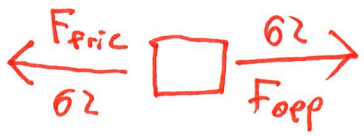
Work Practice Name:_____

1. A table is pushed by a person 5.6m across a floor at a constant velocity by a force of 62N.



$W = Fd$
$= 62 \times 5.6$
$= 347.2\ J$

The person does 350 J of work on the table.

The floor does -350 J of work on the table.

2. A block is pushed by a person 2.9 m across a floor with an applied force of 125N. A constant frictional force of 112N works against the motion.

Person $W = Fd$
$= 125 \times 2.9$
$= 362.5\ J$

Floor $W = Fd$
$= 112 \times -2.9$

force is in opposite direction to displacement

The person does 360 J of work on the block.

The floor does -320 J of work on the block.

3. A block which is initially moving at 25 m/s is slowed by a friction force of 1250 N until it stops after 16m.

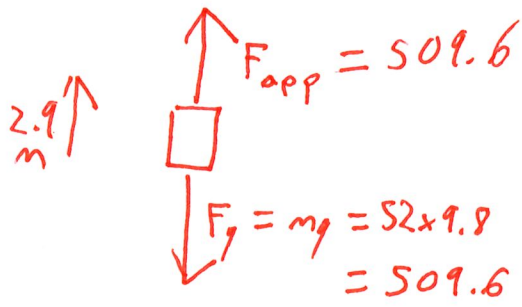
$W = Fd$
$= 1250 \times -16$
$= -20\,000$

The floor does -2.0×10^4 J of work on the block.

Work Practice Name: _____

4. A 52 kg object is lifted by a rope 2.9 m at a constant velocity.

$W = Fd = 509.6 \times 2.9$
$= 1478$



The rope does 1500 J of work on the table.

The Earth does −1500 J of work on the object.

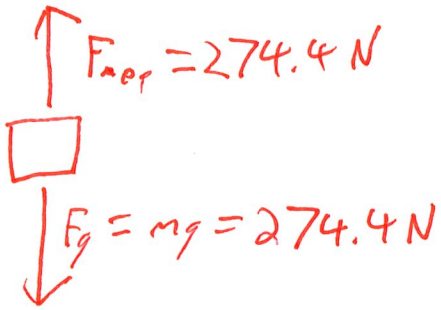
5. A 52 kg object is dropped from a height a 25 m and falls to the ground.

$W = Fd = F_g d$
$= 52 \times 9.8 \times 25$
$= 12740$
≈ 13000
1.3×10^4

The Earth does _____ J of work on the object.

6. A rope attached to a 28 kg object is used to lower it from a height of 2.9m at a constant velocity.

$W = Fd$
$= 274.4 \times 3.1$
$= 851$



The rope does −850 J of work on the object.

The Earth does 850 J of work on the object.

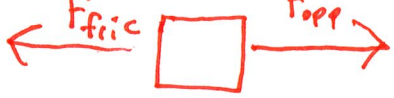
Work Practice Name:_____

7. A 26kg object is pushed by a person at a constant velocity over a floor with $\mu = 0.24$.

$F_{fric} = \mu F_N$

$= 0.24 \times 26 \times 9.8$

$= 61.15N$



$W = Fd$

$= 61.15 \times 46$

$= 2813$

The person does 2800 J of work on the object.

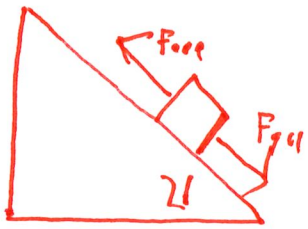
The floor does -2800 J of work on the object.

8. A 24kg block is pushed up a 21° frictionless incline at a constant velocity.

$F_{g\perp} = \sin 21 \times 24 \times 9.8$

$= 80.78N$

$F_{g\parallel} = F_{app}$



$W = Fd = 80.78 \times 1.2 = 97\ J$

The person does 97 J of work on the block.

The Earth does -97 J of work on the block.

Work Practice Name:_____

9. A 0.35kg puck with initial velocity of 26m/s slides across ice with $\mu = 0.14$.

Need to find displacement and Force

Force is Friction $F_{fric} = \mu F_N = 0.14 \times 0.35 \times 9.8$

$= 0.4802\ N$

Need acceleration to find displacement

$\frac{F_{net}}{m} = a = \frac{0.4802}{0.35} = 1.372\ m/s^2$ against motion

$W = Fd = 0.4802 \times -246.35 = -118.3$

The ice does -120 J of work on the puck.

$d = ?$ $V_f = 0\ m/s$

$V_0 = 26\ m/s$ $a = -1.372\ m/s^2$

use $V_f^2 = V_0^2 + 2ad$

$d = 246.35\ m$

10. A person pushes a 15kg block across a frictionless surface with a force of 15N for 15 seconds.

Need to find displacement

To find displacement find acceleration

$F_{net} = 15\ N$

$\frac{F_{net}}{m} = a$

$\frac{15}{15} = 1\ m/s^2$

$d = V_0 t + \frac{1}{2} a t^2$

$= 112.5\ m$

$W = Fd = 15 \times 112.5$

$= 1687.5\ J$

The person does 1700 J of work on the block.