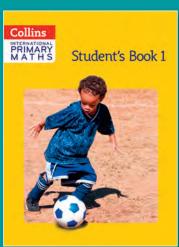


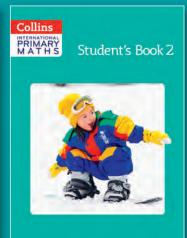
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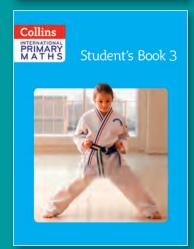
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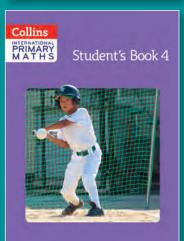


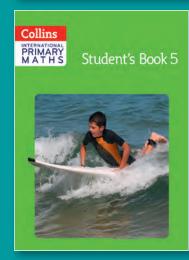
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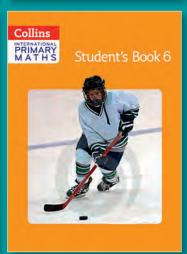


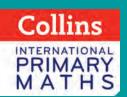












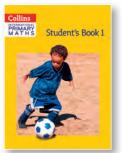
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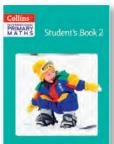
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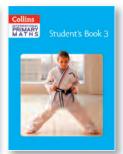
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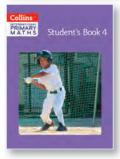
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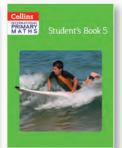
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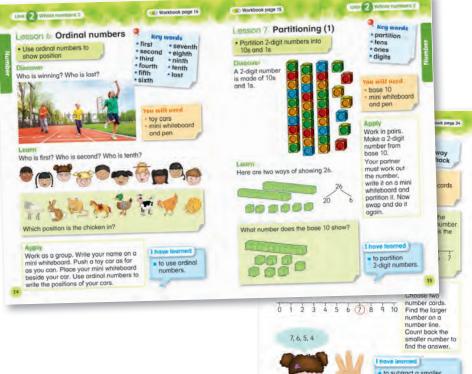




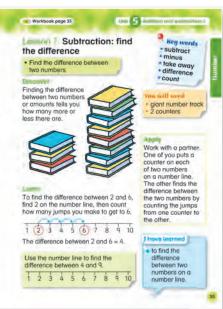




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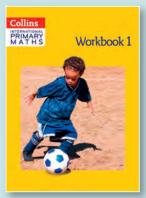


We are working with Cambridge International Examinations towards endorsement of these forthcoming titles

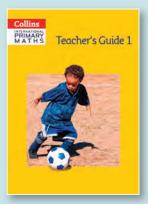


Sample page from Student's Book 1

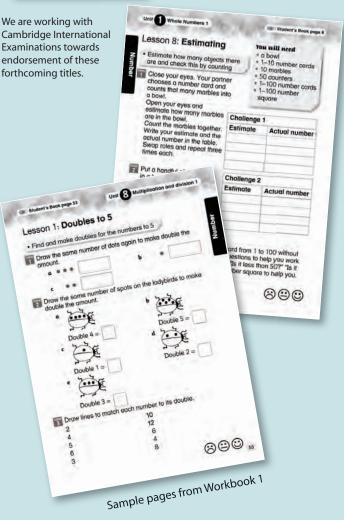
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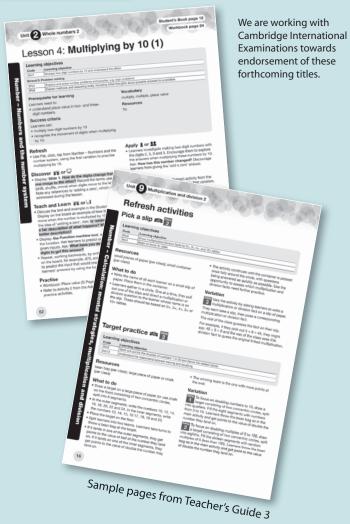


Each Workbook page has three levels of challenge which allow learners to practise and consolidate their newly acquired knowledge, skills and understanding of the mathematics they are learning.



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The digital component, via our online interactive platform **Collins Connect**, provides additional resources for teachers, including slideshows, images, resource sheets (PDFs), an audio glossary of terms and any interactive activities linked to lessons. It also contains planning, teaching and recording functionality via the adaptable planning tool, flexible interactive whiteboard teaching tools and games and the record-keeping tool. The accompanying DVD includes the Teacher's Guide in editable word documents and PDFs, slideshows to accompany the lessons and 32 interactive whiteboard mathematical tools.

Whole class	Review	Review questions that establish that learning is secure	5 min	
Groups / Pairs / Indiviuals	Apply	• Alternative context, including link to Strand 5: Problem solving, as well as cross-curricula links within which learning can be used and applied • Investigation/ puzzle/problem where the learner uses and applies the knowledge, skills and understanding taught during the lesson	10 min	
Groups / Pair	Practise	 Practical and written activities that consolidate the Learning Objective(s) Content to cover three levels of differentiation, with the majority of content focussing on the expected level In the Workbook this is approx: 25% below level of expectation 50% at level of expectation 25% above level of expectation 	15 min	Workbook
Whole class	Teach	 Direct the teaching of the Learning Objective(s) Use of digital component Promote mathematical vocabulary Textbook page to include: Key vocabulary Explanatory text Explanatory text Morked examples Worked examples 	10 min	's Book
	Discover	 Introduce the 'Big Idea' of the lesson Act as a springboard for discussion and exploration Provide international context and real-world applications of maths Photo/artwork/ diagram/series of questions etc. Aimed at getting the children engaged with the lesson The 'theme' of the Big Idea may be expanded and revisited in subsequent stages of the lesson 	5 min	Student's Book
	Refresh	- The 'starter' - Refresh the prerequisites for learning - Content may come from a related Learning Objective from the previous stage - 'Getting started'/'Oral and mental starter' type of activity	5 min	

Teacher's Guide

Unit overview

Unit 1: Whole numbers 1

Learning objectives			
Code	Learning objective		
1Nn1	Recite numbers in order (forwards from 1 to 100, backwards from 20 to 0).		
1Nn2	Read and write numerals from 0 to 20.		
1Nn3	Count objects up to 20, recognising conservation of number.		
1Nn4	Count on in tens from zero or a single-digit number to 100 or just over.		
1Nn5	Count on in twos [, beginning to recognise odd/even numbers to 20 as 'every other number'.]		
1Nn9	Order numbers to at least 20 positioning on a number track[; use ordinal numbers]		
1Nn11	Give a sensible estimate of some objects that can be checked by counting, e.g. to 30.		
Strand 5: P	roblem solving		
1Pt2	Explore number problems and puzzles.		
1Pt7	Describe and continue patterns such as count on and back in tens, e.g. 90, 80, 70.		
1Pt8	Identify simple relationships between numbers [and shapes], e.g. this number is ten bigger than that number.		

Unit overview

In this unit, learners will work with numbers, counting forwards and backwards in 1s, 2s and 10s. They will be reading, writing and ordering numbers to 20, and counting objects. They will estimate 'how many' objects there are in a group, then check their estimates by counting the objects.

Common difficulties and remediation

Some learners may believe that you must start counting on from number 1 or 0, and/or finish on number 10. Remedy this by asking learners to choose a number to start counting from, for example, 4; or to finish counting on, for example, 18.

Learners may not understand that, when counting a group of objects, each number said is a label for each object, and that each object must be counted only once. Practise organising objects so that they are easier to count accurately (into lines or pairs) and counting slowly and deliberately together as a class, using one number name for each object.

There can be some confusion around the terms 'numbers', 'numerals' and 'digits'. In Stage 1, it is sufficient to use the term 'numbers' with the learners when talking about a number as an amount you have in your head or see written down as numerals. It is necessary, however, to speak about one- and two-digit numbers and to explain that 'digit' refers to one of the 10 symbols that is used to make up a number. Of these three words, 'numerals' is the least important for learners to hear and understand at this stage, and will be introduced at a later stage, so 'numbers' can be used in its place where necessary.

In Stage 1, some learners may struggle to understand the concept of estimation, choosing a number at random as their estimate rather than looking at the group of objects and thinking carefully about how many there may be. To help learners with this, show them a group of 10 objects, a group of 2 objects and a group of 50 (or more) objects so that they have a basis for comparison. Ask questions such as: Has this group got more or less than 10 in it? whilst encouraging learners to compare it with the group of 10 objects.

Some learners may struggle when counting in the teen numbers as 11, 12, 13 and 15 do not follow the same naming pattern as the other teen numbers, for example, fifteen not fiveteen. Give lots of practice counting and identifying these numbers.

Promoting and supporting language

Display the key words for each lesson and discuss them with the learners. Use and refer to these words throughout the whole lesson, and encourage learners to use these words too, prompting them when necessary.

Knowing the number names is important for this unit. It is good practice to display both numerals and their corresponding number words around your classroom to expose learners to numbers in as many ways as possible. For example, you could display a number line around the classroom, number the seats the learners sit at, number the windows, and so on. Refer to these numbers on display as often as possible.

Use every opportunity you can to count with the learners, for example, counting the learners as they line up for lunch or counting out resources.

Physically show the learners the meaning of the vocabulary if possible, for example, walk forwards or move your hand forwards on a number line to demonstrate the meaning of 'forwards'.



Student's Book page 8

Workbook page 8

Lesson 8: Estimating

Learning objectives

Code	Learning objective		
1Nn11	Give a sensible estimate of some objects that can be checked by counting, e.g. to 30.		
Strand 5: Problem solving			

1Pt2	Explore	number	problems	and	puzzles.
------	---------	--------	----------	-----	----------

Prerequisite for learning

Learners need to:

• be able to count at least 10 objects accurately.

Success criteria

Learners can:

- sensibly estimate the number of objects in a group
- · check their estimate by counting.

Refresh 🖵

• Use the activity How many? from the Refresh

Discover SB 🖵

• Direct learners to the picture in the Student's Book and display Slide 9. Ask: How many sweets are there? How could you make a better guess?

Teach and Learn SB

- Show learners the dish containing approximately 20 buttons. Tell them that they will estimate how many buttons there are. Explain that an estimate is a best guess. Show the learners two buttons and ask if there are more or less than 2 buttons in the dish.
- · Repeat with other amounts of up to 30 (if appropriate 50) buttons. Encourage learners to estimate the number of buttons. Take suggestions. If necessary, suggest to the learners the strategy of looking for groups of 2, 5 or 10 objects. Then count the buttons together. Direct learners to the dot arrays in the Student's Book.

- Workbook: Estimating Page 8
- · Refer to Activity 4 from the Additional practice activities.

Vocabulary

estimate, guess, more than, less than

Resources

dish of approximately 50 buttons (per class); dish of 30 small objects to estimate (per group); slip of paper (1 per learner on each table); bowl (per pair)

Apply ::

• Put a dish of objects on each table and ask learners to write their name and an estimate of how many objects are in the dish on a slip of paper. They fold their paper, leave it on the table, and each group moves to the next table. Repeat until every group has visited every table. Then count the objects, open the slips of paper, and discover who made the closest estimate for each set of objects.

Review

 Ask everyone who prefers apples to raise their hand and everyone who prefers bananas to fold their arms. Learners must estimate how many of the class prefer apples. Ask them to think about how many learners are in the class, and whether more people raised their hands than folded their arms. Write estimates on the board, then count to get

Assessment for learning

- Estimate how many objects there are.
- Do you think there are more or less than 10/50/100 objects?

Lesson 8: Estimating

 Estimate how many objects there are and check this by counting

Discover



Key words

- estimate
- guess
- more than
- · less than



Learn

Use the dot pictures to help you estimate.

4 10

There are about the same number of butterflies as blue dots.



There are about 20 butterflies. Count to check.

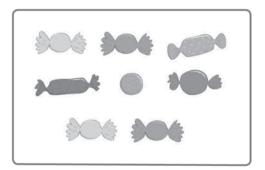
Lesson 8: Estimating

Unit 1

 Estimate how many objects there are and check this by counting



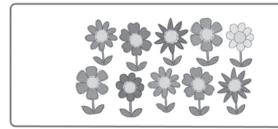
Estimate, then count.



Estimate

Count

Estimate, then count.



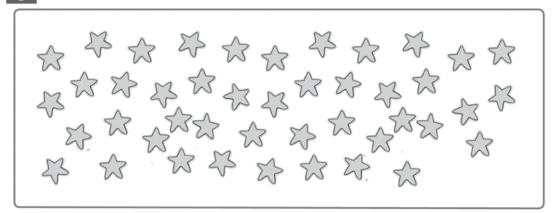
Estimate

Count

Estimate

Count

Estimate, then count.



 \odot

Estimate

Count



Unit 1 Whole numbers 1

Additional practice activities

Activity 1 1 Challenge 2

Learning objectives

• Recite numbers in order (forwards from 1 to 100, backwards from 20 to 0).

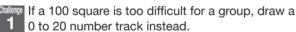
Resources

Resource sheet 1: 0–100 Number cards; chalk; stone or similar (for the Variation – per learner)

What to do

- Draw a 100 square grid outside using chalk. Each square must be large enough for a learner to jump in.
- Ask learners to jump along the numbers counting in ones. Encourage learners to count forwards from any number, not just from one.
- Ask learners to count backwards from 20 as they jump backwards along the track or number square.

Variations



Can the learners count backwards from the number their stone lands on?

Adapt for indoor use by using Resource sheet 1: 0–100 number cards and sticking the cards to the floor.

Activity 2 to or 22 Challenge 2

Learning objectives

- Read and write numerals from 0 to 20.
- Count objects up to 20, recognising conservation of number.

Resources

order pad (per group or pair); toy food or other countable items (per group or pair); plastic plates or bowls (per group or pair)

What to do

- One learner in each group or pair is the waiter and has an order pad.
- The other members of the group/pair must decide what they want and how many. The waiter writes down their orders (for example, 6 apples/12 buttons). If the learners are not confident to write words, they can draw the objects, as long as they write the correct number down.
- The waiter then goes and fetches the order, counting the objects onto plates and giving them to the customers to count and check.
- Swap roles and repeat.

Variations

Set up a café role-play area where the learners undertake the activity. The customers write their order on the order pad and give it to the waiter to read.



Adapt the activity to make it teacher led.



Learners can order more than 20 objects.

Unit overview

Unit 12: 3D shape

Learning objectives Code Learning objective Identify, describe and make 3D shapes including pyramids and prisms; investigate which nets will make a cube. 3Gs3 3Gs4 Classify 3D shapes according to the number and shape of faces, number of vertices and edges. 3Gs6 Relate [2D shapes and] 3D solids to drawings of them. 3Gs7 Identify [2D and] 3D shapes, [lines of symmetry and right angles] in the environment. Strand 5: Problem solving 3Pt9 Identify the differences and similarities between different 3D shapes. 3Ps7 Identify simple relationships between shapes, [e.g. these shapes all have the same number of lines of symmetry.] 3Ps8 Investigate a simple general statement by finding examples which do or do not satisfy it, [e.g. when adding 10 to a number, the first digit remains the same.] 3Ps9 Explain methods and reasoning orally, including initial thoughts about possible answers to a problem.

Unit overview

This unit focuses on 3D shapes. It includes work on pyramids and prisms. It would be helpful to explain to learners that 3D shapes can initially be classified into those that have curved surfaces, such as spheres, and those that have flat surfaces, such as cubes. The latter are called polyhedra. Two faces that meet form an edge and the corner where edges meet is called a vertex. Regular polyhedra have faces that are the same shape and edges that are the same length. Some polyhedra are prisms. A prism is made up of two identical polygons at opposite ends, joined by parallel lines that form rectangular shapes. A pyramid is made from a polygon forming the base and then lines drawn from each vertex which meet at an apex. The shape of the faces made by the lines are triangular.

Common difficulties and remediation

Shape is an area of mathematics in which learners who are less confident often excel, so have high expectations of what these learners, in particular, can achieve! Some learners may confuse names of 2D shapes with names of 3D shapes and name the 3D shape by the shape of its face. Provide activities that encourage learners to name 3D shapes and describe their properties in terms of the number and shape of the faces and the number of edges and vertices. Ask them to tell you similarities and differences between different 3D shapes.

Another area that some learners may find difficult is that of visualisation. Provide plenty of opportunities to do this by, for example, asking learners to visualise a net of a tetrahedron. Then ask them to draw it on paper and visualise the shape that will be seen after cutting the top off a square-based pyramid and describe what they can now see.

Give learners opportunities to examine and unfold packages such as tubes and prism-shaped confectionary packets. This will help them when they carry out work related to nets.

Be clear in practical demonstrations of what the cross-section of a prism is, so that learners can see that it is the same from one end of the shape to the other.

Promoting and supporting language

Recap the 3D shape words that they have already learned. Introduce new vocabulary by writing the words on cards and displaying them in the classroom with the actual shapes beside them. You may find it useful to refer to the audio glossary on Collins Connect. Tell learners that all shapes with faces and straight edges are called polyhedra (pol-e-he-dra). The word for one of these is polyhedron (pol-e-he-dron). This word is from the Greek 'poly' meaning many and 'hedron' meaning face.

The learners will be introduced to the word prism (pri-z-um) and pyramid (pir-a-mid). It would be helpful to break these, and all new words, up in this way and say them slowly, asking the learners repeat them after you.

Ask questions such as, **What is the same?** and **What is different?** when classifying shapes and expect the learners to answer in complete sentences.

Student's Book page 83

Workbook page 166



Lesson 3: Nets of a cube

Learning objectives

Code	Learning objective		
3Gs3	[Identify, describe and make 3D shapes including pyramids and prisms]; investigate which nets will make a cube.		
Strand 5	: Problem solving		
3Pt9	Identify the differences and similarities between different 3D shapes.		
3Ps7	Identify simple relationships between shapes, [e.g. these shapes all have the same number of lines of symmetry.]		
3Ps8	Investigate a simple general statement by finding examples which do or do not satisfy it, [e.g. when adding 10 to a number, the first digit remains the same.]		
3Ps9	Explain methods and reasoning orally, including initial thoughts about possible answers to a problem.		

Prerequisites for learning

Learners need to:

- visualise common 3D shapes
- sort, make and describe shapes, referring to their properties.

Success criteria

Learners can:

- · draw a net for a cube
- make a cube.

Refresh

 Choose an activity from Geometry – Shapes and geometric reasoning, 3D shape.

Discover 21/2

Direct learners to the Student's Book. They show a
puzzle cube and its net. Ask: What do you notice
about the puzzle? What do you notice about its
net? Learners discuss the fact that, like the shapes
in earlier lessons, it can be made from a net. Elicit
that the net is made from six squares.

Teach and Learn we or will

- Learners make a cube from modelling clay. Learners discuss the properties of a cube. Share answers and agree it has 6 faces, 12 edges and 8 vertices and it is a prism. Ask learners to point to the faces, edges and vertices on their cube.
- Say: A cube can be made from a net. Display: the Nets tool, showing a cube and what it looks like when opened up. Learners use a ruler to measure a net on squared paper and use the net to make an accurate cube from a piece of card.

Practise

- Workbook: Nets of a cube Page 166
- Refer to Activity 1 from the Additional practice activities.

Vocabulary

net, cube, faces, vertices, vertex, polyhedron

Resources

modelling clay (per learner); squared paper (per learner); card (per learner); ruler (per learner); sticky tape (per group), cube (per learner)

Apply

Give each learner a piece of squared paper. Ask
them to explore other arrangements of six squares
that would make a net of a cube. Once they have
drawn them, they cut them out and assemble them
to see if they will make a cube.

Review III

Display: the Nets tool. Show the net of a cube.
 Remind learners that they made their first net like this. Next, ask them to share the other nets they found. Invite volunteers to the front to draw their nets on the board.

Assessment for learning

- What is a net?
- What are the properties of a cube?
- How many squares make the net of a cube? Why?



Lesson 3: Nets of a cube

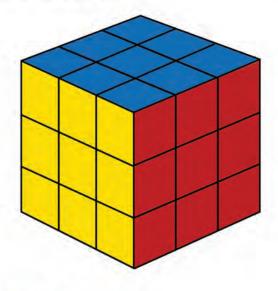
. Draw a net for a cube and make a cube

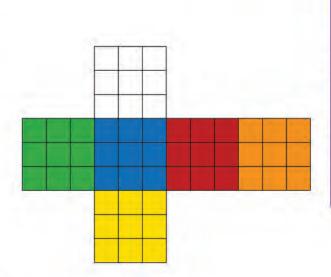
Discover

This is a puzzle cube and its net. A cube is a polyhedron. It has 6 square faces, 8 vertices and 12 edges.



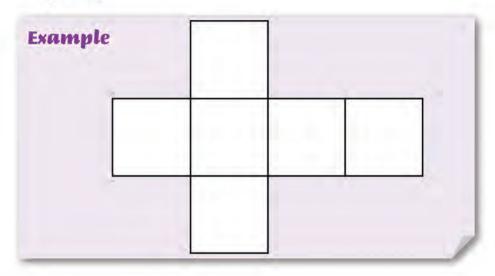
- net
- cube
- faces
- vertices
- vertex
- polyhedron





Learn

Just as you did for a triangular prism, you can make a cube from a net. The net for a cube is made up of 6 squares.



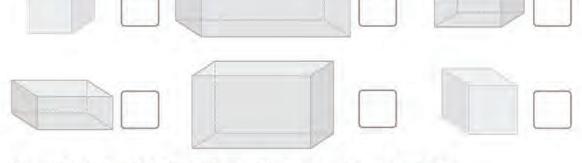


Lesson 3: Nets of a cube

- · Draw a net for a cube and make a cube
- Tick the shapes which are cubes.

You will need

- ruler
- cube



Complete the table to show the properties of a cube.

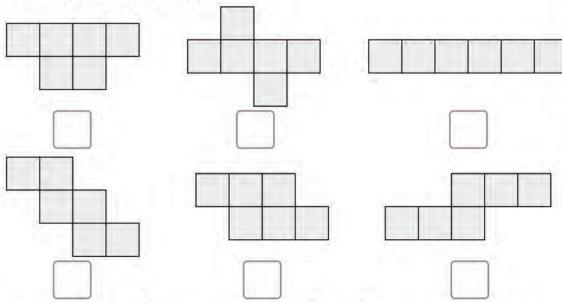
Number of faces	
Number of vertices	
Number of edges	
Is it a prism?	



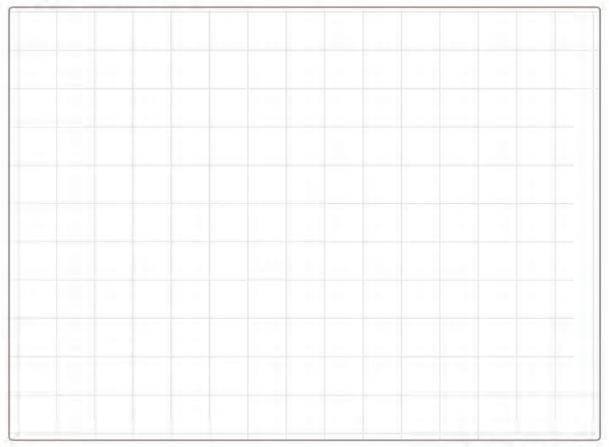
1 Describe how a cube is different from a cuboid.

2 Look closely at a cube. Now draw it.

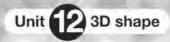
3 Tick the nets of a cube.



There are 11 possible nets of a cube. Draw 2 more nets that have not yet been shown.







Additional practice activities

Activity 1 : Challenge

Learning objectives

- · Identify, describe, make and classify 3D shapes including pyramids and prisms
- · Identify differences, similarities and relationships between shapes

Resources

sphere, cone, cylinder, cube, cuboid, square-based pyramid, tetrahedron, triangular prism (per group); Resource sheet: Carroll diagram template (enlarged to A3) (per group); Resource sheet: Venn diagram template for the variation (enlarged to A3) (per group)

What to do

- Learners discuss the properties of the 3D shapes
 number and shape of faces, number of edges and vertices.
- As a group, they decide the criteria for their Carroll diagram and add them to their frame.
- They then sort the shapes into the diagram, labelling each one with its name.
- Any shapes that do not fit are placed outside the diagram.

Variation

Learners repeat the activity but use a Venn diagram instead of a Carroll diagram. Give them more shapes to sort.

Activity 2 : Challenge 2

Learning objectives

- · Relate 3D solids to drawings of them and real-life examples
- Identify differences, similarities and relationships between 3D shapes

Resources

magazine pictures, photographs (per group); sheet of A3 paper (per group); glue stick (per group)

What to do

- Give groups of learners some photographs of reallife objects.
- They create a poster by sticking them onto large paper and labelling each object with its 3D shape name.
- . They then add the properties of each shape.
- Say: Make statements about pairs of shapes that give differences and similarities between them.

Variation

Learners discuss familiar items from around the classroom or from their homes. They list them and their 3D shape name and sketch a picture to illustrate.



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