Skills Worksheet

Directed Reading A

Section: Work and Power

- **1.** What is the transfer of energy to an object using a force that causes the object to move in the direction of the force?
 - a. movement
 - **b**. power
 - **c.** work
 - **d**. force

WHAT IS WORK?

- **2.** Which of the following is considered work?
 - **a.** pushing a table across a room
 - **b.** carrying a book across the room
 - **c.** writing a note to your friend
 - **d.** trying to push a box, but not moving it
- 3. Choose one example from above that is not work and explain why it isn't scientifically defined as work.

4. What two things need to happen for there to be work done on an object?

5. One way you can tell that the bowler has done work is that when the ball is

moving, it has ______ energy.

Name	Class	Date
Directed Reading A continued		
HOW MUCH WORK?		
6. Why is it the same amount of to walk up a slope?	work for a hiker to e	climb straight up a cliff and
7. The formula used to calculat	e work is:	
aucode	~	
<i>WOTK</i> =	^	·
8. The unit used to express wor	k is the	
9. Work is the transfer of		to an object.
10. The two ways in which you o	can increase the amou	unt of work done are
POWER: HOW FAST WORK IS D	ONE	
11. What is the rate at wh	ich energy is transfe	rred?
a. force		
b. power		
c. work		
u. energy		
12. What is the unit used	to express power?	
a. joule		
c. watt		
d. meter		
13 . Name the two things that no	wer measures	
14. What two events increase po	wer output?	

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Name	Class	Date
Directed Reading A continued		
15. If you sand a shelf by hand, the with an electric sander. What	he energy needed is does change betwe	the same as if you sanded it een the two sanding methods?
16. How does a powerful engine	affect the performa	nce of a car?
17. What is the difference betwee	en a joule and a wat	t?

Answer Key

Directed Reading A

SECTION: WORK AND POWER

- **1.** C
- **2.** A
- **3.** Answers will vary. Sample answer: Carrying a book across a room is not work because the book is not moving in the direction of the force.
- **4.** The object moves as a force is applied to it and the direction of the object's motion is the same as the direction of the force.
- 5. kinetic
- **6.** Because work depends upon distance and force. The straight cliff is a shorter distance but takes more force. The slope is a longer distance, but takes less force.
- **7.** force (F), distance (D)
- 8. joule
- 9. energy
- **10.** weight and distance
- **11.** B
- 12. C
- **13.** Power measures how fast work happens or how quickly energy is transferred
- **14.** Power output is greater when more work is done in a given amount of time and when the time it takes to do a certain amount of work is decreased.
- **15.** The power output is lower when you sand the shelf by hand.
- **16.** A more powerful engine will move the car more quickly. For a given speed, a more powerful engine can move a heavier car than a less powerful engine can.
- **17.** A joule is a unit to express energy. One watt is equal to 1 joule per second.

SECTION: WHAT IS A MACHINE?

- **1.** A
- **2.** C
- **3.** work input
- 4. work output

- 5. Work input is the work done on a machine, such as when you push on the screwdriver to pry the paint can lid off. Work output is the work done by the machine such as the screwdriver lifting the paint can lid. Students examples may vary.
- 6. Sample answer: scissors and chopsticks
- 7. increases
- 8. input force
- **9.** The amount of work for each is the same.
- **10.** distance
- **11.** Machines make work easier by changing the size or direction of the input force. But the amount of work done is the same.
- **12.** C
- **13.** B
- 14. greater
- **15.** distance
- **16.** B
- 17. D
- 18. input
- **19.** friction
- **20.** A machine that is 100% efficient.
- **21.** Machines aren't 100% efficient because some of the machine's work input is used up by the friction from moving parts.
- **22.** Magnets and lubricants can help reduce friction.

SECTION: TYPES OF MACHINES

- 1. wedge
- **2.** lever, inclined plane, wedge, screw, pulley, wheel and axle
- **3.** B
- **4.** C
- **5.** B
- **6.** B
- 7. fulcrum, bar, load

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