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

A3 Test 1

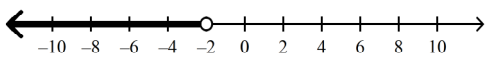
Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. Solve $-4(24 + 8y) = -64$.
a. $y = 4$
b. $y = -11$
c. $y = -1$
d. $y = 5$

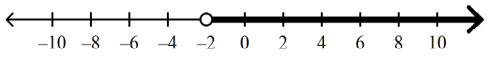
____ 2. Solve $3n - 24 = 14 - 30n$.
a. $n = 2$
b. $n = 1\frac{5}{33}$
c. $n = 1\frac{11}{27}$
d. $n = \frac{10}{33}$

____ 3. Solve $5j - 12 + 13j = -4 + 18j - 8$.
a. The solution set is all real numbers, or $\mathbb{R}$.
b. The solution set is the empty set.
c. $j = -12$
d. $j = 0$

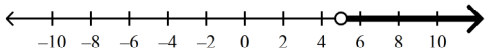
____ 4. Solve and graph $-2a - 7 > -3$.
a. $a < -2$



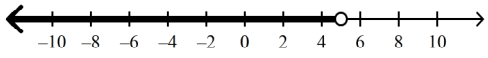
b. $a > -2$



c. $a > 5$

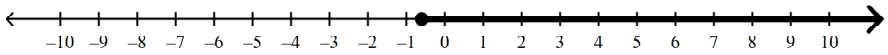


d. $a < 5$

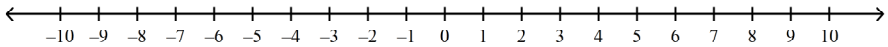


____ 5. Solve and graph $5(-4+2x) \geq 2(5x+4)$.

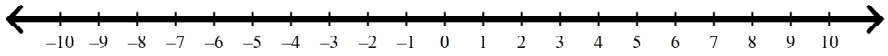
a. $x \geq -\frac{3}{5}$



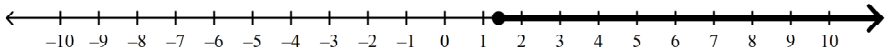
b. The inequality has no solution. The solution set is the empty set.



c. The solution set is the set of all real numbers.



d. $x \geq \frac{7}{5}$



____ 6. Solve the equation $9|x-4| = 81$.

a. $x = 13$

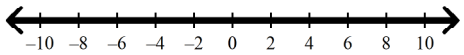
b. $x = 85$ or $x = -77$

c. $x = 13$ or $x = -5$

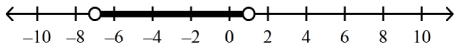
d. $x = 85$

____ 7. Solve the inequality $|12+4x| > 16$ and graph the solution set.

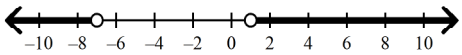
a. $(-\infty, \infty)$



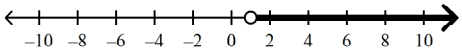
b. $(-7, 1)$



c. $(-\infty, -7) \cup (1, \infty)$

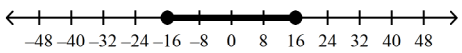


d. $(1, \infty)$



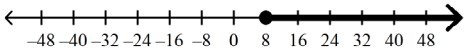
____ 8. Solve $\frac{|x-12|}{4} \leq 1$ and graph the solution set.

a. $-16 \leq x \leq 16$

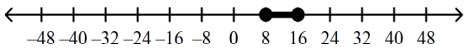


b. $8 \geq x$ and $16 \leq x$
No solution.

c. $8 \leq x$ and $16 \leq x$



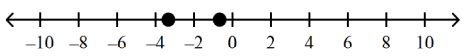
d. $8 \leq x \leq 16$



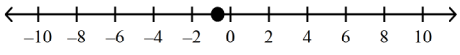
____ 9. Solve the inequality and graph the solution set for $-6|6+3x| = -24$.

a. No solution.

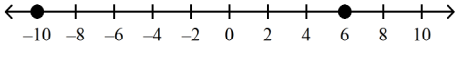
b. $x = -\frac{2}{3}$ or $x = -\frac{10}{3}$



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



d. $x = -10$ or $x = 6$



____ 10. Solve $-2(-16+4y)=24$.

a. $y=-2$
c. $y=1$
b. $y=10$
d. $y=-7$

____ 11. Solve $2(24-6y)=-48$.

a. $y=0$
c. $y=16$
b. $y=12$
d. $y=8$

____ 12. Solve $5p+4=26+6p$.

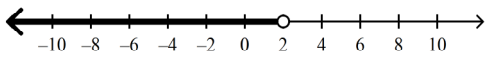
a. $p=30$
c. $p=-2$
b. $p=-21$
d. $p=-22$

____ 13. Solve $7k+19=6+19k$.

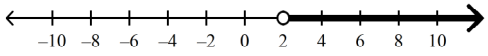
a. $k=1\frac{1}{12}$
c. $k=2$
b. $k=2\frac{1}{12}$
d. $k=\frac{1}{2}$

____ 14. Solve and graph $-8t+12>-4$.

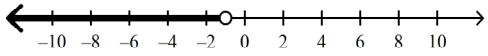
a. $t<2$



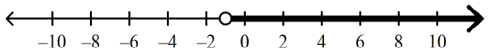
b. $t>2$



c. $t<-1$

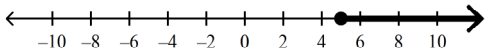


d. $t>-1$

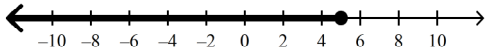


____ 15. Solve and graph $t-6\le -1$.

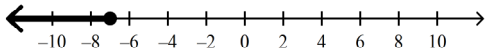
a. $t\ge 5$



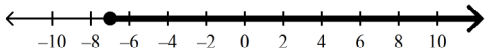
b. $t\le 5$



c. $t\le -7$

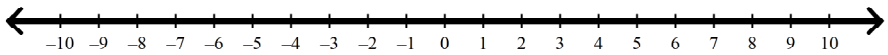


d. $t\ge -7$

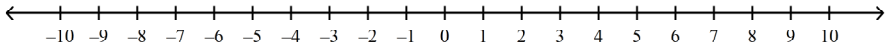


____ 16. Solve and graph $3(6-4x) < -4(3x-6)$.

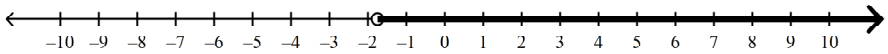
a. The solution set is the set of all real numbers.



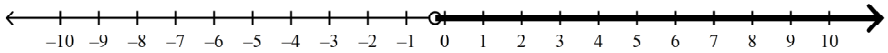
b. The inequality has no solution. The solution set is the empty set.



c. $x > -\frac{7}{4}$

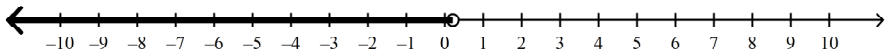


d. $x > -\frac{1}{4}$

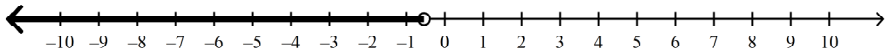


____ 17. Solve and graph $6(3+4x) < 4(6x-2)$.

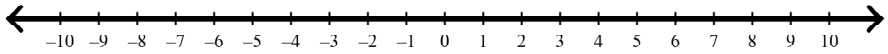
a. $x < \frac{5}{24}$



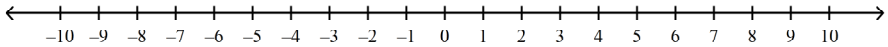
b. $x < -\frac{13}{24}$



c. The solution set is the set of all real numbers.



d. The inequality has no solution. The solution set is the empty set.



____ 18. Solve the equation $5|x+4| = 15$.

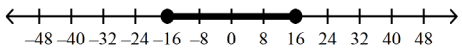
a. $x = -1$ or $x = -7$
b. $x = 11$
c. $x = 11$ or $x = -19$
d. $x = -1$

____ 19. Solve the equation $9|x-7| = 45$.

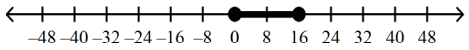
a. $x = 12$ or $x = 2$
b. $x = 52$ or $x = -38$
c. $x = 12$
d. $x = 52$

____ 20. Solve $\frac{|x-8|}{2} \le 4$ and graph the solution set.

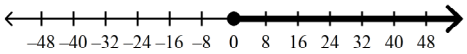
a. $-16 \le x \le 16$



b. $0 \le x \le 16$



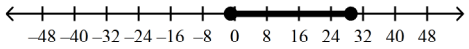
c. $0 \le x$ and $16 \le x$



d. $0 \ge x$ and $16 \le x$
No solution.

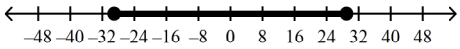
____ 21. Solve $\frac{|x-14|}{3} \le 5$ and graph the solution set.

a. $-1 \le x \le 29$

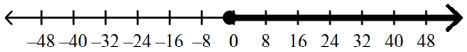


b. $-1 \ge x$ and $29 \le x$
No solution.

c. $-29 \le x \le 29$

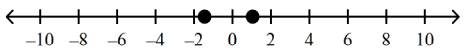


d. $-1 \le x$ and $29 \le x$

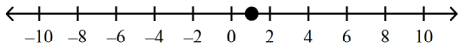


____ 22. Solve the inequality and graph the solution set for $-2|2+10x| = -25$.

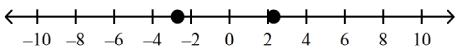
a. $x = \frac{21}{20}$ or $x = -\frac{29}{20}$



b. $x = \frac{21}{20}$



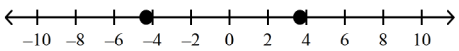
c. $x = -\frac{27}{10}$ or $x = \frac{23}{10}$



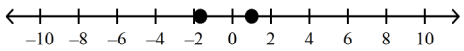
d. No solution.

____ 23. Solve the inequality and graph the solution set for $-3|2+6x| = -24$.

a. No solution.

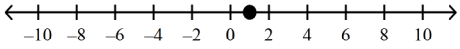


b. $x = 1$ or $x = -\frac{5}{3}$



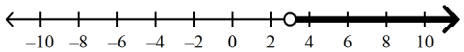
c. $x = -\frac{13}{3}$ or $x = \frac{11}{3}$

d. $x = 1$

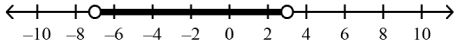


____ 24. Solve the inequality $|6+3x| > 15$ and graph the solution set.

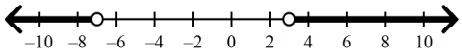
a. $(3, \infty)$



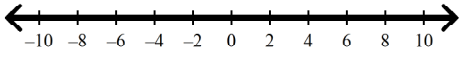
b. $(-7, 3)$



c. $(-\infty, -7) \cup (3, \infty)$



d. $(-\infty, \infty)$



A3 Test 1
Answer Section

MULTIPLE CHOICE

1. ANS: C

$$\begin{aligned} -4(24+8y) &= -64 \\ -96-32y &= -64 \quad \text{Distribute } -4. \\ -32y &= 32 \quad \text{Add 96 to both sides.} \\ y &= -1 \quad \text{Divide by } -32. \end{aligned}$$

REF: Page 91 OBJ: 2-1.2 Solving Equations with the Distributive Property

2. ANS: B

First, collect all variable terms on one side and all constant terms on the other side. Then, isolate the variable.

REF: Page 92 OBJ: 2-1.3 Solving Equations with Variables on Both Sides

3. ANS: A

$5j - 12 + 13j = -4 + 18j - 8$

$18j - 12 = 18j - 12$ Simplify.

$\underline{-18j} \quad \underline{-18j}$

$-12 = -12$ Identity. The solution set is all real numbers.

REF: Page 92 OBJ: 2-1.4 Identifying Identities and Contradictions

4. ANS: A

To isolate the variable, first undo the addition or subtraction. Then, undo the multiplication by dividing each side of the inequality by the coefficient of the variable. If the coefficient is negative, reverse the inequality symbol. Next, graph the solution.

Remember, a "$>$" or "$<$" graph has an open circle at that value. A "$\geq$" or "$\leq$" graph has a closed circle at that value.

A "$>$" or "$\geq$" graph has an arrow to the right, and a "$<$" or "$\leq$" graph has an arrow to the left.

REF: Page 93 OBJ: 2-1.5 Solving Inequalities

5. ANS: B

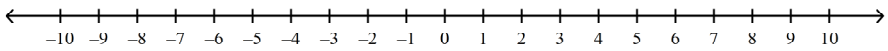
$5(-4+2x) \geq 2(5x+4)$

$-20 + 10x \geq 10x + 8$ Use the Distributive Property.

$0x \geq 28$ Isolate x. Then simplify.

$0 \geq 28$ Contradiction.

The inequality has no solution. The solution set is the empty set.



6. ANS: C

$9|x-4| = 81$

$|x-4| = 9$ Isolate the absolute-value expression by dividing both sides by 9.

$x-4 = 9$ or $x-4 = -9$ Rewrite the absolute value as a disjunction.

$x = 13$ or $x = -5$ Add 4 to both sides of each equation.

REF: Page 152 OBJ: 2-8.2 Solving Absolute-Value Equations

7. ANS: C

Rewrite the absolute value as a disjunction. Then subtract 12 from both sides and divide by 4.

$|12+4x| > 16$

$12+4x > 16$ or $12+4x < -16$

$4x > 4$ or $4x < -28$

$x > 1$ or $x < -7$

REF: Page 152 OBJ: 2-8.3 Solving Absolute-Value Inequalities with Disjunctions

8. ANS: D

$\frac{|x-12|}{4} \le 1$ Multiply both sides by 4.

$|x-12| \le 4$ Rewrite the absolute value as a conjunction.

$x-12 \le 4$ and $x-12 \ge -4$ Simplify.

$x \le 16$ and $x \ge 8$

Graph the solution on a number line. As the inequality symbols include equality, circles should be filled in at the limits indicated by each expression. "Greater than" means values larger than a limit will be included. "Less than" indicates values less than the limit will be included. If there are no solutions that satisfy both inequalities, there is no solution. If all values satisfy the requirements, the solution includes all real umbers.

REF: Page 153 OBJ: 2-8.4 Solving Absolute-Value Inequalities with Conjunctions

9. ANS: B

$-6|6+3x| = -24$ Rewrite the absolute value as a disjunction.

$-6(6+3x) = -24$ or $-6(6+3x) = 24$ Divide both sides by –6.

$6+3x = 4$ or $6+3x = -4$ Subtract 6 from both sides.

$3x = -2$ or $3x = -10$ Divide both sides by 3 and simplify.

$x = -\frac{2}{3}$ or $x = -\frac{10}{3}$

10. ANS: C

$-2(-16+4y) = 24$

$32-8y = 24$ Distribute –2.

$-8y = -8$ Add –32 to both sides.

$y = 1$ Divide by –8.

REF: Page 91 OBJ: 2-1.2 Solving Equations with the Distributive Property

11. ANS: D

$$\begin{aligned} 2(24-6y) &= -48 \\ 48-12y &= -48 && \text{Distribute 2.} \\ -12y &= -96 && \text{Add } -48 \text{ to both sides.} \\ y &= 8 && \text{Divide by } -12. \end{aligned}$$

REF: Page 91 OBJ: 2-1.2 Solving Equations with the Distributive Property

12. ANS: D

First, collect all variable terms on one side and all constant terms on the other side. Then, isolate the variable.

REF: Page 92 OBJ: 2-1.3 Solving Equations with Variables on Both Sides

13. ANS: A

First, collect all variable terms on one side and all constant terms on the other side. Then, isolate the variable.

REF: Page 92 OBJ: 2-1.3 Solving Equations with Variables on Both Sides

14. ANS: A

To isolate the variable, first undo the addition or subtraction. Then, undo the multiplication by dividing each side of the inequality by the coefficient of the variable. If the coefficient is negative, reverse the inequality symbol. Next, graph the solution.

Remember, a "$>$" or "$<$" graph has an open circle at that value. A "$\geq$" or "$\leq$" graph has a closed circle at that value.

A "$>$" or "$\geq$" graph has an arrow to the right, and a "$<$" or "$\leq$" graph has an arrow to the left.

REF: Page 93 OBJ: 2-1.5 Solving Inequalities

15. ANS: B

To isolate the variable, first undo the addition or subtraction. Then, undo the multiplication by dividing each side of the inequality by the coefficient of the variable. If the coefficient is negative, reverse the inequality symbol. Next, graph the solution.

Remember, a "$>$" or "$<$" graph has an open circle at that value. A "$\geq$" or "$\leq$" graph has a closed circle at that value.

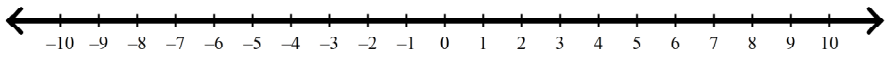
A "$>$" or "$\geq$" graph has an arrow to the right, and a "$<$" or "$\leq$" graph has an arrow to the left.

REF: Page 93 OBJ: 2-1.5 Solving Inequalities

16. ANS: A

$$\begin{aligned} &3(6-4x) < -4(3x-6) \\ &18-12x < -12x+24 && \text{Use the Distributive Property.} \\ &0x < 6 && \text{Isolate } x. \text{ Then simplify.} \\ &0 < 6 && \text{Identity.} \end{aligned}$$

The solution set is the set of all real numbers.

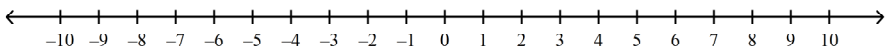


17. ANS: D

$6(3+4x) < 4(6x-2)$

$18+24x < 24x-8$	Use the Distributive Property.
$0x < -26$	Isolate x. Then simplify.
$0 < -26$	Contradiction.

The inequality has no solution. The solution set is the empty set.



18. ANS: A

$5|x+4| = 15$

$\|x+4\| = 3$	Isolate the absolute-value expression by dividing both sides by 5.
$x+4 = 3$ or $x+4 = -3$	Rewrite the absolute value as a disjunction.
$x = -1$ or $x = -7$	Subtract 4 from both sides of each equation.

REF: Page 152 OBJ: 2-8.2 Solving Absolute-Value Equations

19. ANS: A

$9|x-7| = 45$

$\|x-7\| = 5$	Isolate the absolute-value expression by dividing both sides by 9.
$x-7 = 5$ or $x-7 = -5$	Rewrite the absolute value as a disjunction.
$x = 12$ or $x = 2$	Add 7 to both sides of each equation.

REF: Page 152 OBJ: 2-8.2 Solving Absolute-Value Equations

20. ANS: B

$\frac{\|x-8\|}{2} \le 4$	Multiply both sides by 2.
$\|x-8\| \le 8$	Rewrite the absolute value as a conjunction.
$x-8 \le 8$ and $x-8 \ge -8$	Simplify.
$x \le 16$ and $x \ge 0$	

Graph the solution on a number line. As the inequality symbols include equality, circles should be filled in at the limits indicated by each expression. "Greater than" means values larger than a limit will be included. "Less than" indicates values less than the limit will be included. If there are no solutions that satisfy both inequalities, there is no solution. If all values satisfy the requirements, the solution includes all real umbers.

REF: Page 153 OBJ: 2-8.4 Solving Absolute-Value Inequalities with Conjunctions

21. ANS: A

$\frac{\lvert x-14\rvert}{3} \le 5$	Multiply both sides by 3.
$\lvert x-14\rvert \le 15$	Rewrite the absolute value as a conjunction.
$x-14 \le 15$ and $x-14 \ge -15$	Simplify.
$x \le 29$ and $x \ge -1$	

Graph the solution on a number line. As the inequality symbols include equality, circles should be filled in at the limits indicated by each expression. "Greater than" means values larger than a limit will be included. "Less than" indicates values less than the limit will be included. If there are no solutions that satisfy both inequalities, there is no solution. If all values satisfy the requirements, the solution includes all real umbers.

REF: Page 153 OBJ: 2-8.4 Solving Absolute-Value Inequalities with Conjunctions

22. ANS: A

	$-2\lvert 2+10x\rvert = -25$		Rewrite the absolute value as a disjunction.
$-2(2+10x) = -25$	or	$-2(2+10x) = 25$	Divide both sides by –2.
$2+10x = \frac{25}{2}$	or	$2+10x = -\frac{25}{2}$	Subtract 2 from both sides.
$10x = \frac{21}{2}$	or	$10x = -\frac{29}{2}$	Divide both sides by 10 and simplify.
$x = \frac{21}{20}$	or	$x = -\frac{29}{20}$	

23. ANS: B

	$-3\lvert 2+6x\rvert = -24$		Rewrite the absolute value as a disjunction.
$-3(2+6x) = -24$	or	$-3(2+6x) = 24$	Divide both sides by –3.
$2+6x = 8$	or	$2+6x = -8$	Subtract 2 from both sides.
$6x = 6$	or	$6x = -10$	Divide both sides by 6 and simplify.
$x = 1$	or	$x = -\frac{5}{3}$	

24. ANS: C

Rewrite the absolute value as a disjunction. Then subtract 6 from both sides and divide by 3.

$\lvert 6+3x\rvert > 15$		
$6+3x > 15$	or	$6+3x < -15$
$3x > 9$	or	$3x < -21$
$x > 3$	or	$x < -7$

REF: Page 152 OBJ: 2-8.3 Solving Absolute-Value Inequalities with Disjunctions