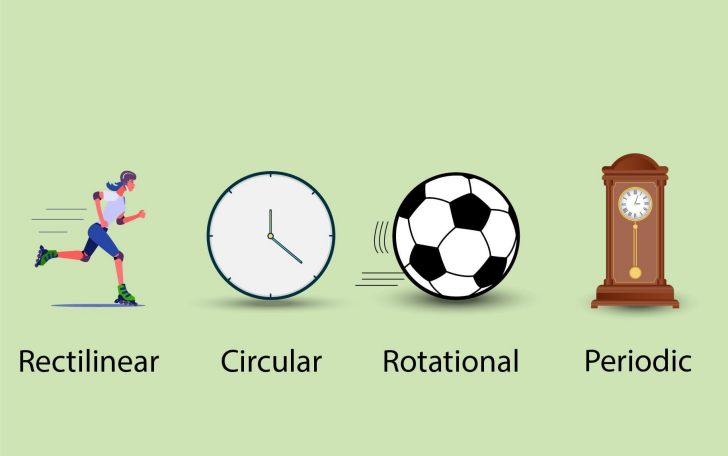
A2. What Is Motion?

What Is Motion?

Motion is all around us! When you walk, ride a bike, or see a car moving, that's motion. But what exactly is motion? Let's find out!



Definition of Motion
Motion is when an object changes its position over time. An object is in motion if it is moving from one place to another.

Types of Motion
There are different types of motion, such as:

1. **Linear Motion**
   This is when an object moves in a straight line, like a train on its tracks.

2. **Circular Motion**
   This is when an object moves in a circle, like a spinning top or a merry-go-round.

3. **Back-and-Forth Motion**
   This is when an object moves in a repeated back-and-forth pattern, like a swinging pendulum or a rocking chair.

4. **Rotational Motion**
   This is when an object spins around an axis, like a spinning wheel or a spinning top.

Speed and Direction
When we talk about motion, we often mention two important things: speed and direction.

1. **Speed**
   Speed tells us how fast or slow an object is moving. When you ride a bike, you might go fast downhill and slow uphill.

2. **Direction**
   Direction tells us which way an object is moving. For example, if you walk forward, you are moving in the direction you are facing.

Measuring Motion
Scientists use tools like rulers and stopwatches to measure motion. They can measure how far an object has moved and how long it took to move.

Forces and Motion

You might wonder why things move in the first place. Well, there's something called force that makes objects move. A force is like a push or a pull. When you kick a soccer ball, you use force to make it move.

Friction and Motion

Friction is a force that works against motion. It happens when two surfaces rub against each other. For example, when you slide on a carpet, there's more friction than when you slide on a slippery floor.

Examples of Motion

Here are some examples of motion in our daily lives:

1. When you ride a bike, you experience circular motion as the wheels turn.
2. When you throw a ball, you see linear motion as it flies through the air.
3. When a fan spins, it shows rotational motion.

1. What is motion?
    A) When an object changes its shape
    B) When an object changes its color
    C) When an object changes its position
    D) When an object changes its size

2. What type of motion is shown when an object moves in a straight line?
    A) Circular motion
    B) Back-and-forth motion
    C) Rotational motion
    D) Linear motion

3. What is speed in motion?
    A) How strong an object is
    B) How fast or slow an object is moving
    C) The direction an object is moving
    D) The color of an object

4. What does direction tell us in motion?
    A) How strong an object is
    B) How fast or slow an object is moving
    C) The direction an object is moving
    D) The color of an object

5. How do scientists measure motion?
    A) With a thermometer
    B) With a ruler and a stopwatch
    C) With a magnet and a scale
    D) With a telescope

6. What is force in motion?
    A) A push or a pull that makes objects move
    B) The color of an object
    C) The direction an object is moving
    D) How strong an object is

7. What is friction?
    A) A force that makes objects move faster
    B) A force that works against motion
    C) A type of motion
    D) A type of speed

8. What type of motion is shown when an object spins around an axis?
    A) Linear motion
    B) Circular motion
    C) Back-and-forth motion
    D) Rotational motion

9. When you kick a soccer ball, what makes it move?
    A) Speed
    B) Direction
    C) Friction
    D) Force

10. What are some examples of motion?
    A) Sleeping and eating
    B) Reading a book and drawing
    C) Riding a bike and throwing a ball
    D) Sitting and watching TV

ANSWERS & EXPLANATIONS

1. C - When an object changes its position.
    a. Motion is when an object changes its position over time.

2. D - Linear motion.
    a. Linear motion is when an object moves in a straight line.

3. B - How fast or slow an object is moving.
    a. Speed in motion tells us how fast or slow an object is moving.

4. C - The direction an object is moving.
    a. Direction in motion tells us which way an object is moving.

5. B - With a ruler and a stopwatch.
    a. Scientists measure motion using tools like rulers and stopwatches.

6. A - A push or a pull that makes objects move.
    a. Force is like a push or a pull that makes objects move.

7. B - A force that works against motion.
    a. Friction is a force that works against motion and happens when two surfaces rub against each other.

8. D - Rotational motion.
    a. Rotational motion is when an object spins around

9. D - Force
    a. The force that is applied to the ball makes it move.

10. C - Riding a bike and throwing a ball
    a. Both require forces acting upon them, such are in motion.