Name: _____ Date: _____

PHYSICS
Work, Power, and Energy

WORK AND POWER CONCEPT REVIEW

Part 1: 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

_____ Stretch elastic

_____ Shatter a window with a rock

_____ Tear paper

_____ Squeeze a spring

_____ Ride upward in an elevator

_____ Pull a wagon across the ground

_____ Walk up a hill

_____ Stack blocks on top of each other

_____ Flatten clay

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)

Work against gravity

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

W = work (J)
m = mass (kg)
g = 9.81 m/s^2
h = height (m)

LIVEWORKSHEETS

Part 2: Work and Power. Identify which person or process used the most work and which used the most power. Read the problems carefully and draw logical conclusions.

Marlow pushed a crate with a net force of 50 N over a distance of 30 m in 60 seconds.
Kendrick pushed a crate with a net force of 50 N over a distance of 20 m in 60 seconds.

_____ 1 Who performed more work?
A. Marlow
B. Kendrick
C. Both did equal work

_____ 2 Who used the most power?
A. Marlow
B. Kendrick
C. Both used equal power

Alexa pushed a wagon with a force of 100 N over a distance of 20 m in 40 seconds.
Renaldo pushed a crate with a force of 50 N over a distance of 20 m in 20 seconds.

_____ 3 Who performed more work?
A. Alexa
B. Renaldo
C. Both did equal work

_____ 4 Who used the most power?
A. Alexa
B. Renaldo
C. Both used equal power

Jasper pushed a box with a force of 90 N over a distance of 60 m in 1 minute.
Federico pushed a box with a force of 180 N over a distance of 30 m in 1 minute.

_____ 5 Who performed more work?
A. Jasper
B. Federico
C. Both did equal work

_____ 6 Who use the most power?
A. Jasper
B. Federico
C. Both used equal power

LIVEWORKSHEETS

Shandra pulled a wagon with a force of 80 N over a distance of 80 m in 3 minutes.
Katrina pulled a wagon with a force of 60 N over a distance of 120 m in 4 minutes.

_____ 7 Who performed the most work?
A. Shandra
B. Katrina
C. Both did equal work

_____ 8 Who used the most power?
A. Shandra
B. Katrina
C. Both used equal power

The red crane lifted a 100 kg block to a height of 30 meters in 1 minute.
The blue crane lifted a 200 kg block to a height of 30 meters in 1 minute.

_____ 9. Which crane performed the most work?
A. Red crane
B. Blue crane
C. Both did equal work

_____ 10 Which craned use the most power?
A. Red crane
B. Blue crane
C. Both used equal power

The yellow crane lifted a 100 kg block to a height of 60 meters in 2 minutes.
The green crane lifted a 200 kg block to a height of 30 meters in 1 minute.

_____ 11 Which crane performed the most work?
A. Yellow crane
B. Green crane
C. Both did equal work

_____ 12 Which crane used the most power?
A. Yellow crane
B. Green crane
C. Both did equal work

LIVEWORKSHEETS

Jeremy works in an office building on the 2nd floor.
On Monday, Jeremy walked up 20 stairs to his office in 30 seconds.
On Tuesday, Jeremy walked up 20 stairs to his office in 20 seconds.

_____ 13 On which day did Jeremy do more work?
A. Monday
B. Tuesday
C. Equal work both days

_____ 14 On which day did Jeremy use more power?
A. Monday
B. Tuesday
C. Equal power both days

Barbara has a mass of 60 kg. She walked up 60 stairs to her sister's apartment in 2 minutes.
Gregory has a mass of 90 kg. He walked up 60 stairs to his sister's apartment in 2 minutes.

_____ 15 Who performed more work?
A. Barbara
B. Gregory
C. Both did equal work

_____ 16 Who used more power?
A. Barbara
B. Gregory
C. Both used equal power

On Wednesday, Norberto ran up 50 stairs in 30 seconds.
On Thursday, Norberto ran up 100 stairs in 60 seconds.

_____ 17 On which day did Norberto do more work?
A. Wednesday
B. Thursday
C. Equal work both days

_____ 18 On which day did Norberto use more power?
A. Wednesday
B. Thursday
C. Equal power both days

LIVEWORKSHEETS

On Saturday, Yolanda pushed a car with a force of 120 N for a distance of 80 m in 160 seconds.
On Sunday, Yolanda pushed a car with a force of 160 N for a distance of 60 m in 180 seconds.

_____ 19 On which day did Yolanda do more work?

A. Saturday
B. Sunday
C. Equal work both days

_____ 20 On which day did Yolanda use more power?

A. Saturday
B. Sunday
C. Equal power both days

LIVEWORKSHEETS