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Unit 4I
Power
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):

- ***Understand the influence of work, energy change, and time on the amount of power exerted.***
- ***Calculate the amount of power exerted by determining the rate at which work is done on an object or energy is converted by an object.***

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 4I
Power
Questions to Consider TEACHER

Questions to consider:

1. **Define power in your own words.**

Power is the rate at which work is done or energy is transferred from one form to another.

2. **Power is measured in what unit? What base units make up this unit?**

Power is measured in watts, which are equal to joules per second.

3. **In what unit is power measured in the United States? How is this unit relative to the unit discussed in the previous question?**

Power is also measured in units of horsepower, and one horsepower equals 746 watts (1 hp = 746 W).

4. **What is the equation for power in terms of work and time?**

$$P = \frac{W}{t}$$

5. **What is an equation for power in terms of force and velocity?**

$$P = Fv$$

6. **If the amount of work done remains constant but occurs over less time, how does this affect the amount of power exerted? Explain.**

More power must be exerted to generate the same amount of work over less time.

7. **If the force applied to an object remains constant, is more power needed for the object to move faster? Explain.**

In order for an object to move faster while experiencing a constant force, the power exerted on the object must increase. This is because more work is done on the object per second as the distance covered each second increases.

8. **Explain how a 45 and 60 watt bulb differ in terms of energy output.**

A 60 W bulb puts off 60 J of energy each second, while a 45 W bulb puts off 45 J of energy each second.

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