Keeping the Mansfield and Pinxton line on track

Mill Waters
Parks and Reservoir

well read
informed communications

This education Pack developed by Kate Dawson at Well Read in consultation with local heritage groups and schools. Particular thanks to Denis Hill, Heritage Consultant for his help providing historic background.

M&P_L4TS

at Mill Waters heritage site

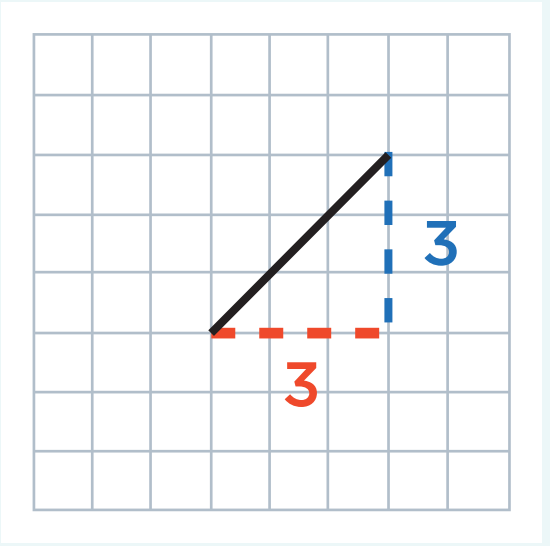
What is gravity?

- Gravity pulls everything with weight towards Earth – even you!
- Gravity keeps all the planets orbiting around earth.
- Air resistance can slow things down – like a sky diver's parachute.

What is gradient?

- The gradient of a slope is how steep it is.
- If you put a ball at the top of a slope it will roll down because of gravity.
- The train track with the steepest gradient in the UK is The Lickey Incline, south of Birmingham. The climb is a gradient of 1 in 37.7 for a continuous distance of two miles (3.2 km).

A section of railway in Kirkby was known as The Lickey because it was steep like the one near Birmingham.



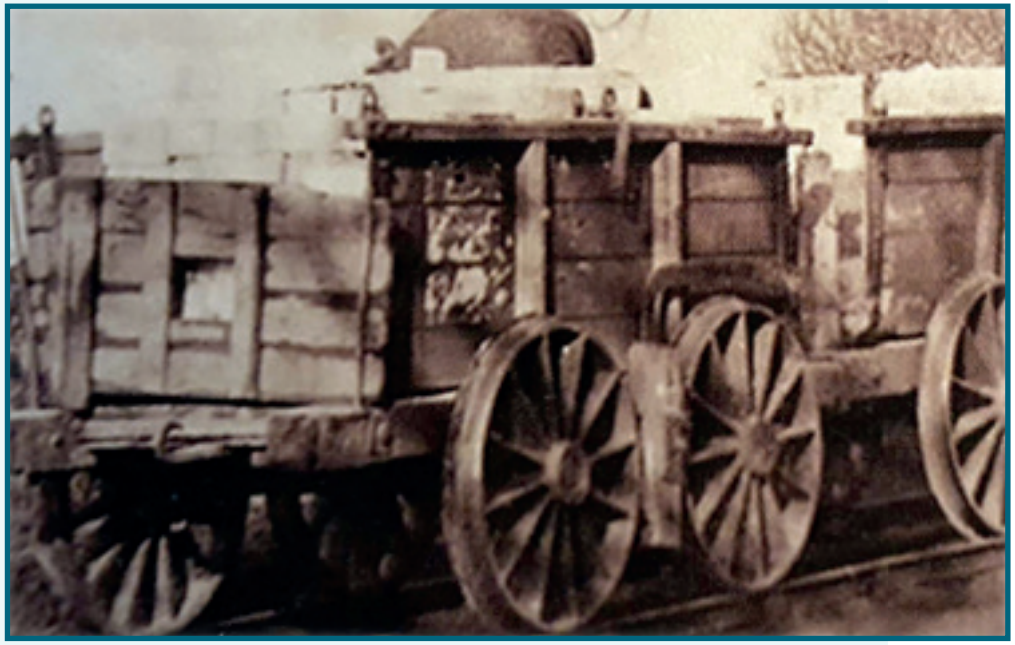
We can measure the gradient of a line by dividing the height by the distance across.

The above gradient is 3 ÷ 3 = 1

So the gradient is equal to 1

The early trains

- The early trains were pulled by horses.
- If you put a train at the top of a sloping track it will roll down because of gravity, so the driver operated a wooden brake to stop the train from going too fast.



Gradient posts on the railway

What is velocity?

- Speed is how fast something is travelling.
- If we say there is a car going at 50 miles per hour, we are announcing its speed.
- Velocity is how fast something is travelling in a particular direction.
- If you say the same car is moving north at 50 miles per hour that is announcing its velocity.

How do we measure speed?

Speeds are usually measured in miles per hour.

In science speed is measured in:

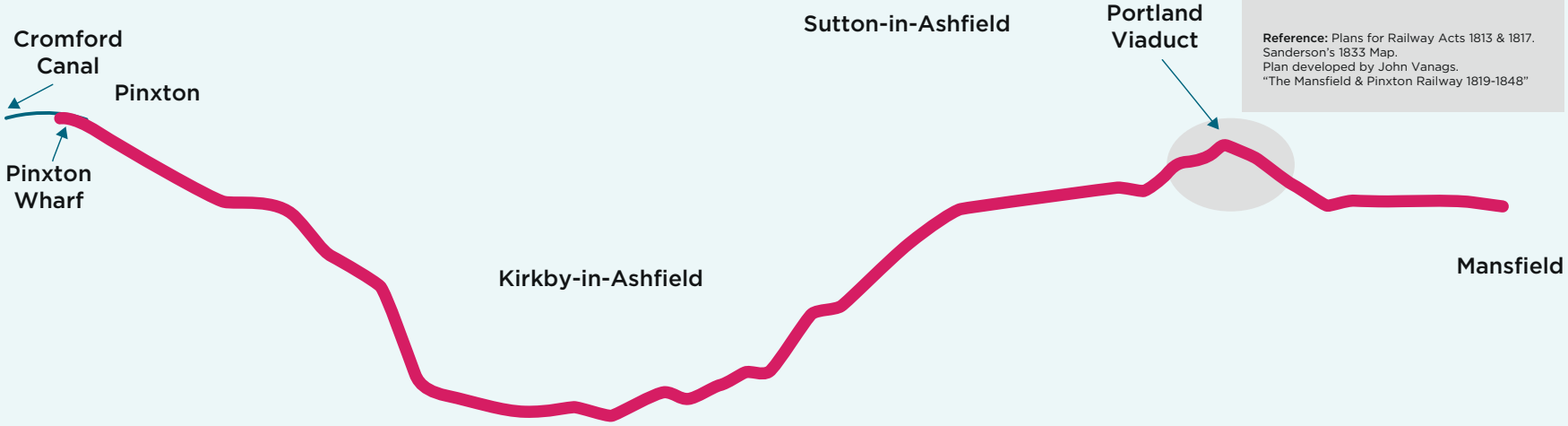
- metres per second (m/s).
- kilometres per hour (km/h).
- kilometres per second (km/s).
- metres per minute (m/min).

Let's do an experiment!

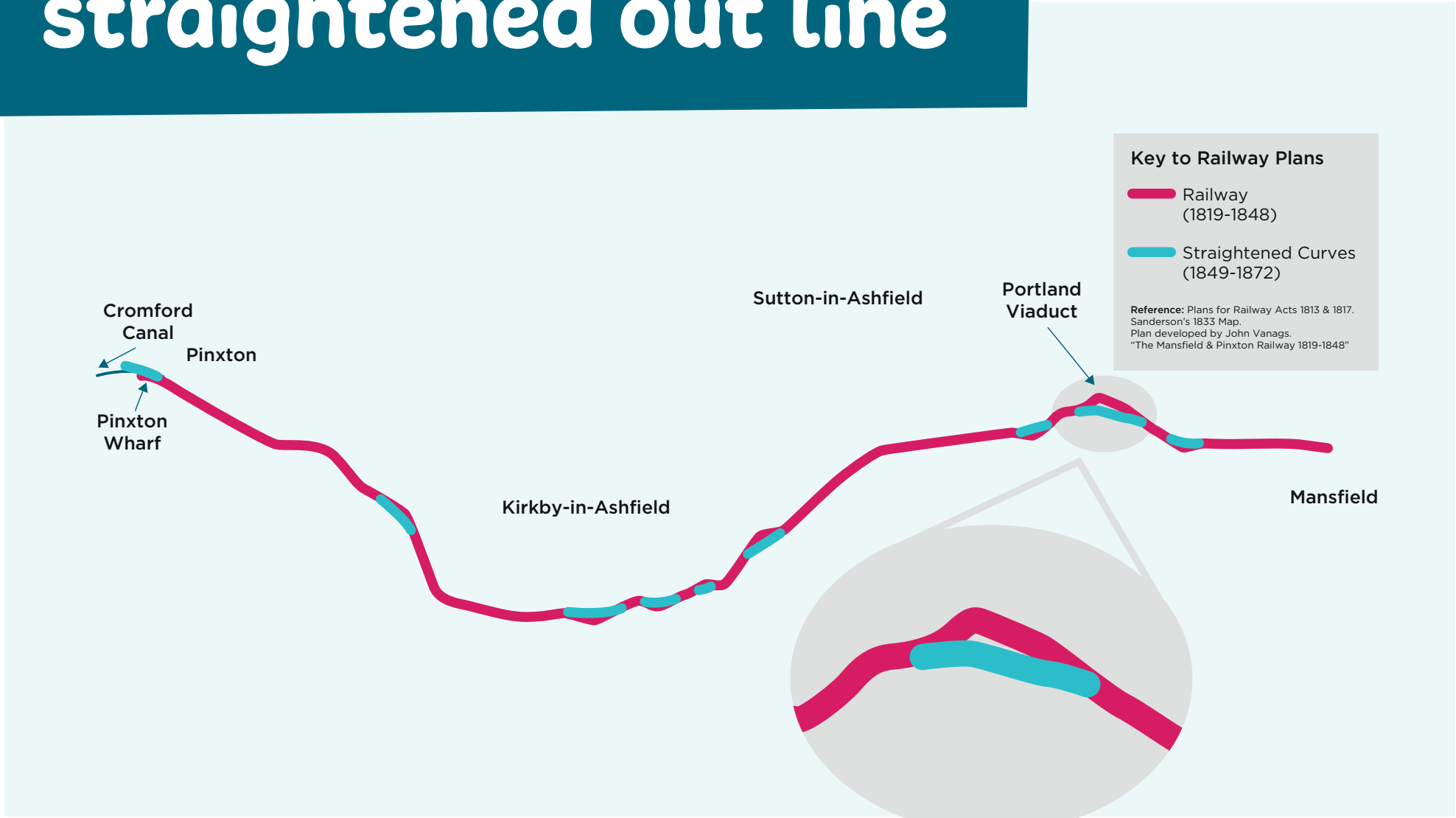
- Can you build two railway lines using cardboard and Sellotape?
- One line should be curvy and the other straight.
- Test how fast a marble or small ball travels down each tracks at 3cm, 5cm, 10cm, 15cm, 20cm, 25cm and 30cm height.
- Write down the results.
- **What did you learn from your experiment?**

Here's what your train lines might look like

A map of the original Mansfield and Pinxton line



A map of the straightened out line



Why was the line altered?

- The new steam engines could go faster but would have toppled over on the tight bends.
- People could get to their destination quicker.
- It uses less coal to keep going fast instead of having to slow down for corners.
- By going faster more deliveries of goods could be made each day.