PHYSICS IN MOTION
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Unit 4F
Work-Energy Theorem
Note-Taking Guide TEACHER

Main Ideas, Key Points, Questions:

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

Objective(s):

- ***Calculate the work done on an object and its change in energy.***
- ***Apply the work-energy theorem to an object that experiences a net external force.***

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?"

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Unit 4F
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Questions to Consider TEACHER

Answer the following.

1. **Define the physics quantity of work in your own words.**

Work is done when a force causes an object to move or to be displaced.

2. **When work is done on an object, it changes the object's** *energy* .

3. **What is the unit of work?**

Work is measured in joules. A joule is a newton times a meter.

4. **What is the unit of energy?**

Energy is also measured in joules.

5. **How is work related to force and displacement?**

Work equals force times displacement (W = Fd).

6. **How is work related to kinetic energy?**

Work also equals the change in an object's kinetic energy.

$$W = \triangle KE$$
$$W = KE_f - KE_i$$
$$W = \frac{1}{2}mv_f^2 - \frac{1}{2}mv_i^2$$

7. **How does friction affect the kinetic energy of an object?**

Friction reduces the kinetic energy of an object.

8. **How does the direction of friction compare to an object's direction of motion?**

Friction acts opposite to an object's direction of motion.

9. **Based on the previous two questions, does friction do positive or negative work? What does this mean for the energy of an object?**

Friction does negative work by acting opposite to an object's

direction of motion, thereby reducing the object's energy.