How does the number of passengers on the train affect the stopping distance of the train?

It is vital that a train can come to a stop at stations and level crossings. We will investigate how the number of passengers on the train affects the distance its stopping distance.



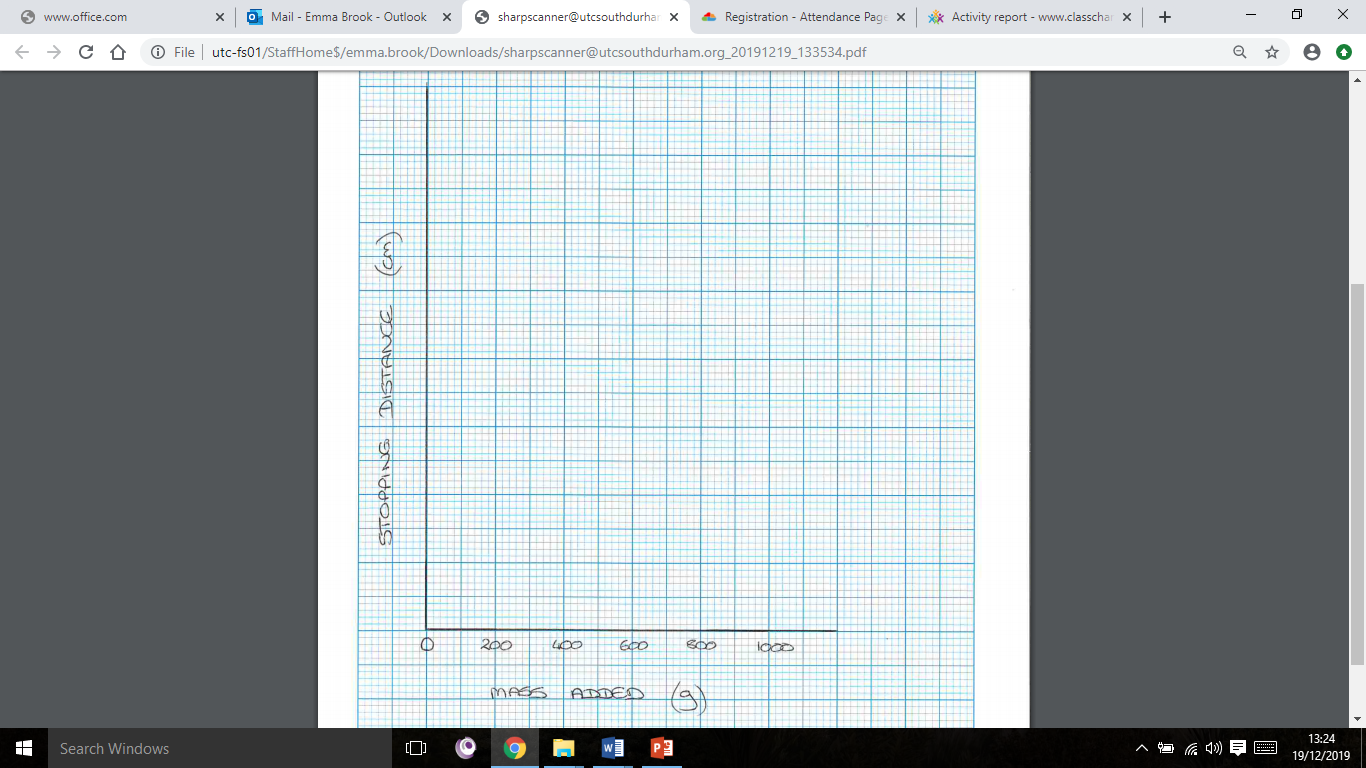
Method

1. Balance the ramp on the box to make a slope, ensure you do not change the angle of the slope once it is set.
2. Hold a trolley at the top of the ramp and allow it to roll down the ramp.
3. Measure the distance from the bottom of the ramp to where the trolley came to rest (measure to the very front of the train)
4. Repeat 2 more times.
5. Add 200g mass and repeat steps 1-4
6. Repeat for 400g, 600g, 800g and 1000g

Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mass added to trolley (g) | Distance 1 (cm) | Distance 2 (cm) | Distance 3 (cm) | Mean distance (cm) |
| 0 |  |  |  |  |
| 200 |  |  |  |  |
| 400 |  |  |  |  |
| 600 |  |  |  |  |
| 800 |  |  |  |  |
| 1000 |  |  |  |  |

Graph

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Analysis

How does increasing the mass of the train (more passengers) affect the stopping distance of the train?

What other factors could affect the stopping distance of the train?