Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Unit 1 - Review (Equations and Inequalities)

Multiple Choice
Identify the choice that best completes the statement or answers the question.

What is the solution of the following one-step equation?

____ 1. $x - 0.7 = -2$

a. -1.3 b. -0.4 c. 0.77 d. -0.77

Solve the equation.

____ 2. $3y + 20 = 3 + 2y$

a. $-\frac{1}{17}$ b. $7\frac{2}{3}$ c. 23 d. -17

____ 3. $0.125r - 0.0625 + 0.25r = 0.25 + r$

a. -0.28 b. 0.23 c. -0.5 d. -0.3

____ 4. $-5y - 9 = -(y - 1)$

a. $-\frac{1}{2}$ b. $-2\frac{1}{2}$ c. -2 d. $-\frac{2}{5}$

Use an algebraic equation to solve the problem.

____ 5. A rectangle is 3 times as long as it is wide. The perimeter is 60 cm. Find the dimensions of the rectangle. Round to the nearest tenth if necessary.

a. 7.5 cm by 22.5 cm
b. 7.5 cm by 52.5 cm
c. 20 cm by 60 cm
d. 15 cm by 22.5 cm

____ 6. The sides of a triangle are in the ratio 3 : 4 : 5. What is the length of each side if the perimeter of the triangle is 90 cm?

a. 10.5 cm, 11.5 cm, and 12.5 cm
b. 22.5 cm, 30 cm, and 37.5 cm
c. 7.5 cm, 11.5 cm, and 32.1 cm
d. 19.3 cm, 25.7 cm, and 32.1 cm

____ 7. Two cars leave Denver at the same time and travel in opposite directions. One car travels 10 mi/h faster than the other car. The cars are 300 mi apart in 3 h. How fast is each car traveling?

a. 35 mi/h and 45 mi/h
b. 55 mi/h and 35 mi/h
c. 45 mi/h and 55 mi/h
d. 55 mi/h and 65 mi/h

Is the following *always*, *sometimes*, or *never* true?

____ 8. $14 + 3x - 7 = 7x + 7 - 4x$

a. always b. sometimes c. never

____ 9. $8 + 6x - 10 = 10x + 11 - 4x$

a. always b. sometimes c. never

Solve the equation or formula for the indicated variable.

____ 10. $S = 5r^2t$, for t

a. $t = \frac{S}{5} - r$ b. $t = \frac{25r}{S}$ c. $t = r^2 - 5S$ d. $t = \frac{S}{5r^2}$

____ 11. $T = \frac{4U}{E}$, for U

a. $U = \frac{T - E}{4}$ b. $U = T + \frac{E}{4}$ c. $U = 4T - E$ d. $U = \frac{TE}{4}$

What inequality represents the sentence?

____ 12. 14 fewer than a number is at least −8

a. $x + 14 \le -8$
b. $x - 14 \ge -8$
c. $14 - x \ge -8$
d. $x - 14 < -8$

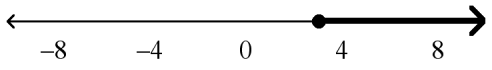
____ 13. The product of a number and 12 is no more than 15.

a. $12n < 15$
b. $12n > 15$
c. $12n \ge 15$
d. $12n \le 15$

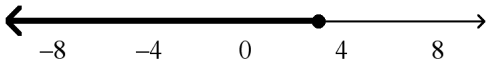
Solve the inequality. Graph the solution set.

____ 14. $2 + 2k \le 8$

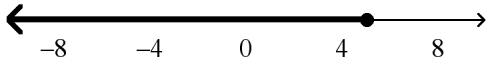
a. $k \ge 3$



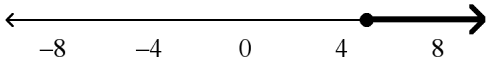
c. $k \le 3$



b. $k \le 5$

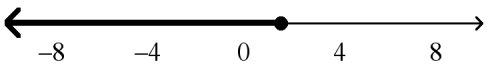


d. $k \ge 5$

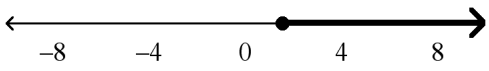


____ 15. $2r - 9 \geq -6$

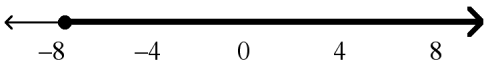
a. $r \leq 1\frac{1}{2}$



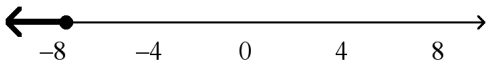
c. $r \geq 1\frac{1}{2}$



b. $r \geq -7\frac{1}{2}$

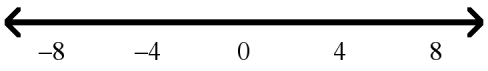


d. $r \leq -7\frac{1}{2}$

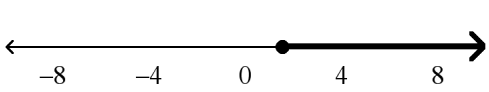


____ 16. $26 + 6b \geq 2(3b + 4)$

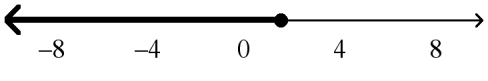
a. all real numbers



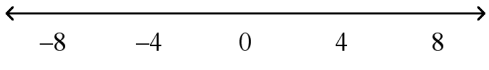
c. $b \geq 1\frac{1}{2}$



b. $b \leq 1\frac{1}{2}$



d. no solutions



Solve the problem by writing an inequality.

____ 17. A club decides to sell T-shirts for $15 as a fund-raiser. It costs $20 plus $9 per T-shirt to make the T-shirts. Write and solve an equation to find how many T-shirts the club needs to make and sell in order to profit at least $150.

a. $15x - (9x + 20) \geq 150$; $x \geq 28.33$
b. $15x - 9x + 20 \geq 150$; $x \geq 20$
c. $(8x + 20) - 15x \geq 150$; $x \geq 20$
d. $15x - 9(x + 20) \geq 150$; $x \geq 20$

____ 18. If the perimeter of a rectangular picture frame must be less than 200 in., and the width is 36 in., what must the height h of the frame be?

a. $h < 64$ in.
b. $h > 128$ in.
c. $h > 64$ in.
d. $h < 128$ in.

Is the inequality *sometimes*, *always*, or *never* true?

____ 19. $-2(2x + 9) > -4x + 9$

a. always
b. sometimes
c. never

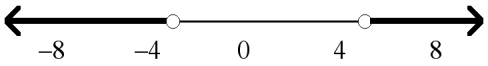
____ 20. $2(10x - 5) - 9x \leq 11x + 13$

a. always b. sometimes c. never

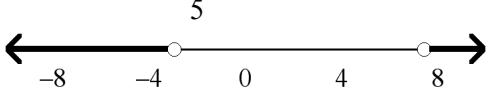
Solve the compound inequality. Write your solution in interval notation.

____ 21. $4x - 5 < -17$ or $5x + 6 > 31$

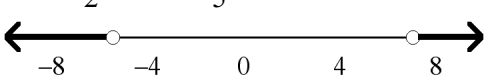
a. $x < -3$ or $x > 5$



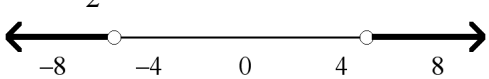
c. $x < -3$ or $x > 7\frac{2}{5}$



b. $x < -5\frac{1}{2}$ or $x > 7\frac{2}{5}$

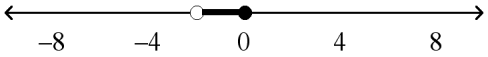


d. $x < -5\frac{1}{2}$ or $x > 5$

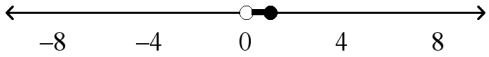


____ 22. $-2 \leq 2x - 4 < 4$

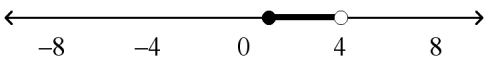
a. $0 \leq x < -2$



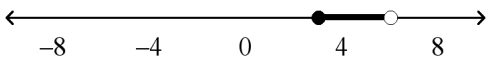
c. $1 \leq x < 0$



b. $1 \leq x < 4$



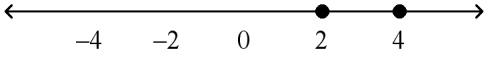
d. $3 \leq x < 6$



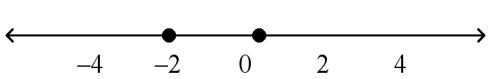
Solve the absolute value equation. Graph the solution.

____ 23. $|x - 3| = 1$

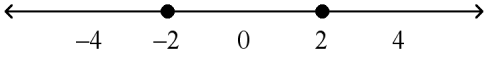
a. $x = 4$ or $x = 2$



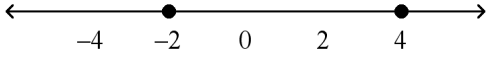
c. $x = -2$ or $x = \frac{1}{3}$



b. $x = -2$ or $x = 2$

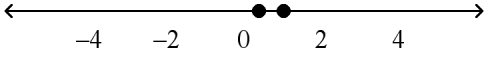


d. $x = -2$ or $x = 4$

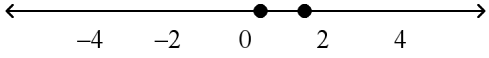


____ 24. $2|4x - 5| - 2 = -4$

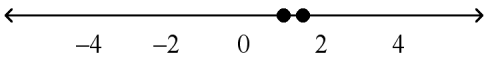
a. $x = \frac{3}{8}$ or $x = 1$



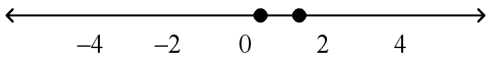
c. $x = \frac{3}{8}$ or $x = 1\frac{1}{2}$



b. $x = 1$ or $x = 1\frac{1}{2}$

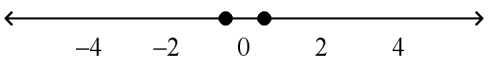


d. $x = \frac{3}{8}$ or $x = 1\frac{3}{8}$

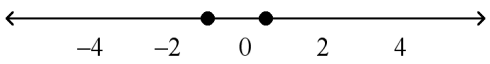


____ 25. $|4x + 1| = -3$

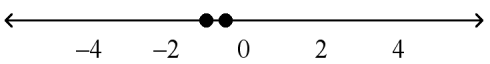
a. $x = -\frac{1}{2}$ or $x = \frac{1}{2}$



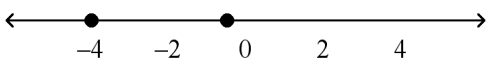
c. $x = -1$ or $x = \frac{1}{2}$



b. $x = -\frac{1}{2}$ or $x = -1$

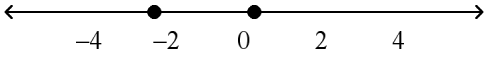


d. $x = -\frac{1}{2}$ or $x = -4$

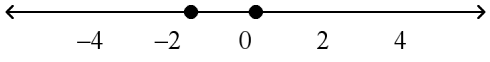


____ 26. $4|3x + 5| + 2 = 10$

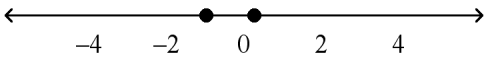
a. $x = \frac{1}{4}$ or $x = -2\frac{1}{3}$



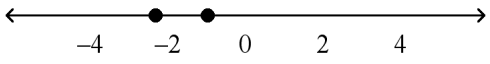
c. $x = \frac{1}{4}$ or $x = -1\frac{5}{12}$



b. $x = \frac{1}{4}$ or $x = -1$



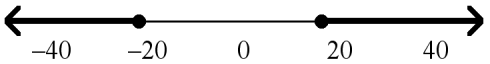
d. $x = -1$ or $x = -2\frac{1}{3}$



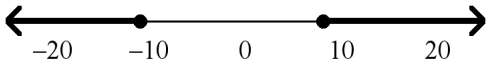
Solve the inequality. Graph the solution.

____ 27. $|2x + 3| \geq 19$

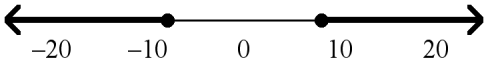
a. $x \leq -22$ or $x \geq 16$



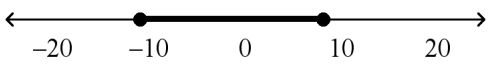
c. $x \leq -11$ or $x \geq 8$



b. $x \leq -8$ or $x \geq 8$



d. $x \geq -11$ or $x \leq 8$



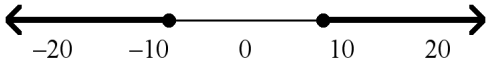
____ 28. $|2x + 10| \leq 26$

a. $-18 \geq x \geq 8$

c. $-36 \leq x \leq 16$

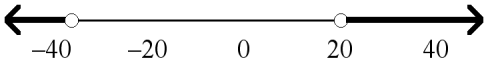
b. $-18 \leq x \leq 8$

d. $x \leq -8$ or $x \geq 8$

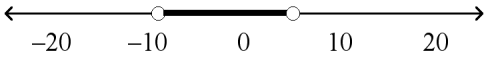


____ 29. $|4x + 8| > 28$

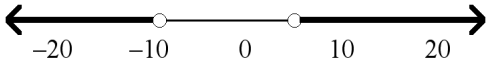
a. $x < -36$ or $x > 20$



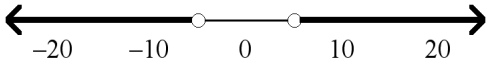
b. $x > -9$ or $x < 5$



c. $x < -9$ or $x > 5$



d. $x < -5$ or $x > 5$



____ 30. A furniture maker uses the specification $21.88 \le w \le 22.12$ for the width w in inches of a desk drawer. Write the specification as an absolute value inequality.

a. $|w - 0.24| \le 22.12$
b. $|w - 0.12| \le 22$
c. $|w - 22| \le 0.24$
d. $|w - 22| \le 0.12$

____ 31. When Spheres-R-Us ships bags of golf balls, the number of balls in each bag must be within 6 balls of 300. Write a compound inequality and an absolute value inequality for an acceptable number of golf balls b in each bag.

a. $294 \le b \le 306$; $|b - 6| \le 300$
b. $297 \le b \le 303$; $|b - 3| \le 300$
c. $297 \le b \le 303$; $|b - 300| \le 6$
d. $294 \le b \le 306$; $|b - 300| \le 6$

Short Answer

Solve the compound inequality. Write your solution in interval notation.

32. $5x + 10 \ge 10$ and $7x - 7 \le 14$

Solve the inequality. Graph the solution.

33. $2\left|x + \frac{1}{4}\right| < 9$

Unit 1 - Review (Equations and Inequalities)
Answer Section

MULTIPLE CHOICE

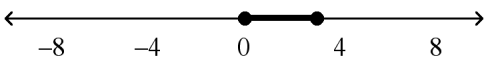
1. ANS: A PTS: 1 DIF: L3 REF: 1-4 Solving Equations
   OBJ: 1-4.1 To solve equations TOP: 1-4 Problem 2 Solving a Multi-Step Equation
   KEY: equation | solution of an equation | inverse operations DOK: DOK 1
2. ANS: D PTS: 1 DIF: L2 REF: 1-4 Solving Equations
   OBJ: 1-4.1 To solve equations TOP: 1-4 Problem 2 Solving a Multi-Step Equation
   KEY: equation | solution of an equation | inverse operations DOK: DOK 1
3. ANS: C PTS: 1 DIF: L3 REF: 1-4 Solving Equations
   OBJ: 1-4.1 To solve equations TOP: 1-4 Problem 2 Solving a Multi-Step Equation
   KEY: equation | solution of an equation | inverse operations DOK: DOK 1
4. ANS: B PTS: 1 DIF: L2 REF: 1-4 Solving Equations
   OBJ: 1-4.1 To solve equations TOP: 1-4 Problem 2 Solving a Multi-Step Equation
   KEY: equation | solution of an equation | inverse operations DOK: DOK 1
5. ANS: A PTS: 1 DIF: L3 REF: 1-4 Solving Equations
   OBJ: 1-4.2 To solve problems by writing equations
   TOP: 1-4 Problem 3 Using an Equation to Solve a Problem KEY: equation | solution of an equation
   DOK: DOK 2
6. ANS: B PTS: 1 DIF: L3 REF: 1-4 Solving Equations
   OBJ: 1-4.2 To solve problems by writing equations
   TOP: 1-4 Problem 3 Using an Equation to Solve a Problem KEY: equation | solution of an equation
   DOK: DOK 2
7. ANS: C PTS: 1 DIF: L3 REF: 1-4 Solving Equations
   OBJ: 1-4.2 To solve problems by writing equations
   TOP: 1-4 Problem 3 Using an Equation to Solve a Problem KEY: equation | solution of an equation
   DOK: DOK 2
8. ANS: A PTS: 1 DIF: L3 REF: 1-4 Solving Equations
   OBJ: 1-4.1 To solve equations
   TOP: 1-4 Problem 4 Equations with No Solutions and Identities
   KEY: equation | identity DOK: DOK 1
9. ANS: C PTS: 1 DIF: L3 REF: 1-4 Solving Equations
   OBJ: 1-4.1 To solve equations
   TOP: 1-4 Problem 4 Equations with No Solutions and Identities
   KEY: equation DOK: DOK 1
10. ANS: D PTS: 1 DIF: L3 REF: 1-4 Solving Equations
    OBJ: 1-4.1 To solve equations TOP: 1-4 Problem 5 Solving a Literal Equation
    KEY: equation | literal equation DOK: DOK 2
11. ANS: D PTS: 1 DIF: L3 REF: 1-4 Solving Equations
    OBJ: 1-4.1 To solve equations TOP: 1-4 Problem 5 Solving a Literal Equation
    KEY: equation | literal equation DOK: DOK 2
12. ANS: B PTS: 1 DIF: L2 REF: 1-5 Solving Inequalities
    OBJ: 1-5.1 To solve and graph inequalities
    TOP: 1-5 Problem 1 Writing an Inequality from a Sentence
    KEY: compound inequality | word problem | problem solving DOK: DOK 1

13. ANS: D PTS: 1 DIF: L3 REF: 1-5 Solving Inequalities
OBJ: 1-5.1 To solve and graph inequalities
TOP: 1-5 Problem 1 Writing an Inequality from a Sentence
KEY: compound inequality | word problem | problem solving DOK: DOK 1
14. ANS: C PTS: 1 DIF: L2 REF: 1-5 Solving Inequalities
OBJ: 1-5.1 To solve and graph inequalities
TOP: 1-5 Problem 2 Solving and Graphing an Inequality DOK: DOK 2
15. ANS: C PTS: 1 DIF: L2 REF: 1-5 Solving Inequalities
OBJ: 1-5.1 To solve and graph inequalities
TOP: 1-5 Problem 2 Solving and Graphing an Inequality DOK: DOK 2
16. ANS: A PTS: 1 DIF: L3 REF: 1-5 Solving Inequalities
OBJ: 1-5.1 To solve and graph inequalities
TOP: 1-5 Problem 2 Solving and Graphing an Inequality DOK: DOK 2
17. ANS: A PTS: 1 DIF: L3 REF: 1-5 Solving Inequalities
OBJ: 1-5.1 To solve and graph inequalities TOP: 1-5 Problem 3 Using an Inequality
DOK: DOK 2
18. ANS: A PTS: 1 DIF: L3 REF: 1-5 Solving Inequalities
OBJ: 1-5.1 To solve and graph inequalities TOP: 1-5 Problem 3 Using an Inequality
DOK: DOK 2
19. ANS: C PTS: 1 DIF: L3 REF: 1-5 Solving Inequalities
OBJ: 1-5.1 To solve and graph inequalities
TOP: 1-5 Problem 4 No Solution or All Real Numbers as Solution
DOK: DOK 2
20. ANS: A PTS: 1 DIF: L3 REF: 1-5 Solving Inequalities
OBJ: 1-5.1 To solve and graph inequalities
TOP: 1-5 Problem 4 No Solution or All Real Numbers as Solution
DOK: DOK 2
21. ANS: A PTS: 1 DIF: L3 REF: 1-5 Solving Inequalities
OBJ: 1-5.2 To write and solve compound inequalities
TOP: 1-5 Problem 6 Solving an OR Inequality KEY: compound inequality
DOK: DOK 2
22. ANS: B PTS: 1 DIF: L3 REF: 1-5 Solving Inequalities
OBJ: 1-5.2 To write and solve compound inequalities
TOP: 1-5 Problem 5 Solving an AND Inequality KEY: compound inequality
DOK: DOK 2
23. ANS: A PTS: 1 DIF: L2
REF: 1-6 Absolute Value Equations and Inequalities
OBJ: 1-6.1 To write and solve equations and inequalities involving absolute value
TOP: 1-6 Problem 1 Solving an Absolute Value Equation KEY: absolute value
DOK: DOK 1
24. ANS: B PTS: 1 DIF: L2
REF: 1-6 Absolute Value Equations and Inequalities
OBJ: 1-6.1 To write and solve equations and inequalities involving absolute value
TOP: 1-6 Problem 2 Solving a Multi-Step Absolute Value Equation
KEY: absolute value DOK: DOK 1

25. ANS: C PTS: 1 DIF: L3
REF: 1-6 Absolute Value Equations and Inequalities
OBJ: 1-6.1 To write and solve equations and inequalities involving absolute value
TOP: 1-6 Problem 1 Solving an Absolute Value Equation KEY: absolute value
DOK: DOK 1
26. ANS: D PTS: 1 DIF: L3
REF: 1-6 Absolute Value Equations and Inequalities
OBJ: 1-6.1 To write and solve equations and inequalities involving absolute value
TOP: 1-6 Problem 2 Solving a Multi-Step Absolute Value Equation
KEY: absolute value DOK: DOK 1
27. ANS: C PTS: 1 DIF: L3
REF: 1-6 Absolute Value Equations and Inequalities
OBJ: 1-6.1 To write and solve equations and inequalities involving absolute value
TOP: 1-6 Problem 5 Solving the Absolute Value Inequality; "greater than"
KEY: absolute value DOK: DOK 2
28. ANS: B PTS: 1 DIF: L3
REF: 1-6 Absolute Value Equations and Inequalities
OBJ: 1-6.1 To write and solve equations and inequalities involving absolute value
TOP: 1-6 Problem 4 Solving the Absolute Value Inequality; "less than"
KEY: absolute value DOK: DOK 2
29. ANS: C PTS: 1 DIF: L3
REF: 1-6 Absolute Value Equations and Inequalities
OBJ: 1-6.1 To write and solve equations and inequalities involving absolute value
TOP: 1-6 Problem 5 Solving the Absolute Value Inequality; "greater than"
KEY: absolute value DOK: DOK 2
30. ANS: D PTS: 1 DIF: L3
REF: 1-6 Absolute Value Equations and Inequalities
OBJ: 1-6.1 To write and solve equations and inequalities involving absolute value
TOP: 1-6 Problem 6 Using an Absolute Value Inequality KEY: absolute value
DOK: DOK 2
31. ANS: D PTS: 1 DIF: L3
REF: 1-6 Absolute Value Equations and Inequalities
OBJ: 1-6.1 To write and solve equations and inequalities involving absolute value
TOP: 1-6 Problem 6 Using an Absolute Value Inequality KEY: absolute value
DOK: DOK 2

SHORT ANSWER

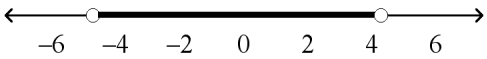
32. ANS:
$x \geq 0$ and $x \leq 3$



PTS: 1 DIF: L3 REF: 1-5 Solving Inequalities
OBJ: 1-5.2 To write and solve compound inequalities
TOP: 1-5 Problem 5 Solving an AND Inequality KEY: compound inequality
DOK: DOK 2

33. ANS:

$-4\frac{3}{4} < x < 4\frac{1}{4}$



PTS: 1 DIF: L4 REF: 1-6 Absolute Value Equations and Inequalities
OBJ: 1-6.1 To write and solve equations and inequalities involving absolute value
TOP: 1-6 Problem 4 Solving the Absolute Value Inequality; "less than"
KEY: absolute value DOK: DOK 2