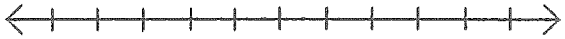
Solve the inequality. Express the solution in set notation. Graph the solution set on a labeled number line.

1. $-7 < a + 3$

Solution in set notation: { }

2. $\frac{1}{4}x > 7$



Solution in set notation: { }

3. $-54 \leq -6w$

Solution in set notation: { }

4. $\frac{x}{4} - 9 > -5$

Solution in set notation: { }

5. $-3(x-4) > 5x - 4$

Solution in set notation: { }

6. $5x + 1 \leq 16$ *or* $3x - 7 > 14$

Solution in set notation: { }

7. $-2 \leq 3w + 4 < 19$

Solution in set notation: { }

8. $|2x - 7| \leq 9$

Solution in set notation: { }

9. $\left|\frac{2x+4}{3}\right| > 8$

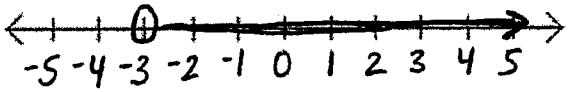
Solution in set notation: { }

10. A brownie contains 12 grams of fat. If you eat no fewer than 3 and no more than 8 brownies, how many grams of fat will you consume?

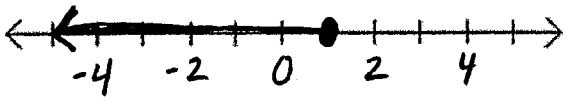
Solution in set notation: { }

Write an inequality (or inequalities) for each graph.

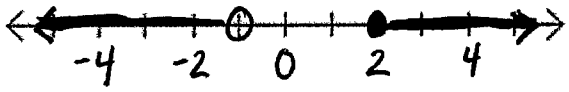
11.



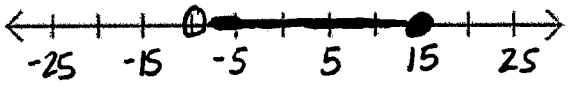
12.



13.



14.



15. The sewage plant receives 300 to 450 tons of waste every month. How many tons of waste does the plant receive daily? (*Hint on average there are 30 days in a month)

16. Kevin is saving up for his vacation. During the summer he saved $1,600 . His vacation costs at least $4,000. His job pays him $30 an hour. At least how many hours must he work to save up for his vacation?

**BONUS If he works 30 hours a week, at least how many weeks must he work?

17. Which number is a solution of the inequality: $x+8<-5$

A. –10

B. –14

C. –3

D. 3

18. Which statement is equivalent to the inequality $|x-3|>8$?

A. $x-3>8$ or $x-3<8$

B. $x-3>8$ or $x-3<-8$

C. $x-3>8$ and $x-3<8$

D. $x-3>8$ and $x-3<-8$

19. Solve and graph

$$-15+3a\leq -9$$

20. It costs $7 to make a charm necklace with up to 5 charms and $1.50 for each additional charm. Kimberly has a budget of $16 maximum set aside for her necklace. **Write** and **Solve** an inequality for the number of additional charms that Kimberly can have added to her necklace.