Linear Inequalities- Part 2

1. Solve the following inequality.

$$-3|3 - x| + 3 \leq -15$$

○ A. $x \ge 9 \text{ or } x \le -3$ ○ B. $x \ge 7 \text{ or } x \le -1$ ○ C. $x \le 9 \text{ or } x \ge -3$ ○ D. $x \le 7 \text{ or } x \ge -1$

2. Stephanie has two bottles of liquid that she is going to pour down the drain. One bottle contains regular soda and the other bottle contains diet soda. The amount remaining in the regular soda bottle after x seconds can be modeled by the expression 120 - 4.5x. The amount remaining in the diet soda bottle after x seconds can be modeled by the expression 240 - 12x.

Which graph represents the time when the amount remaining in the diet soda bottle is less than the amount remaining in the regular soda bottle?



3. Solve the following inequality.

$$-4|6 - x| \leq -20$$

• A.
$$x \le 1$$

• B. $x \ge 11 \text{ or } x \le 1$
• C. $x \le 11 \text{ or } x \ge 1$
• D. $1 \le x \le 11$

4. The blues band, Jonny and the Silver Toads, charges \$25 per ticket at their performances. Their next venue charges them \$1,000 for use of the venue. Based on the inequality below, how many tickets, *t*, do they need to sell in order to make a profit of at least \$2,650?

 $25t - 1,000 \ge 2,650$

○ A. The band needs to sell at most 122 tickets.

○ **B.** The band needs to sell at most 146 tickets.

○ C. The band needs to sell at least 146 tickets.

○ **D.** The band needs to sell at most 129 tickets.

5. Solve the following inequalities.

84 < 7(x + 5) < 105

• A. 7 < x < 10• B. 17 < x < 20• C. 7 < x < 20• D. 17 < x < 10

6. Paul is selling his paintings at the town square. He has 35 paintings to sell in all and needs to sell at least 19 paintings in one day to recover his cost. He has already sold 3 paintings since the morning and has 5 more hours to sell his paintings. Paul wants to know about how many paintings he should sell per hour to recover his cost.

Write an inequality that represents the given situation.

7. Solve the following compound inequality.

 $4x + 7 \le -13$ OR 4x - 7 > 13 **A.** $-5 \le x < 5$ **B.** $x \le -5$ **C.** $x \le -5$ OR x > 5**D.** $x \le -6$ OR x > 6 **8.** The junior class has been selling roses as an ongoing fundraiser. Roses sell for \$5.75 each and, to date, they have raised \$2,004.96. They would like to raise a total of \$3,603.46 by the end of the year. If this situation is modeled by the inequality below, how many more roses, x, do they need to sell to raise at least \$3,603.46?

 $2,004.96 + $5.75x \ge $3,603.46$

○ A. The junior class would need to sell at most 278 roses.

○ **B.** The junior class would need to sell at most 349 roses.

○ C. The junior class would need to sell at most 627 roses.

O D. The junior class would need to sell at least 278 roses.

9. Which of the following number lines shows the solution to the inequality given below?



 $4x + 8 \le -52$ OR 4x + 8 > 0

10. The city of Cartesianville is sponsoring an event to collect food for those in need in their community. A local church has already donated 452 pounds of food. The event is expecting 179 attendees. Based on the inequality below, how many pounds of food, f, should each attendee donate in order to collect at least 1,347 pounds of food?

$$452 + 179f \ge 1,347$$

○ A. Each attendee should donate at least 5 pounds of food.

○ **B.** Each attendee should donate at most 5 pounds of food.

• C. Each attendee should donate at most 8 pounds of food.

○ **D.** Each attendee should donate at most 10 pounds of food.

11. Solve the following inequality.

• A. $-7 < x < \frac{11}{4}$ • B. $-\frac{3}{4} < x < \frac{11}{4}$ • C. $x < \frac{11}{4}$ • D. $-\frac{11}{4} < x < \frac{3}{4}$

12. Shelly is going shopping at the mall to buy 3 pairs of shoes. She has a coupon for \$2 off per pair of shoes after buying the first pair at full price. Shelly is willing to spend \$80 to \$86 not including tax. If the shoes she purchases are all the same price, what is the least and most amount she can spend per pair?

|4x - 4| < 7

A. \$26 and \$29
B. \$28 and \$30
C. \$27 and \$29
D. \$29 and \$31

13. Solve the following inequalities.

$$2 < -2(x - 1) < 24$$

• A. -11 < x < 0• B. -11 < x < -2• C. -13 < x < 0• D. -13 < x < -2

14. Ben's business averages \$1,500 per month in internet sales plus another \$250 per salesperson per month. Based on the inequality below, how many salespeople, *s*, need to be working in order for Ben's business to generate at least \$3,000 in monthly revenue?

 $1,500 + 250s \ge 3,000$

○ A. Ben needs at most 16 salespeople working.

- **B.** Ben needs at least 6 salespeople working.
- C. Ben needs at most 6 salespeople working.
- **D.** Ben needs at most 11 salespeople working.

Answers

1. A 2. C 3. B 4. C 5. A 6. 3.2 < x < 6.4 7. C 8. D 9. D 10. A 11. B 12. B 13. A

14. B