Name: _____ **Date:** _____

Zig-Zag and Velocity: A Kindergarten Kinematics Challenge

Can you predict a marble's path? Analyze change in direction and speed through complex marble runs and obstacle courses.

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1. Imagine a marble rolling down a straight track and another marble rolling down a zig-zag track. If they both start at the same time and height, which one has to change its direction more often?

A. The marble on the straight track
B. The marble on the zig-zag track
C. Neither marble changes direction
D. They both change the same amount

2. If a toy car is moving at a steady speed but it starts turning in a circle, its motion is changing.

A. True
B. False

3. A penguin slides down an icy hill. At the top, it moves slowly. At the bottom, it moves very fast. We call this 'speeding up' or _____.

A. Gravity
B. Acceleration
C. Stopping
D. Spinning

4. You throw a paper plane and it suddenly catches a gust of wind that pushes it sideways. What part of its motion changed the most?

A. Its weight
B. Its color
C. Its direction
D. The floor

5. Two squirrels race to a tree. Squirrel A runs in a straight line. Squirrel B runs in big loops. Even if they run at the same speed, Squirrel ___ will reach the tree first.

A. Squirrel B
B. Neither
C. Squirrel A
D. The tree

6. To describe exactly how a ball moved, you only need to know how fast it went, not which way it went.

A. True
B. False

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7. A feather and a rock are dropped at the same time. The rock hits the ground first. Why does the rock have a different motion than the feather?

A. The rock accelerated faster
B. The rock is prettier
C. The feather went up
D. The ground moved

8. A train slows down as it gets closer to the station. This change in motion where it loses speed is called _____.

A. Jumping
B. Deceleration
C. Fast motion
D. Straight motion

9. Look at a clock's second hand. It moves around and around. Is its position changing even if it stays attached to the center?

A. No, it is stuck
B. Yes, its tip is in a new place every second
C. No, it is too slow
D. Yes, because it changes color

10. If you walk 3 steps forward and 3 steps backward, your ending position is the same as your starting position.

A. True
B. False