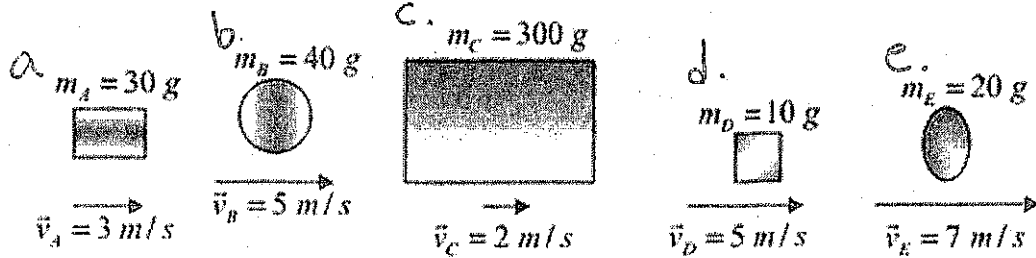


Impulse/Momentum Theorem Classwork

Activity: Rank the objects (A – E) in order of increasing momentum.



Least 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ Greatest

6. A force of 6.0 N acts on a 4.0 kg object for 10.0 s. What is the object's change in momentum?

- a. 24 kgm/s b. 40 kgm/s c. 60 kgm/s d. 10 kgm/s

7. What force is needed to stop a 1,200 kg car in 20.0 s if the car is moving at 22.0 m/s?

- a. -1320 N b. -11,760 N c. 26,400 N d. 1320 N

8. A snowmobile has a mass of 250 kg. A constant force acts on it for 65.0 s. The snowmobile's initial speed is 6.0 m/s and its final speed is 28.0 m/s. What is the snowmobile's change in momentum?

- a. 16,250 kgm/s b. 22 kgm/s c. 7,000 kgm/s d. 5,550 kgm/s

9. In #8, what is the magnitude of the force acting on the snowmobile?

- a. 5,550 N b. 84 N c. -5,550 N d. -84 N

Use the following information to answer #10-#13

A car weighing 15,680 N and moving at 20.0 m/s is acted upon by the brakes. The brakes apply a 650 N force until the car is slowed to a speed of 5.0 m/s.

10. What is the car's mass?

- a. 15,680 N b. 1,600 kg c. 32 kg d. 2,000 kg

11. What is the car's initial momentum?

- a. 20 kgm/s b. 15 kgm/s c. 313,600 kgm/s d. 32,000 kgm/s

12. What is the change in the car's momentum?

- a. 24,000 kgm/s b. 235,200 kgm/s c. -24,000 kgm/s d. -235,200 kgm/s

13. How much time is required for the brakes to slow the car?

- a. 3.62 s b. 362 s c. 18 s d. 37 s

14. What is the final speed of a 20,000 kg rocket which is traveling at 100 m/s and then has a 200,000 N force acting on it for 15.0 s?

- a. 50 m/s b. 200 m/s c. 250 m/s d. 500 m/s

15. Calculate the momentum of an electron of mass 9.1×10^{-31} kg moving at a velocity of 1×10^7 m/s.

- a) 9.1×10^{-24} kgm/s b) 9.1×10^{38} kgm/s c) 910 d) 0.000000091

$$J = \Delta P$$

$$Ft = \Delta P$$

$$Ft = mv_f - mv_i$$

$$J = mv_f - mv_i$$