

Inequalities - Application
Algebra 1

Mount Si High School Name: _____
Fall 2015 Date: _____ Period: _____

Write the sentence as an inequality.

1. The product of a number n and 2 is no less than 14.

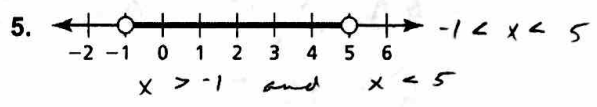
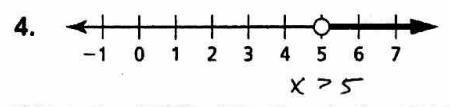
$$2n \geq 14$$

2. The speed s on a highway is at most 60 miles per hour.

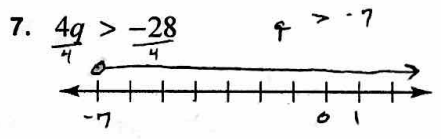
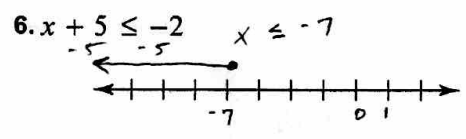
$$s \leq 60$$

3. The length r of a rope should be at least 28 inches. $r \geq 28$

Write an inequality that represents the graph.



Solve the inequality. Graph the solution.



Solve the inequality.

8. $2k > 2k + 4$
 $-2k - 2k$
 $0 > 4$ N.S.

9. $4p < 6p + 12$
 $-4p - 4p - 12$ $-12 < 2p$
 $-6 < p$

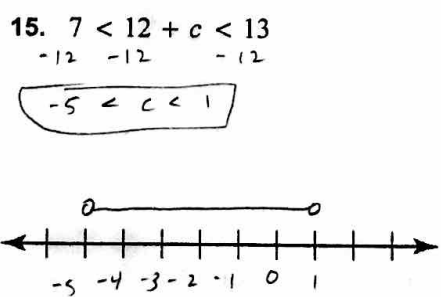
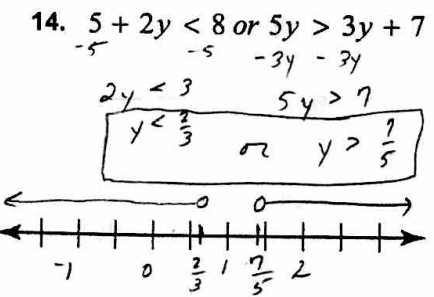
10. $2.5w - 5 < 2w + 5$
 $-2w + 5 - 2w + 5$
 $\frac{0.5w}{0.5} < \frac{10}{0.5}$ $w < 20$

11. $5(p - 1) > 6p - 7$
 $5p - 5 > 6p - 7$
 $-5p + 7 - 5p + 7$
 $2 > p$

12. $5n + 3 \geq 4 - (6 - 5n)$
 $5n + 3 \geq 4 - 6 + 5n$
 $5n - 5n$
 $3 \geq -2$
infinite solutions

13. $5 - 2x < 4 - 2x + 3$
 $+2x$ $+2x$
 $5 < 7$ definite solutions

Solve the inequality. Graph the solution.



Solve the inequality.

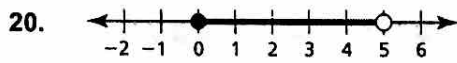
16. $-3p + 1 \leq -11$ or $-0.5p > 12$
 $-1 -1 -0.5 -0.5$
 $-3p \leq -12$ $p < -24$
 $\frac{-3p}{-3} \frac{-12}{-3}$
 $p \geq 4$ or $p < -24$

17. $6 < 4 - w \leq 2w - 2$
 $+w +w$
 $6 + w < 4 \leq 3w - 2$
No solution

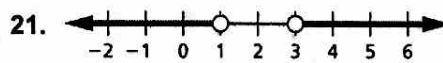
Answers

- 1. _____
- 2. _____
- 3. _____
- 4. _____
- 5. _____
- 6. _____
- 7. See left.
- 8. _____
- 9. $p > -6$
- 10. $w < 20$
- 11. $p < 2$
- 12. _____
- 13. _____
- 14. _____
- 15. See left.
- 16. _____
- 17. _____
- 18. _____
- 19. _____

Write a compound inequality that represents the graph shown.



$$0 \leq x < 5$$



$$x < 1 \text{ or } x > 3$$

Answers

20. _____

21. _____

22. You need to earn at least \$75. You earn \$6.00 for each hour you work. Write and solve an inequality that represents the number of hours h that you need to work.

$$6h \geq 75$$

$$h \geq 12.5$$

You must work at least 12.5 hours.

22. _____

23. _____

23. You need at least 150 cups of lemonade but less than 225 cups of lemonade for a picnic. Each batch of lemonade makes 25 cups of lemonade. Write and solve an inequality that represents the number of batches b you need to make.

$$\frac{150}{25} \leq \frac{25b}{25} < \frac{225}{25}$$

$$6 \leq b < 9$$

$$150 \leq 25b < 225$$

You need to make between 6 and 9 batches.

24. _____

25. _____

24. You have a goal to practice the piano for an average of at least 50 minutes per day for one week. The first six days you practice a total of 245 minutes. Write and solve an inequality that represents the number of minutes m you need to practice on the seventh day.

$$\frac{245 + m}{7} \geq 50$$

$$\frac{245 + m}{7} \geq 50$$

$$\begin{array}{r} 245 + m \geq 350 \\ -245 \quad -245 \\ \hline m \geq 105 \end{array}$$

Must practice more than 105 minutes

25. The cost to rent a construction crane is \$1500 per day plus \$250 per hour of use. Write and solve an inequality that can be used to determine the maximum number of hours h the crane can be used if the rental cost for one day will not exceed \$5000.

$$1500 + 250h \leq 5000$$

$$\begin{array}{r} 1500 + 250h \leq 5000 \\ -1500 \quad -1500 \\ \hline 250h \leq 3500 \end{array}$$

$$\begin{array}{r} 250h \leq 3500 \\ \frac{250}{250} \quad \frac{3500}{250} \\ \hline h \leq 14 \end{array}$$

The number of hours cannot exceed 14.