

The Ellipses

Extending knowledge on curves

MATHOMAT V2
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Linear Radian Scale $1 \text{ Radian} = 1.5\text{cm}$

Number Line - cm divisions
5mm, 7mm, 10mm, 15mm, 20mm, 30mm, 40mm, 50mm

Circle Face
Clock Face
Circle Cluster
Isosceles
Equilateral
Trapezium
Parallelogram
Rhombus
Square
Golden Rectangle
Kite
Quadrilateral Cluster
Rhombus
Triangle
Dodecagon
Pentagon
Hexagon
Octagon
Polygon Cluster
Square 25mm
Rhombus 30°
Rhombus 45°
Parallelogram 45°
Normal Frequency Curve
Triangle Cluster
Isosceles
Equilateral
Trapezium
Parallelogram 45°
Rhombus
Square
Golden Rectangle
Kite
Quadrilateral Cluster
Rhombus
Triangle
Dodecagon
Pentagon
Hexagon
Octagon
Polygon Cluster
Square 25mm

Problem solving steps:
1 - analyse,
2 - think,
3 - do,
4 - check

0.5mm Pencil Allowance

Scale 1: 20.00
Scale 1: 2

Scale 1: 20.00
Scale 1: 2

Scale 1: 20.00
Scale 1: 2

Scale 1: 20.00
Scale 1: 2

Name:

Circle Centre Finder
Parallel Lines
Isometric Lines
Ellipse Cluster
Scaling

Radius to Tenths
Bearing
Degrees

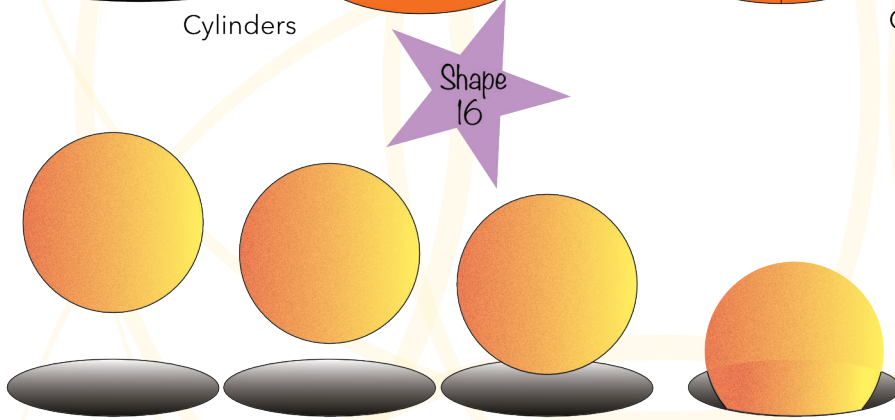
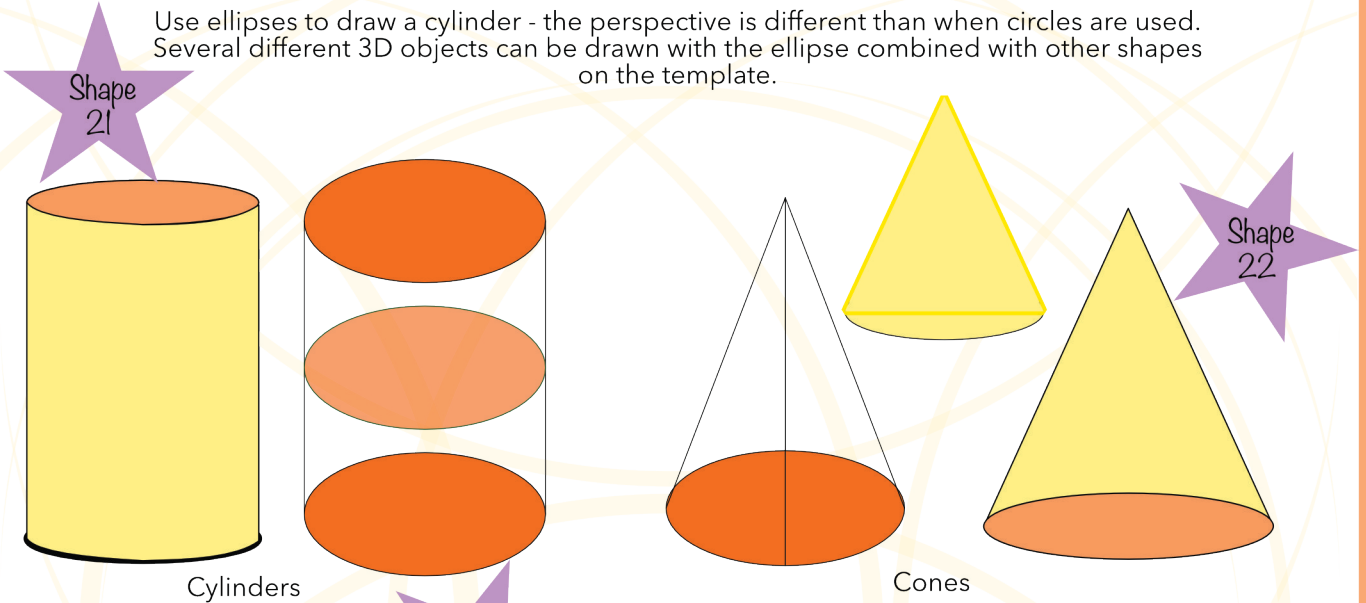
$y = \sin x$
 $y = \sqrt{x}$

Circle Cluster
18.54 x 30mm
10 x 40mm
20 x 40mm
8 x 30mm
8 x 20mm

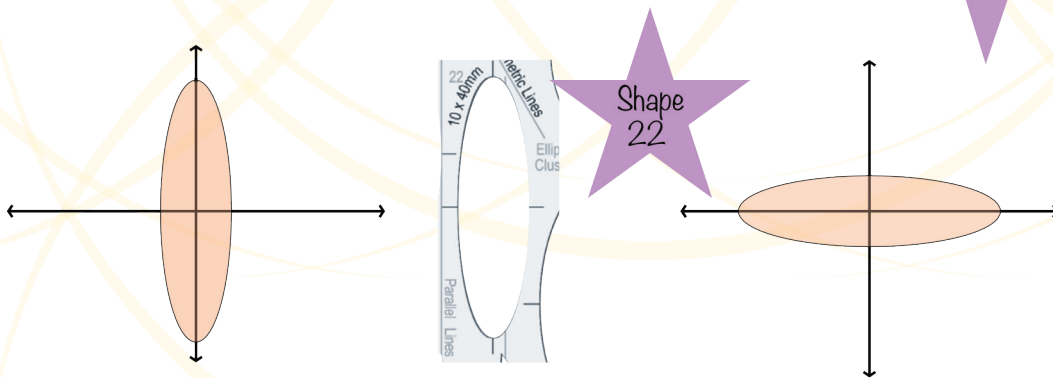
Ellipses Examples

Putting 3D Objects in Perspective and Euclidean Geometry

Use ellipses to draw a cylinder - the perspective is different than when circles are used. Several different 3D objects can be drawn with the ellipse combined with other shapes on the template.



This sketch would not have worked if a circle was used to show the hole in the ground. The perspective is more correct when using an ellipse.



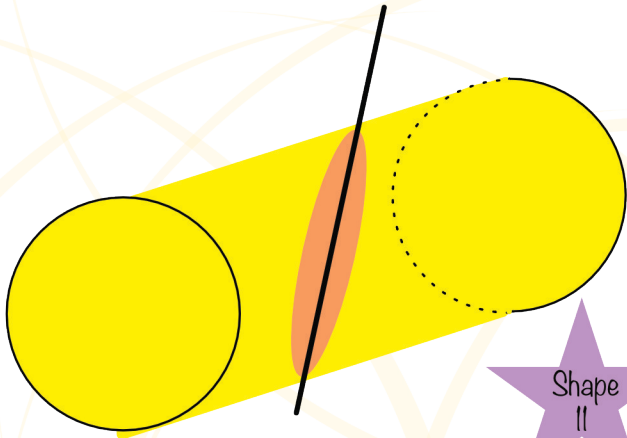
The ellipses may be used in conjunction with the Cartesian Plane. The major and minor axes are clearly marked on the template.



Ellipses Examples

3D Objects, Cross-sections and Drawings

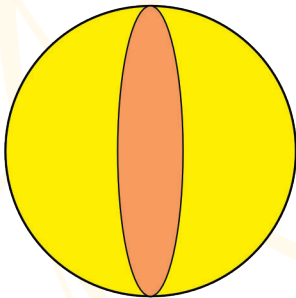
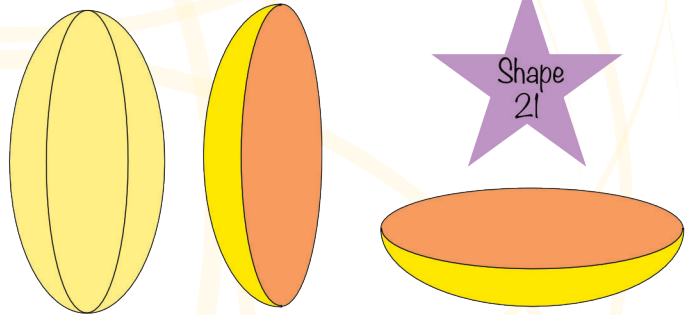
Cylinders and Cones look better when drawn with an ellipse than it does with a circle. Take care to explain that the base is still a circle shape - but how we see it is more like an ellipse.



An ellipse is used to show the cross-section through a cylinder. The cross-section is not perpendicular, hence the base and the face will differ. If this cross-section was perpendicular we would have had a circle-shaped face.

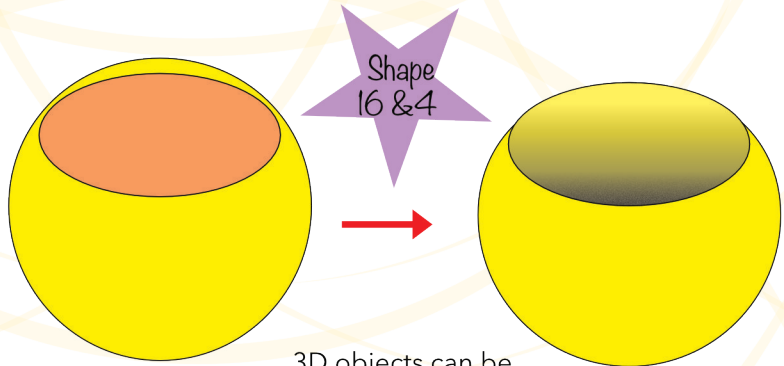


Cross-sections through various 3D objects can result in having an ellipse as a face.



The cross section through a sphere

A 3D oval is called an ellipsoid



3D objects can be drawn using the shapes on the template as a guide.

Studying the perpendicular cross-sections of 3D objects enables students to identify the base more readily. Other types of cross-sections deliver interesting results which introduces some of the functions used in Algebra. ✓

