

EXTRA PRACTICE — Exercises

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Unit VI – Second Degree Relations and Higher - Algebraic Fractions Part C – Problem Solving with Algebraic Fractions Lesson 4 – “Direct Variation” Problems

For each of the following story problems about direct variation, use the fraction format to find the relation needed to solve. Then solve and use common sense to check you answer.

1. The cost of gasoline varies directly as the number of gallons bought. If fifteen gallons cost \$18.75, find the cost of 27 gallons.
2. The volume of water in a cylindrical tank is directly proportional to the height of the water measured in the tank wall. If ten thousand cubic meters of water fills the tank to the twenty-five meter mark, how much water is in the tank when it is filled to the thirty-five meter mark?
3. A peanut butter jar is in the shape of a right circular cylinder. A jar four inches high and three inches in diameter sells for one dollar and twenty cents. If cost is directly proportional to volume, how much should a jar six inches high and six inches in diameter cost?
(volume of a cylinder is given by $V = \pi \cdot r^2 \cdot h$)
4. The weight of a sphere of a given material varies directly as its volume. An iron ball five inches in diameter weighs twenty-five pounds. Find the weight of an iron ball that is eight inches in diameter.
(Note: A diameter is two times a radius. The volume of a sphere is given by $V = \frac{4}{3} \cdot \pi \cdot r^2$)
5. The distance it takes a car to stop after the brakes are applied varies directly as the square of the car's speed. If a car traveling at forty miles per hour takes one hundred feet to stop, find the distance needed to stop if traveling sixty miles per hour.

EXTRA PRACTICE — Answer Key

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For each of the following story problems about direct variation, use the fraction format to find the relation needed to solve. Then solve and use common sense to check you answer.

1. \$33.75
2. 14,000 cubic meters
3. \$7.20 per jar
4. 102.825 pounds
5. 225 feet