Name: _____ **Date:** _____

Answer Key: Your Super Speedy Scientist Race: 1st Grade Motion Academy

Synthesize motion patterns and design paths to help a lost robot find home using advanced spatial reasoning and kinematic concepts.

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1. A toy bunny hopped in a straight line to the garden. Then it hopped back to the exact same start. What happened to its total trip distance?

Answer: B) The distance grew as it kept moving.

Even if you return to the start, every step you take adds to the total distance moved.

2. If you want to win a race by changing your velocity, you must change your speed OR your _____.

Answer: B) Direction

Velocity is special because it tracks both how fast you go and which way you are pointing.

3. True or False: If a rocket is going very fast but never changes its speed or direction, it is NOT accelerating.

Answer: A) True

Acceleration only happens when you speed up, slow down, or turn. Constant motion is not acceleration.

4. You are designing a slide. To make a teddy bear accelerate the most, how should the slide look?

Answer: C) Very steep like a mountain side

A steeper slope causes a faster change in speed, which is a higher rate of acceleration.

5. A snail travels 2 inches every minute. After 10 minutes, the snail has changed its _____ by 20 inches.

Answer: B) Position

Motion is defined as a change in position over time relative to a starting point.

6. True or False: A car slowing down as it reaches a red light is a type of acceleration.

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Answer: A) True

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

7. If you walk 3 steps North and then 3 steps South, where are you compared to where you started?

Answer: C) Back at the start

Your displacement is zero because your final position is the same as your starting position.

8. To describe exactly how a bird flies, you need its speed and its _____.

Answer: A) Direction

Combining speed with direction gives us velocity, which provides a complete picture of motion.

9. Imagine a ball being thrown straight up. At the very top before it falls, what happens for a tiny moment?

Answer: C) Its velocity is zero

When an object changes direction from up to down, it must stop for a split second at the peak.

10. True or False: A toy car moving at the same speed in a circle is accelerating because its direction is changing.

Answer: A) True

Acceleration occurs whenever there is a change in velocity; since velocity includes direction, turning a corner is acceleration.