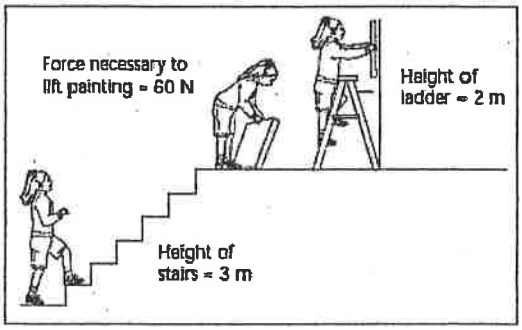
Part I Work and Power INTRODUCTION.

Work $W = Fd =$ ____J

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



Step 1: A 50 N girl climbs the flight of stairs in 3 seconds.

Work = _____

_____

Power = _____

_____

Step 2: The girl lifts a painting to a height of 0.5 m in 0.75 seconds.

Work= _____

_____

Power= _____

_____

Step 3: The girl climbs the ladder with the painting in 5 seconds.

Work= _____

_____

Power= _____

_____

Part II Work and Power REPETITION.

Work $W = Fd =$ ____J

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

	Force (N)	Distance (m)	Time (s)	Work (J)	Power (W)
1.	100	2	5		
2.	100	2	10		
3.	100	4	10		
4.	100		25	500	
5.		20	20	1000	
6.		30	10		60
7.	9	20			60
8.	3			75	5

Show your work:

1.

2.

3.

4.

5.

6.

7.

8.

Part III Work and Power PRACTICE

Work $W = Fd = \_\_\_\_J$ **DON'T FORGET!** **1 kg = 10-N**

Power $P = \frac{W}{t} = \_\_\_\_W$

1. Oliver weighs 600 N. He climbs a flight of stairs that is 3.0 meters tall in 4.0 seconds.
   a. How much work did he do?

   b. What was Oliver's power in watts?

2. An elevator weighing 6000 N moves up a distance of 10.0 meters in 30.0 seconds.
   a. How much work did the elevator's motor do?

   b. What was the power of the elevator's motor in watts?

3. After a large snowstorm, you shovel 2500 kg of snow off your sidewalk in a half an hour. You lift the shovel to an average height of 1.5 meters.
   a. How much work did you do? Hint: The force is the weight of the snow.

   b. What was your power in watts? Hint: Convert minutes to seconds.

4. A television converts 12000 J of electrical energy into light and sound every minute.
   a. What is the power of the television?

5. The power of a typical adult's body over the course of a day is 100 watts. This means that 100 J of energy from food is needed each second.
   a. The average apple contains 500,000 J of energy. For how many seconds would an apple power a person?

   b. How many Joules are needed each day?

   c. How many apples would a person need to eat to get enough energy for one day?

6. An alkaline AA battery stores approximately 12000 J of energy. A small flashlight used two AA batteries and will produce light for 2 hours.
   a. What is the power of the flashlight bulb?