

Study Guide

Chapter 3 Test

3.1: Solve One-Step Equations

- Be able to use inverse operations to isolate the variable and solve one-step equations

Ex: $\frac{2}{7}n = -5$

Ex: $-5 + x = -4$

Ex: $1 - x = -2$

3.2/3.3: Solve 2/Multi-Step Equations

- Be able to use inverse operations and reverse PEMDAS to solve multi-step equations

Ex: $4w + 2w = 24$

Ex: $\frac{x}{2} + 5 = 11$

Ex: $5x - 4(x - 3) = 17$

Ex: $\frac{3}{4}(z - 6) = 12$

Ex: $-4 = 2(x - 2) - 3(1 - x)$

3.4: Solve equations with variables on both sides

- Be able to solve equations with variables on both sides by moving variable terms together

Ex: $3m - 25 - 8m = m - 14$

Ex: $4(m - 3) = 2(6 - 2m)$

- Be able to identify when an equation has no solution, infinite solutions or 0 as the solution

Ex: $-5(3a - 4) = 7a + 27 - 7$

Ex: $4(3x + 2) = 2(6x + 4)$

Ex: $5z - 6 = (z - 1)5$

3.2-3.4: Solve Real-World Problems Involving Equations

For each problem, be able to set up an equation to represent the situation, then solve the equation. Be sure to identify a variable.

Ex: John's family is moving and he needs to rent a U-Haul truck. The truck costs \$250. He also wants to hire movers to help that cost \$40 per hour. If he can only spend \$750, how many hours could he hire movers for?

a) Write an equation to represent the situation. Be sure to identify a variable and what it represents.

b) Solve your equation.

Ex: A major league baseball pitcher pitches from a distance of 60 feet 6 inches (*6 inches = how many feet?*). The pitcher can throw a ball at 90 miles per hour (132 feet per second). How long (in seconds) does it take the pitch to reach the batter?

Ex: Amy wants to join a movie theater club where she should pay \$150 up front and then get to see as many movies as she wants in theaters for \$5 each. A non-member must pay \$12.50 for each movie. Amy wants to set up an equation to figure out when the cost of a member and a non-member would be equal.

a) Set up and solve an equation to represent the situation. Be sure to identify a variable and what it represents.

b) Solve your equation.

c) Explain the meaning of the solution as well as when Amy should choose to become a member and when she should choose to remain a non-member.

Ex: You want to make and sell holiday scarves. Your goal is to earn a profit of \$500. You plan to sell each scarf for \$5 and the cost of materials to make all scarves will be \$200. Set up and solve a profit equation to determine how many scarves you will need to sell in order to meet your goal of a \$500 profit.

3.5/3.6: Write ratios and write/solve proportions

- Be able to set up and solve ratios and proportions

Ex: $\frac{34}{6} = \frac{2z+1}{2}$

Ex: $\frac{-4a-1}{-10a} = \frac{3}{8}$

Ex: There are 10 girls and 12 boys in Mr. Taliaferro's Social Studies class.

a) What is the ratio of boys to girls?

b) What is the ratio of girls to all students?

Ex: You can read 20 pages of Fahrenheit 451 in 45 minutes. How many pages can you read in 1.5 **hours**? Set up a proportion and solve.

3.7: Set up and solve percent problems

- **Be able to set up and solve percent and percent of change problems using the percent proportion**

Ex: What is 42.5% of 380?

Ex: 90 is what percent of 250?

Ex: A survey asks high school seniors whether they would be willing to pay \$5 for their yearbook. 198 students said "yes." This is 88% of the senior class. How many seniors are there in the high school?

3.8: Rewrite equations and formulas

- **Be able to solve a literal equation for a variable**

Ex: The area of a circular ring is found by using the formula $A = 4\pi pw$

a) Solve for p .

b) Find p when the area is 905 square feet and the width is 9 feet.

- **Be able to write equations in function form**

Ex: $4x - 2y = -18$

Ex: $4y - x = 20$