

Intermediate Algebra
Chapters 3 & 4 Test, Calculator Allowed

I. Solve for x. Write inequality answers in Interval Notation.

1. $2x - 4 < 2$ and $2x \geq x + 2$
2. $2x - 3 \leq 2$ or $3x < x + 4$
3. $20 \leq 2x + 4 \leq 60$
4. $-3 < 4 - \frac{1}{3}x < 7$

II. Follow the directions provided.

5. Determine graphically if the system is dependent, inconsistent, or has a unique solution. If a unique solution exists, solve the system.
 $2x - y = 3$
 $-4x + 2y = -6$
6. Determine graphically if the system is dependent, inconsistent, or has a unique solution. If a unique solution exists, solve the system.
 $x - 3y = 5$
 $x + 5y = -3$

III. Solve the following systems of equations graphically.

7. $y = 2x + 1$
 $y = x + 2$
8. $y = 2x - 2$
 $y = -x + 4$
9. $y = 2x - 1$
 $y = \frac{1}{3}x + 4$

IV. Complete the table and then use the table to solve the equations.

10. $5 - 2x = 3$

x	-1	0	1	2	3
$5 - 2x$	7				-1

11. $5 - 2x = -1 + x$

x	0	1	2	3	4
$5 - 2x$	5				-3
$-1 + x$	-1				3

V. Graph the following inequalities.

12. $x - 2y > 5$
13. $x - 2y > 4$
 $2x + y \leq -3$

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VI. Solve the following problems.

14. Find the length of a rectangular lot with a perimeter of 84 meters if the length is 8 meters more than the width.
15. The perimeter of a rectangle is 44 cm. One side is 10 cm longer than the other side. Find the lengths of the sides.
16. Mardi received an inheritance of \$50,000. She invested part at 7% and deposited the remainder in tax-free bonds at 8%. Her total annual income from the investments was \$3700. Find the amount invested at 7%.

Answers:

1. $[2, 3)$
2. $(-\infty, \frac{5}{2}]$
3. $[8, 28]$
4. $(-9, 21)$
5. *Dependent System*
6. *Unique System: $(2, -1)$*
7. $(1, 3)$
8. $(2, 2)$
9. $(3, 5)$
- 10.

x	-1	0	1	2	3
$5 - 2x$	7	5	3	1	-1

11.

x	0	1	2	3	4
$5 - 2x$	5	3	1	-1	-3
$-1 + x$	-1	0	1	2	3

12. Dashed Line with shading below the line. The graph is above and the scale is $[-7, 7, 1]$ by $[-7, 7, 1]$.
13. First Line Dashed, Second Line Solid with shading in Bottom Left. The graph is below and the scale is $[-7, 7, 1]$ by $[-7, 7, 1]$.

14. 25 m
15. 6, 16
16. \$30,000

