Knowledge organiser Year 10 spring

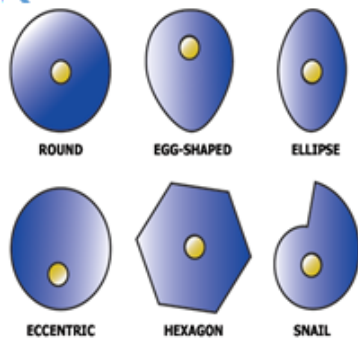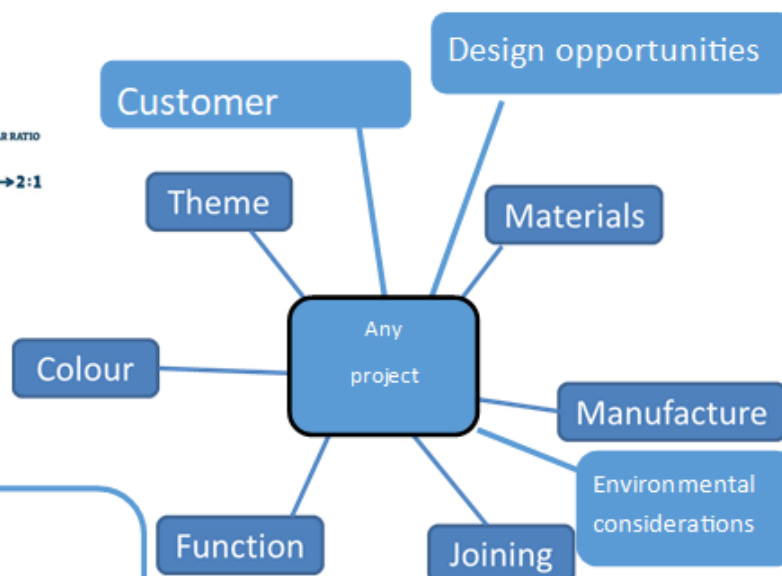## Simple machines

Gears: shapes and types https://www.technologystudent.com/gears1/geardex1.htm

Cams and followers https://www.technologystudent.com/cams/camdex.htm

Levers and linkages   https://technologystudent.com/cams/link1.htm

GEAR RATIO

GEAR REDUCTION

DRIVE (EFFORT) 10

DRIVEN (LOAD) 20

$$\frac{DRIVEN}{DRIVE} = GEAR\ RATIO$$

$$\frac{20}{10} = \frac{2}{1} \rightarrow 2{:}1$$

ROUND   EGG-SHAPED   ELLIPSE

ECCENTRIC   HEXAGON   SNAIL

Types of motion:

Linear motion – movement in a straight line.
Reciprocating motion – movement backwards and forwards in a straight line.
Rotary motion – movement around in a circle.
Oscillating motion – movement swinging from side to side.

Customer

Design opportunities

Theme

Materials

Colour

Any project

Manufacture

Environmental considerations

Function

Joining

Understanding iteration

Iterative design is the process of continual improvement, of a concept, prototype, design or product. It is a cyclic approach to the development of a product, whereby a design is improved by frequent testing, client feedback, focus groups, materials testing, prototype testing, design development and evaluation, until a final refined / developed design is reached.
The Iterative Design Cycle works at it's best, when a student understands how each of it's individual components (we call them 'design tools') can be used, to help in the design and development of a product.
There is no set way of designing. The student has freedom to use the 'design tools' at his/her disposal at any time, whilst designing at product.