

Ch 4-1

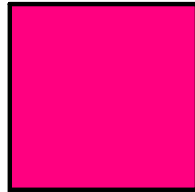
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Work is.....

physical
Painful
movement-
active

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There must be force and motion,
and the force must be in the
direction of the motion.



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The formula for work is:

$$W = F \times D$$

$$\text{Work} = \text{Force} \times \text{distance}$$

What do we measure these in?

$$\begin{aligned} \text{Work} &= \text{joules (J)} \\ \text{force} &= \text{newtons (N)} \\ \text{distance} &= \text{meters (m)} \end{aligned}$$

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A student's backpack weighs 10N. She lifts it from the floor to a table 0.75m high. How much work is being done?

$$W = F \times D$$

10N x 0.75m
7.5 J

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How much work is being done when you lift a 18N object 1.5m off the ground?

$$18N \cdot 1.5m$$

27 J

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A dancer lifts a 400N ballerina 1.4m off the ground and holds her for 5 seconds. How much work did he do?

$$400\text{N} \cdot 1.4\text{m}$$

$$560\text{J}$$



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