

Name: _____

Inequalities

Solve the following inequalities.

1. $-13 < 4x + 3 < 11$

2. $5x - 8 > -13$ OR $-3x \leq -15$

3. $14 < 2(x + 3) < 46$

☐ A. $-4 < x < \frac{11}{4}$

☐ A. $x > -1$

☐ A. $4 < x < 26$

☐ B. $-4 < x < 2$

☐ B. $-1 < x \leq 5$

☐ B. $10 < x < 20$

☐ C. $-\frac{5}{2} < x < \frac{7}{2}$

☐ C. $x < -1$ OR $x \geq 5$

☐ C. $10 < x < 26$

☐ D. $-\frac{25}{4} < x < -\frac{1}{4}$

☐ D. $x \geq 5$

☐ D. $4 < x < 20$

4. $2x + 6 \leq 0$ OR $4x - 9 > 19$

5. $100 < -10(x - 7) < 210$

6. $25 \leq -5x + 5 \leq 40$

☐ A. $x \leq -4$ OR $x > 8$

☐ A. $-28 < x < -17$

☐ A. $-9 \leq x \leq -6$

☐ B. $-3 \leq x < 7$

☐ B. $-14 < x < -3$

☐ B. $-7 \leq x \leq -4$

☐ C. $x \leq -3$

☐ C. $-17 < x < -14$

☐ C. $-3 \leq x \leq 0$

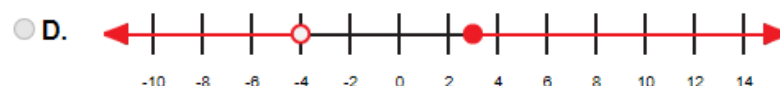
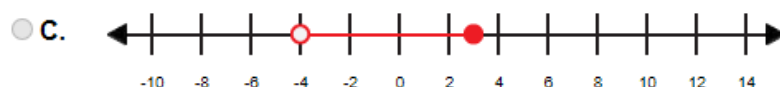
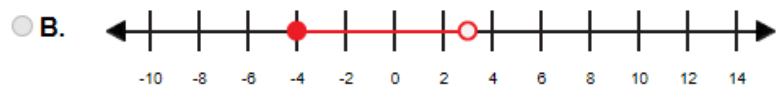
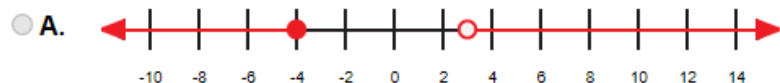
☐ D. $x \leq -3$ OR $x > 7$

☐ D. $-28 < x < -3$

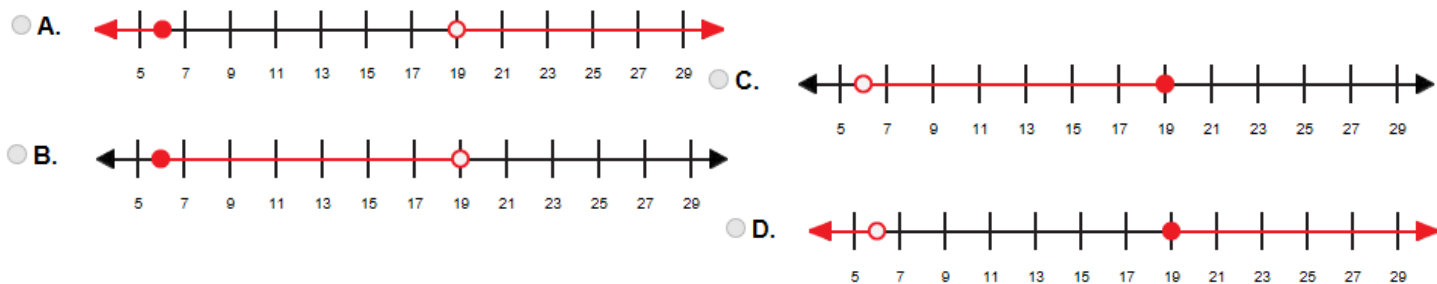
☐ D. $20 \leq x \leq 35$

Graph the solution(s) to the following inequalities.

7. $5x - 9 \leq -29$ OR $2x - 9 > -3$

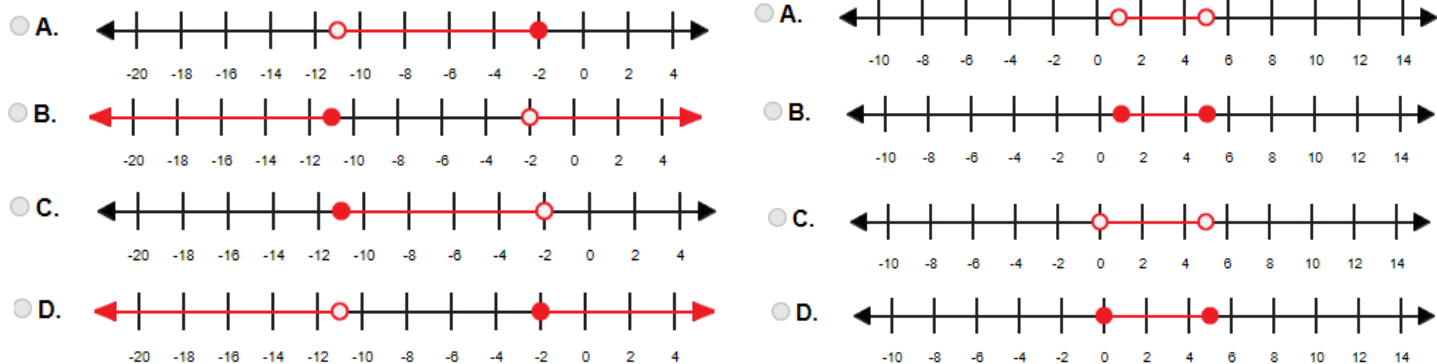


8. $-19 \geq -4x + 5 > -71$



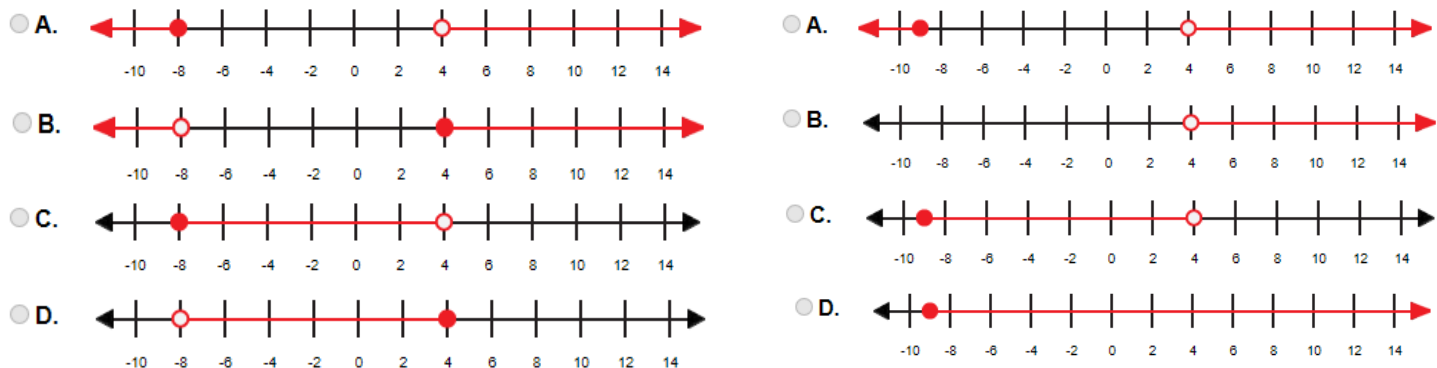
9. $5x + 4 \leq -51$ OR $4x + 7 > -1$

10. $1 \leq 4x + 1 \leq 21$



11. $-4x + 5 < 37$ AND $5x - 2 \leq 18$

12. $-2x - 2 < -10$ OR $-2x \leq 18$



13. $|2x + 3| < 7$

- ☐ A. $-2 < x < 5$
- ☐ B. $-5 < x < 2$
- ☐ C. $x < 2$
- ☐ D. $-7 < x < 2$

14. $-2|8 - x| + 2 \leq -10$

- ☐ A. $x \geq 14$ or $x \leq 2$
- ☐ B. $x \leq 12$ or $x \geq 4$
- ☐ C. $x \geq 12$ or $x \leq 4$
- ☐ D. $x \leq 14$ or $x \geq 2$

15. $|2x + 5| + 3 < 8$

- ☐ A. $-10 < x < \frac{17}{3}$
- ☐ B. $x < \frac{17}{3}$
- ☐ C. $x < -1$ or $x > \frac{17}{3}$
- ☐ D. $-5 < x < 0$

Word Problems.

16. Brandon writes math problems for a publishing company. This week he has already written 21 problems. There are 2 days left in the work week. He set a goal for himself to write at least 31 problems this week. If this situation is modeled by the inequality below, what is the average number of problems, x , he needs to write each of the remaining work days in order to reach his goal?

$$21 + 2x \geq 31$$

- ☐ A. Brandon needs to write an average of at most 3 problems each of the remaining work days this week.
 - ☐ B. Brandon needs to write an average of at most 26 problems each of the remaining work days this week.
 - ☐ C. Brandon needs to write an average of at most 5 problems each of the remaining work days this week.
 - ☐ D. Brandon needs to write an average of at least 5 problems each of the remaining work days this week.
17. The blues band, Jonny and the Silver Toads, charges \$30 per ticket at their performances. Their next venue charges them \$800 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 \$3,580?

$$\$30t - \$800 \geq \$3,580$$

- ☐ A. The band needs to sell at most 146 tickets.
 - ☐ B. The band needs to sell at most 122 tickets.
 - ☐ C. The band needs to sell at least 146 tickets.
 - ☐ D. The band needs to sell at most 129 tickets.
18. Marie is saving money for home repairs. To date, she has saved \$1,065. She needs at least \$1,375 for the repairs. She plans to set aside \$31 per week to add to her current savings. If this situation is modeled by the inequality below, how many more weeks, x , does she need to continue saving in order to have enough money for the repairs?

$$\$1,065 + \$31x \geq \$1,375$$

- ☐ A. Marie needs to continue saving for at most 79 more weeks.
- ☐ B. Marie needs to continue saving for at most 10 more weeks.
- ☐ C. Marie needs to continue saving for at most 29 more weeks.
- ☐ D. Marie needs to continue saving for at least 10 more weeks.

19. Priya makes bracelets for her online store. Her monthly business expenses are \$522. She sells an average of 83 bracelets per month. Based on the inequality below, if she wants to profit at least \$1,221, how much should she charge, b , per bracelet?

$$83b - \$522 \geq \$1,221$$

- ☐ A. Priya needs to charge at most \$18 per bracelet.
 - ☐ B. Priya needs to charge at most \$21 per bracelet.
 - ☐ C. Priya needs to charge at most \$28 per bracelet.
 - ☐ D. Priya needs to charge at least \$21 per bracelet.
20. Ben's business averages \$1,500 per month in internet sales plus another \$200 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 \$2,300 in monthly revenue?

$$\$1,500 + \$200s \geq \$2,300$$

- ☐ A. Ben needs at least 4 salespeople working.
 - ☐ B. Ben needs at most 14 salespeople working.
 - ☐ C. Ben needs at most 9 salespeople working.
 - ☐ D. Ben needs at most 4 salespeople working.
21. The city of Cartesianville is sponsoring an event to collect food for those in need in their community. A local church has already donated 377 pounds of food. The event is expecting 165 attendees. Based on the inequality below, how many pounds of food, f , should each attendee donate in order to collect at least 1,037 pounds of food?

$$377 + 165f \geq 1,037$$

- ☐ A. Each attendee should donate at most 7 pounds of food.
 - ☐ B. Each attendee should donate at most 9 pounds of food.
 - ☐ C. Each attendee should donate at least 4 pounds of food.
 - ☐ D. Each attendee should donate at most 4 pounds of food.
22. An insurance company is considering implementing a plan based on mileage. The current plan, Plan A, charges a flat rate of \$252.80 per month. Plan B charges a flat rate of \$177.60 per month plus an additional \$0.08 per mile driven the previous month. Using the inequality below, find the number of miles, x , where the cost of Plan B is less than the cost of Plan A.

$$\$177.60 + \$0.08x < \$252.80$$

- ☐ A. The mileage must be greater than 1,880 miles.
- ☐ B. The mileage must be less than 5,380 miles.
- ☐ C. The mileage must be less than 940 miles.
- ☐ D. The mileage must be greater than 940 miles.