

#### Main Ideas, Key Points, Questions:

After watching the video segment, write down key points, main ideas, and big questions.

#### Objective(s):

- Analyze the motion of objects, both with and without an initial velocity, that experience free-fall acceleration.
- Use constant acceleration kinematics equations to make calculations for objects that experience free-fall acceleration.

#### Notes:

During the video segment, use words, phrases, or drawings to take notes.

#### Summary:

After watching the video segment, write at least three sentences explaining what you learned. You may ask yourself: "If I was going to explain this to someone else, what would I say?"

**Answer the following.**

1. When an object is experiencing “free fall,” what is the only force acting upon it?

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2. Does the acceleration of a falling object depend on its mass? Explain.

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3. What is the rate of acceleration due to gravity on the earth?

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4. In what direction does gravity always cause objects to accelerate?

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5. If the initial velocity of an object is upward in the positive direction, what must the sign of the acceleration due to gravity be in a calculation?

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6. A ball is thrown straight up in the air.

a. At the peak of its ascent, what is it doing?

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b. What is the ball's velocity at this point?

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c. What is the ball's acceleration at this point?

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**Answer the following.**

7. If a ball is accelerated downward at  $9.8 \text{ m/s}^2$ , by how many meters per second does the object's velocity change every second?

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