

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## WORK, POWER, & ENERGY

### Work and Power Review

#### Part 1: Linear Work and Power. Compare and Contrast.

Linear or Mechanical Work happens when a parallel force displaces an object.  
Power is defined as the rate at which work is performed.

##### Linear work

$$W = F \cdot d$$

##### Power

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

W = work (J)

F = parallel force (N)

P = power (Watts)

t = time (s)

d = distance (m)

1. Identify which person performed more work and used more power?

Simon pulled the 40 kg wagon with a force of 50 N for a distance of 80 m in 1 minute.

More work: \_\_\_\_\_

Tandy pulled the 40 kg wagon with a force of 50 N for a distance of 80 m in 2 minutes.

More power: \_\_\_\_\_

2. Identify which person performed more work and used more power?

Simon pulled the 40 kg wagon with a force of 50 N for a distance of 80 m in 1 minute.

More work: \_\_\_\_\_

Tandy pulled the 20 kg wagon with a force of 50 N for a distance of 80 m in 1 minutes.

More power: \_\_\_\_\_

3. Identify which person performed more work and used more power?

Simon pulled the 40 kg wagon with a force of 25 N for a distance of 80 m in 1 minute.

More work: \_\_\_\_\_

Tandy pulled the 40 kg wagon with a force of 50 N for a distance of 80 m in 1 minute.

More power: \_\_\_\_\_

4. Identify which person performed more work and used more power?

Simon pulled the 40 kg wagon with a force of 100 N for a distance of 40 m in 2 minutes.

More work: \_\_\_\_\_

Tandy pulled the 40 kg wagon with a force of 200 N for a distance of 40 m in 4 minutes.

More power: \_\_\_\_\_

5. Identify which person performed more work and used more power?

Simon pulled the 80 kg wagon with a force of 30 N for a distance of 200 m in 10 minutes.

More work: \_\_\_\_\_

Tandy pulled the 40 kg wagon with a force of 60 N for a distance of 300 m in 15 minutes.

More power: \_\_\_\_\_

## Part 2: Work Against Gravity and Power.

Work against gravity happens when an object is moved upward away from a permanent surface. The object is raised, lifted, or moved up. Power is defined as the rate at which work is performed.

**Work against gravity**

$$W = m \cdot g \cdot h$$

**Power**

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

W = work (J)

m = mass (kg)

g = 9.81 m/s<sup>2</sup>

P = power (Watts)

t = time (s)

h = height (m)

6. Identify on which day Ted did more work and used more power?

On Monday, Ted walked up 50 stairs in 2 minutes.

More work: \_\_\_\_\_

On Tuesday, Ted walked up 100 stairs in 2 minutes.

More power: \_\_\_\_\_

7. Identify on which day Ted did more work and used more power?

On Monday, Ted walked up 100 stairs in 4 minutes.

More work: \_\_\_\_\_

On Tuesday, Ted walked up 100 stairs in 6 minutes.

More power: \_\_\_\_\_

8. Identify on which day Ted did more work and used more power?

On Monday, Ted walked up 50 stairs in 2 minutes.

More work: \_\_\_\_\_

On Tuesday, Ted walked up 100 stairs in 4 minutes.

More power: \_\_\_\_\_

9. Identify on which day Ted did more work and used more power?

On Monday, Ted walked up 160 stairs in 8 minutes.

More work: \_\_\_\_\_

On Tuesday, Ted walked up 120 stairs in 6 minutes.

More power: \_\_\_\_\_

10. Identify on which day Ted did more work and used more power?

On Monday, Ted walked up 90 stairs in 3 minutes.

More work: \_\_\_\_\_

On Tuesday, Ted walked up 120 stairs in 6 minutes.

More power: \_\_\_\_\_

**Part 3: Work.** Identify which form of work is being performed by the activity. Write the letter of the correct answer on the line to the left of the statement or question.

A = work ("mechanical" or linear).

B = Work against gravity.

C = Work against resistance.

D = Work against shape

\_\_\_\_\_ Bend a steel rod

\_\_\_\_\_ Climbing stairs

\_\_\_\_\_ Push a box across the floor

\_\_\_\_\_ Stretch a rubber band.

\_\_\_\_\_ Swim opposite river current

\_\_\_\_\_ Lifting a book to a shelf

\_\_\_\_\_ Tie knot in rope

\_\_\_\_\_ Inflate a balloon

\_\_\_\_\_ Shatter a window with a rock

\_\_\_\_\_ Tear paper

\_\_\_\_\_ Stretch a spring

\_\_\_\_\_ Ride in an elevator

\_\_\_\_\_ Pull a wagon

\_\_\_\_\_ Walk up a hill

\_\_\_\_\_ Stack blocks on top of each other

\_\_\_\_\_ Mold clay