The Circles

A variety with specific uses

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Linear Radian Scale
1 Radian = 1.5cm

Number Line - cm divisions

Circle Cluster

5mm
7mm
10mm
15mm
20mm
18.54 x 30mm

Clock Face

100 Divisions (Percentage Points)

Polygon Cluster

Octagon
Hexagon
Pentagon
Triangle
Octagon
Triangle
Pentagon
Hexagon
Dodecagon
Square
Square 25mm

Australian Patent Appl.
No. 2018900281 and
Design Appl.
No. 201810792

Golden Rectangle
18.54 x 30mm

Rhombus 30°
Rhombus 60°
Rhombus 45°

Square 15 x 15mm
Kite

Quadrilateral Cluster

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

0.5mm Pencil Allowance

Radius to Tenths

Bearing

Degrees

Circle Centre Finder

Parallel Lines

Isometric Lines
Ellipse Cluster
10 x 40mm
20 x 40mm

Scalene
Isosceles
Triangle Cluster
Equilateral
Isosceles
$(1, 2, \sqrt{3})$
$(1, 1, \sqrt{2})$
8 x 26mm

Rectangle 25 x 15mm
$y = 2x^2$
$y = x^2$

Parallelogram 45°

Normal Frequency Curve
$y = \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}x^2}$

Trapezium
Trapezium

$y = \sin x$

$\frac{\pi}{6}$ $\frac{\pi}{4}$ $\frac{\pi}{3}$ $\frac{\pi}{2}$ $\frac{2\pi}{3}$ $\frac{3\pi}{4}$ $\frac{5\pi}{6}$ π $\frac{7\pi}{6}$ $\frac{5\pi}{4}$ $\frac{4\pi}{3}$ $\frac{3\pi}{2}$ $\frac{5\pi}{3}$ $\frac{7\pi}{4}$ $\frac{11\pi}{6}$ 2π

Name:

Concave Quadrilateral
Arrow Head

5 x 15mm

Scale 1:20,00 (Mapping)
Scale 1:2

1:20,000
1:2

Shape 3

This circle is the biggest on the template, save for the protractor. The main use is for pie-charts as the divisions are marked off in hundreds.
Working from a bar graph to a pie-chart is easy when using this circle for the pie chart and any of the rectangles for the bar graph.

Ages of children at Sunshine Daycare

Number of children

30

20

10

3   4   5   6   7   8

Age in years

Shape 4
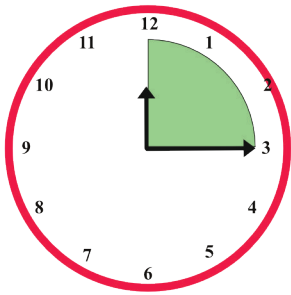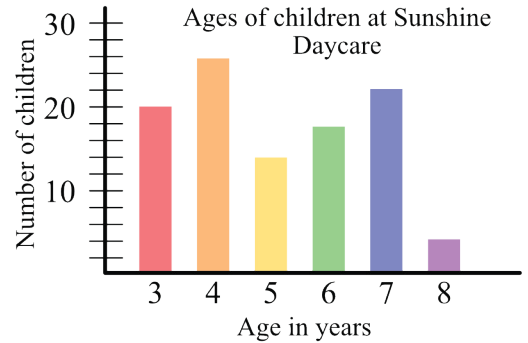
Turn the circle into fractions and use it alongside the clock-face - this way halves and quarters can be visualized.

Shape 11
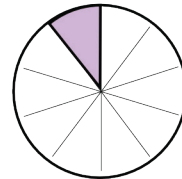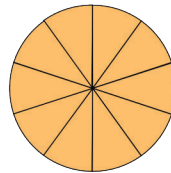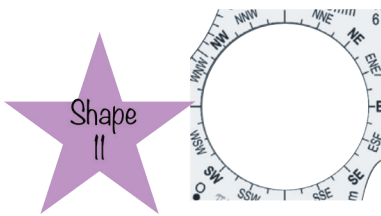
Steps to create fractions: Select a circle, mark off the points, divide into sectors.
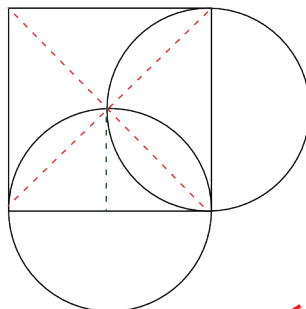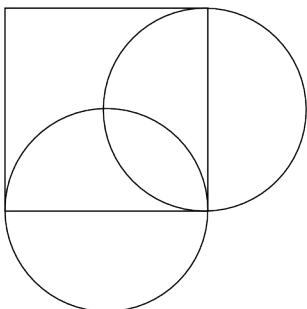
Being able to model problems is critical to understanding the process of solving them. ✔

Circles Examples

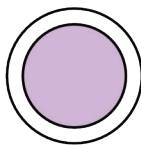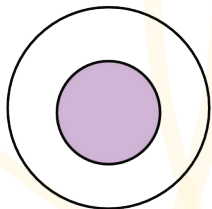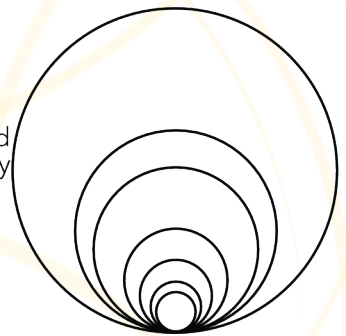## Patterns, Venn-diagrams, 3D objects and Decomposing Shapes
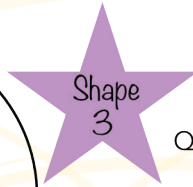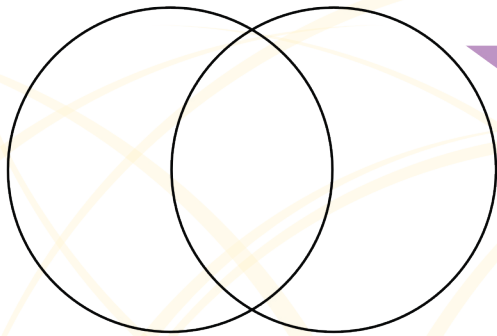
Shape 3

Quick and easy Venn diagrams - the circle from the protractor can be used for this as well.
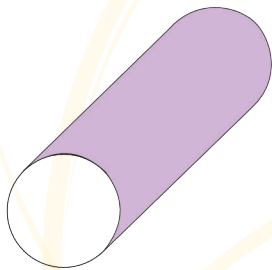
Creating 3D objects by using the 2D shapes.

Exploring patterns and properties of circles by using them in art projects or patterns.

Some optical illusion experiments will have students understand the power of perspective in geometry. Both of the coloured - in circles are same size.

This diagram shows the intersections of the circles with the square. Some very intricate questions on area has been developed by using only certain parts of these types of diagrams. It is very useful for students to see how figures can be decomposed into their respective units.
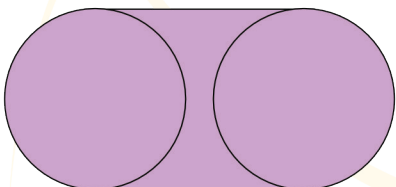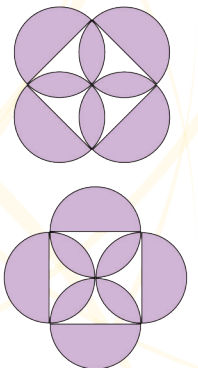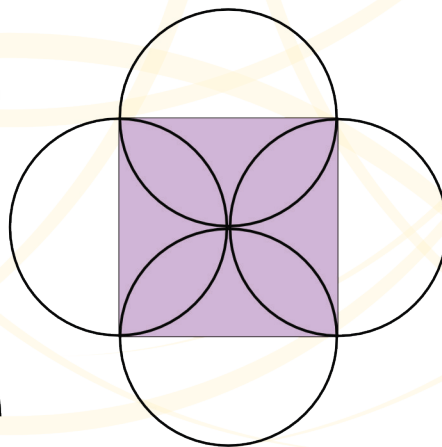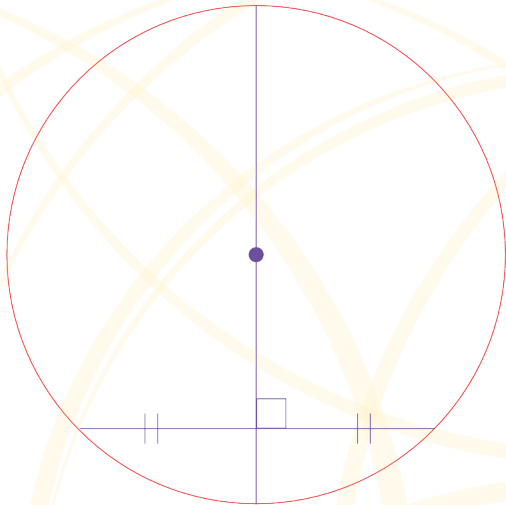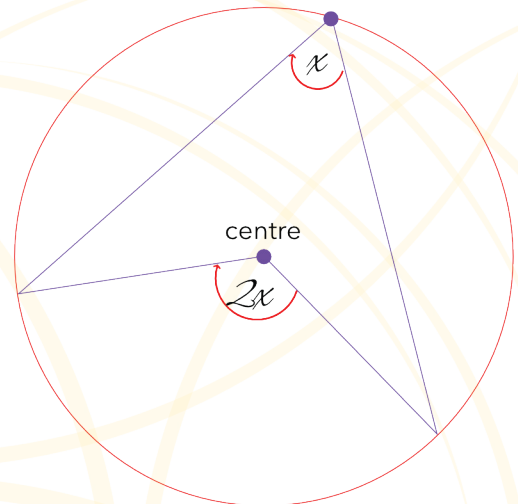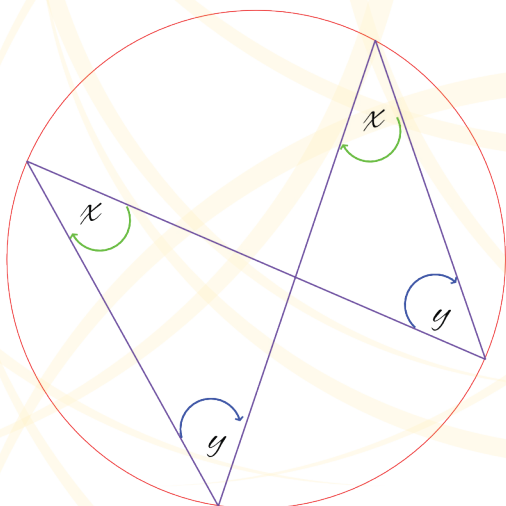
Drawing composite shapes

Circles Examples

## Euclidean Geometry and Modelling some Circle Theorems

A line drawn from the centre of a circle to the midpoint of a chord is perpendicular to the chord.

The angle subtended by an arc at the centre of a circle is double the size of the angle subtended by the same arc on the circle's circumference.

Shape 3

Angles subtended by the same arc of the circle in the same segment are equal.
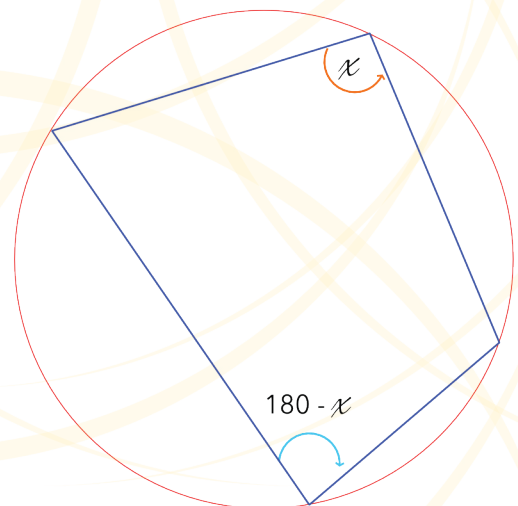
The opposite angles of a cyclic quadrilateral are supplementary.

Have the students first draw the diagrams and measure angles. See if they can come to the conclusion of the Theorem by themselves.