

## Study Guide - Inequalities

### Multiple Choice (80 points, 5 points each)

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

1. Translate the word sentence into an inequality:

“2 more than a number is less than 8.”

- A.  $x + 2 < 8$
- B.  $x - 2 < 8$
- C.  $x + 2 > 8$
- D.  $x + 2 \leq 8$

2. Ms. Salgado needs to have her car repaired but does not want to spend more than \$375 for the repairs.

The mechanic says that the part needed for the repair will cost \$100 and the labor will cost an additional \$40 per hour. Which inequality below represents the greatest number of hours the mechanic can work without exceeding Ms. Salgado’s budget?

- A.  $140x \leq 375$
- B.  $40 + 100x > 225$
- C.  $100 + 40x \leq 375$
- D.  $100 + 40x > 375$

3. Solve:  $\frac{-x}{3} < 12$

- A.  $x < 15$
- B.  $x < 36$
- C.  $x > -4$
- D.  $x > -36$

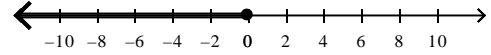
4. Solve:  $\frac{4x+12}{6} < 8$

- A.  $x > 9$
- B.  $x > -9$
- C.  $x < -9$
- D.  $x < 9$

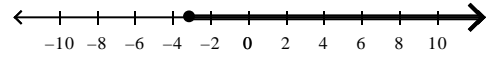
5. Solve and graph.

$$4z + 6 \leq -6$$

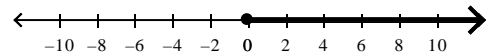
- A.  $z \leq 0$



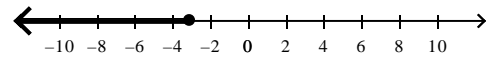
- B.  $z \geq -3$



- C.  $z \geq 0$



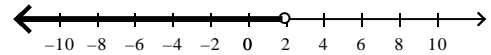
- D.  $z \leq -3$



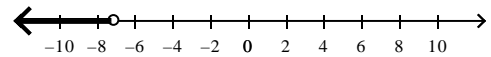
6. Solve and graph.

$$-3y + 9 + y < 5$$

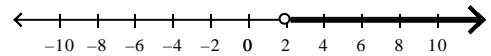
- A.  $y < 2$



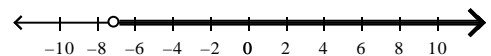
- B.  $y < -7$



- C.  $y > 2$



- D.  $y > -7$



7. Write and solve the algebraic inequality.

The product of  $-8$  and a number is at least  $-40$ .

- A.  $-8x < -40; x > -5$
- B.  $-8x > -40; x > -5$
- C.  $-8x \geq -40; x \leq 5$
- D.  $-8x \geq -40; x \geq 5$

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

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



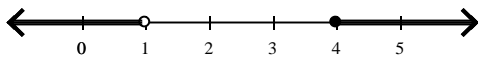
B.  $1 < x$  AND  $x < 4$



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



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



9. Rhonda has \$355 in her saving account. She wants to save no less than \$505. Write and solve an inequality to determine how much more money Rhonda must save to reach her goal. Let  $d$  represent the amount of money in dollars Rhonda must save to reach her goal.

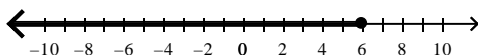
- A.  $355 + d \geq 505$ ;  $d \geq 150$
- B.  $355 + d \geq 505$ ;  $d > 505$
- C.  $355 + d = 505$ ;  $d = 150$
- D.  $355 + d > 505$ ;  $d > 150$

10. Solve the inequality  $-6(z - 3) > -6z - 7$ .

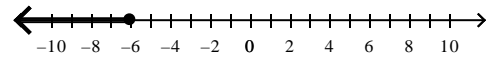
- A.  $z > -\frac{11}{12}$
- B. all real numbers
- C.  $z > 2\frac{1}{12}$
- D. no solutions

11. Solve and graph.  $-6(2p - 6) \leq 108$

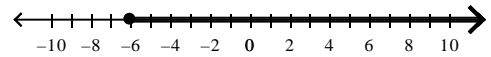
A.  $p \leq 6$



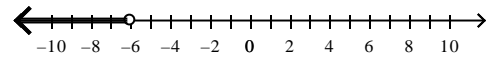
B.  $p \leq -6$



C.  $p \geq -6$



D.  $p < -6$



12. Solve.  $11b + 6 \geq 14b + 3$

- A.  $b \geq 1$
- B.  $b \geq -3$
- C.  $b \leq 1$
- D.  $b \geq -1$

13. Skate World offers birthday parties for a fee of \$130 plus \$3 per person. If you can spend no more than \$190 on your party, what is the maximum number of people who can attend?

- A. 15
- B. 12
- C. 20
- D. 14

14. Sara earns \$9 per hour babysitting. She must earn a minimum of \$81 next month to attend a concert. If  $h$  represents the number of hours Sara babysits, write an inequality to describe the situation.

- A.  $9h \leq 81$
- B.  $9h \geq 81$
- C.  $9h > 81$
- D.  $9h < 81$

15. Solve the inequality.

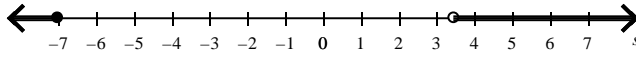
$$2(y + 6) \leq 3y$$

- A.  $y > 12$
- B.  $y \leq 12$
- C.  $y \leq 6$
- D.  $y \geq 12$

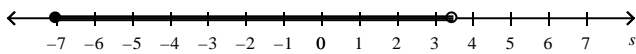
16. Solve and graph the compound inequality.

$$s + 4 > 7.5 \text{ OR } 1 + s \leq -6$$

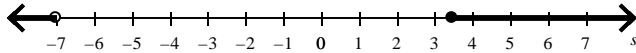
A.  $s > 3.5 \text{ OR } s \leq -7$



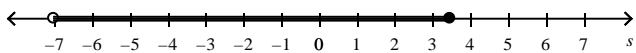
B.  $s > -7 \text{ OR } s \leq 3.5$



C.  $s > 3.5 \text{ OR } s \leq -7$



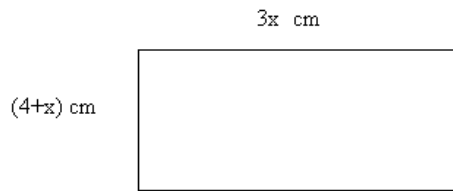
D.  $s > -7 \text{ OR } s \leq 3.5$



**Short Answer: (20 points, 5 points each)**

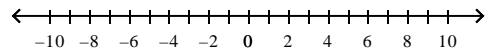
Solve each of the following.

17. What is the value of  $x$ , such that the perimeter of the rectangle shown is at least 96 centimeters?

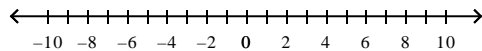


20. Solve the inequality and graph.

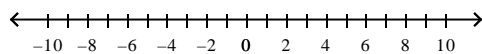
$$2x + 2 < 2(3x - 1)$$



18. Graph the solution to:  $-3 < x$ .



19. Solve the inequality and graph:  $-5 + \frac{x}{4} < -3$



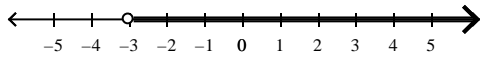
**Study Guide - Inequalities**  
**Answer Section**

**MULTIPLE CHOICE**

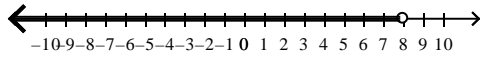
1. A
2. C
3. D
4. D
5. D
6. C
7. C
8. C
9. A
10. B
11. C
12. C
13. C
14. B
15. D
16. A

**SHORT ANSWER**

17.  $x \geq 11$



18.



19.

20.  $x > 1$