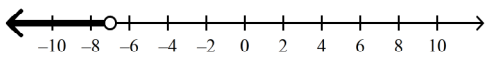
Name: _____ **Class:** _____ **Date:** _____

Module 5 Practice Quiz

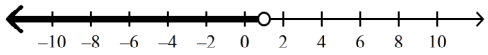
Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. Solve the inequality $-n - 4 < 3$ and graph the solutions.

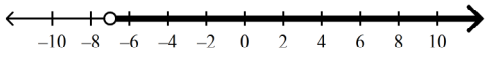
a. $n < -7$



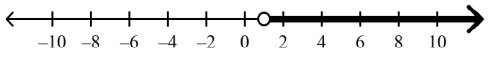
b. $n < 1$



c. $n > -7$

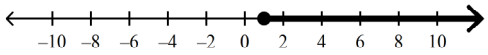


d. $n > 1$

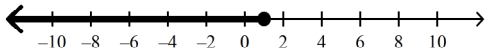


____ 2. Solve the inequality $z + 8 + 3z \leq -4$ and graph the solutions.

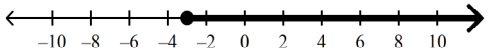
a. $z \geq 1$



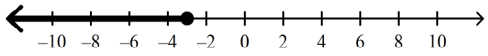
b. $z \leq 1$



c. $z \geq -3$



d. $z \leq -3$



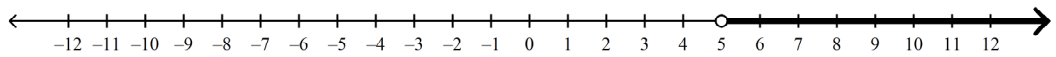
____ 3. A family travels to Bryce Canyon for three days. On the first day, they drove 150 miles. On the second day, they drove 190 miles. What is the least number of miles they drove on the third day if their average number of miles per day was at least 180?

a. 200 mi
b. 180 mi
c. 540 mi
d. 201 mi

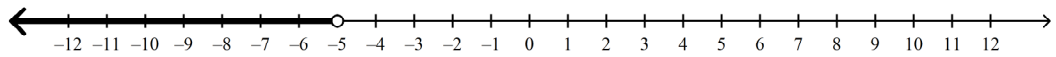
Name: _____

____ 4. Solve the inequality $6x < 3x + 15$ and graph the solutions.

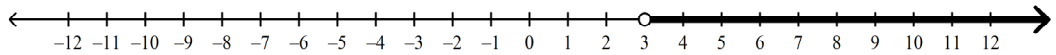
a. $x > 5$



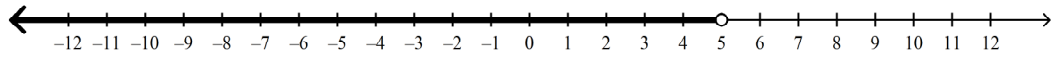
b. $x < -5$



c. $x > 3$



d. $x < 5$



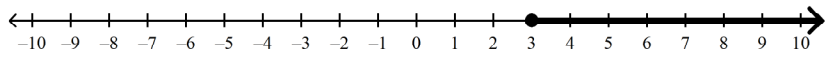
____ 5. Mrs. Williams is deciding between two field trips for her class. The Science Center charges $135 plus $3 per student. The Dino Discovery Museum simply charges $6 per student. For how many students will the Science Center charge less than the Dino Discovery Museum?

a. 132 or more students
b. More than 45 students
c. Fewer than 45 students
d. 132 or fewer students

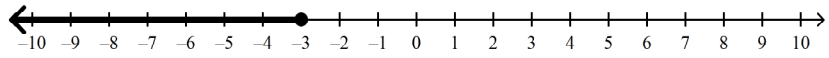
____ 6. Solve the inequality and graph the solution.

$-3x + 2.5x \le 1.5(x + 4)$

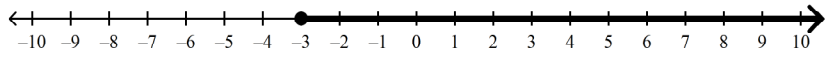
a. $x \ge 3$



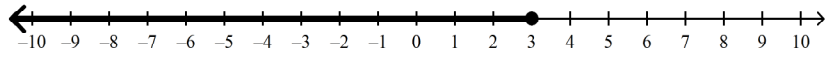
b. $x \le -3$



c. $x \ge -3$



d. $x \le 3$



____ 7. Solve the inequality $-2(k + 3) < -2k - 7$.

a. $k < \frac{1}{4}$
b. All real numbers are solutions.
c. $k < 3\frac{1}{4}$
d. no solutions

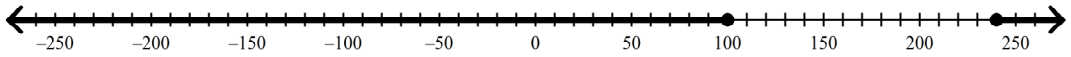
____ 8. Solve $-0.25 + 1.75x < -1.75 + 2.25x$.

a. $3 < x$
b. $x < 6$
c. $x < 3$
d. $x < 0.33$

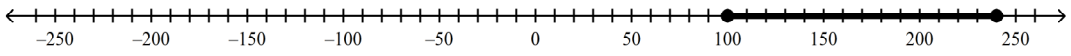
Name: _____

____ 9. Fly with Us owns a D.C.10 airplane that has seats for 240 people. The company flies this airplane only if there are at least 100 people on the plane. Write a compound inequality to show the possible number of people in a flight on a D.C.10 with Fly with Us. Let n represent the possible number of people in the flight. Graph the solutions.

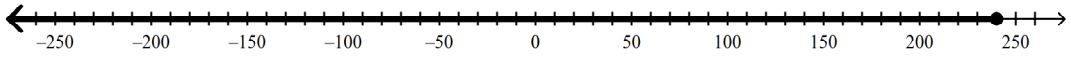
a. $100 \geq n \geq 240$



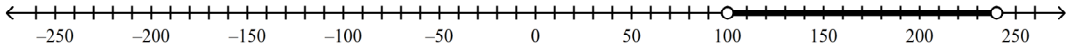
b. $100 \leq n \leq 240$



c. $n \leq 240$



d. $100 < n < 240$



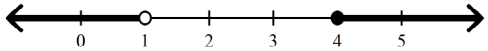
____ 10. Solve the compound inequality $1 < 3x - 2 \leq 10$ and graph the solutions.

a. $1 < x$ AND $x \leq 4$

b. $1 < x$ AND $x < 4$

c. $1 \leq x$ AND $x \leq 4$

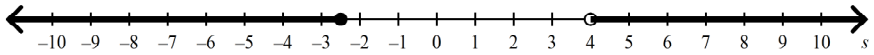
d. $1 > x$ AND $x \geq 4$



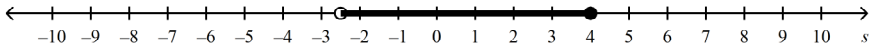
Name: _____

____ 11. Solve and graph the compound inequality.
$s + 4 < 1.5$ OR $3 + s \geq 7$

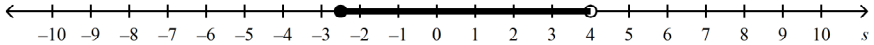
a. $s < -2.5$ OR $s \geq 4$



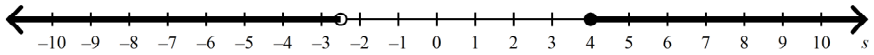
b. $s < -2.5$ OR $s < 4$



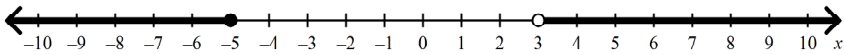
c. $s < -2.5$ OR $s < 4$



d. $s < -2.5$ OR $s \geq 4$



____ 12. Write the compound inequality shown by the graph.



a. $x < -5$ OR $x > 3$
b. $x \leq 3$ AND $x > -5$
c. $x \leq -5$ OR $x > 3$
d. $x \leq -5$ AND $x > 3$

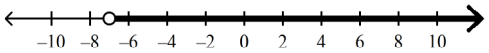
____ 13. Which of the following is a solution of $x - 6 < 6$ AND $x + 4 \geq -1$?

a. 2
b. –6
c. 14
d. 12

Module 5 Practice Quiz
Answer Section

MULTIPLE CHOICE

1. ANS: C
Use inverse operations to undo the operations in the inequality one at a time.
$-n - 4 < 3$
$n > -7$



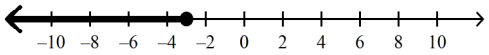
Use a solid circle when the value is included in the graph, such as with ≥ or ≤. Use an empty circle when the value is not included, such as with > or <.

	Feedback
A	If you divide both sides of the inequality by a negative number, reverse the inequality symbol. If you divide by a positive number, do not reverse the inequality symbol.
B	Check your calculations when using inverse operations to isolate the variable.
C	Correct!
D	Use inverse operations to undo the operations in the inequality one at a time.

PTS: 1 DIF: 1 REF: 10262bb2-4683-11df-9c7d-001185f0d2ea
OBJ: 5-1.1 Solving Multi-Step Inequalities NAT: NT.CCSS.MTH.10.9-12.A.REI.3
STA: MCC9-12.A.REI.3 LOC: MTH.C.10.08.01.01.009 | MTH.C.10.08.02.01.01.007
TOP: 5-1 Solving Two-Step and Multi-Step Inequalities KEY: solving | two-step inequality
DOK: DOK 2

2. ANS: D

$z + 8 + 3z \le -4$	
$4z + 8 \le -4$	Combine like terms.
$4z \le -12$	Subtract 8 from both sides.
$z \le -3$	Divide both sides by 4. When you divide by a negative number, reverse the inequality symbol. When you divide by a positive number, keep the same inequality symbol.



Use a solid circle when the value is included in the graph, such as with ≥ or ≤. Use an empty circle when the value is not included, such as with > or <.

	Feedback
A	Check your calculations.
B	Use inverse operations to isolate the variable.
C	If you divide both sides of the inequality by a negative number, reverse the inequality symbol. If you divide by a positive number, keep the same inequality symbol.
D	Correct!

PTS: 1 DIF: 2 REF: 102866fe-4683-11df-9c7d-001185f0d2ea
OBJ: 5-1.2 Simplifying Before Solving Inequalities NAT: NT.CCSS.MTH.10.9-12.A.REI.3
STA: MCC9-12.A.REI.3 LOC: MTH.C.10.08.02.01.01.007 | MTH.C.10.08.02.01.005
TOP: 5-1 Solving Two-Step and Multi-Step Inequalities KEY: multistep inequality | solving
DOK: DOK 2

3. ANS: A

Let d represent the distance the family drove on the third day. The average number of miles is the sum of the miles of each day divided by 3.

(150	plus	190	plus	d)	divided by	3	is at least	180
(150	+	190	+	d)	÷	3	≥	180

$\frac{150+190+d}{3} \geq 180$ Since $150+190+d$ is divided by 3, multiply both sides by 3 to undo the division.

$3\left(\frac{150+190+d}{3}\right) \geq 3(180)$

$150+190+d \geq 540$ Combine like terms.

$340+d \geq 540$ Since 340 is added to d, subtract 340 from both sides to undo the addition.

$d \geq 200$

The least number of miles the family drove on the third day is 200.

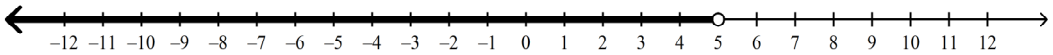
	Feedback
A	Correct!
B	First, set up an inequality where the average number of miles is the sum of the miles of each day divided by 3. Then, solve the inequality.
C	First, set up an inequality where the average number of miles is the sum of the miles of each day divided by 3. Then, solve the inequality.
D	First, set up an inequality where the average number of miles is the sum of the miles of each day divided by 3. Then, solve the inequality.

PTS: 1 DIF: 2 REF: 102ac95a-4683-11df-9c7d-001185f0d2ea
OBJ: 5-1.3 Application STA: MCC9-12.A.REI.3
LOC: MTH.C.10.08.02.01.01.007 TOP: 5-1 Solving Two-Step and Multi-Step Inequalities
KEY: inequalities | two-step | multi-step DOK: DOK 3

4. ANS: D

$6x < 3x + 15$

$3x < 15$	Subtract $3x$ from both sides to collect the x terms on one side of the inequality symbol.
$x < 5$	Divide both sides by 3.



	Feedback
A	Only change < to > when you divide or multiply by a negative number.
B	Check your positive and negative signs.
C	Check your calculations.
D	Correct!

PTS: 1 DIF: 1 REF: 102af06a-4683-11df-9c7d-001185f0d2ea
OBJ: 5-2.1 Solving Inequalities with Variables on Both Sides NAT: NT.CCSS.MTH.10.9-12.A.REI.3
STA: MCC9-12.A.REI.3 LOC: MTH.C.10.08.02.01.01.007 | MTH.C.10.08.02.01.005
TOP: 5-2 Solving Inequalities with Variables on Both Sides
KEY: multistep inequality | solving | word problem DOK: DOK 2

5. ANS: B

Science Center fee	plus	$3	per	student	is less than	$12	per	student
$135	+	$3	•	s	<	$6	•	s

$$\begin{array}{r} 135 + 3s < 6s \\ \underline{-3s \quad -3s} \\ 135 \quad < \quad 3s \end{array}$$

$$\frac{135}{3} < \frac{3s}{3}$$
$$45 < s$$

If $45 < s$, then $s > 45$. The Science Center charges less if there are more than 45 students.

	Feedback
A	The per-student fees need to be multiplied by the number of students.
B	Correct!
C	This is the number of students where the Dino Discovery Museum charges less.
D	The per-student fees need to be multiplied by the number of students.

PTS: 1 DIF: 2 REF: 102d2bb6-4683-11df-9c7d-001185f0d2ea
OBJ: 5-2.2 Application STA: MCC9-12.A.REI.3 | MCC9-12.A.CED.1
LOC: MTH.C.10.08.02.01.01.007 TOP: 5-2 Solving Inequalities with Variables on Both Sides
KEY: multistep inequality | solving | word problem DOK: DOK 3

6. ANS: C
On the left side, combine the two terms. On the right side, distribute 1.5.

$$\begin{aligned} -3x + 2.5x &\leq 1.5(x + 4) \\ -0.5x &\leq 1.5x + 6 \end{aligned}$$

Subtract the $1.5x$ from both sides of the inequality.

$$\begin{aligned} -2x &\leq 6 \end{aligned}$$

Divide both sides of the inequality by -2. Reverse the inequality symbol.

$$\begin{aligned} x &\geq -3 \end{aligned}$$

	Feedback
A	Check your signs. When you subtract 1.5 from both sides you should have a negative coefficient.
B	Reverse the inequality symbol when multiplying or dividing both sides of an inequality by a negative number.
C	Correct!
D	Check your signs. When you subtract 1.5 from both sides you should have a negative coefficient. When multiplying or dividing by a negative number, reverse the inequality symbol.

PTS: 1 DIF: 2 REF: 102f8e12-4683-11df-9c7d-001185f0d2ea
OBJ: 5-2.3 Simplifying Each Side Before Solving NAT: NT.CCSS.MTH.10.9-12.A.REI.3
STA: MCC9-12.A.REI.3 LOC: MTH.C.10.08.02.01.01.007 | MTH.C.10.08.02.01.005
TOP: 5-2 Solving Inequalities with Variables on Both Sides
KEY: inequalities | variables on both sides | number line | graph
DOK: DOK 2

7. ANS: D
When the inequality is simplified, if the result is a statement that is always true, then all real numbers are solutions. If the result is a statement that is always false, then there are no solutions to the inequality.

	Feedback
A	Check that you have simplified the inequality correctly.
B	Check whether any real number will make the inequality true or whether no real numbers will make the inequality true.
C	Check that you have simplified the inequality correctly.
D	Correct!

PTS: 1 DIF: 2 REF: 102fb522-4683-11df-9c7d-001185f0d2ea
OBJ: 5-2.4 All Real Numbers as Solutions or No Solutions NAT: NT.CCSS.MTH.10.9-12.A.REI.3
STA: MCC9-12.A.REI.3 LOC: MTH.C.10.06.01.012
TOP: 5-2 Solving Inequalities with Variables on Both Sides KEY: inequalities | variables on both sides
DOK: DOK 2

8. ANS: A

$-0.25 + 1.75x < -1.75 + 2.25x$

$-0.25 + 1.75 < 2.25x - 1.75x$ Combine like terms.

$1.5 < 0.5x$ Simplify.

$3 < x$ Divide both sides by 0.5.

	Feedback
A	Correct!
B	When moving a term from one side of the inequality to the other side, subtract from both sides.
C	The inequality symbol will only change if you multiply or divide by a negative number.
D	Combine only like terms.

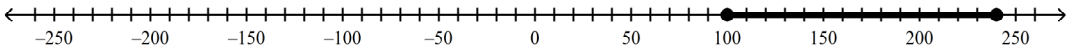
PTS: 1 DIF: 3 REF: 1031f06e-4683-11df-9c7d-001185f0d2ea
NAT: NT.CCSS.MTH.10.9-12.A.REI.3 STA: MCC9-12.A.REI.3
LOC: MTH.C.10.08.02.01.01.007 TOP: 5-2 Solving Inequalities with Variables on Both Sides
KEY: inequalities | variables on both sides DOK: DOK 3

9. ANS: B

Let n represent the possible number of people in the flight.

100	is less than or equal to	n	is less than or equal to	240
100	≤	n	≤	240

$100 \le n \le 240$



	Feedback
A	Check your inequality symbols. Is it possible for a number to be less than or equal to 100 AND greater than or equal to 240?
B	Correct!
C	A compound inequality is the result of combining two simple inequalities into one statement by the words AND or OR.
D	The phrase "at least" means the number 100 is included in the solution.

PTS: 1 DIF: 2 REF: 103452ca-4683-11df-9c7d-001185f0d2ea
OBJ: 5-3.1 Application NAT: NT.CCSS.MTH.10.9-12.A.CED.1
STA: MCC9-12.A.CED.1 LOC: MTH.C.10.08.02.01.006 | MTH.C.10.08.02.01.008
TOP: 5-3 Solving Compound Inequalities KEY: inequalities | compound
DOK: DOK 2

10. ANS: A

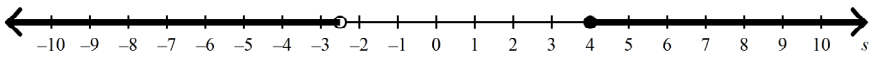
$1 < 3x - 2$	AND	$3x - 2 \le 10$	Write the compound inequality using AND.
$3 < 3x$		$3x \le 12$	Solve each simple inequality.
$\frac{3}{3} < \frac{3x}{3}$		$\frac{3x}{3} \le \frac{12}{3}$	Divide to undo the multiplication.
$1 < x$	AND	$x \le 4$	

First, graph the solutions of each simple inequality. Then, graph the intersection by finding where the two graphs overlap.

	Feedback
A	Correct!
B	Check the endpoints to see whether they are included in the solutions.
C	Check the endpoints to see whether they are included in the solutions.
D	Check the inequality symbols. A number cannot be less than 1 AND greater than or equal to 4.

PTS: 1 DIF: 2 REF: 103479da-4683-11df-9c7d-001185f0d2ea
OBJ: 5-3.2 Solving Compound Inequalities Involving AND
STA: MCC9-12.A.REI.3 | MCC9-12.A.CED.1
LOC: MTH.C.10.08.02.01.01.01.002 | MTH.C.10.08.02.01.006
TOP: 5-3 Solving Compound Inequalities KEY: inequalities | compound
DOK: DOK 2

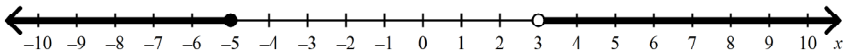
11. ANS: D
First solve each simple inequality to obtain $s < -2.5$ OR $s \ge 4$. The graph of the compound inequality is the union of the graph of $s < -2.5$ and the graph of $s \ge 4$. Find the union by combining the two regions.



	Feedback
A	Use a solid circle if and only if the endpoint is contained in the solution set.
B	Find the union of the two regions.
C	Find the union of the two regions. Use a solid circle if and only if the endpoint is contained in the solution set.
D	Correct!

PTS: 1 DIF: 2 REF: 1036b526-4683-11df-9c7d-001185f0d2ea
OBJ: 5-3.3 Solving Compound Inequalities Involving OR
STA: MCC9-12.A.REI.3 | MCC9-12.A.CED.1
LOC: MTH.C.10.08.02.01.01.01.003 | MTH.C.10.08.02.01.006
TOP: 5-3 Solving Compound Inequalities KEY: inequalities | compound
DOK: DOK 2

12. ANS: C



$x \leq -5$	OR	$x > 3$
The numbers to the left of –5 are shaded. A solid circle is used. This part of the inequality uses ≤.	The shaded area is not between two numbers so the compound inequality uses OR.	The numbers to the right of 3 are shaded. An empty circle is used. This part of the inequality uses >.

	Feedback
A	There is a closed dot at –5.
B	The shaded portion is not between two numbers.
C	Correct!
D	The shaded portion is not between two numbers.

PTS: 1 DIF: 1 REF: 10391782-4683-11df-9c7d-001185f0d2ea
OBJ: 5-3.4 Writing a Compound Inequality from a Graph STA: MCC9-12.A.CED.1
LOC: MTH.C.10.08.02.01.004 TOP: 5-3 Solving Compound Inequalities
KEY: inequalities | compound DOK: DOK 2

13. ANS: A
Test each value to see which is a solution of $x - 6 < 6$ AND $x + 4 \geq -1$.

If $x = 14$, then $14 - 6 < 6$ AND $14 + 4 \geq -1$. The first inequality is false, so the compound inequality is false.

If $x = 12$, then $12 - 6 < 6$ AND $12 + 4 \geq -1$. The first inequality is false, so the compound inequality is false.

If $x = -6$, then $-6 - 6 < 6$ AND $-6 + 4 \geq -1$. The second inequality is false, so the compound inequality is false.

If $x = 2$, then $2 - 6 < 6$ AND $2 + 4 \geq -1$. Both inequalities are true, so the compound inequality is true.

	Feedback
A	Correct!
B	As the compound inequality is an "AND" statement, check that both inequalities are true.
C	Substitute the solution into the inequalities to check that the compound inequality is true.
D	Check the inequality symbols.

PTS: 1 DIF: 3 REF: 10393e92-4683-11df-9c7d-001185f0d2ea
NAT: NT.CCSS.MTH.10.9-12.A.REI.3 STA: MCC9-12.A.REI.3 | MCC9-12.A.CED.1
LOC: MTH.C.10.08.02.01.01.01.002 TOP: 5-3 Solving Compound Inequalities
KEY: inequalities | compound DOK: DOK 3

Module 5 Practice Quiz [Answer Strip] **ID: A**

__C__ 1.

__D__ 2.

__A__ 3.

__D__ 4.

__B__ 5.

__C__ 6.

__D__ 7.

__A__ 8.

__B__ 9.

__A__ 10.

__D__ 11.

__C__ 12.

__A__ 13.