

Name:

## The Engineering Gallery

### Find the Gimson 1880 Beam Engine.

Can you work out how old this engine is?  
\_\_\_\_\_ years.

Look at the flywheel. It is an enormous circle.  
The measurement across the wheel through the  
centre is called the **diameter**.



The Beam Engine

That measurement is 3.66 metres, but, let's call it 3.5m or three and a half metres.

The measurement all the way around the outside of the wheel is called the **circumference**. You can make an approximate calculation of the circumference by multiplying the diameter by three, or by adding three diameters together.

What is the circumference of the Beam Engine's flywheel? \_\_\_\_\_ metres.

### Next stop is the Gimson 1895 Horizontal Engine.

Can you estimate the length of the drive belt?  
\_\_\_\_\_ metres.

Tick which group your estimate comes in:

- 0 - 5m
- 6 - 10m
- 11 - 15m
- 16 - 20m
- 21 - 25m
- 26m+



This is the Horizontal Beam Engine, the drive belt is the long strip that wraps around the wheel.

## Find the hands-on pulleys.

Pulleys should make lifting weights easier.

Try each of the pulley systems, then fill in the table below:

1 pulley = weight lifted 25kg  
the weight of sack feels like \_\_\_\_\_ kg

2 pulleys = weight lifted 25kg  
the weight of sack feels like \_\_\_\_\_ kg

4 pulleys = weight lifted 25kg  
the weight of sack feels like \_\_\_\_\_ kg



Hands on pulleys

Your conclusion:

How does adding pulleys make a difference to the effort you have to make to lift the weight ?

## Head over to the display of clocks on the wall.

Find the clock with the pendulum, known as the 'Pul-syn-thetic Master Clock'.

Count how many swings, from one side to another, the pendulum makes in 15 seconds. (One elephant, two elephants... if you haven't got a timer).



Clock display

In 15 seconds the pendulum swung \_\_\_\_\_ times.

So, in 30 seconds it will swing \_\_\_\_\_ times. In one minute it will swing \_\_\_\_\_ times.

If you could make the pendulum longer or shorter, how would that affect the time told by the clock?

Longer pendulum \_\_\_\_\_

Shorter pendulum \_\_\_\_\_