

Name: Answer Key Period: \_\_\_\_\_ Date: \_\_\_\_\_

## HS.P.E.41, 42, 43 Assessment

HS.P.E.41	I can use the relationship between the force applied to an object and the displacement of the object to calculate the work done on that object	
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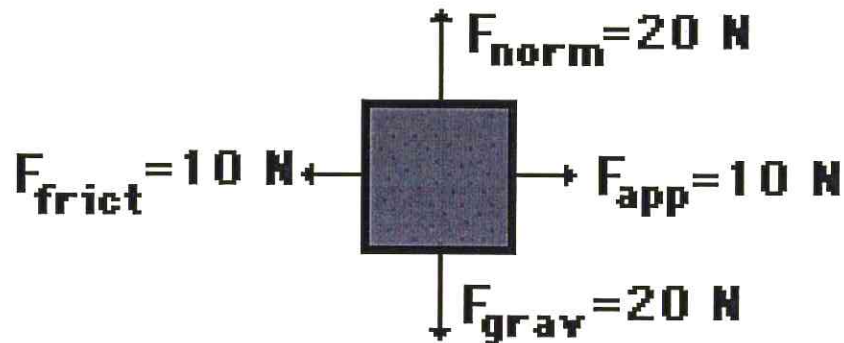
1. How many joules of work are done on a box when a force of 25 N pushes it 3 meters?

What you know (Variables)	$W = ?$ $F = 25\text{ N}$ $d = 3\text{ m}$
Formula	$W = Fd$
Substitute (Variables in Formula)	$W = (25)(3)$
Calculations	$W = 75\text{ J}$
Answer	$75\text{ J}$

HS.P.E.42

I can calculate the work done when the force and the displacement are not in the same direction.

A 10 N force is applied to push a block across a frictional surface at constant speed for a displacement of 15 meters to the right.



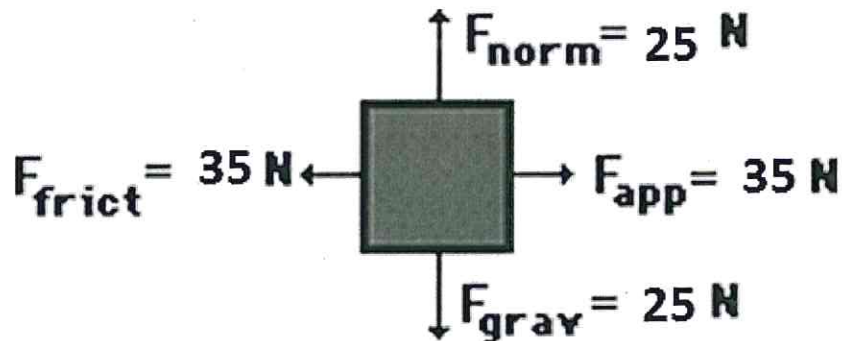
2. From the picture above, what is the work done by the frictional force.

What you know (Variables)	$W = ?$ $F = 10\text{ N}$ $d = 15$
Formula	$W = Fd$
Substitute (Variables in Formula)	$W = (10)(15)$
Calculations	$W = -150\text{ J}$ it is negative because the force and displacement are in opposite directions
Answer	$W = -150\text{ J}$

HS.P.E.43

I can calculate the work done by a particular force as well as the net work done to an object or system.

A 35 N force is applied to push a block across a frictional surface at constant speed for a displacement of 12 meters to the right.



3. Circle which forces are doing work. If they are doing work how much (calculate the work)?

<p style="text-align: center;"><math>F_{\text{frict}}</math></p> $W = Fd$ $W = (-35)(12)$ $W = -420 \text{ J}$ <p>The work is negative because the force and the displacement are in opposite directions.</p>	<p style="text-align: center;"><math>F_{\text{norm}}</math></p> <p>No work is done because the <del>the</del> force is perpendicular to the displacement.</p>
<p style="text-align: center;"><math>F_{\text{grav}}</math></p> <p>No work is done because the force is perpendicular to the displacement.</p>	<p style="text-align: center;"><math>F_{\text{app}}</math></p> $W = Fd$ $W = (35)(12)$ $W = 420 \text{ J}$

