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TExES Core Subjects EC-6: Fine Arts, Health and PE (905)

Free Practice Sample: 10 Questions with Answer Key

1. All squares are rectangles, but not all rectangles are squares because squares have the additional property of

A. having four equal sides
B. having four right angles
C. being a parallelogram
D. having two pairs of parallel sides

2. A student says a diamond is not a square because it looks different. This misconception suggests the student needs to learn that

A. shape classification depends on properties, not orientation
B. diamonds and squares are unrelated shapes
C. primarily shapes with horizontal bases can be squares
D. diamonds are consistently parallelograms but rarely squares

3. Which shape has no vertices?

A. triangle
B. square
C. circle
D. pentagon

4. A sphere is different from all other common 3D shapes because it has

A. the largest volume
B. the smallest surface area
C. primarily one face
D. no flat faces, edges, or vertices

5. Speed is different from velocity because velocity also includes

A. mass of the object
B. distance traveled
C. time of travel
D. direction of motion

6. Simple machines make work easier by

A. reducing the force needed
B. making objects weightless
C. creating energy from nothing
D. changing force or direction

7. A student believes that heavier objects fall faster than lighter objects. To address this misconception, Ms. Price should

A. explain that Galileo proved this wrong hundreds of years ago
B. wait until students are older to address this topic
C. tell students they are incorrect and move on
D. have students drop objects of different masses from the same height

8. A ball rolling across the floor eventually stops because of

A. gravity pulling it down
B. air pushing the ball backwards
C. the ball running out of energy
D. friction between the ball and the floor

9. Gravity is a force that

A. primarily affects objects on Earth
B. primarily works on heavy objects
C. pushes objects away from the Earth
D. attracts all objects with mass toward each other

10. When two forces act on an object in opposite directions, the object will move in the direction of the

A. smaller force
B. force applied first
C. larger force
D. heavier force

Answer Key

1. A — The correct answer is A. Both squares and rectangles have four right angles, are parallelograms, and have two pairs of parallel sides. The distinguishing feature is that squares have four equal sides (congruent sides). Choices A, C, and D are shared properties.

2. A — The correct answer is A. Geometric shapes maintain their properties regardless of rotation or position. A square rotated 45° is still a square. Students must identify shapes by properties (four equal sides, four right angles), not visual appearance. Choices A, C, and D reinforce the misconception.

3. C — The correct answer is C. A circle is a curved shape with no corners (vertices) and no straight sides. Choice A has 3 vertices. Choice B has 4 vertices. Choice D has 5 vertices.

4. D — The correct answer is D. A sphere is completely curved with no flat surfaces (faces), no edges where faces meet, and no vertices (corners). This makes it unique among common 3D shapes. Choices A and D make false comparisons. Choice C incorrectly suggests it has a face.

5. D — The correct answer is D. Speed is scalar (magnitude only: how fast). Velocity is vector (magnitude AND direction: how fast AND which way). Two objects with the same speed but different directions have different velocities. Choices A, C, and D don't distinguish speed from velocity.

6. D — The correct answer is D. Simple machines (lever, pulley, inclined plane, etc.) provide mechanical advantage—reducing force needed (while increasing distance) or changing force direction. They don't eliminate work. Choice A, C, and D violate physical principles.

7. D — The correct answer is D. Direct experimentation with objects of different masses (minimizing air resistance) shows they fall at the same rate. This hands-on approach addresses misconceptions more effectively than telling. Choice A provides history, not experience. Choices C and D are poor pedagogy.

8. D — The correct answer is D. Friction between surfaces opposes motion and converts kinetic energy to heat, slowing the ball until it stops. While air resistance also plays a small role, floor friction is the primary factor. Choice A affects vertical, not horizontal motion. Choice C is an imprecise explanation. Choice B is minimal.

9. D — The correct answer is D. Gravity is a universal attractive force between all objects with mass. The strength depends on masses and distance. Choice A ignores universal gravitation. Choice C describes a repulsive force. Choice B ignores that all masses are affected.

10. C — The correct answer is C. When opposing forces act, the net (unbalanced) force determines motion direction. The object accelerates toward the direction of the larger force. Choice A is opposite. Choice B ignores force magnitude. Choice D confuses force with weight.

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