

Installation art
Three dimensional art that aims to transform a particular place.



'Support - Save Venice from drowning' by Lorenzo Quinn. © Frans Sellies Photography. All rights reserved 2022 / Bridgeman Images.

- Often large in scale.
- Location is important.
- Often made using everyday objects in new ways.
- Can be interactive.

Cai Guo-Qiang

- Guo-Qiang was born in 1957 in the Fujian Province, China.
- He grew up during China's Cultural Revolution, when explosions were part of everyday life.
- Guo-Qiang took part in demonstrations against political changes.
- He creates sculpture, drawings, installations and performance work.
- His art explores culture, politics and science and sometimes features explosions.

Interactive art



'The Weather Project' by Olafur Eliasson aimed to recreate a sunset using lighting, mirrors and artificial mist.

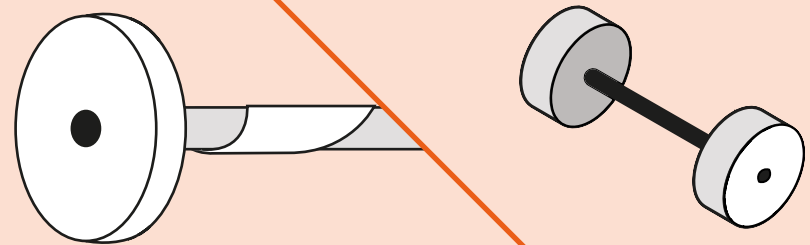
- see hear touch smell

atmosphere	The mood of an artwork, for example, mysterious or joyful.
concept	The idea behind an artwork.
location	The place where an artwork is displayed.
performance art	Artwork that is an event rather than an object.
scale	The size of an artwork.
viewer	The people who look at, or visit, your installation.

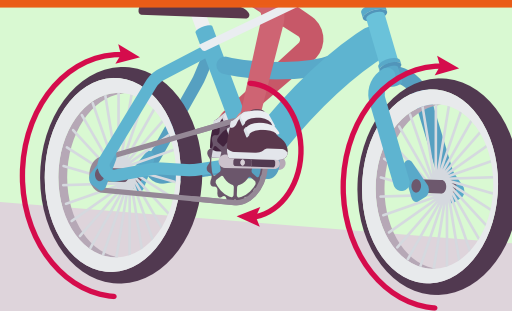
Circuit	A collection of components that make an electrical system.
Circuit component	One of several parts that complete a circuit (e.g. bulb).
Configuration	How different parts are put together to form an object.
Current	The flow of electricity.
Develop	Continue to work on something to make progress or improve it.
DIY	The acronym means 'Do it yourself' and represents various activities that someone chooses to do themselves at home, rather than through a service or professional.
Investigate	Research something by looking at it in greater detail.
Problem-solve	Develop and test solutions to an issue.
Product analysis	To look at an object and evaluate it based on certain criteria (e.g. function).
Stable	Object does not easily topple over.
Target user	A particular person at whom the product is aimed.

Key facts

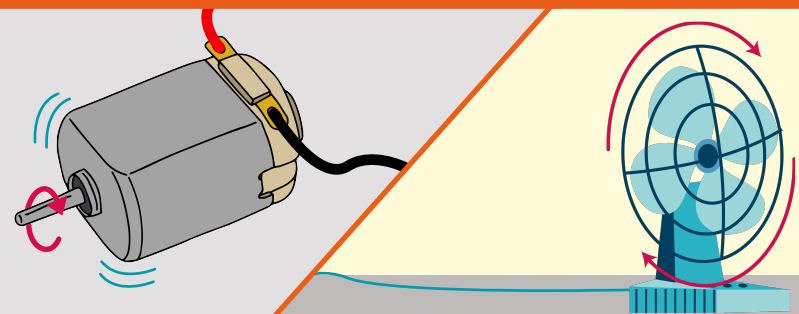
Axles form part of the wheel mechanism in wheeled products such as toy cars, wheelbarrows and bicycles.



For a bicycle to function we need to use our legs and feet to push the pedals that rotate the axle and spin the wheels.

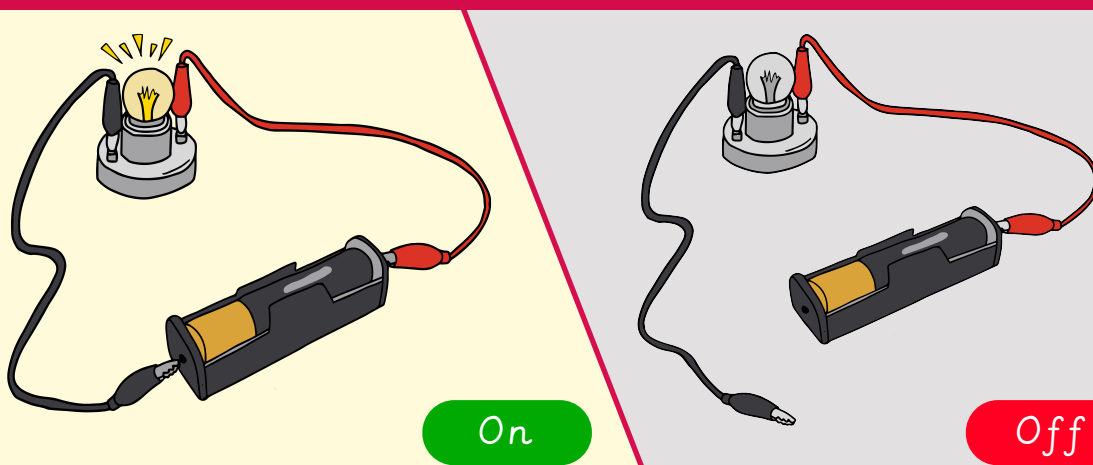


An electric motor converts electrical energy into rotational movement, causing the motor's axle to spin. Motors use electricity instead of human force to move the axle.



A motorised product is an object that uses a motor to function.

Series circuits only have one path for the electrical current to flow.



If there is a break in a series circuit, the electrical current will be cut and all the components will stop working. Causing a break in a series circuit can act as a switch to turn the circuit off.



Vocabulary and pictures



Mercure

Mercury



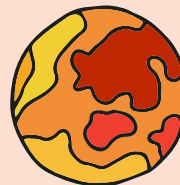
Vénus

Venus



La Terre

the Earth



Mars

Mars



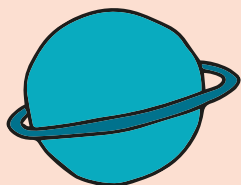
Jupiter

Jupiter



Saturne

Saturn



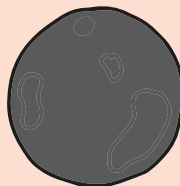
Uranus

Uranus



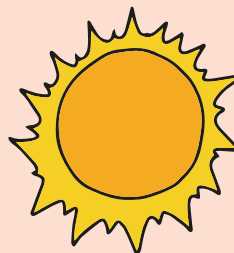
Neptune

Neptune



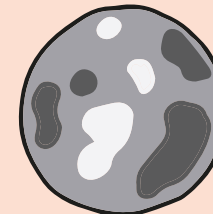
Pluton

Pluto



le Soleil

the sun



la Lune

the moon



une étoile

a star



minuscule

tiny



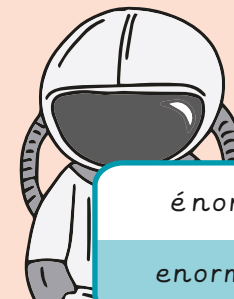
petit(e)

small



grand(e)

big



énorme

enormous



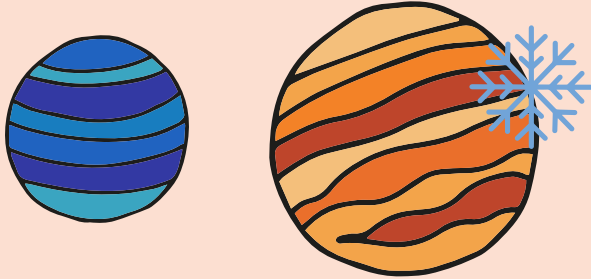
Sentence structure and phrases

le système solaire	The solar system
l'espace (m)	Space
une planète	A planet
chaud(e)	hot
froid(e)	cold
glacé(e)	frozen

Descriptions

Neptune est une assez grande planète bleue

Neptune is a quite large blue planet



Jupiter est une énorme planète très froide

Jupiter is an enormous, very cold planet

très very assez quite

Descriptions and metaphors

The size adjective comes before the noun, and the colour adjective after the noun

Le soleil est un grand lion orange



The sun is a big orange lion

La lune est une grande banane jaune



The moon is a big yellow banana

La Terre est un petit bébé bleu et vert



The Earth is a small blue and green baby

Watch out for the words **et** and **est** both sound the same but have different meanings!

et - and

est - is

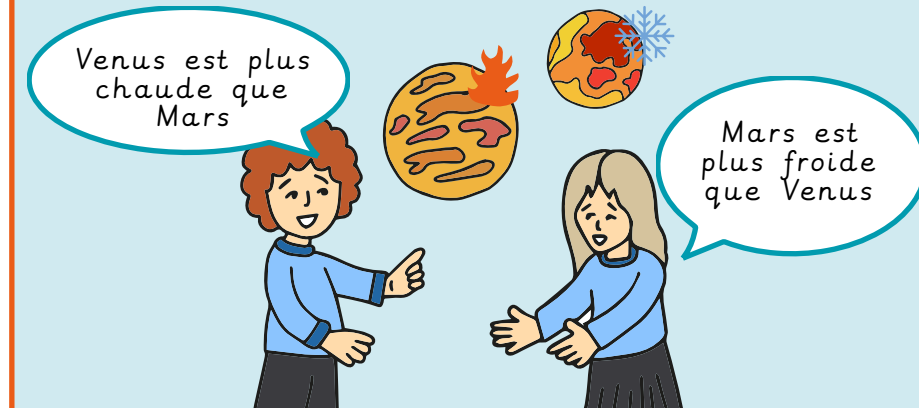
de + le = du

Saturne est loin **du** soleil

Saturn is far from the sun

Making comparisons

Venus est plus chaude que Mars



Venus is hotter than Mars

Mars is colder than Venus



Where is Baghdad?

Modern day Baghdad can be found in Iraq. Iraq is a country within the continent of Asia. Iraq is in the west of Asia and the west of Asia is often referred to as the Middle East.

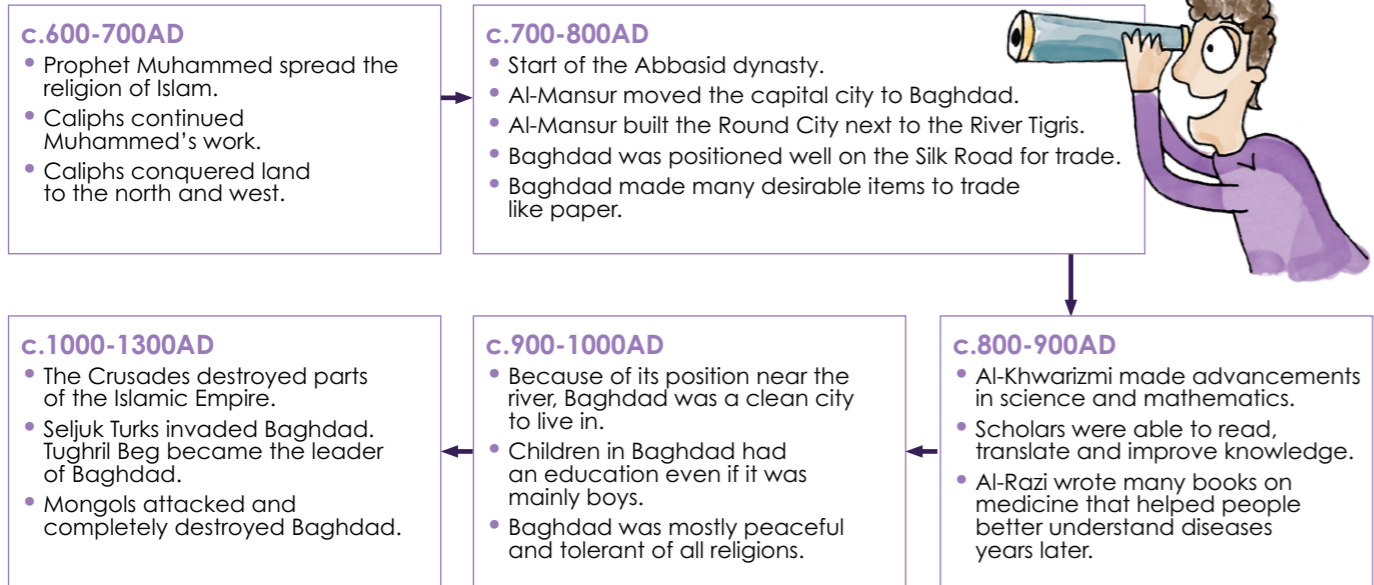


What was the Golden Age of Islam?

Between the 7th and 10th centuries, Baghdad was a place of great wealth. The city was positioned between great trade routes and made goods that were very desirable such as paper and ceramic tiles. It was also a centre of learning. Because of all of the wealth and achievements, this period was described as the Golden Age of Islam.



Timeline



Significant People and Places

The Round City of Baghdad	Tigris River	House of Wisdom	The Middle East
The Round City was built in 762AD. It took four years to build by around 100,000 craftsmen. It included an outer circle that was 32m thick and 27m high and was surrounded by a deep water-filled trench.	The Tigris River ran alongside the Round City of Baghdad. It was a vital source of water and an important transport link to the Persian Gulf.	The House of Wisdom was a type of library. Many scholars from around the world came to translate and preserve ancient texts.	The Middle East includes land from most of West Asia and parts of North Africa. Some of the countries that are part of the Middle East include Iraq, Syria, Turkey, Iran, Afghanistan, Saudi Arabia, Egypt, Sudan, and Libya.

Glossary

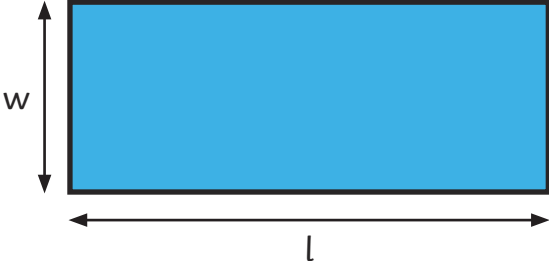
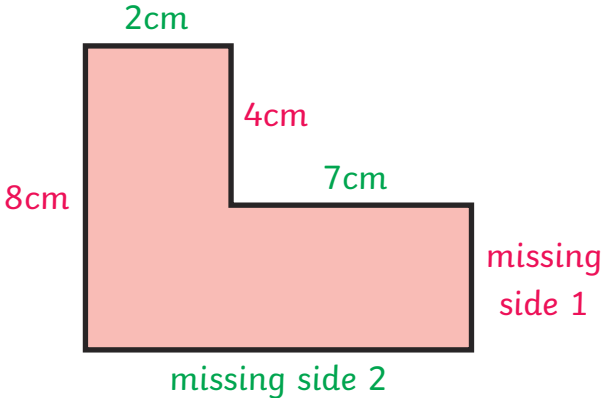
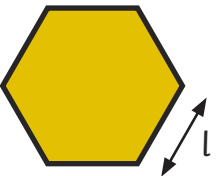


1	algebra	a problem-solving system where letters and other symbols are used to represent numbers and quantities
2	allies	nations who choose to support each other
3	astrology	the study of the movements and relative positions of planets and stars and how they may have an influence on the world
4	astrolabe	a circular metal disc with pointers for measuring the angles of the stars
5	astronomy	a branch of science that studies space and the universe
6	caliph	the chief Muslim ruler, viewed as the successor of Muhammad
7	civil war	a war between citizens within the same country
8	drainage	the action of removing surface water or sewage to keep places clean
9	dynasty	a line of rulers of a country
10	Islam	the religion of the Muslims revealed through Muhammad as the Prophet of Allah
11	merchants	a person selling and buying goods with foreign countries
12	observatory	a room or building for scientific equipment to be used to study natural phenomena in the universe
13	papyrus	a plant that was stripped and used to make paper by the ancient Egyptians
14	prophet	a person seen as an inspired teacher spreading the word
15	Qur'an	the holy book of the religion Islam
16	scholars	a specialist in a particular subject
17	textiles	a type of cloth or woven fabric
18	territory	an area that is controlled by a country
19	translators	people who translate from one language into another as their job
20	wood pulp	a mixture of wood chips and chemicals that was compressed to make paper

Significant People and Places

Muhammad ibn Musa Al-Khwarizmi	Abu Ja'far Abdallah ibn Muhammad al-Mansur, 754AD	Harun al-Rashid 786AD	Abu Bakr Muhammad ibn Zakariya Al-Razi
Al-Khwarizmi studied ancient Indian scientific books. He was one of the greatest astronomers creating a table to predict the position of the sun and planets. He also wrote many books on mathematics and calculation. His work is still used today.	Al-Mansur was the second Abbasid Caliph. Because his brother died in 754AD, after only five years as caliph, Al-Mansur worked to establish the Abbasid caliphate. He removed all opposition and he moved the capital city to Baghdad where he had the most support. He created the Round City.	Harun al-Rashid was the fifth Abbasid Caliph. During his rule, there were many local revolts. However, it was also a time of great wealth and it is said that Baghdad flourished as he established the House of Wisdom and the Baghdad hospital.	Al-Razi has been described as one of the greatest physicians. He is well-known for writing over 200 books on medicine and various areas of science. He became chief physician of Baghdad hospital.

Length, Perimeter and Area

Knowledge Organiser

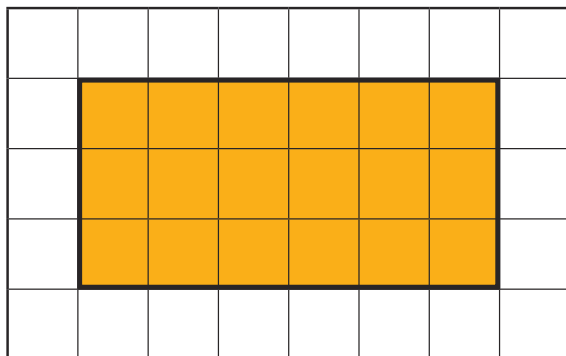
Key Vocabulary	Measure Perimeter	Calculate Perimeter		
metre	Measure the perimeter of a rectangle: 	Calculate the missing sides of this rectilinear shape to find the perimeter: 		
kilometre			Measure the length (l) and width (w). $Perimeter = l + w + l + w$ or $(l + w) \times 2$	* This shape is not drawn to the dimensions specified.
perimeter			Measure the perimeter of regular shapes:  Measure the length (l) and count the number of sides (s) on the shape. $Perimeter = l \times s$	$Missing\ side\ 1 + 4cm = 8cm,$ $so\ missing\ side\ 1 = 4cm.$
length	Measure the perimeter of irregular shapes: 	$Missing\ side\ 2 = 2cm + 7cm = 9cm$		
width	Measure the length of each side and add them together.	$Perimeter = sum\ of\ all\ sides =$ $2cm + 4cm + 7cm + 4cm + 9cm + 8cm = 34cm$		
rectangle				
rectilinear				
dimensions				
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Length, Perimeter and Area

Knowledge Organiser

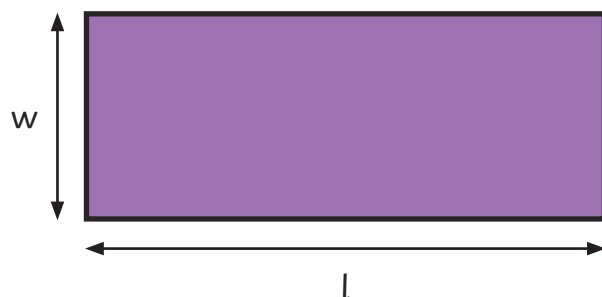
Area of Rectangles

The area of a rectangle on a grid:



Multiply the length \times width
 $= 6 \times 3 = 18$ squares.

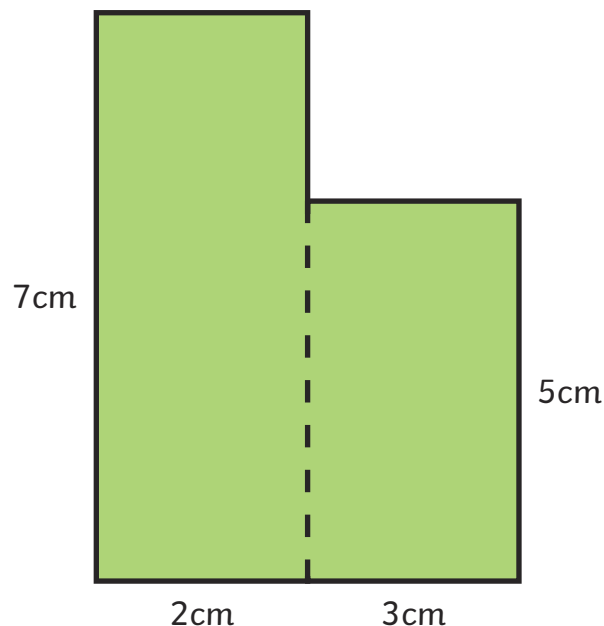
The area of a rectangle = length (l) \times width (w).



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Area of Compound Shapes

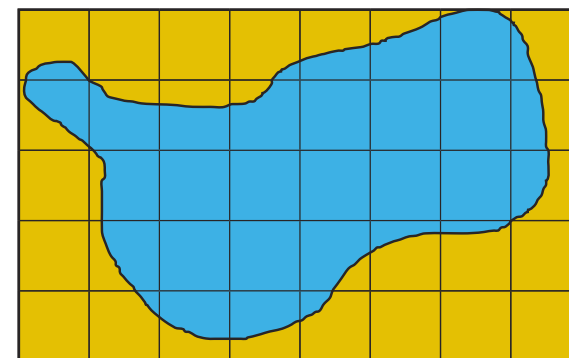
To find the area of a compound shape, divide the shape into rectangles with known dimensions:



$$\begin{aligned} \text{Area} &= 7\text{cm} \times 2\text{cm} + 3\text{cm} \times 5\text{cm} \\ &= 14\text{cm}^2 + 15\text{cm}^2 \\ &= 29\text{cm}^2 \end{aligned}$$

Estimating Area

To estimate the area of an irregular shape, find the number of whole squares plus squares where more than half is covered.



Whole squares = 10
Squares where more than half is covered = 10

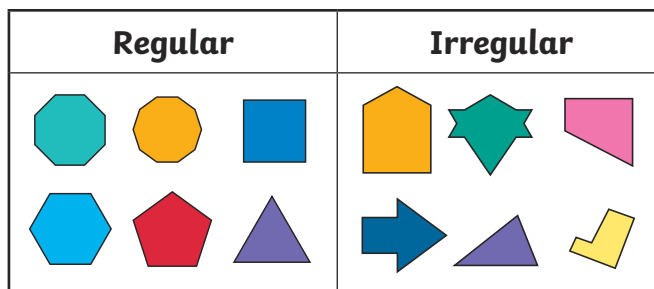
$$\begin{aligned} \text{Estimate of area} &= \text{whole squares} + \text{part squares} \\ &= 10\text{cm}^2 + 10\text{cm}^2 = 20\text{cm}^2 \end{aligned}$$

*There are other ways to estimate the area of irregular shapes.

Key Vocabulary

- angle
- right angle
- acute
- obtuse
- reflex
- protractor
- horizontal
- vertical
- parallel
- perpendicular
- polygon
- regular
- irregular
- two-dimensional
- three-dimensional
- flat face
- curved surface
- edge
- curved edge
- vertex
- apex

Regular and Irregular Polygons



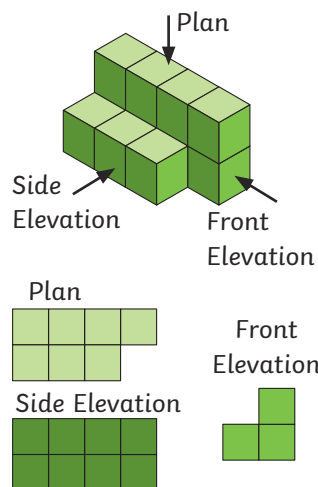
A polygon is any two-dimensional shape formed with straight lines.

In a regular polygon, all the sides and angles are equal.

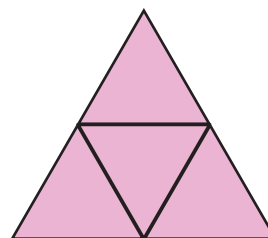
In an irregular polygon, the sides and angles are not equal.

Representations

Cube models can be drawn as 2D representations using different elevations.












A shape net is a 2D drawing of an unfolded 3D shape. When you are drawing or reasoning about shape nets, think carefully about where the edges of the faces meet.



Shape net of a tetrahedron.

Properties of 3D Shapes

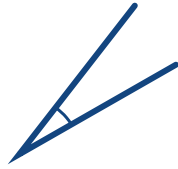
Name	Surfaces		Edges		Vertices	Picture
	Flat	Curved	Flat	Curved		
cube	6	0	12	0	8	
cuboid	6	0	12	0	8	
square-based pyramid	5	0	8	0	5	
tetrahedron	4	0	6	0	4	
triangular prism	5	0	9	0	6	
pentagonal prism	7	0	15	0	10	
hexagonal prism	8	0	18	0	12	
octagonal prism	10	0	24	0	16	
octahedron	8	0	12	0	6	

A cone has an apex. This is because a vertex is the point where two straight edges meet and a cone has no straight edges.

Identifying Angles

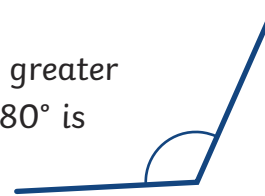
Acute Angles

Any angle that measures less than 90° is called an **acute** angle.



Obtuse Angles

Any angle that measures greater than 90° and less than 180° is called an **obtuse** angle.

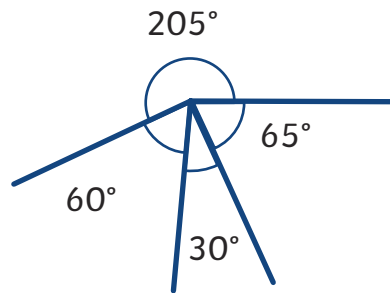


Reflex Angles

Any angle that measures greater than 180° is called a **reflex** angle.



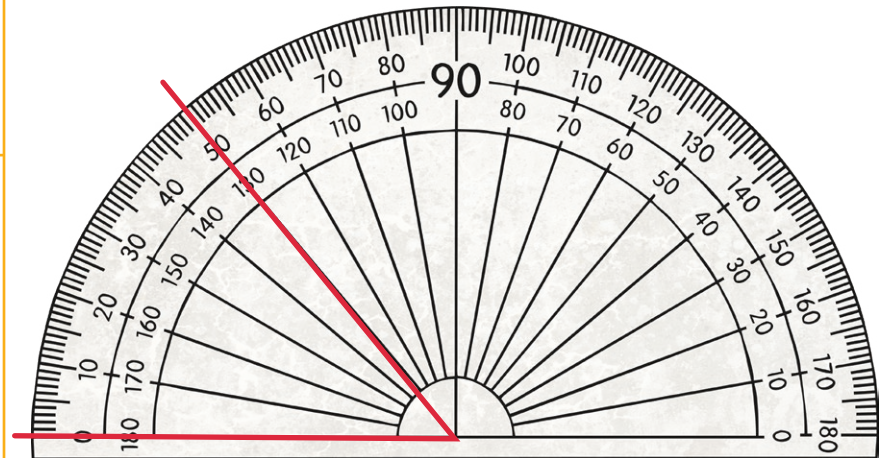
Angles on a straight line always total 180° .



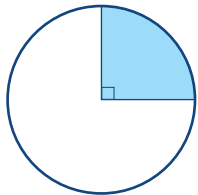
Angles around a point always total 360° .

Measuring and Drawing Angles

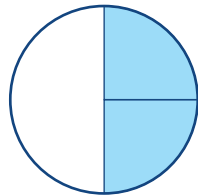
To measure angles, we use a protractor. Look carefully at how the numbers on the scale count from 0° to 180° in both directions.



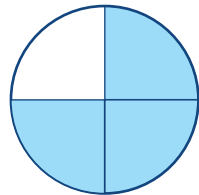
Multiples of 90° can be used as descriptions of a turn.



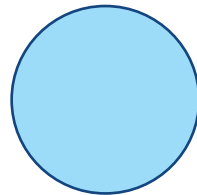
$\frac{1}{4}$ turn - 90°



$\frac{1}{2}$ turn - 180°

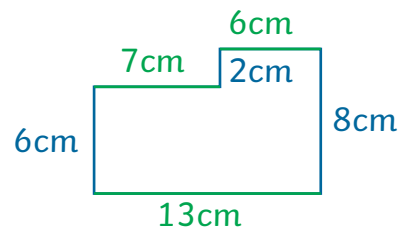


$\frac{3}{4}$ turn - 270°



1 turn - 360°

Using Properties of Rectangles



$6\text{cm} + 2\text{cm} = 8\text{cm}$

$7\text{cm} + 6\text{cm} = 13\text{cm}$



Glossary

1	anther	the part of the stamen that contains the pollen of a flowering plant
2	asexual	not requiring both reproductive organs
3	conception	the initial development of an embryo or young
4	domains	three groups of organisms
5	fertilising	the action of combining male and female gametes
6	gametes	either a female or male cell in both plants and animals
7	gestation	the period between conception and birth
8	grafting	inserting a twig or shoot as a graft
9	invertebrate	an animal without a backbone
10	kingdoms	four main groups of organisms: protists, fungi, plants and animals
11	life cycles	the series of changes in an organism including reproduction
12	organisms	an individual animal, plant, or single-celled life form
13	ovule	the female cell in a plant
14	pollination	the transfer of pollen from stamen to stigma, ovule or flower
15	sexual	the involvement and fusion of both gametes
16	species	a set of animals or plants with similar characteristics
17	stamen	the part of the plant containing the pollen
18	stigma	the part of a plant that receives the pollen
19	vertebrate	an animal with a backbone
20	viviparous	animals that give birth to live young

Who are Jane Goodall and David Attenborough?

Dr. Jane Goodall, born in 1934, ventured into the realm of the unknown at the age of 26. Gaining an understanding of our closest relatives the chimpanzees, Dr. Jane Goodall has not only shown us the urgent need to protect chimpanzees from extinction; she has also redefined species conservation.



Born 8 years earlier– Sir David Attenborough is best well known for his fascinating TV series' about our world, animals and the environment we live in. As part of his very early TV series for the BBC, Attenborough used to collect animals and transport them to London Zoo. He soon realised that animals in nature was a lot better!



Life cycles in animals, including gestation periods

Life cycles in animals varies depending on animal class (amphibian, fish, reptile, bird, mammal) but even further to some **species** — for example, some reptiles give birth to eggs, while others give birth to live young. **Gestation** is the time between **conception** and birth; in **viviparous** animals.

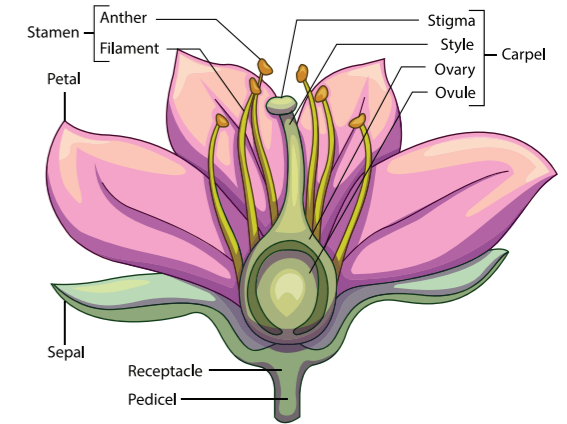
The length of **gestation** varies drastically among animals, with hamsters: 16-23 days up to elephants: 18-22 months! Invertebrates' life cycles vary drastically as well — between jellyfish to arthropods and worms to mollusks!

life cycle of a turtle	life cycle of a chicken	life cycle of a butterfly	life cycle of a frog

Pollination and Reproduction

Pollination of plants happens in many ways: birds, bats, insect, wind, mammals and sometimes water.

Reproduction can happen in two different ways: **asexually** and **sexually**. Asexual reproduction occurs when the parent plant is used to generate a new plant. Grafting, layering and **micropropagation** can be methods to achieve this.



What is inside a flower?

Most flowering plants have flowers which have both male and female parts. In this picture, the anther and stamen are male parts and the style, ovary and ovule are female parts. The petals help attract insects who move the pollen from this flower to a different flower.

Types of plant

Flowering	Nonflowering
<p>Flowering plants produce, seeds, fruits and flowers. A flower's petals are mostly brightly coloured to attract insects and other animals for pollination.</p>	<p>Nonflowering plants are divided into two main categories: those that reproduce with dust like particles called spores and those that use seeds to reproduce.</p>