GENERAL

algebra 1 chapter 2 practice 3 answers

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Algebra 1 Chapter 2 Practice 3 Answers: A Complete Guide

Algebra is a foundational subject that equips students with critical thinking skills and a framework for solving real world problems. For many learners, Chapter 2 of Algebra 1 is a pivotal point where concepts such as linear equations, graphing, and solving systems begin to crystallize. This chapter often presents a set of practice problems that challenge students to apply what they have learned. In this article, we will dive deep into the “Algebra 1 Chapter 2 Practice 3 Answers” set, providing detailed explanations, step by step solutions, common pitfalls, and useful strategies to master these exercises. Whether you are a student preparing for a quiz, a teacher looking for supplemental materials, or a parent wanting to help your child, this guide will give you the insights you need to excel.

Understanding the Scope of Chapter 2

Before tackling the practice problems, it’s essential to grasp the overarching themes of Chapter 2. Typically, this chapter covers:

- Solving linear equations and inequalities
- Graphing linear functions and understanding slope and intercepts
- Using linear equations to model real-life situations
- Solving systems of equations using substitution and elimination

Each of these topics builds upon the algebraic foundations laid in Chapter 1, and the practice problems are designed to reinforce these concepts. The “Practice 3” section is usually the most challenging, featuring multi step problems that require careful reasoning and accurate calculations.

Overview of the Practice 3 Problems

While the exact number of problems can vary by textbook edition, the typical “Practice 3” set in Algebra 1 Chapter 2 includes between 12 and 20 questions. They usually cover a mix of:

1. Single variable linear equations
2. Linear equations with fractions or negative coefficients
3. Systems of linear equations (two equations, two variables)
4. Word problems that translate into linear equations
5. Graphing linear equations and interpreting the graph

Below, we present the solutions to each problem, along with a thorough explanation of the methods used. By studying these solutions, you will not only learn how to arrive at the correct answer but also why each step is necessary.

Detailed Answers to Practice 3 Problems

Problem 1: Solve for x in the equation 2x + 5 = 17

Solution:

1. Subtract 5 from both sides: 2x = 12
2. Divide both sides by 2: x = 6

Answer: **6**

Problem 2: Solve for y in the equation –3y + 9 = 0

Solution:

1. Add 3y to both sides: 9 = 3y
2. Divide both sides by 3: y = 3

Answer: **3**

Problem 3: Solve the system of equations using substitution

2x – 4y = 8

5x + 2y = 10

Solution:

1. Isolate y in the first equation: –4y = 8 – 2x !’ y = (2x – 8)/4 = (x – 4)/2
2. Substitute y into the second equation:
3. Simplify: 5x + (x – 4) = 10 !’ 6x – 4 = 10
4. Add 4: 6x = 14
5. Divide by 6: x = 14/6 = 7/3 "H 2.33
6. Substitute back to find y: y = (x – 4)/2 = (7/3 – 4)/2 = (7/3 – 12/3)/2 = (–5/3)/2 = –5/6 "H –0.83

Answer: **x = 7/3, y = –5/6**

Problem 4: A word problem involving distance

“A car travels at a constant speed of 60 miles per hour. How many miles will it cover in 3.5 hours?”

Solution:

1. Use the formula: Distance = Speed × Time
2. Plug in the values: Distance = 60 mph × 3.5 h = 210 miles

Answer: **210 miles**

Problem 5: Graph the linear equation y = 2x + 1

Solution:

- Identify the slope (m = 2) and y intercept (b = 1).
- Plot the point (0,1).
- From that point, move up 2 units and right 1 unit to find another point (1,3).
- Draw a straight line through the points.

Answer: The graph is a straight line with a slope of 2 crossing the y axis at 1.

Problem 6: Solve the equation 4(3x – 5) = 2x + 14

Solution:

1. Distribute the 4: 12x – 20 = 2x + 14
2. Subtract 2x from both sides: 10x – 20 = 14
3. Add 20: 10x = 34

4. Divide by 10: x = 3.4

Answer: **3.4**

Problem 7: Solve for x in the equation 5/(x – 2) = 3

Solution:

1. Multiply both sides by (x – 2): 5 = 3(x – 2)
2. Expand: 5 = 3x – 6
3. Add 6: 11 = 3x
4. Divide by 3: x = 11/3 "H 3.67

Answer: **11/3**

Problem 8: Solve the system using elimination

3x + 2y = 12

4x – 2y = 8

Solution:

1. Add the two equations to eliminate y:
2. Combine like terms: 7x = 20
3. Divide by 7: x = 20/7 "H 2.86
4. Substitute x back into the first equation:
5. Compute: 60/7 + 2y = 12 !' 2y = 12 – 60/7 = (84 – 60)/7 = 24/7
6. Divide by 2: y = 12/7 "H 1.71

Answer: **x = 20/7, y = 12/7**

Problem 9: Find the slope of the line passing through the points (3, 4) and (7, 10)

Solution:

1. Use the slope formula: m = (y , – y •)/(x , – x •)
2. Plug in the points: m = (10 – 4)/(7 – 3) = 6/4 = 3/2

Answer: **3/2**

Problem 10: A real world scenario: “If a company sells a product for $15 each and makes a total profit of $600, how many units were sold?”

Solution:

1. Let x be the number of units sold.
2. Profit equation: 15x = 600
3. Divide by 15: x = 40

Answer: **40 units**

Problem 11: Solve the inequality 2x + 7 > 11

Solution:

1. Subtract 7: 2x > 4
2. Divide by 2: x > 2

Answer: **x > 2**

Problem 12: Convert the equation 3x – 4 = 2x + 5 into standard form ax + by = c

Solution:

1. Subtract 2x from both sides: x – 4 = 5
2. Add 4: x = 9
3. Express in standard form: 1x + 0y = 9

Answer: **1x + 0y = 9**

Problem 13: Graph the inequality y "d –3x + 6

Solution:

- Plot the boundary line y = –3x + 6 (solid line because of “"d”).
- Test a point not on the line, e.g., (0,0): 0 "d 6 is true, so shade below the line.

Answer: The shaded region is below the line y = –3x + 6, including the line itself.

Problem 14: Solve the quadratic equation (x – 2)(x + 3) = 0

Solution:

1. Set each factor equal to zero:
2. x – 2 = 0 !’ x = 2
3. x + 3 = 0 !’ x = –3

Answer: **x = 2 or x = –3**

Problem 15: Find the equation of the line that passes through (4, –2) and is perpendicular to y = 5x + 1

Solution:

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