

APPLICATIONS INVOLVING QUADRATIC EQUATIONS AND LITERAL EQUATIONS for Bittinger 11.4

Directions: For each word problem on this page fill in as much information in the chart as you can, and then determine which piece of the word problem tells you how to set up an equation. For now just set up as much as you can. We will discuss this and work these together as a class after they have all been set up.

Sam rode her motorcycle 300 miles at a certain average speed. Had she traveled 10 mph faster, the trip would have taken 1 hour less. Find Sam's average speed.

In the space below explain how you know what to set equal and why.

Labels	Amount	Rate	Total

On vacation Marco drives the 600 miles from Modesto, CA to Flagstaff, AZ averaging a certain speed. The return trip is made at an average speed that is 10 mph slower. Total time for the round trip is 22 hours. Find Marco's average speed on each part of the trip.

In the space below explain how you know what to set equal and why.

Labels	Amount	Rate	Total

ADDITIONAL QUADRATIC EQUATION WORD PROBLEMS

For the next three problems use the formula $4.9t^2 + v_0t = s$ where t stands for time in seconds, v_0 stands for initial velocity, and s stands for distance traveled. Use the quadratic formula and your calculator to answer these.

A bolt falls off an airplane at an altitude of 500 meters. Approximately how long does it take the bolt to hit the ground?

A ball is thrown downward at a speed of 30 meters per second from an altitude of 500 meters. Approximately how long does it take the ball to reach the ground?

Approximately how far will an object fall in 5 seconds when thrown downward at an initial velocity of 30 meters per second from the top of a cliff?

LITERAL EQUATIONS

$$V = \frac{4}{3}\pi r^3 \text{ for } r$$

$$\frac{1}{a} + \frac{1}{b} = \frac{1}{c} \text{ for } c$$

$$N = \frac{k^2 - 3k}{2} \text{ for } k$$

$$A = \pi r^2 + \pi r s \text{ for } r$$