Name: _____ **Date:** _____

Answer Key: A Dash, a Crash, and a Zooming Zoo: Kindergarten Kinematics

Young learners predict animal pathways and design speed scenarios to grasp how displacement and acceleration change an object's final destination.

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1. A turtle moves 2 steps forward, but then turns around and moves 2 steps back to his starting rock. How far is he from where he started now?

Answer: C) 0 steps away

Even though the turtle walked 4 steps total, his displacement (change in position) is zero because he ended up exactly where he began.

2. If a red race car and a blue race car both go at the same speed, but the blue car turns left while the red car goes straight, they have different velocities.

Answer: A) True

Velocity includes both speed and direction. Since they are moving in different directions, their velocities are different.

3. Imagine you are riding a bike. To make your bike have 'acceleration' and go faster for a race, you must _____.

Answer: A) Push the pedals harder

Acceleration is a change in velocity. Pushing harder increases your speed, which is a form of acceleration.

4. An astronaut floats 5 meters toward the Moon and then 3 more meters toward the Moon. What is the astronaut's total displacement?

Answer: B) 8 meters toward the Moon

When an object moves in the same direction, you add the distances together to find the total change in position (displacement).

5. A ball is rolling down a very tall, steep hill. As it rolls further and further down, the ball will usually _____.

Answer: C) Speed up (accelerate)

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Gravity pulls the ball down the hill, causing it to accelerate or gain velocity as it moves.

6. If a train is slowing down to stop at a station, it is experiencing acceleration.

Answer: A) True

In physics, acceleration means any change in velocity, including slowing down (negative acceleration).

7. You want to describe a bird's velocity. Which of these descriptions tells us the full velocity?

Answer: C) The bird flies 5 miles per hour North

Velocity must include both the speed (5 miles per hour) and the direction (North).

8. If a robot walks 3 steps East and then 3 steps West, the robot's _____ is zero.

Answer: B) Displacement

Displacement measures how far you are from where you started. Since the robot returned to the start, the displacement is zero.

9. A car traveling at a steady speed of 50 miles per hour on a straight road has zero acceleration.

Answer: A) True

Since the speed is not changing and the direction is not changing, there is no change in velocity, so acceleration is zero.

10. A honeybee flies in a perfect circle and lands back on the same flower it started on. Which statement is true?

Answer: B) The bee's displacement is zero

Because the start and end points are the same, the change in position (displacement) is zero, even though the bee flew a long way.