

Name _____

2-1B Lesson Master**Questions on SPUR Objectives**
See Student Edition pages 143–147 for objectives.**VOCABULARY**In 1–3, use the direct variation equation $V = \frac{4}{3} \pi r^3$ to identify the

1. *constant of variation.* _____
2. *independent variable.* _____
3. *dependent variable.* _____

SKILLS Objective A

In 4–8, write a variation equation representing the situation.

4. a varies directly as the cube of b . _____
5. T is directly proportional to the fourth power of S . _____
6. The actual distance D between two towns is directly proportional to d , the distance between them on a map. _____
7. A person's weight w varies directly as the cube of his or her height h . _____
8. Real-estate taxes T are directly proportional to property value V . _____
9. Write the variation equation $y = kx^3$ in words. _____

SKILLS Objective B10. m is directly proportional to n . If $m = 48$ when $n = 12$, find m when $n = 3$.
_____11. y varies directly as the square of x . If $y = 63$ when $x = 3$, find y when $x = 9$.
_____12. s varies directly as g^4 , and $s = 64$ when $g = 2$.a. Find the constant of variation k .
_____b. Find s when $g = 3$.
_____13. c varies directly as the cube of d , and $c = 32$ when $d = 4$.a. Find the constant of variation k .
_____b. Find c when $d = 5$.

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USES Objective F

In 14–16, translate the sentence into a variation equation.

- 14. The price p of a pizza varies directly as the square of its diameter d . _____
- 15. The cost c of filling a gas tank with gas is directly proportional to the volume v of the gas tank. _____
- 16. The volume V of a spherical helium balloon is directly proportional to the cube of its radius r . _____

USES Objective G

- 17. When lightning strikes 8 miles away, the sound of the thunder is heard about 40 seconds later. The time it takes for the sound to travel is directly proportional to the distance. How long does it take the sound to travel if lightning strikes 6 miles away? _____
- 18. The number of volts across an electrical circuit with constant resistance varies directly as the strength of the current in amps. There are 500 volts across a circuit of 25 amps. What would be the voltage across a circuit of 60 amps? _____
- 19. The designers of the Parthenon, a Greek temple completed in 432 BCE, utilized the golden ratio. The outline of its face fits into a golden rectangle, in which the length varies directly as its height in the ratio 1.618 to 1. The length of the temple was about 31 m. What was the original height of the Parthenon? _____
- 20. The rear wheel of a 5-speed bicycle turns 770 times in a mile. The table below lists the number of pedal turns for rear-wheel turns in each gear. The number of rear-wheel turns in each gear is directly proportional to the number of pedal turns.

Gear	First	Second	Third	Fourth	Fifth
Pedal Turns	9	4	1	3	5
Rear-Wheel Turns	14	7	2	7	14

How many pedal turns must a person use in a mile in each gear?

- a. First _____
- b. Second _____
- c. Third _____
- d. Fourth _____
- e. Fifth _____