

Name of the Student: _____

Max. Marks : 20 Marks

Time : 20 Minutes

Q1.

A car is travelling along a level road.



(i) Complete the sentence by putting a cross (☒) in the box next to your answer.

When the velocity of the car is constant, the force of friction on it is

(1)

- ☒ **A** zero
- ☐ **B** greater than the driving force
- ☐ **C** smaller than the driving force
- ☐ **D** the same size as the driving force

(ii) The car now accelerates in a straight line.
Its average acceleration is 12 m/s^2 .

Calculate the increase in velocity of the car in 4.0 s.

(3)

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Q2.

Figure 1 shows how the thinking distance and braking distance change depending on the speed of a car.

speed in km / h	speed in m / s	thinking distance in m	braking distance in m	stopping distance in m
50	14	21	21	42
60	17	25	31	56
70		29	42	71
80	22	33	55	88
90	25	37	85	107
100	28	42	85	127

Figure 1

(i) Fill in the gap in the table.

(1)

(ii) A student studies these results and writes the conclusion:

'The thinking distance is proportional to the speed of the car'.
Comment on the student's conclusion.

(3)

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(Total for question = 4 marks)

Q3.

A student has a trolley and a ramp, as shown in Figure 12.

The height, H , of one end of the ramp can be adjusted.

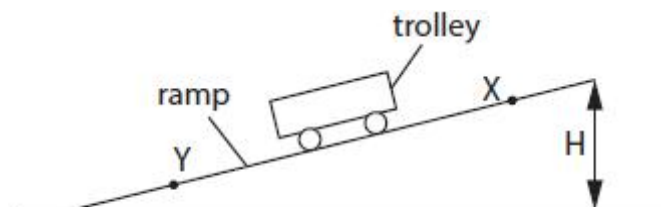


Figure 12

The student investigates how the average speed of the trolley between X and Y depends on the height, H , of the ramp.

Describe

- the additional equipment that the student needs

- how that equipment is used to obtain the measurements needed.

(6)

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(Total for question = 6 marks)

Q4.

Figure 5 shows the apparatus a student uses to investigate how the stopping distance of a toy car depends on the type of surface that it is stopping on.

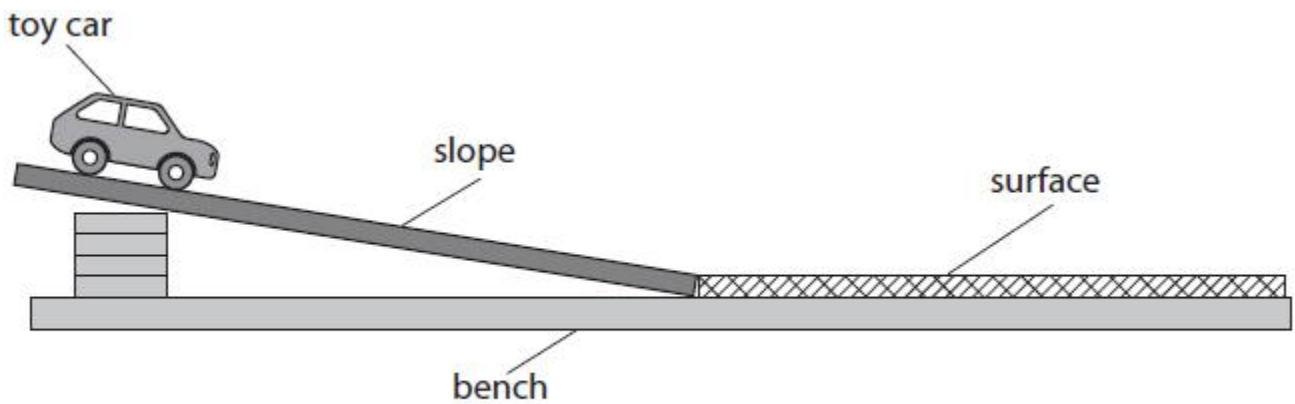


Figure 5

Describe an experiment to find out how the stopping distance depends on the surface that stops the toy car.

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(Total for question = 2 marks)

Q5.

A student lifts a toy car from a bench and places the toy car at the top of a slope as shown in Figure 9.

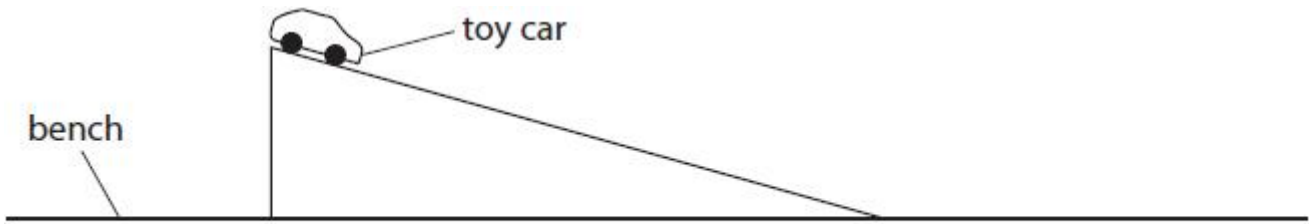


Figure 9

The student lets the toy car roll down the slope.
Describe how the student could find, by experiment, the speed of the toy car at the bottom of the slope.

(4)

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(Total for question = 4 marks)