

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
- ☐ $\frac{1}{2}mv^2$
- ☐ 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