

QUIZ / Mechanics - Kinematics

NAME

DATE

CLASS PERIOD

Put a check ✓ in the o next to the correct answer.

1. Kinematics is the study of what?

☐ Motion

☐ Forces and torque

☐ Robot aesthetics

☐ Inertia

☐ Rotation

2. In the U.S. customary system, the accepted value for the gravitational constant is $g = 9.81 \text{ ft/s}^2$.

☐ True

☐ False

3. To employ the following equations, what must be true?

$$v = v_o + a_o(t - t_o)$$

$$s = s_o + v_o(t - t_o) + \frac{1}{2}a_o(t - t_o)^2$$

$$v^2 = v_o^2 + 2a_o(s - s_o)$$

☐ Acceleration must be constant

☐ Acceleration must be zero

☐ The object must be in static equilibrium

☐ Initial time must be zero

☐ Weight must be the only force acting on the object

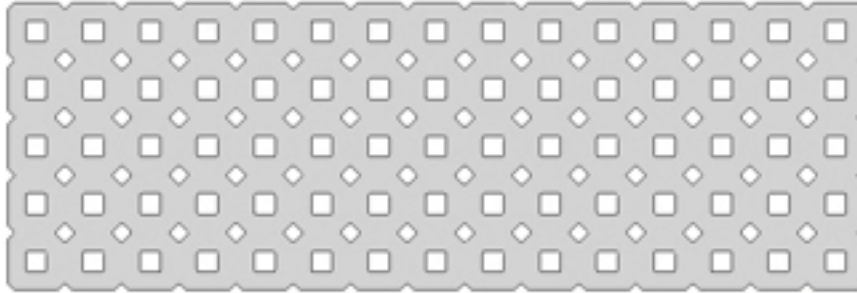
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4. A 0.25 lb plate has come lose from your aerial robot, and free-falls with an initial speed of zero. Determine how long it will take to fall 2 feet.



- ☐ 0.352 s
 - ☐ 0.408 s
 - ☐ 0.124 s
 - ☐ 0.639 s
 - ☐ 0.555 s
5. The interpretation of the phrase, “starts from rest” means what?
- ☐ Initial velocity is zero
 - ☐ Initial acceleration is zero
 - ☐ Initial speed and acceleration is zero
 - ☐ The object begins in static equilibrium
 - ☐ Initial time is $t = \text{zero}$

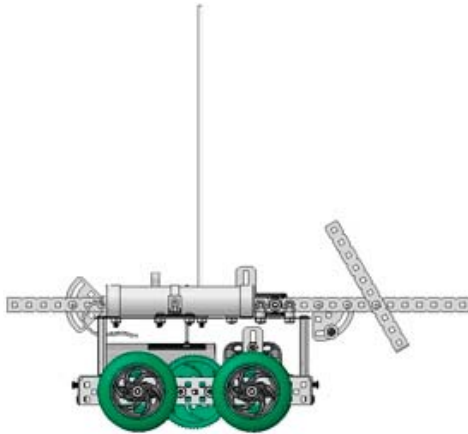
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6. The robot starts from rest, and begins to accelerate at a constant rate of 1.5 ft/s^2 . Determine its speed after 2 seconds.



- ☐ 3 ft/s
 - ☐ 0.75 ft/s
 - ☐ 1.33 ft/s
 - ☐ 6 ft^2
 - ☐ 2.12 ft/s
7. An object that fell from rest 2 meters in 0.75 seconds exhibited an acceleration of what?
- ☐ 7.11 m/s²
 - ☐ 5.33 m/s^2
 - ☐ 3.56 m/s^2
 - ☐ 2.67 m/s^2
 - ☐ 9.81 m/s^2
8. The term “deceleration” means ...
- ☐ A decrease in the rate of change of speed
 - ☐ A decrease in speed
 - ☐ An increase in speed in the negative direction
 - ☐ Nothing, it’s a made up term
 - ☐ A decrease in rotation