

Main Ideas, Key Points, Questions:

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

Objective(s):

- Calculate the amount of work performed by a force on an object.
- Differentiate between positive work, negative work, and zero work.
- Relate the amount of work done to an object by the change in its energy.

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. 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. Is there net work done on an object at rest or moving at a constant velocity?

No. The net work done on an object is zero if it is at rest or moving at a constant velocity.

Any net work done on an object will cause it to accelerate.

3. Work is measured in what unit? What base units make up this unit?

Work is measured in joules, and a joule is equal to a newton times a meter.

4. How does a force do positive work on an object?

In order for a force to do positive work on an object,

the direction of motion and the direction of force must be the same.

5. How does a force do negative work on an object?

In order for a force to do negative work on an object,

the direction of motion and the direction of force must be opposite.

6. When a forklift raises an object, is it doing positive or negative work on the object? Which type of work is the force of gravity doing on the object? Explain your answers.

The forklift is doing positive work on the object because the direction of force

and the direction of motion are the same. The force of gravity is doing negative

work on the object because it is acting opposite to the direction of motion.

Answer the following.

7. Does kinetic friction speed up or slow down an object? Therefore, which type of work is done by kinetic friction? What can you conclude about the change in an object's speed relative to the type of work done on that object?

Kinetic friction always slows down an object, therefore doing negative work on that object.

In conclusion, negative work slows down an object and positive work speeds up an object.

8. How is the amount of work done on an object relative to its change in energy?

The amount of work done on an object is equal to its change in energy.

9. Define energy in your own words.

Energy is the amount of work that an object does.

10. What happens to the energy in a closed system?

In a closed system, energy is neither created nor destroyed, only converted from one form to another.
