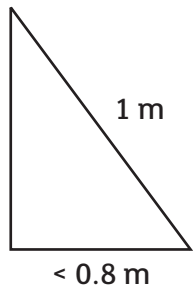
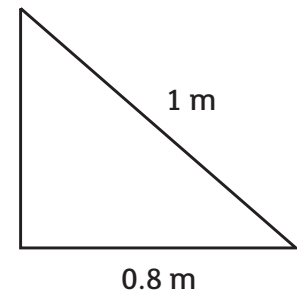


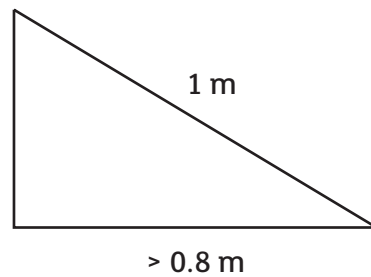
Solution

Pupils can solve the problem using Pythagoras' Theorem.

Taking into account that, for every metre that the steel inclines, the horizontal distance along the ground should not be less than four fifths of a metre, then the maximum height of the rollercoaster will be achieved as follows:



If the horizontal distance is less than 0.8 m, then the track is too steep, and is not allowed for health and safety reasons.

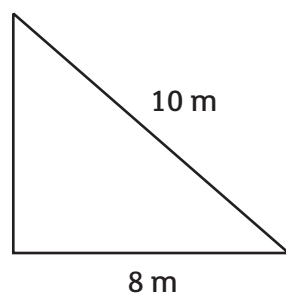


If the horizontal distance is more than 0.8 m then the track is too shallow, and will not give the maximum height.

As the upward incline will use five two-metre lengths of steel then the upward incline will be 10 m long ($5 \times 2 = 10$ m)

The horizontal distance will be 8 m long ($\frac{4}{5}$ of 10 m)

$$\begin{aligned} \text{Height}^2 &= 10^2 - 8^2 \\ \text{Height}^2 &= 100 - 64 \\ \text{Height} &= \sqrt{36} \\ \text{Height} &= 6 \text{ m} \end{aligned}$$



Maximum height of upward incline is 6 m

