K Education Centre

GCSE Physics P10.2

Forces and Motion – Assignment 2

Assignment Questions

Forces and Motion – Assignment 2

Q1 : What is stopping distance ? What are the factors which effect the stopping distance?

Q2: A car of mass 3500 kg moving at speed of 45 m/s decelerates and stops in 80 m.

a) Calculate the deceleration of the vehicle.
b) Estimate the braking force on the car.

Q3: Calculate the stopping distance of the car when:
Reaction time of driver is 0.8 secs and the car was moving initially at 20 m/s . After the brakes were applied the car decelerated at 0.8 m/s^2

Q4:
a) Calculate the momentum of 2500 kg car moving at velocity of 10 m/s.
b) Calculate the velocity of the 0.6 kg ball if it has same momentum as car calculated in part a) .

Q5: A 4000 kg truck moving at a velocity of 20 m/s collides with a stationery car of mass 1500 kg. After the collision two vehicles stuck together. Calculate the velocity of both vehicles after collision.

Q6: A 1200 kg car moving at velocity of 14 m/s on a level road collides with a stationery vehicle of mass 800 kg. The velocity of car is reduced to 10 m/s as the result of the collision. Calculate the velocity of the 800 kg vehicle after the collision.

Q7: Define Hooke's law.

Q8: In Hooke's law test on a spring following results were obtained.

Weight in Newtons	Length in Millimeters	Extension in mm
0	245	0
1	285	40
2	325	
3	365	
4	405	
5	445	
6	485	

a) Copy the third column of the table.
b) Plot a graph of the extension on the vertical axis against weight on horizontal axis.
c)   If weight of 7.0 N is suspended what will be the extension of spring.
d) Calculate the spring constant of the spring
e) An object suspended on the spring gives an extension of 140 mm. Calculate the weight of the object.

Q9: An artillery gun of mass 3000 kg fires a shell of mass 15 kg at velocity of 100 m/s. Calculate the recoil velocity of the gun.