

- 10** A student investigates how the time taken for a ball to roll down a slope changes with the distance from the bottom of the slope.

This is the student's method.

- place a ball on the slope 10 cm from the bottom of the slope
  - release the ball and start a stopwatch
  - stop the stopwatch when the ball arrives at the bottom of the slope
  - record the time taken for the ball to roll down the slope
  - repeat for different distances from the bottom of the slope
- (a) Complete the table by placing a tick (✓) to show which variables are the independent, dependent and control variables in this investigation.

(4)

	Independent	Dependent	Control
Surface of slope			
Angle of slope			
Distance travelled			
Time taken			

- (b) The table shows the student's results.

Distance travelled in cm	Time taken in s
10	0.41
20	0.58
30	0.71
40	0.82
50	0.91

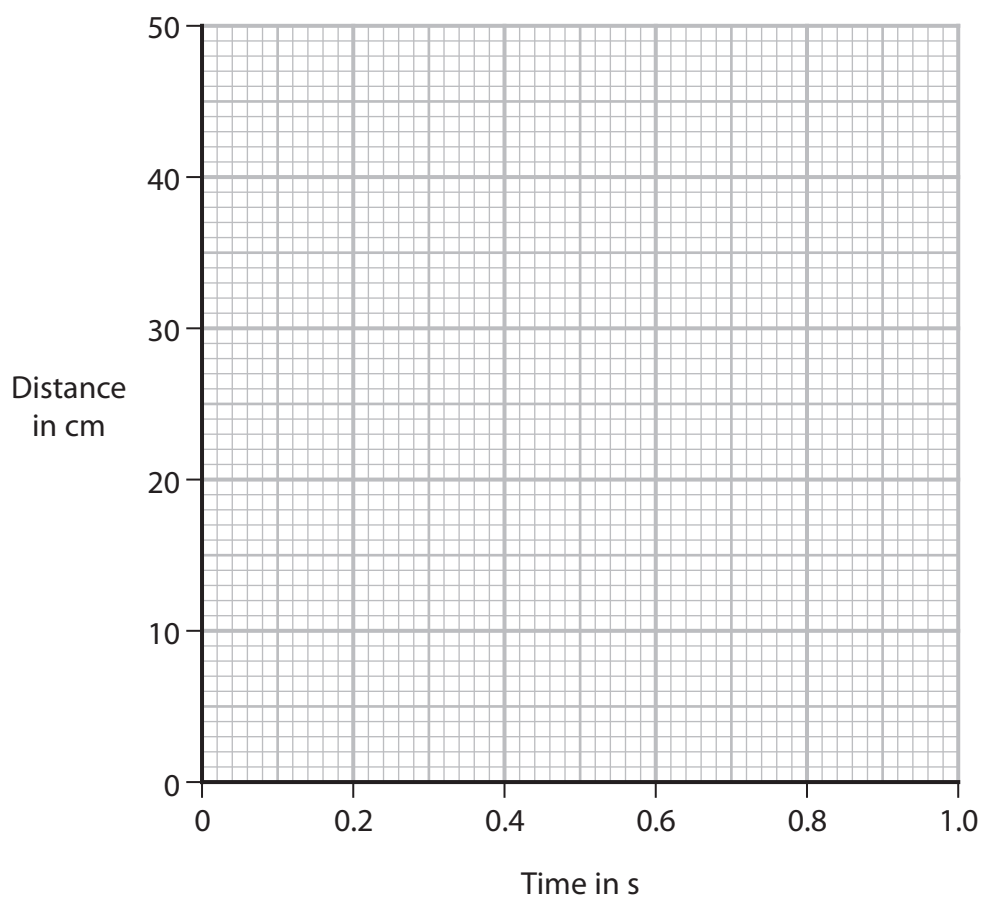
- (i) Plot the student's data on the grid.

(1)

- (ii) Draw a best fit curve.

(1)





- (iii) The student concludes that the results obey this relationship

$$\text{distance} \div (\text{time}^2) = \text{constant}$$

Use the student's data to deduce whether the student's results support this conclusion.

(4)

(Total for Question 10 = 10 marks)

