Chapter 5 Review

Students will be able to:

- Write inequalities representing word problems. Types include 1 variable inequalities, compound inequalities, 2 variable inequalities, and systems of inequalities.
- Solve 1 step 1 variable inequalities by addition/subtraction/multiplication/division.
- Solve multi-step inequalities including variables on both sides and distributive property.
- Represent solutions to 1 variable inequalities using a number line or coordinate plane.
- Represent solutions to 2 variable inequalities on the coordinate plane.
- Represent solutions to systems of inequalities on the coordinate plane.
- Identify solutions to inequalities algebraically and graphically.
- Solve real world problem situations using 1 variable inequalities, 2 variable inequalities and systems of inequalities.
- Solve absolute value inequalities.
- Solve and/or compound inequalities and represent solutions graphically.
- Write algebraic inequalities in 1 variable to represent given solution regions (including compound inequalities.)
- Write linear inequalities in 2 variables from the graph of solution region.
- Write systems of inequalities from the graph of solutions regions.

Skill 1 – Solving 1 variable inequalities by addition/subtraction

Match each inequality to the graph of its solution.

1. $x + 11 > 16$

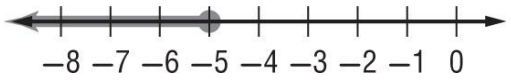
2. $x - 6 < 1$

3. $x + 2 \leq -3$

4. $x + 3 \geq 1$

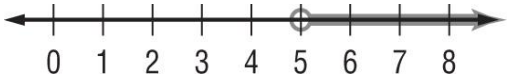
5. $x - 1 < -7$

a.



b.

c.



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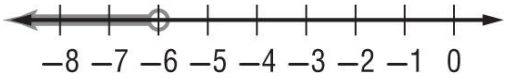
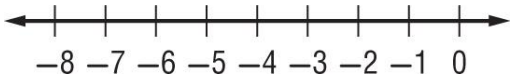


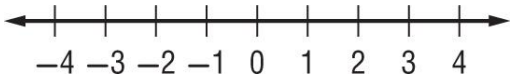
e.

Solve each inequality. Check your solution, and then graph it on a number line.

12. $-2 \geq x + 4$



13. $2y < y + 2$



Skill 2 – solving 1 variable inequalities using multiplication and division

Solve each inequality. Check your solution

15. $-\frac{t}{12} \geq -90$

16. $5z < -90$

17. $-13m > -26$

19. $-y < 36$

20. $-16c \geq -224$

21. $-\frac{h}{10} \leq 2$

Skill 3: Solving multi-step inequalities including distributive property and variables on both sides.

Solve each inequality. Check your solution.

3. $-2b + 4 > -6$

4. $3x + 15 \leq 21$

5. $\frac{d}{2} - 1 \geq 3$

6. $\frac{5}{5}a - 4 < 2$

7. $-\frac{t}{5} + 7 > -4$

8. $\frac{3}{4}j - 10 \geq 5$

9. $-\frac{2}{3}f + 3 < -9$

10. $2p + 5 \geq 3p - 10$

11. $4k + 15 > -2k + 3$

12. $2(-3m - 5) \geq -28$

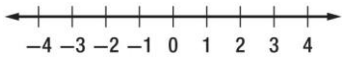
13. $-6(w + 1) < 2(w + 5)$

14. $2(q - 3) + 6 \leq -10$

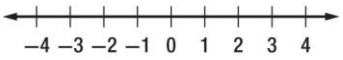
Skill 4 – Solving compound inequalities involving and/or.

Graph the solution set of each compound inequality.

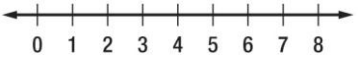
1. $b > 3$ or $b \leq 0$



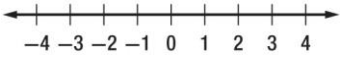
2. $z \leq 3$ and $z \geq -2$



3. $k > 1$ and $k > 5$



4. $y < -1$ or $y \geq 1$



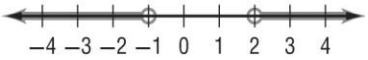
Write a compound inequality for each graph.

5.

6.

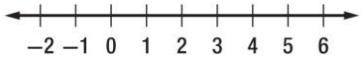
7.

8.

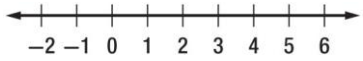


Solve each compound inequality. Then graph the solution set.

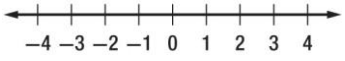
9. $m + 3 \geq 5$ and $m + 3 < 7$



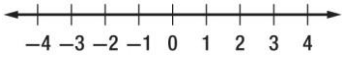
10. $y - 5 < -4$ or $y - 5 \geq 1$



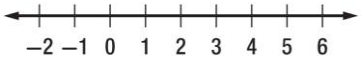
11. $4 < f + 6$ and $f + 6 < 5$



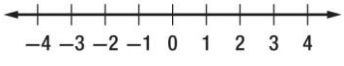
12. $w + 3 \leq 0$ or $w + 7 \geq 9$



13. $-6 < b - 4 < 2$



14. $p - 2 \leq -2$ or $p - 2 > 1$



Skill 5 – Absolute value inequalities

Match the following absolute value inequalities to the graphs of the solutions

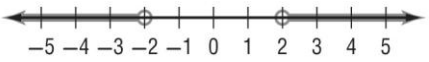
1. $|x| > 2$

2. $|x - 2| \leq 3$

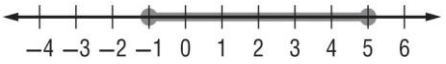
3. $|x + 1| < 4$

a.

b.



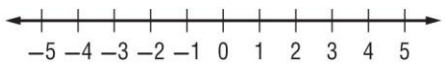
c.



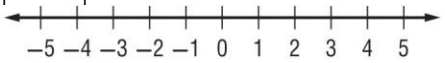
Solve each inequality. Then graph the solution set.

6. $|2z - 9| \leq 1$

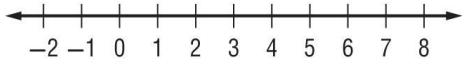
7. $|3 - 2r| > 7$



8. $|3t + 6| < 9$



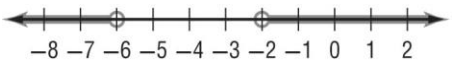
9. $|2g - 5| \geq 9$



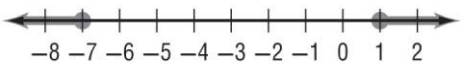
Write an open sentence involving absolute value for each graph.

10.

11.



12.



13.

Skill 6 – Inequalities involving 2 variables

Determine which ordered pairs are part of the solution set for each inequality.

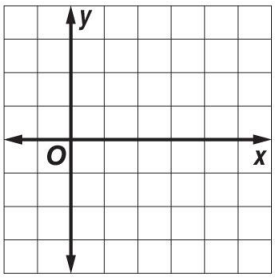
1. $3x + y \geq 6$, {(4, 3), (–2, 4), (–5, –3), (3, –3)}

2. $y \geq x + 3$, {(6, 3), (–3, 2), (3, –2), (4, 3)}

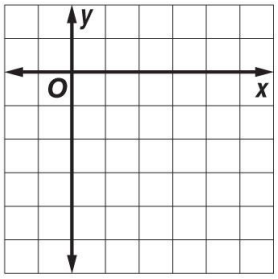
3. $3x - 2y < 5$, {(4, –4), (3, 5), (5, 2), (–3, 4)}

Graph each inequality.

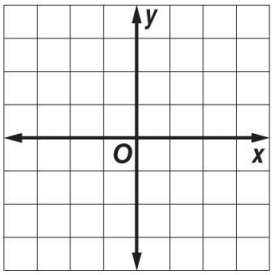
4. $2y - x < -4$



5. $2x - 2y \geq 8$

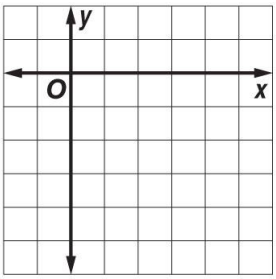


6. $3y > 2x - 3$

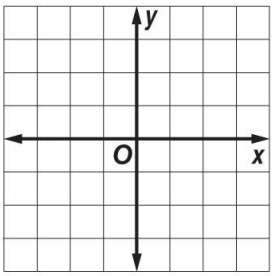


Use a graph to solve each inequality.

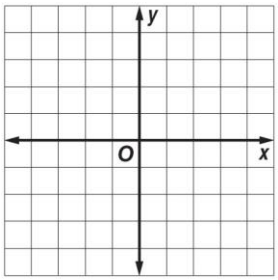
7. $-5 \leq x - 9$



8. $6 > \frac{2}{3}x + 5$



9. $\frac{1}{2} > -2x + \frac{7}{2}$



Word Problem Practice

1. Satchi found a used bookstore that sells pre-owned DVDs and CDs. DVDs cost $9 each, and CDs cost $7 each. Satchi can spend no more than $35.

a. Write an inequality that represents this situation.

b. Does Satchi have enough money to buy 2 DVDs and 3 CDs?

2. Tyler has $75 to spend at the mall. He purchases a music video for $14.99 and a pair of jeans for $18.99. He also spent $4.75 for lunch. Tyler still wants to purchase a video game. How much money can he spend on a video game?

3. On average, at least 25,000 pieces of luggage are lost or misdirected each day by United States airlines. Of these, 98% are located by the airlines within 5 days. From a given day's lost luggage, at least how many pieces of luggage
are still lost after 5 days?

4. Gil earned these scores on the first three tests in biology this term: 86, 88, and 78. What is the lowest score that Gil can earn on the fourth and final test of the term if he wants to have an average of at least 83?

5. Jay has lost his mother's favorite necklace, so he will rent a metal detector to try to find it. A rental company charges a one-time rental fee of $15 plus $2 per hour to rent a metal detector. Jay has only $35 to spend. What is the maximum amount of time he can rent the metal detector?

6. Bobby, Billy, and Barry Smith are each one year apart in age. The sum of their ages is greater than the age of their father, who is 60. How old can the oldest brother can be?

7. Jamal works in a city and sometimes takes a taxi to work. The taxicabs charge $1.50 for the first $\frac{1}{5}$ mile and $0.25 for each additional $\frac{1}{5}$ mile. Jamal has only $3.75 in his pocket. What is the maximum distance he can travel by taxi if he does not tip the driver?

8. The perimeter of a rectangular playground must be no greater than 120 meters, because that is the total length of the materials available for the border. The width of the playground cannot exceed 22 meters. What are the possible lengths of the playground?

9. Michelle works in the sales department at a local software developer. She is paid $2000 per month plus 8% commission on her sales for that month. How much money should she sell each month if her goal is to make at least $5000?

10. Troop 200 sold cider and donuts to raise money for charity. They sold small boxes of donut holes for $1.25 and cider for $2.50 a gallon. In order to cover their expenses, they needed to raise at least $100. Write and graph an inequality that represents this situation.