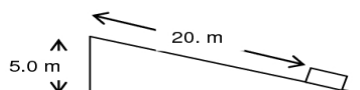


### Work, Power and Energy Worksheet

#### Work and Power

1. Calculate the work done by a 47 N force pushing a pencil 0.26 m.
2. Calculate the work done by a 47 N force pushing a 0.025 kg pencil 0.25 m against a force of 23 N.
3. Calculate the work done by a 2.4 N force pushing a 400. g sandwich across a table 0.75 m wide.
4. How far can a mother push a 20.0 kg baby carriage, using a force of 62.0 N at an angle of  $30.0^\circ$  to the horizontal, if she can do 2920 J of work?
5. How much work is it to lift a 20. kg sack of potatoes vertically 6.5 m?
6. If a small motor does 520. J of work to move a toy car 260. m, what force does it exert?
7. A girl pushes her little brother on his sled with a force of 300. N for 750. m. How much work is this if the force of friction acting on the sled is (a) 200. N, (b) 300. N?
8. A 75.0 kg man pushes on a  $5.0 \times 10^5$  ton wall for 250 s but it does not move. How much work does he do on the wall? (2000 lb = 1 ton; 0.454 kg = 1 lb)
9. A boy on a bicycle drags a wagon full of newspapers at 0.800 m/s for 30.0 min using a force of 40.0 N. How much work has the boy done?

Consider a 10 kg mass sitting on the ramp shown to the right. Use the following diagram for questions 10 and 11.



10. If it takes 25 N to slide the box on the ramp, how much work will it take to slide the box up?
11. Instead of sliding, how much work will it take to lift the box to the top of the ramp?

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12. How much power does it take to lift 30.0 N 10.0 m high in 5.00 s?
13. How much power does it take to lift 30.0 kg 10.0 m high in 5.00 s?
14. You move a 25 N object 5.0 meters. How much work did you do?
15. You carry a 20. N bag of dog food up a 6.0 m flight of stairs. How much work was done?
16. You push down on a 3.0 N box for 10. minutes. How much work was done?
17. You use 35 J of energy to move a 7.0 N object. How far did you move it?
18. You do 45 J of work in 3.0 seconds. How much power do you use?
19. A car uses 2,500 Joules in 25 seconds. Find power.
20. A 60. watt light bulb runs for 5.0 seconds. How much energy does it use?