Chapter 8: Force and Laws of Motion Quiz

Force and its Effects

1. What can force do?

○ Change speed, direction, or shape
○ Only change speed
○ Only change direction
○ Nothing

Answer: Change speed, direction, or shape

2. Force is based on the concept of?

○ Push, hit, or pull
○ Mass and volume
○ Speed and time
○ Energy

Answer: Push, hit, or pull

3. Can force change the shape of an object?

○ Yes
○ No
○ Only for liquids
○ Only for gases

Answer: Yes

4. Pushing a stationary object can?

○ Put it into motion
○ Break it
○ Change its color
○ Do nothing

Answer: Put it into motion

5. Stopping a moving object requires?

○ Effort or force
○ No effort
○ Magic
○ Waiting

Answer: Effort or force

Balanced Forces

1. Balanced forces are?

○ Equal in magnitude, opposite in direction
○ Unequal in magnitude
○ Same direction
○ Zero magnitude

Answer: Equal in magnitude, opposite in direction

2. Do balanced forces change the state of motion?

○ No
○ Yes
○ Sometimes
○ Only for light objects

Answer: No

3. If a block is pulled equally from both sides, it?

○ Does not move
○ Moves right
○ Moves left
○ Moves up

Answer: Does not move

4. The net force in a balanced system is?

○ Zero
○ Double
○ Half
○ Infinite

Answer: Zero

5. Balanced forces can change?

○ Shape
○ Speed
○ Velocity
○ Direction

Answer: Shape

Unbalanced Forces

1. Unbalanced forces act in the direction of?

○ The greater force
○ The smaller force
○ Gravity
○ Friction

Answer: The greater force

2. What is required to accelerate an object?

○ Unbalanced force
○ Balanced force
○ No force
○ Friction only

Answer: Unbalanced force

3. If an unbalanced force acts on an object, it?

○ Changes speed or direction
○ Stops moving
○ Remains at rest
○ Disappears

Answer: Changes speed or direction

4. To keep an object moving with uniform velocity, the net force must be?

○ Zero
○ Positive
○ Negative
○ Unbalanced

Answer: Zero

5. When you stop pedaling a bicycle, it slows down due to?

○ Unbalanced friction force
○ Balanced force
○ Inertia
○ Gravity

Answer: Unbalanced friction force

Friction

1. Friction force acts in which direction?

○ Opposite to motion
○ Same as motion
○ Perpendicular to motion
○ Downwards

Answer: Opposite to motion

2. Friction arises between?

○ Two surfaces in contact
○ Air and water
○ Space
○ Magnets

Answer: Two surfaces in contact

3. If a pushed box doesn't move, friction is?

○ Balancing the push
○ Less than the push
○ Zero
○ Helping the push

Answer: Balancing the push

4. To move a heavy box, pushing force must be?

○ Greater than friction
○ Equal to friction
○ Less than friction
○ Zero

Answer: Greater than friction

5. Friction is a type of?

○ Contact force
○ Non-contact force
○ Magnetic force
○ Gravitational force

Answer: Contact force

First Law of Motion

1. First Law of Motion is also known as?

○ Law of Inertia
○ Law of Momentum
○ Law of Action-Reaction
○ Law of Gravity

Answer: Law of Inertia

2. An object at rest tends to?

○ Remain at rest
○ Start moving
○ Fly
○ Vibrate

Answer: Remain at rest

3. An object in uniform motion tends to?

○ Keep moving in a straight line
○ Stop
○ Change direction
○ Accelerate

Answer: Keep moving in a straight line

4. What changes the state of motion?

○ Applied unbalanced force
○ Inertia
○ Mass
○ Time

Answer: Applied unbalanced force

5. Who presented the three laws of motion?

○ Newton
○ Galileo
○ Einstein
○ Darwin

Answer: Newton

Inertia

1. Inertia is the tendency to?

○ Resist change in state of motion
○ Change state of motion
○ Move faster
○ Stop moving

Answer: Resist change in state of motion

2. Why do passengers fall back when a bus starts?

○ Inertia of rest
○ Inertia of motion
○ Gravity
○ Friction

Answer: Inertia of rest

3. Why do passengers fall forward when a bus stops?

○ Inertia of motion
○ Inertia of rest
○ Acceleration
○ Speed

Answer: Inertia of motion

4. Why does a coin fall into a glass when the card is flicked?

○ Inertia of the coin
○ Gravity only
○ Card pushes it
○ Coin is heavy

Answer: Inertia of the coin

5. Which objects have inertia?

○ All objects
○ Only moving objects
○ Only heavy objects
○ Only solids

Answer: All objects

Inertia and Mass

1. Inertia is measured by?

○ Mass
○ Volume
○ Speed
○ Force

Answer: Mass

2. Which has more inertia?

○ A stone
○ A rubber ball of same size
○ Both same
○ Depends on speed

Answer: A stone

3. Heavier objects have?

○ Larger inertia
○ Smaller inertia
○ No inertia
○ Variable inertia

Answer: Larger inertia

4. Which is harder to push?

○ Box full of books
○ Empty box
○ Small toy
○ Feather

Answer: Box full of books

5. Mass is a measure of?

○ Inertia
○ Velocity
○ Acceleration
○ Distance

Answer: Inertia

Momentum

1. Formula for momentum (p) is?

○ mv
○ ma
○ 1/2mv^2
○ mg

Answer: mv

2. SI unit of momentum is?

○ kg m/s
○ kg m/s^2
○ N
○ Joule

Answer: kg m/s

3. Momentum has?

○ Magnitude and direction
○ Only magnitude
○ Only direction
○ Neither

Answer: Magnitude and direction

4. Direction of momentum is same as?

○ Velocity
○ Acceleration
○ Force
○ Displacement

Answer: Velocity

5. An object at rest has momentum?

○ Zero
○ Infinite
○ Equal to mass
○ Variable

Answer: Zero

Second Law of Motion

1. Rate of change of momentum is proportional to?

○ Applied unbalanced force
○ Velocity
○ Mass
○ Time

Answer: Applied unbalanced force

2. This law gives a method to measure?

○ Force
○ Inertia
○ Energy
○ Work

Answer: Force

3. Force acts in the direction of?

○ Change of momentum
○ Velocity
○ Mass
○ Gravity

Answer: Change of momentum

4. A greater force produces?

○ Greater change in velocity/momentum
○ Less change
○ No change
○ Constant velocity

Answer: Greater change in velocity/momentum

5. Change in momentum depends on?

○ Force and time
○ Force only
○ Time only
○ Mass only

Answer: Force and time

Mathematical Formulation of Second Law

1. Mathematical formula for Second Law is?

○ F = ma
○ F = mv
○ F = m/a
○ a = mF

Answer: F = ma

2. Acceleration 'a' is?

○ (v - u) / t
○ v / t
○ u / t
○ s / t

Answer: (v - u) / t

3. The constant 'k' in F = kma is?

○ 1
○ 0
○ 10
○ 9.8

Answer: 1

4. If mass is 2kg and acceleration is 5m/s^2, Force is?

○ 10 N
○ 2.5 N
○ 7 N
○ 3 N

Answer: 10 N

5. If Force is 0, acceleration is?

○ 0
○ Constant
○ Infinite
○ 1

Answer: 0

Unit of Force

1. SI unit of force is?

○ Newton (N)
○ Dyne
○ Pascal
○ Joule

Answer: Newton (N)

2. 1 Newton is force required to accelerate?

○ 1 kg mass at 1 m/s^2
○ 1 g mass at 1 cm/s^2
○ 1 kg at 10 m/s^2
○ 10 kg at 1 m/s^2

Answer: 1 kg mass at 1 m/s^2

3. Symbol for Newton is?

○ N
○ n
○ Kg
○ m

Answer: N

4. Force is a?

○ Vector quantity
○ Scalar quantity
○ Fundamental quantity
○ None

Answer: Vector quantity

5. kg m s^-2 is equivalent to?

○ Newton
○ Pascal
○ Watt
○ Joule

Answer: Newton

Applications of Second Law

1. Why does a fielder pull hands back while catching?

○ To increase time and reduce force
○ To show style
○ To decrease time
○ To catch faster

Answer: To increase time and reduce force

2. Increasing time of impact?

○ Decreases rate of change of momentum
○ Increases force
○ Does nothing
○ Increases momentum

Answer: Decreases rate of change of momentum

3. High jumpers fall on cushions to?

○ Increase time of fall stop
○ Decrease time
○ Increase force
○ Bounce back

Answer: Increase time of fall stop

4. Stopping a ball suddenly causes?

○ Large force and injury
○ No force
○ Less force
○ Slow stop

Answer: Large force and injury

5. Karate player breaks ice slab with?

○ Single fast blow
○ Slow push
○ Heavy hammer
○ Heat

Answer: Single fast blow

Third Law of Motion

1. Third Law states?

○ To every action there is equal and opposite reaction
○ Force equals mass times acceleration
○ Objects remain at rest
○ Energy is conserved

Answer: To every action there is equal and opposite reaction

2. Action and reaction forces act on?

○ Two different objects
○ Same object
○ No object
○ One object only

Answer: Two different objects

3. Action and reaction are?

○ Simultaneous
○ One after another
○ Delayed
○ Random

Answer: Simultaneous

4. If A exerts force on B, B exerts force on A that is?

○ Equal and opposite
○ Equal and same direction
○ Unequal
○ Zero

Answer: Equal and opposite

5. Do action and reaction cancel each other?

○ No, because they act on different objects
○ Yes
○ Sometimes
○ Only in space

Answer: No, because they act on different objects

Action and Reaction

1. When walking, we push the ground?

○ Backwards
○ Forwards
○ Downwards
○ Upwards

Answer: Backwards

2. The ground pushes us?

○ Forwards
○ Backwards
○ Downwards
○ Sideways

Answer: Forwards

3. Why do equal forces produce different accelerations?

○ Different masses of objects
○ Different times
○ Different shapes
○ Different colors

Answer: Different masses of objects

4. A sailor jumps forward from a boat. The boat moves?

○ Backwards
○ Forwards
○ Downwards
○ Doesn't move

Answer: Backwards

5. This is explained by?

○ Third Law of Motion
○ First Law
○ Second Law
○ Law of Gravitation

Answer: Third Law of Motion

Recoil of a Gun

1. Recoil of a gun is due to?

○ Third Law of Motion
○ First Law
○ Friction
○ Gravity

Answer: Third Law of Motion

2. Gun exerts forward force on bullet. Bullet exerts?

○ Backward force on gun
○ Forward force
○ No force
○ Downward force

Answer: Backward force on gun

3. Why is gun acceleration less than bullet?

○ Gun has much greater mass
○ Gun is fixed
○ Bullet is sharp
○ Gun is lighter

Answer: Gun has much greater mass

4. Recoil force is in which direction?

○ Opposite to bullet
○ Same as bullet
○ Perpendicular
○ Random

Answer: Opposite to bullet

5. This phenomenon is an example of?

○ Conservation of momentum
○ Conservation of energy
○ Inertia
○ Friction

Answer: Conservation of momentum