

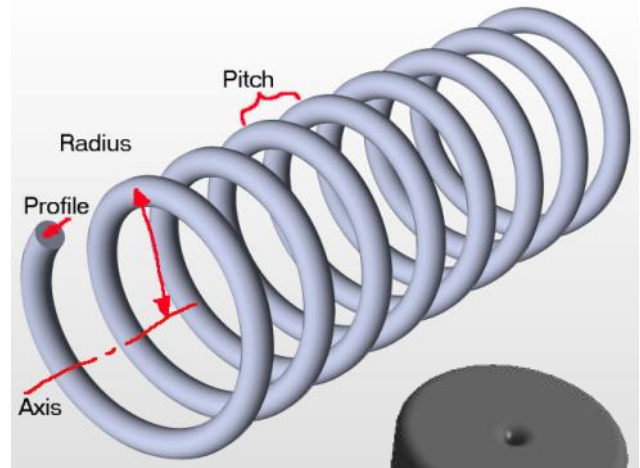
Irvine Royal Academy—Technical Department

Graphic Communication—Advanced Higher

Helices (Helix)

A **Helix** is the technical name for a spring-shaped object. This is the preferred SQA term for the shape, which you should use. Note that some programmes, eg Inventor, may use the word coil instead. Also note that the plural is **helices**.

The simplest helix is like a spiral—a shape (or **profile**) that rotates around a cylinder shape (which may be visible or not), moving gradually in one direction (the **Pitch**) as it does so. The distance from the centre line (**Axis**) to the middle of the profile is called the **Radius**.



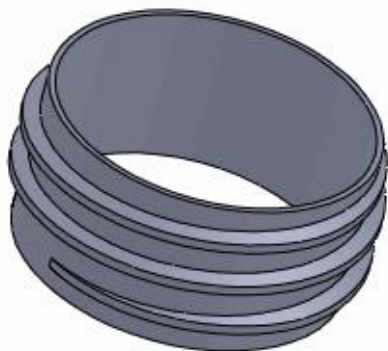
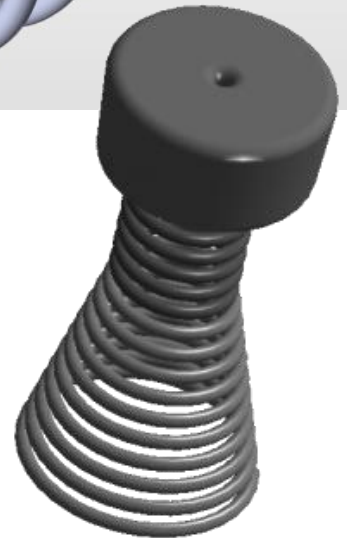
Pitch—this is determined as the distance travelled along the axis direction for one full revolution of the profile shape.

Profile—this is the shape of that is used to create the Helix—a simple spring is usually a circular shape, but you can make any shape into a helix.

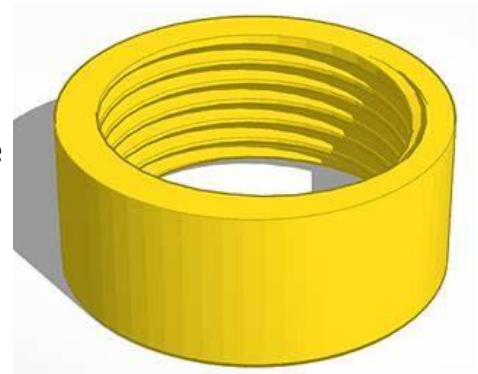
Axis—the centre line of the imaginary cylinder that the helix is drawn around.

Radius—the size from the imaginary centre of the helix to the centre point of the profile.

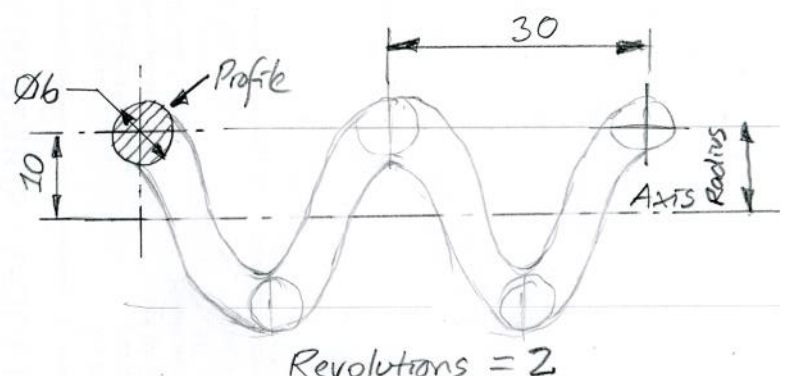
Taper—in some cases the helix may have a taper to it, to create more complex shapes, as shown here.



A helix is sometimes needed to draw a thread on an object—a positive shape can be used to create a male thread on the outside of a bottle, for example (left). A negative (ie Extrude Subtract Helix) can be used inside a lid to create a female thread (right)



In an SQA exam, you will probably be tested on helices in a modelling plan question. To ensure that you get full marks you should make sure that you indicate every important dimension in the helix, ie. Profile size and shape, Distance from the Axis (radius), pitch, and number of turns (or total length of helix). Sketch something like what is shown here.



Simple Helix on Inventor:

<https://youtu.be/AsFQLc7uKgk>

<https://youtu.be/TvOoGLsWG44?t=11>