Short Answer

8.1 Linear Momentum, Force, and Impulse 31.

If an object's velocity is constant, what is its momentum proportional to?

a. Its shape
b. Its mass
c. Its length
d. Its breadth

32.

If both mass and velocity of an object are constant, what can you tell about its impulse?

a. Its impulse would be constant.
b. Its impulse would be zero.
c. Its impulse would be increasing.
d. Its impulse would be decreasing.

33.

When the momentum of an object increases with respect to time, what is true of the net force acting on it?

a. It is zero, because the net force is equal to the rate of change of the momentum.
b. It is zero, because the net force is equal to the product of the momentum and the time interval.
c. It is nonzero, because the net force is equal to the rate of change of the momentum.
d. It is nonzero, because the net force is equal to the product of the momentum and the time interval.

34.

How can you express impulse in terms of mass and velocity when neither of those are constant?

a. $\Delta \mathrm{p} = \Delta(m\mathrm{v})$
b. $\frac{\Delta \mathrm{p}}{\Delta t} = \frac{\Delta(m\mathrm{v})}{\Delta t}$
c. $\Delta \mathrm{p} = \Delta\left(\frac{m}{\mathrm{v}}\right)$
d. $\frac{\Delta \mathrm{p}}{\Delta t} = \frac{1}{\Delta t} \cdot \Delta(m\mathrm{v})$

35.

How can you express impulse in terms of mass and initial and final velocities?

a. $\Delta \mathrm{p} = m(\mathrm{v_f} - \mathrm{v_i})$
b. $\frac{\Delta \mathrm{p}}{\Delta t} = \frac{m(\mathrm{v_f} - \mathrm{v_i})}{\Delta t}$
c. $\Delta \mathrm{p} = \frac{(\mathrm{v_f} - \mathrm{v_i})}{m}$

d. $\frac{\Delta \mathrm{p}}{\Delta t} = \frac{1}{m}\frac{(\mathrm{v_f}-\mathrm{v_i})}{\Delta t}$

36.

Why do we use average force while solving momentum problems? How is net force related to the momentum of the object?

a. Forces are usually constant over a period of time, and net force acting on the object is equal to the rate of change of the momentum.
b. Forces are usually not constant over a period of time, and net force acting on the object is equal to the product of the momentum and the time interval.
c. Forces are usually constant over a period of time, and net force acting on the object is equal to the product of the momentum and the time interval.
d. Forces are usually not constant over a period of time, and net force acting on the object is equal to the rate of change of the momentum.

8.2 Conservation of Momentum 37.

Under what condition(s) is the angular momentum of a system conserved?

a. When net torque is zero
b. When net torque is not zero
c. When moment of inertia is constant
d. When both moment of inertia and angular momentum are constant

38.

If the moment of inertia of an isolated system increases, what happens to its angular velocity?

a. It increases.
b. It decreases.
c. It stays constant.
d. It becomes zero.

39.

If both the moment of inertia and the angular velocity of a system increase, what must be true of the force acting on the system?

a. Force is zero.
b. Force is not zero.
c. Force is constant.
d. Force is decreasing.

8.3 Elastic and Inelastic Collisions 40.

Two objects collide with each other and come to a rest. How can you use the equation of conservation of momentum to describe this situation?

a. $m_1\mathbf{v}_1 + m_2\mathbf{v}_2 = 0$

b. $m_1\mathbf{v}_1 - m_2\mathbf{v}_2 = 0$
c. $m_1\mathbf{v}_1 + m_2\mathbf{v}_2 = m_1\mathbf{v}_1$
d. $m_1\mathbf{v}_1 + m_2\mathbf{v}_2 = m_1\mathbf{v}_2$

41.

What is the difference between momentum and impulse?

a. Momentum is the sum of mass and velocity. Impulse is the change in momentum.
b. Momentum is the sum of mass and velocity. Impulse is the rate of change in momentum.
c. Momentum is the product of mass and velocity. Impulse is the change in momentum.
d. Momentum is the product of mass and velocity. Impulse is the rate of change in momentum.

42.

What is the equation for conservation of momentum along the x-axis for 2D collisions in terms of mass and velocity, where one of the particles is initially at rest?

a. $m_1\mathbf{v}_1 = m_1\mathbf{v}_1 \cos{}_1$
b. $m_1\mathbf{v}_1 = m_1\mathbf{v}_1 \cos{}_1 + m_2\mathbf{v}_2 \cos{}_2$
c. $m_1\mathbf{v}_1 = m_1\mathbf{v}_1 \cos{}_1 - m_2\mathbf{v}_2 \cos{}_2$
d. $m_1\mathbf{v}_1 = m_1\mathbf{v}_1 \sin{}_1 + m_2\mathbf{v}_2 \sin{}_2$

43.

What is the equation for conservation of momentum along the y-axis for 2D collisions in terms of mass and velocity, where one of the particles is initially at rest?

a. $0 = m_1\mathbf{v}_1 \sin{}_1$
b. $0 = m_1\mathbf{v}_1 \sin{}_1 + m_2\mathbf{v}_2 \sin{}_2$
c. $0 = m_1\mathbf{v}_1 \sin{}_1 - m_2\mathbf{v}_2 \sin{}_2$
d. $0 = m_1\mathbf{v}_1 \cos{}_1 + m_2\mathbf{v}_2 \cos{}_2$