circle.	It’s circular.
A set square has three sides.	It is a triangle.	It’s triangular.

- Add in the object column one by one and elicit the noun and adjective for the shapes. As you do this write them on the board.
- Ask individual students to read aloud each row.



Practice (5 mins)

- Say: ‘Open your Student book at Topic 5, Lesson 1 and look at Activity 1.’ Hold up your Student book at the correct page and point to Activity 1.
- Say: ‘Work in pairs to find the correct words to fill the gaps in the table.’
- When they have finished ask them to exchange their exercise books with another pair.
- Ask them to mark the other pair’s work and write any helpful comments.
- Monitor the students as they work. Make sure that they are marking fairly and adding sensible comments.



Consolidation/evaluation and assessment (10 mins)

- Say: ‘Look at Activity 2.’ Hold up your Student book and point to the activity.
- Say: ‘With your partner, look at each group of shapes and write a sentence about that group.’
- Do the first sentence together as a class. Elicit the sentence if you can. (Answer – Group 1 has one rectangle, one triangle and one circle.) If you can, add the colours of the shapes.
- Monitor the students as they work.

Topic 5: Shapes and Measurements

Reflection

- Say: 'Think about how much you know about shapes. How much can you revise at home before the next lesson?'

Answers

Activity 1

1	has four		
2		circle	circular
3	has		triangular
4		rectangle	
5	four sides		rectangular
6	no sides	circle	circular
7	four sides	rectangle	rectangular

Activity 2

Group 1 has one red rectangle, one green triangle and one blue circle.

Group 2 has two red rectangles, two green triangles and one blue circle.

Group 3 has one green triangle and one red rectangle.

Group 4 has one red rectangle, one blue circle and one purple square.

Group 5 has three green triangles, one white triangle and one green and white triangle.

Group 6 has two green triangles, three blue circles and one red rectangle.

The square is the odd one out.

Extension Activity

- In pairs the students list as many objects that are shapes with sides as they can. Once they have the list they then ask each other: 'How many sides does a... have?'

Teacher's reflections

- This is the first lesson in a series about this topic. How do you feel the students managed for a first lesson? Look through the ten lessons in this topic. Do you need to prepare extra activities or can you miss some out?

Homework

- The students can make a list of rectangular, circular and triangular objects that they have in their house.

Lesson 2: Four-sided shapes

Vocabulary: Quadrilateral; rectangle; square; parallelogram; kite; trapezium; opposite; parallel; 90 degrees; four-sided; sides

Structures: This is a...; All/none of the sides are/aren't the same length; Two of the four sides are longer/shorter; The angles measure/don't measure 90 degrees

Lesson content objectives:

By the end of the lesson the students will be able to:

- identify and name four-sided shapes
- classify real life objects into types of four-sided shapes
- describe the differences between four-sided shapes.

Learning strategy: Listening for gist before listening for more detail.

Preparation: Prepare a set of picture cards of the following: rectangle, square, rhombus/diamond, parallelogram and trapezium. Have plenty of paper available.

Introduction (5 mins)



- Say: 'Good morning/afternoon. How are you?' Wait for the students to reply.
- Say: 'Look around and tell us any object which has four sides.' Answer – door, book, window, desktop.) Ask: 'What do we call these four-sided shapes?' (Answer – Quadrilaterals.)
- Write the word 'quadrilaterals' on the board inside a circle. This is the centre of your spider diagram.
- Ask the students to name the objects they have noticed that are quadrilateral and as they do ask what the name of the shape is. You are aiming to elicit rectangle, square, rhombus/diamond, parallelogram and trapezium.

Presentation (10 mins)



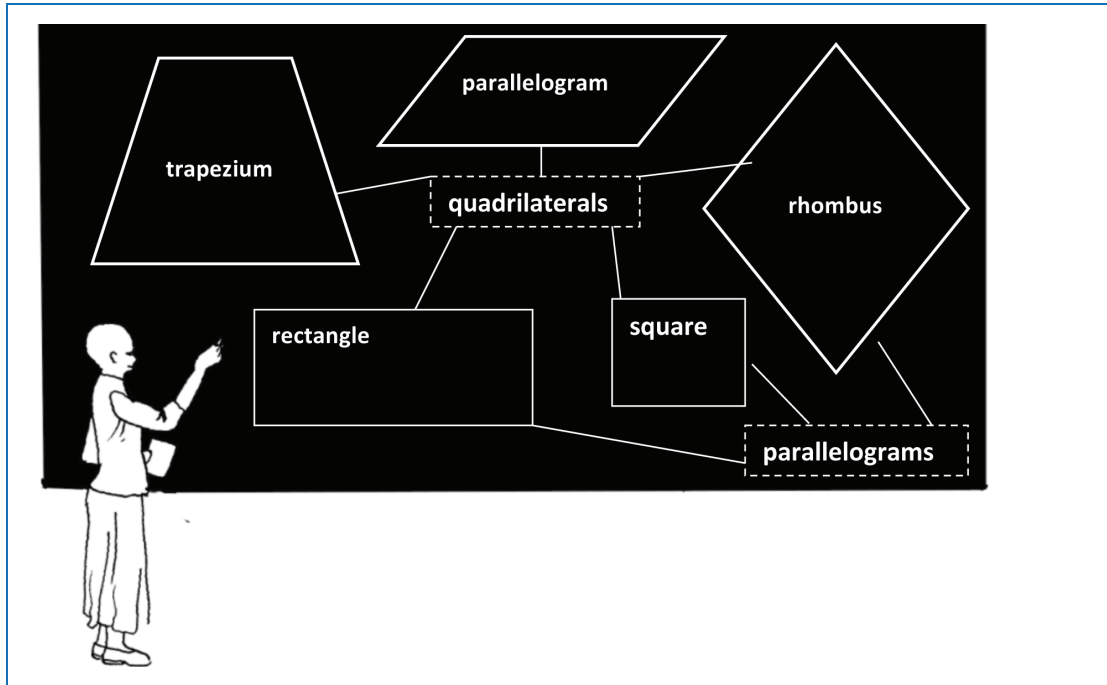
- Write each shape individually on the spider diagram on the board inside a drawing of that shape.

Note: the students may or may not know what the shapes are. If they do not know them in English then you need to give them time to absorb these new words and practise saying them.

- When you elicit or tell the students the shape make sure you discuss the properties of each shape. How many sides they have and what these sides are like.

Topic 5: Shapes and Measurements

- See below for an example of what your board should look like.



- When you have completed the spider diagram ask the students to copy it into their exercise books.

Practice (10 mins)

- Put the students into groups of five. Hold up each of the shape picture cards and ask 'What shape is this?'
- Give out one piece of paper to every student and tell them that each person in the group needs to draw one of the shapes so that the group has all five shapes.
- Hold up each shape in turn, say the name of the shape and encourage the students to repeat the name after you. Ask one person in each group to draw the shape.
- Say:
 - 'If you have a square, put it on your head, stand up and sit down.'
 - 'If you have a rectangle, stand up and point it to the board and sit down.'
 - 'If you have a parallelogram, wave it in the air forward and backwards once.'
 - 'If you have a rhombus, stand up, sit down and put it in front of your face.'
 - 'If you have a trapezium, stand up, turn around and hold it in the air.'

- After each one wait for the students from that group to do the actions and check that they are doing them correctly. Then say the names of shapes randomly and faster and faster so that the students have to do their action each time you say their shape.
- You can swap shapes and start the game again.
- Say: 'Open your Student book at Topic 5, Lesson 2 and look at Activity 1.' Hold up your Student book at the correct page and point to Activity 1.
- Ask the students to complete the sentences
- Monitor the exercise and then review the answers as a whole class.

Consolidation/evaluation and assessment (5 mins)



- Say: 'Look at Activity 2.'
- Tell the students to work in pairs.
- Say: 'You are going to think about the shapes of everyday objects. Can you tell me something that is square?' Wait for a student to answer (answer: a floor tile, or a light switch for example). Now ask them to think of something rectangular (a window or a door for example).
- Now tell the students they will have two minutes to work with their partner to make a list of as many items as possible and their shapes.
- At the end of two minutes, students count their answers. For any object that has a square or rectangular shape they receive 1 point. For an object with the other shapes, they receive 2 points. The pair with the highest points wins.

Reflection



- Did the spider diagram help you to see the relationships between the shapes easily? Can you use this method to record vocabulary?

Topic 5: Shapes and Measurements

Answers

Activity 1

- a) This is a **quadrilateral**. It is called a **square**. It has four **sides**. All four sides are **the same length**. It has four **equal angles**.
- b) This is a **quadrilateral**. It is called a **rectangle**. It has four sides. Two of the sides are **parallel and the same length**. It has four **equal angles**.
- c) This is a **quadrilateral**. It is called a **parallelogram**. It has **four** sides and opposite sides **are parallel. It has opposite angles that are equal.** (*Note: a square, rectangle and a rhombus are parallelograms.*)
- d) This is a **quadrilateral**. It is called a **trapezium**. **It has a pair of parallel opposite sides. They are not always the same length.**
- e) This is a **quadrilateral**. It is called a **rhombus or a diamond**. **It has four equal straight sides. Opposite angles are equal.**

Extension Activity

- In pairs the students spell out 'quadrilateral', 'rectangle', 'parallelogram', 'square', 'kite' and 'trapezium'.
- Encourage the students to write the correctly spelt word on the board.

Teacher's reflections

Did the board plan help you to manage the board in a clearer way for the students? Would it be a good idea to prepare a board plan more often?

Homework

- The students should find scrap paper and cut out a batch of each of the shapes. They then stick the shapes onto another piece of paper in an interesting way to make a collage of the shapes. These can be brought in and displayed around the school or classroom.

Lesson 3: Three-sided shapes

Vocabulary: Triangle; scalene; isosceles; equilateral; same length; different lengths

Structures: What type of triangle is this/that?; This/that is a... triangle; How many of these shapes are (scalene/isosceles/equilateral)?; One/Two/three/four...of these shapes are...

Lesson content objectives:

By the end of the lesson, the students will be able to:

- Identify three different triangles
- Sketch triangular shapes
- Name triangular shapes.

Learning strategy: Thinking about ways of recording vocabulary.

Introduction (5 mins)



- Say: 'Good morning/afternoon. How are you?' Wait for the students to reply.
- Say: 'Open your Student book at Topic 5, Lesson 3 and look at the picture in Activity 1.' Hold up your Student book at the correct page and point to the pictures.
- Ask: 'What shape are these?' (Answer – Triangles.)
- Say: 'There are several types of triangles. Today we are going to learn about three types of triangles.'
- Write on the board the names of the three triangles: 'equilateral, isosceles, scalene'.
- Ask the students to match the triangles to the names.

Presentation (5 mins)

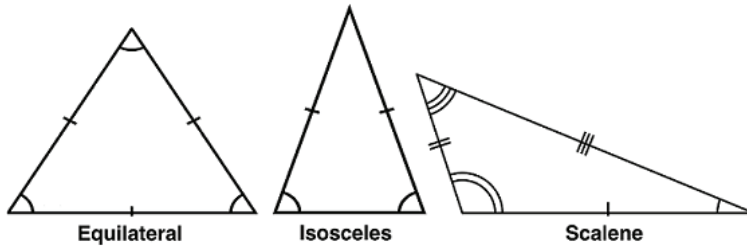


- Draw the three types of triangles on the board: Do not draw in any angles at this stage.
- Point to the equilateral triangle and say: 'Equilateral triangle.' Ask the students to repeat it.
- Say: 'All the sides of an equilateral triangle are equal. They are the same length.' Run your finger over the sides of the triangle to show this.
- Point to the isosceles triangle and say: 'Isosceles triangle.' Ask the students to repeat it.
- Say: 'Two sides of an isosceles triangle are the same length.' Point to the two sides and mark them with a small line across each side.

Topic 5: Shapes and Measurements

- Point to scalene triangle and say: 'Scalene triangle'. Ask the students to repeat it.
- Say: 'What can you tell me about the sides of a scalene triangle?' (Answer – All the sides are different lengths.)
- Mark the three sides differently, as in the diagram.

*Note: The stress in the word 'equilateral' is at the third syllable 'la': E-qui-**lat**-eral. The stress in the word 'isosceles' is at the second syllable, 'sos': I-**sos**-cel-es. The stress in the word 'scalene' is in first syllable 'sca': **sca**-lene.*



Practice (10 mins)



- Ask the students to look at Activity 2 and answer the questions with a partner.

Consolidation/evaluation and assessment (10 mins)



- Ask the students to find a partner.
- Tell them to draw three triangles in their exercise books and number them 1 to 3.
- They should ask their partner what type of triangle each one is. Say: 'What is the question you ask?' (Answer – What type of triangle is this?)

Reflection



- Ask the students how they are recording their vocabulary. How will they find what they are looking for in the future? Are they recording alphabetically or by topic? Are they drawing pictures to help their recall?

Activity 1

1. c-equilateral
2. a-isosceles
3. b-scalene

Activity 2

2 scalene = b, h; 4 isosceles = a, e, g, i; 3 equilateral = c, d, f

Extension Activity



- Tell the students to draw a grid of nine boxes. Then they draw a triangle in each box. They need to make sure they have at least two of each type of triangle in the whole grid.
- Call out names for types of triangles in a random order (making sure that you keep a note of what you are saying) and the students play 'Bingo'. The first student to cross out all nine of their triangles is the winner. However, you should check that the student actually has done it correctly by checking their grid against the list of triangles you called out.

Teacher's reflections



- Think about your students answers to the reflection question about how they are recording their vocabulary. Do you need to investigate this further? Do you think that they are recording their vocabulary well or do you need to look at other ways of recording vocabulary?

Homework



- Students should draw each type of triangle in their exercise books and write the properties of that triangle under each picture.

Topic 5: Shapes and Measurements

Lesson 4: Angles

Vocabulary: Angle; acute; right; obtuse; degrees; rotate; exactly

Structures: The larger/smaller angle is...; What kind of angle is that?; It's a...; Smaller/bigger/greater than; Between... and...

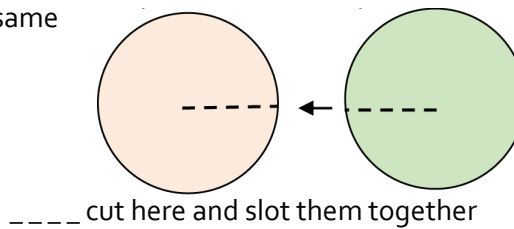
Lesson content objectives:

By the end of the lesson the students will be able to:

- identify and name acute, right and obtuse angles
- sketch acute, right and obtuse angles
- describe acute, right and obtuse angles.

Learning strategy: Using objects and models visually to show a concept.

Preparation: Cut out two large circles of the same size but in different coloured paper or card.



Introduction (5 mins)



- Say: 'Good morning/afternoon. How are you?' Wait for the students to reply.
- Call a volunteer to come in front and show the two different coloured circular cards you have prepared.
- Say: 'Slot them one on top of the other.'
- Show them how to rotate the circular card on top of the other to create an angle.
- Draw two dissecting lines on the board, draw in an angle line to show the angle. Ask: 'What is this?' (Answer – An angle.)
- Say: 'Show me an angle with the circles. Now show the class.'
- Say: 'Rotate it more to create a larger angle. Which angle is the larger/smaller angle?'
- Write on the board: 'The (colour) angle is the smaller/larger angle. The (colour) angle is greater/less than the (colour) angle.'
- Guide the student to use this sentence for different angles that the volunteer shows them.
- Bring other students to the front to make angles with the card. The rest of the class repeat the sentence.

Note: It is a good idea to keep the top right hand side of the board as a place for vocabulary and translations. This way the students know where to look when they need help with a word. If anyone in the class asks for a spelling or translation then you can write it here so that it is there for the rest of the class. Make sure that you let the class know what kind of word each is: (n) = noun; (v) = verb (adv) = adverb, (adj) = adjective, etc.



Presentation (10 mins)

- Say: *'This is how we show an angle but there are different types of angles.'*
- Say: *'Open your Student book at Topic 5, Lesson 4 and look at the picture in Activity 1.'*
Hold up your Student book at the correct page and point to the activity.
- Say: *'Can you identify right, obtuse and acute angles?'* Decide on the names of the angles with the whole class and ask the students to repeat the names after you. (NOTE: Some angles do not apply).
- Ask for three volunteers to come to the front and ask them to draw one of the types of angles. Make sure you tell each volunteer which one to draw. When they have done this number them 1, 2 and 3.
- Keep the volunteers at the front and one at a time they can ask the class about their angle: *'What kind of angle is this?'*
- Rub those out and repeat this with three more volunteers.
- Read aloud the statements: *'Look in your book. Angle e/f is less than/smaller than 90 degrees. It is an acute angle. Angle b is more than/greater than 90 degrees but less than 180 degrees. It is an obtuse angle. Angle c is exactly 90 degrees. It is a right angle.'*
- Say: *'Take out your exercise book and sketch an example of an acute angle, right angle and obtuse angle.'*



Practice (5 mins)

- Put the students into pairs.
- Say: *'Look at Activity 2. There are pictures showing different angles.'*
- Say: *'Take turns asking questions and answering them, about the angles. What question will you ask?'* (Answer – What kind of angle is number 1?) *'Then the partner answers.'*
- Monitor and check that all pairs of students are following the instructions.
- Ask the students to write a sentence for each type of angle in their exercise books.

Topic 5: Shapes and Measurements

Consolidation/evaluation and assessment (10 mins)



- Say: 'Look at Activity 3. It is a multiple choice activity. Complete the sentences with a partner by choosing A, B, C or D. Write the full sentences in your exercise book.'
- Ask for six volunteers to come to the front and say to each student: read the first/second/...etc. sentence with the correct answer.
- Listen to their sentences and correct where necessary. The class can repeat the correct sentence afterwards.

Reflection



- Ask the students whether it made it more real and understandable for them to see the coloured circles.

Answers



Activity 1A

e) and f) are acute angles. They are less/smaller than 90 degrees.

c) This is a right angle. It is exactly 90 degrees.

b) This is an obtuse angle. It is more/greater than 90 degrees.

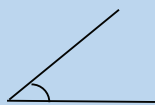
Activity 1B

1)



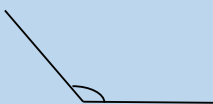
Right angle

1.



Acute angle

2.



Obtuse angle

Activity 2

It is an acute angle. The angle is acute because it is less than 90 degrees.

It is an obtuse angle. The angle is obtuse because it is more than 90 degrees.

It is an acute angle. The angle is acute because it is less than 90 degrees.

It is a right angle. The angle is a right angle because it is exactly 90 degrees.

It is a right angle. The angle is a right angle because it is exactly 90 degrees.

It is an obtuse angle. The angle is obtuse because it is more than 90 degrees.

Activity 3

1 A right angle is: B – exactly 90 degrees.

2 An obtuse angle is: D – greater than 90 degrees and less than 180 degrees.

3 The angle 85 degrees is: A – an example of an acute angle.

4 If X is 98 degrees and Y is 89 degrees: D – X is more than Y.

5 An acute angle is: B – smaller than an obtuse angle.

6 The angle which is: C – more than 90 and less than 180 is obtuse.

Extension Activity



- Tell the students to swap exercise books and say: *'Draw six angles in your partner's exercise book.'* Give them time to do this.
- Say: *'Now take your own exercise book back and label the angles that your partner has drawn. What labels do you need to write?'* (Answer – Obtuse, acute and right angle.)

Teacher's reflections



- How did the students react to the visual stimuli of the coloured circles? Could you have allowed them to make one each of their own? Could you use this idea in other topics?

Homework



- In their exercise books students can draw and label each type of angle and write about the properties of each angle.

Topic 5: Shapes and Measurements

Lesson 5: Circular shapes

Vocabulary: Circle; circular; diameter; radius; circumference; label; distance; centre; edge; pi

Structures: This/that is a circle; Show the diameter/radius/circumference of...; What is the radius/diameter/circumference of a circle?

Lesson content objectives:

By the end of the lesson the students will be able to:

- list everyday circular objects
- label the radius/diameter and circumference of a circle
- identify and calculate the radius/diameter and circumference of a circle.

Learning strategies: Guessing; listing; mathematical calculations.

Preparation: Place different circular objects around the room before the lesson. You will need a piece of paper (can be scrap paper) for everyone. You will need enough circles cut out so that every group of four in the classroom can have one.



Introduction (5 mins)

- Say: 'Good morning/afternoon. How are you?' Wait for the students to reply.
- Divide the class into teams and say: 'We are going to play a guessing game. I will start. I spy with my little eye something circular beginning with C.'
- Encourage the students to guess the name of the object. (Answer – Clock.)
- Write the word 'clock' on the board.
- The student who guesses correctly will give the next clue.
- Let the students play the game. Note which team wins and write the word on the board each time.
- Point to the circular objects, ask the students to read them one after another.



Presentation (10 mins)

- Hold up a paper cut-out of a circle.
- Ask: 'What shape is this?'
- Say; 'Sit in groups of four.'
- Give each group a paper cut-out of a circle.

- Use your circle to demonstrate the circumference of the circle by moving your finger around the edge of the circle.
- Ask the students in each group to show the circumference of the circle and say: *'This is the circumference of the circle.'*
- Write, 'circumference' on the board.
- Encourage the students to read the word and repeat it after you.
- Fold the circle in half to get two equal parts and show the diameter.
- Write the word 'diameter' on the board. Ask the students to read the word and repeat it after you.
- Using your circle, fold the half-circle in half to show the radius.
- Ask the students to fold their circle and show you the radius.
- Write 'radius' on the board, and the students read the word and repeat it after you.
- Unfold your circle and point to the centre of the circle.
- The students point to the centre of the circle.
- Write the word 'centre' on the board, and the students read the word and repeat it after you.
- Say: *'Take it in turns for one person in each group to show the diameter/radius/centre/circumference of the circle.'*
- Ask: *'What will you say?'* (Answer – This is the diameter/radius/centre/circumference of the circle.)
- Say: *'Open your Student book at Topic 5, Lesson 5. Look at the drawings in Activity 1.'* Hold up your Student book at the correct page and point to the activity.
- Say: *'Draw the diagrams in your exercise books and label the parts.'*
- Review the answers as a class.



Practice (10 mins)

- Say: *'Look at Activity 2.'* Hold up your Student book at the correct page.
- Say: *'How do you find the circumference of a circle?'* (Answer – Circumference = $\pi \times$ diameter) Write this on the board.

Note: π (*pi*) is taken as 3.14.

- Tell the students to work out the circumference of each circle and list the diameter, radius and circumference of each of the circles.
- When they have their answers they should find a partner to check the answers with.
- Finally they should join with another pair to check their answers.

Topic 5: Shapes and Measurements

Consolidation/evaluation and assessment (5 mins)



- Say: 'Look at Activity 3. Complete the sentences in your exercise books.'
- Monitor the students and help.

Reflection



- Ask the students to think back to how they did their calculations. Ask if they can remember the process (Answer – Did the calculations alone, checked them in pairs and then in groups).
- Ask them whether they felt that this was a good way to feedback or whether they prefer to get the answers directly from the teacher. Why?

Answers



Activity 1

A. **a** = centre, **b** = radius, **c** = diameter, **d** = circumference

Activity 2

a) 25.12cm b) 18.84 cm c) 43.96cm d) 34.54m

Activity 3

The circumference is the distance around the circle.

The diameter is longer than the radius.

The middle of the circle is called the centre.

A circle is circular.

The formula for finding the area of a circle is $\pi \times r^2$.

Extension Activity



- Put the students into new groups of four. Each group takes one paper circle cut-out.
- Say: 'In your groups, take it in turns to point to the centre, diameter, radius and circumference of the circle. The rest of your group must say the names of that part and spell the word.'
- Circle challenge: groups compete to write the names of ten circular objects from everyday situations. The first group to reach 10 shouts 'circumference!'. The game stops and they read out their words.

Teacher's reflections

- How did the students respond to sharing their answers with other students rather than with the teacher? Did this produce more language?

Homework

- Prepare a set of questions for working out the radius, circumference and diameter of a circle. Ask the students to work out the answers and then write sentences in English describing the circles.

Topic 5: Shapes and Measurements

Lesson 6: Instruments for measuring

Vocabulary: Measuring; instrument; tape measure; beam balance; spring balance; ruler; clock; weight; height; width; depth; time; mass; measuring cylinder

Structures: What is this/that?; This is a...; - What do you use it for?; A... is used to measure...

Lesson content objectives:

By the end of the lesson students will be able to:

- list the common measuring instruments
- describe each instrument orally and in writing.

Learning strategy: Thinking about displaying learning in a visual way.

Introduction (5 mins)



- Say: 'Good morning/afternoon. How are you?' Wait for the students to reply.
- Say: 'Open your Student book at Topic 5, Lesson 6 and look at the picture in Activity 1.' Hold up your Student book at the correct page and point to the activity.
- Say: 'Work with a partner and name as many of the instruments as you can.'

Presentation (10 mins)



- Ask: 'What is a?' (Answer – A beam balance.) Write 'beam balance' on the board. Say: 'What do you use it for?' (Answer – to weigh out things/to find the weight of something.)
- Ask: 'What is b?' (Answer – A ruler.) Write 'ruler' on the board. Say: 'What do you use it for?' (Answer – To measure the length of something short.)
- Ask: 'What is c?' (Answer – A clock.) Write 'clock' on the board. Say: 'What do you use it for?' (Answer – To tell the time/measure time.)
- Ask: 'What is d?' (Answer – A tape measure.) Write 'tape measure' on the board. Say: 'What do you use it for?' (Answer – to find the length, depth, width of something.)

Note: If the students don't know the words 'length', 'depth' and 'width' draw a diagram on the board to show what these are.

- Ask: 'What is e?' (Answer – A measuring cylinder.) Write 'measuring cylinder' on the board. Say: 'What do you use it for?' (Answer – To measure out liquids.)

- Ask: 'What is f?' (Answer – A spring balance.) Write 'spring balance' on the board. Say: 'What do you use it for?' (Answer – to weigh something or find the mass of something.)
- Tell the students that these are all *instruments for measuring*. Put the students into pairs and ask them to take turns to ask each other what each *measuring instrument* is.
- Monitor and check that the students are using the correct language.

Practice (10 mins)

- Say: 'Look at Activity 2.' Put the students into pairs.
- Ask the students to write sentences by matching the information in the three columns of the table.
- The students should write the answers in their exercise books.
- Monitor and help.
- Review the answers as a class.

Consolidation/evaluation and assessment (5 mins)

- Review the units of measurement for each of the measuring instruments.
- Change the pairs around and ask the students to look at Activity 3.
- Tell the pairs to complete the exercise together by completing the model sentence for all of the measuring instruments.
- Once they have done this they should write the units in order of size with the smallest first.

Reflection

- Tell the students that for homework they will be asked to arrange all the vocabulary and language that they have learned in this lesson into a diagram. They should speak to their partner about how they might do this.

Answers

Activity 1

- a) beam balance
- b) a ruler
- c) a clock
- d) a tape measure
- e) a measuring cylinder

Topic 5: Shapes and Measurements

f) a spring balance

Activity 2:

1. A clock – is used to measure time. What time is it?
2. A ruler – is used to measure length. How long is it?
3. A tape measure – is used to measure length, height, width, depth. How tall/long/wide/deep is it?
4. A beam balance is used to measure mass (quantity/amount of matter in a body). How much material is there? What is the mass?
5. A spring balance is used to measure weight (pull of gravity). How heavy is it?
6. A measuring cylinder is used to measure volume of a liquid. How much liquid is there?

Activity 3

A clock measures time in seconds, minutes and hours.

A ruler measures length, depth and width in millimetres and centimetres.

A tape measure measures length, depth and width in millimetres, centimetres and metres.

A beam balance measures mass in milligrams, grams and kilograms.

A spring balance measures weight in kilograms or newtons.

Note: mass and weight aren't actually both measured in kg in a non-physics context, such as a shop.

A measuring cylinder measures volume in millilitres, centilitres and litres.

Seconds, minutes, hours

Milligrams, grams, kilograms

Millilitres, litres

Millimetres, centimetres, metres

Extension Activity

- If you have the instruments in the school bring them to the lesson and allow the students to examine them and discuss them in groups.

Teacher's reflections



- When the students bring the homework back into the class how will you use the information?

Homework



- Say: *'Arrange all of the language and vocabulary of this lesson into a visual diagram that will be easier for you to learn.'*

Topic 5: Shapes and Measurements

Lesson 7: Measuring time

Vocabulary: Clock; half past; quarter past; quarter to; nearly; exactly; a.m.; p.m.; in the morning; in the afternoon; cell phone; sundial; the sun; watch

Structures: How can you tell time?; What is the time?; The time is...; It is... a.m.; It is ...p.m.

Lesson content objectives:

By the end of the lesson the students will be able to:

- describe different ways of measuring time.
- tell the time in hours and minutes using o'clock, half past, quarter past and quarter to.

Learning strategies: Talking about time linked to daily routine; making an object to manipulate in the lesson.

Preparation: Make a clock face using card or stiff paper. Use a pin or nail to fix the two hands so that they can be rotated. Paint the hands any colour available or use a different coloured card. If it is possible have enough ready cut out card and pins available so that each pair in the class can make a clock.

Introduction (5 mins)



- Say: 'Good morning/afternoon. How are you?' Wait for the students to reply.
- Write on the board: 'telling the time'. Ask the students: 'How do we tell the time?' (Answer – Using a clock, watch, phone, sundial, the sun, in hours and minutes.)
- Encourage individual students to give responses and write them on the board.
- Ask them to decide which are the most common ways and organise the list in order of popularity, the most popular first. (Answer – Probably clock, watch, cell phone, etc.)

Presentation (10 mins)



- Arrange them in pairs and say: *'Open your Student book at Topic 5, Lesson 7 and look at Activity 1.'* Hold your Student book up and point to the correct activity.
- Give the students 3 minutes to write the answers to the questions individually.
- Tell them to take it in turns to read out a question and give an answer.
- Show them the clock you have made and say: *'What time is it?'* (Answers – Vary depending on the time you have used but stay with the main quarter hours.) Judge from this how much work they are going to need to do on telling the time.

Practice (10 mins)



- Say: *'Look at the clocks in Activity 2.'* Hold up your Student book at the correct page and point to the activity.
- Ask the students to read the times on the clocks and write them down without talking to other students.
- Review the answers and see how many each student got correct. This will also help you to judge how well the students know this language.
- Then in pairs they can match the columns in the table.
- Give out the pieces of card to each pair. Ask the pairs to make up the clock with the pins and the hands.
- When they have made their clocks ask for a volunteer pair to come to the front and demonstrate.
- Say: *'Turn the clock to a time. Ask the question 'What time is it?'* The students ask and answer the question.
- Choose other volunteers to come to the front of the class and demonstrate. The target language is listed but if they already know this then give them the freedom to take the language further.
- Allow time for the students to work with their partner on the activity.
- Monitor and help the students.

Topic 5: Shapes and Measurements

Consolidation/evaluation and assessment (5 mins)



- Say: 'Look at Activity 3.'
- Say: 'Complete the sentences with times and write them in your exercise books.'
- Make sure that the students are using a range of times and not just *o'clock*.
- Monitor students as they continue working.

Reflection



- Ask: 'Did you know any of the times that were presented. Have you learned anything new?'

Answers



Activity 1

- 1) watch, clock, mobile phone
- 2) calendar
- 3) stopwatch, mobile phone
- 4) sundial
- 5) 60 seconds in a minute
- 6) 366 days

Activity 2

Two o'clock, half past two, quarter past two, quarter to three.

Time in numerals	Time in words
07:00	seven o'clock
10:15	quarter past ten
15:45	quarter to four
09:45	quarter to ten
12:00	twelve o'clock
23:30	half past eleven

Extension Activity

- Say: *'In pairs draw the face of the clock on a piece of paper with its hands showing the time in exact hours or a quarter past or a quarter to.'*
- Say: *'Write the time in words below the picture of your clock.'*
- Ask: *'Which pair can come to the front to show us their clock and their time? Put up your hands.'*
- Invite pairs to show their clocks and read out aloud their time.

Teacher's reflections

- The students were again involved in a kinaesthetic and practical, hands-on activity. How are these working? Do you feel that these are beneficial and will you try them again in another topic?
- Were you able to assess the knowledge of the students at each stage of the lesson and adjust the lesson up or down accordingly?

Topic 5: Shapes and Measurements

Lesson 8: Measuring length

Vocabulary: Millimetre, centimetre, metre, ruler, metre rule, tape measure

Structures: How long/tall/high/wide is the...?; It is... long/tall/high; Which/who is the shortest/tallest? How many... in a...? How far from... to...?

Lesson content objectives:

By the end of the lesson the students will be able to:

- name different instruments for measuring length
- state the length and heights of different objects/people in millimetres, centimetres and metres
- use a metre ruler, ruler and tape measure.

Learning strategies: Comparing; estimating.

Preparation: You will need tape measures, metre rules and rulers.

Introduction (10 mins)



- Say: 'Good morning/afternoon. How are you?' Wait for the students to reply.
- Ask the students to look at their ruler and ask what the unit of measurement is. (Answer – centimetres or millimetres.)
- Say: 'Take the ruler and look at where it is written 'cm' and 'mm'.' Read loudly: 'cm' stands for centimetre, 'mm' stands for millimetre.'
- Give out the tape measures and ask what different units of measurement are on these. (Answer – Metres.)
- Ask: 'How many millimetres are in one centimetre?' (Answer – Ten mm = 1cm.)
- Ask: 'How many centimetres in a metre?' (Answer – 100cm = 1 metre.)
- Ask: 'How many millimetres in a metre?' (Answer – A thousand.)
- Say: 'The prefix milli means one thousandth and centi means one hundredth.'
- Summarise by writing it on the board.

Presentation (10 mins)



- Say: 'We use different instruments to measure different things. How would you measure a book?' (Answer – with a ruler.)
- Give a ruler to a volunteer and ask: 'How long is the book?'

- Say: 'How would you measure the width of the board?' (Answer – With a metre rule.)
Give a metre rule to a volunteer and ask: 'How wide is the board?'
- Say: 'How would you measure the height of the door?' (Answer – With a metre rule or tape measure.) Give a tape measure to a volunteer and ask: 'How high is the door?'
- Say: 'How would you measure the height of a person?' (Answer – With a metre rule or tape measure.)
- Give a tape measure to a volunteer and ask: 'How tall is Dodi?'
- Say: 'Write the answers to those questions in your exercise books as: The length of a book is ... The book is... long; The board is... wide; The door is... high; Dodi is... tall.'
- Give out tape measures and metre rules and ask the students to find a partner. Ask the students to measure each other's height.
- When they have measured their partner they come and write their partner's name and height on the board next to their own name and height.
- When everyone has finished and the pairs of heights are on the board ask: 'Who is taller/shorter... or...?'
- Ask: 'Who is the tallest? Who is the shortest?'

Practice (5 mins)

- Say: 'Open your books at Topic 5, Lesson 8 and look at the pictures in Activity 1.' Hold up your Student book and point to the activity.
- Say: 'What can you see in the pictures?' (Answer – A ruler and a desk, a ruler and a pen, a tree and some corn.)
- Put the students in to pairs and ask them to ask each other the model sentence and answer.
- Monitor and check that the students are copying the model correctly. If they are not then stop the group and ask a strong pair to demonstrate.

Consolidation/evaluation and assessment (5 mins)

- Tell students to think about the distance between objects. What question would they ask to find out the distance between objects? (Answer – How far from... to...? What is the distance between... and...)
- Say: 'Look at Activity 2. Read the instructions and do the activity with a partner.'
- Monitor and check that the students are following the instructions properly.
- Feedback as a class.

Topic 5: Shapes and Measurements

- Ask the students to remember which three different measuring instruments they have used during the lesson. Get them to write their names in their notebooks.

Reflection

- Ask the students whether they enjoyed the practical aspect of the lesson or whether they prefer to sit at their desk for the lesson. Ask why they feel this way.

Answers

Activity 1

- In 'a' we can see a ruler and a desk. Which is bigger? The desk is bigger than the ruler.
- In 'b' we can see a ruler and a pen. Which is longer? The ruler is longer than the pen.
- In 'c' we can see a tree and some corn. Which is taller? The tree is taller than the corn.

Extension Activity

- Put the students into pairs. Give them a tape measure and a ruler.
- Say: *'Go outside the class with the measuring instruments and measure the height of four different objects.'*
- When they come back ask pairs to interview other pairs to find out what they measured and how tall/wide/high they were.
- Monitor and help any groups that need it.

Teacher's reflections

- How well did the students do the outdoor activity? Did they do it without a fuss and without making too much noise? Do they need a reminder of how to behave outside the classroom?

Lesson 9: Measuring mass

Vocabulary: Mass; kilogram (kg); gram (g); milligram (mg); weight; weigh

Structures: Which has the biggest mass? The X has a bigger mass than the Y; The mass of the X is more than the mass of the Y

Lesson content objectives:

By the end of the lesson the students will be able to:

- name the units for measuring mass
- use a beam balance to find the masses of various objects.

Learning strategy: Carrying out a practical weighing activity.

Preparation: A weighing machine such as beam balance, weights of 1kg, 500g, 250g, 100g, 50g; A collection of marbles or pebbles of a similar size, Baseline student books, rulers, pens, a new box of chalk, sand in a small plastic bag.

Introduction (5 mins)



- Say: 'Good morning/afternoon. How are you?' Wait for the students to reply.
- Ask: 'Who can name two instruments for measuring mass?' (Answer – Beam balance, scales, spring balance.)
- Say: 'Mass is the amount of material in an object. Mass is not the same as weight but in life it is used as the same. Mass is measured in units.'
- Put the objects that you have prepared on the front table next to a piece of paper with a number on.
- Pick up two objects and ask: 'Which has the biggest mass?' (Answer – X has more mass than Y. Y has a bigger mass than X.)
- Ask the whole class to ask the question and give the response after you.
- Repeat the process holding up different objects to compare each time. For example, marbles and a ruler; a pen and a book; a pencil and sand; a box of chalk and sand; a ruler and a pen.

Presentation (10 mins)



- Ask: 'How much sugar does your mother buy for your family each week?'
- Write the responses on the board. Repeat the question for salt, flour and beans. (Answer – It may be any amount but note down the weights in kg, grams or milligrams.)

Topic 5: Shapes and Measurements

- Say: 'The symbols for these masses are: kilogram = kg, gram = g, milligram = mg.' Write these symbols on the board.
- Ask them to open their book at Topic 5, Lesson 9 and look at the picture in Activity 1. Ask what it is. (Answer – a balance, scales.)
- Get out the beam balance and weights at the front and ask pairs of students to come to the front to find the mass of an item. Give each pair a different object and record the mass on a table on the board.

Object	Mass (g/kg)
Marbles	
ruler	
pen	
book	
bag of sand	
chalk	

- Ask: 'Which has the greatest mass? Which has the lowest mass?' (Answer – Will depend on your objects.)
- Ask: 'Which has the bigger mass, the pen or the chalk?' (Answer – Will probably be the box of chalks.) Ask more questions like this.
- Ask: 'What is mass?' (Answer – The amount of matter in an object.)
- Ask: 'Is this the same as weight?' (Answer – No weight is the amount that the mass of an object is pulled by gravity.)

Note: It is a good idea to keep the top right hand side of the board as a place for vocabulary and translations. This way the students know where to look when they need help with a word. If anyone in the class asks for a spelling or translation then you can write it here so that it is there for the rest of the class. Make sure that you let the class know what kind of word each is: (n) = noun; (v) = verb (adv) = adverb, (adj) = adjective, etc.

Practice (10 mins)

- Put the students in pairs and ask them to look at Activity 2.
- Give them three minutes to think about the answer and then review the answers as a class.

Consolidation/evaluation and assessment (5 mins)



- Put the students into pairs and ask them to name a few objects around the room. They should write a sentence in their exercise books which compares the mass of these objects.

Reflection



- Ask: *'Did you get to use the beam balance? Did this help you to enjoy the lesson more? Did you understand the lesson more?'*

Answers



Activity 2

- 1 kg is heavier than 900 grams.
- The ruler has a bigger mass than the pencil. (This depends on what rulers are generally made of.)
- The marbles have a greater mass than the piece of chalk.
- 3 grams are heavier than 100 milligrams.
- The book has the biggest mass.

Extension Activity



- Write the following on the board and ask the students to write the short form of each one: five kilograms; one gram; two hundred milligrams; five hundred grams; two hundred and fifty milligrams.

Teacher's reflections



- Think about the students' responses to their reflection questions. Did their answers surprise you? How will you take this information and use it to improve your lessons?

Homework



- Say: *'Look around your home and find things that have a different mass. Write five sentences in your exercise books to compare these objects.'*

Topic 5: Shapes and Measurements

Lesson 10: Measuring volume

Vocabulary: Volume; meniscus; litres; millilitres; liquid; container; measuring cylinder

Structures: How much liquid is in ...?; How many litres/millilitres are there?; There are ...litres/millilitres

Lesson content objectives:

By the end of the lesson the students will be able to:

- state the units of measurement of volume
- state the volume of a liquid contained in a measuring cylinder.

Learning strategy: Reconstructing a text from memory.

Introduction (5 mins)



- Say: 'Good morning/afternoon. How are you?' Wait for the students to reply.
- Say: 'Work in pairs; draw a table with two parts. On the left write 'solid items' and on the right write 'liquid items'.'

Solid items	Liquid items

- Write the list of words on the board: 'water, peas, milk, bread, oil, beans, lotion, tomatoes, blood, bricks, honey, stones, soda, wood, juice, potatoes, tea, books, flour.'
- Go through each word and as a class decide whether it should go in the solid or liquid column.
- When all pairs finish and a list of liquid items is obtained, ask: 'How do we measure liquids?' (Answer – in cubic cm, millilitres, in a measuring cylinder or a beaker.)

Presentation (10 mins)



- Tell students to open their Student books at Topic 5, Lesson 10 and individually read the text on measuring volume.
- After the students have read the text tell them to close their books and get into groups of four.
- Ask them to write as many words or sentences as they can remember from the text into their exercise books. Once they have done this they should close their exercise books and open their Student books again. They reread the text and close their books again.

- In their exercise books they should next take the phrases they have remembered and try to organise these into sentences to try to reconstruct the text as much as possible.

Practice (10 mins)

- Once they have reconstructed as much of the text as they can remember, ask different students in the class to read the original text line by line. As they are doing this the groups should check their reconstructed text.
- Finally they can open their Student books to check the text.

Consolidation/evaluation and assessment (5 mins)

- Ask the students to look at Activity 2. Ask: 'How much liquid is in each measuring cylinder?' Ask the students to read the volume of liquid in each measuring cylinder.

Note: They should be able to do this after reading the text in Activity 1. They need to read the level at the bottom of the meniscus.

- When they have the answers they should find a partner to check them with.
- They should find another pair to make a final check.

Reflection

- Ask the students how well they managed the text reconstruction activity. Did they like this activity? Did it make them think very hard about the content of the text?

Answers

Activity 2
a) 2.4ml b) 5.2ml c) 25.0ml d) 63.0ml e) 124ml or 1.24l

Extension Activity

- Give each pair a beaker of water and a measuring cylinder and ask them to measure out different amounts of liquids and to get another pair to check that it is correct.