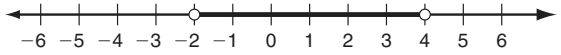
Name _____ Date _____ Class _____

LESSON 3-6

Practice B

Solving Compound Inequalities

Write the compound inequality shown by each graph.

1. 

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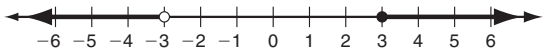
2. 

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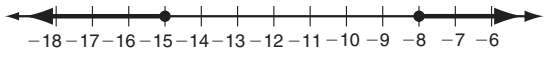
3. 

_____

4. 

_____

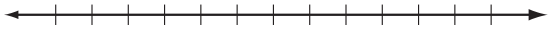
Solve each compound inequality and graph the solutions.

5. $-15 < x - 8 < -4$

_____

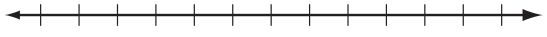
6. $12 \leq 4n < 28$

_____



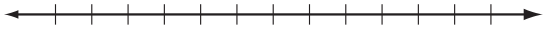
7. $-2 \leq 3b + 7 \leq 13$

_____



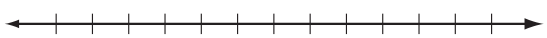
8. $x - 3 < -3$ OR $x - 3 \geq 3$

_____



9. $5k \leq -20$ OR $2k \geq 8$

_____



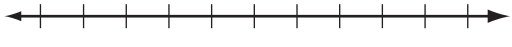
10. $2s + 3 \leq 7$ OR $3s + 5 > 26$

_____

Write a compound inequality for each problem. Graph the solutions.

11. The human ear can distinguish sounds between 20 Hz and 20,000 Hz, inclusive.

_____



12. For a man to box as a welterweight, he must weigh more than 140 lbs, but at most 147 lbs.

_____

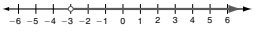
LESSON 3-6

Practice A

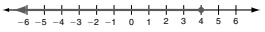
Solving Compound Inequalities

Graph each inequality, and then graph the compound inequality.

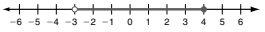
1. $x > -3$



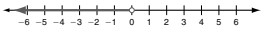
$x \le 4$



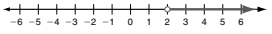
intersection: $x > -3$ AND $x \le 4$



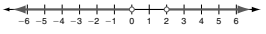
2. $z < 0$



$z > 2$

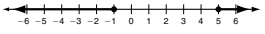


union: $z < 0$ OR $z > 2$



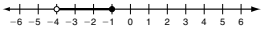
Write the compound inequality shown by each graph.

3.



$x \le -1$ OR $x \ge 5$

4.



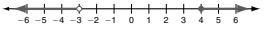
$x > -4$ AND $x \le -1$

Fill in the blanks to solve each compound inequality. Graph the solutions.

5. $n + 5 < 2$ OR $n + 5 \ge 9$

$-$ 5 $-$ 5 $-$ 5 $-$ 5

$n <$ -3 OR $n \ge$ 4



6. $-11 \le 2x - 1 \le 1$

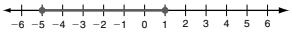
$-11 \le 2x - 1$ AND $2x - 1 \le 1$

$+$ 1 $+$ 1 $+$ 1 $+$ 1

$-10 \le 2x$ AND $2x \le$ 2

$\div$ 2 $\div$ 2 $\div$ 2 $\div$ 2

$-5 \le x$ AND $x \le$ 1



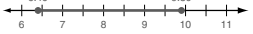
Write a compound inequality for each problem. Graph the solutions.

7. To relieve arthritis, Dr. Stoll recommends taking between 400 and 600 mg of ibuprofen, inclusive.

$400 \le m \le 600$

8. An advertisement for a part-time job says that the hourly rate is between \$6.40 and \$9.80 inclusive, depending on experience.

$6.40 \le r \le 9.80$



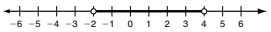
LESSON 3-6

Practice B

Solving Compound Inequalities

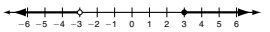
Write the compound inequality shown by each graph.

1.



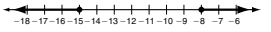
$-2 < x < 4$

2.



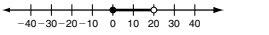
$x < -3$ OR $x \ge 3$

3.



$x \le -15$ OR $x \ge -8$

4.

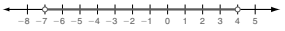


$0 \le x < 20$

Solve each compound inequality and graph the solutions.

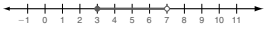
5. $-15 < x - 8 < -4$

$-7 < x < 4$



6. $12 \le 4n < 28$

$3 \le n < 7$

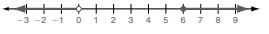


7. $-2 \le 3b + 7 \le 13$

$-3 \le b \le 2$

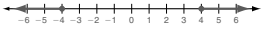
8. $x - 3 < -3$ OR $x - 3 \ge 3$

$x < 0$ OR $x \ge 6$



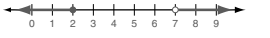
9. $5k \le -20$ OR $2k \ge 8$

$k \le -4$ OR $k \ge 4$



10. $2s + 3 \le 7$ OR $3s + 5 > 26$

$s \le 2$ OR $s > 7$



Write a compound inequality for each problem. Graph the solutions.

11. The human ear can distinguish sounds between 20 Hz and 20,000 Hz, inclusive.

$20 \le h \le 20{,}000$

12. For a man to box as a welterweight, he must weigh more than 140 lbs, but at most 147 lbs.

$140 < w \le 147$

LESSON 3-6

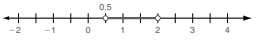
Practice C

Solving Compound Inequalities

Solve each compound inequality and graph the solutions.

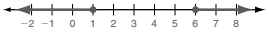
1. $-1 < 4x - 3 < 5$

$0.5 < x < 2$



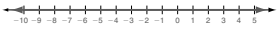
2. $3a - 5 \le -2$ OR $3a - 5 \ge 13$

$a \le 1$ OR $a \ge 6$



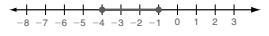
3. $-y - 2 > 6$ OR $4y + 8 \le 20$

$y > -8$ OR $y \le 3$; all real numbers



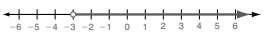
4. $3 \le -2x + 1 \le 9$

$-4 \le x \le -1$



5. $-5k < -10$ OR $3k > -9$

$k > -3$

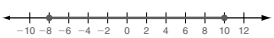


6. $\frac{1}{2}z + 3 < -4$ OR $\frac{2}{3}z - 1 \ge \frac{1}{5}$

$z < -14$ OR $z \ge 1.8$

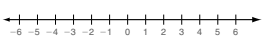
7. $-2 \le \frac{n+2}{3} \le 4$

$-8 \le n \le 10$



8. $p + 4 > 6$ AND $3p \le -18$

$p > 2$ AND $p \le -6$; no solutions



9. The United States Postal Service charges a "nonmachinable surcharge" for first-class mail if the length of the envelope (parallel to the address) divided by the height of the envelope is less than 1.3 or more than 2.5. Charlene has an envelope with a height of 3.5 inches. Write a compound inequality to show the lengths in inches for which Charlene will have to pay the surcharge.
Graph the solutions.

$0 < \ell < 4.55$ OR $\ell > 8.75$

LESSON 3-6

Reteach

Solving Compound Inequalities

Compound inequalities using AND require you to find solutions so that two inequalities will be satisfied at the same time.

Solve $2 < x + 3 \le 5$ and graph the solutions.

The two inequalities are: $2 < x + 3$ AND $x + 3 \le 5$.

Solve $2 < x + 3$.

$2 < x + 3$

$-3 \quad -3$ *Add -3 to both sides.*

$-1 < x$

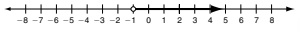
Solve $x + 3 \le 5$.

$x + 3 \le 5$

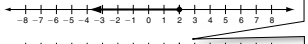
$-3 \quad -3$ *Add -3 to both sides.*

$x \le 2$

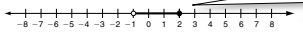
Graph $x > -1$.



Graph $x \le 2$.



Graph $-1 < x \le 2$.



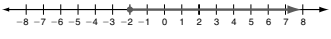
Use **overlapping** regions for compound inequalities with **AND**.

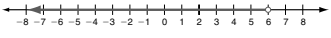
Write the two inequalities that must be solved in order to solve each compound inequality.

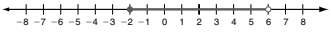
1. $-3 < x - 4 \le 10$ $-3 < x - 4$ AND $x - 4 \le 10$

2. $8 \le m + 4 \le 15$ $8 \le m + 4$ AND $m + 4 \le 15$

3. Graph $-2 \le w < 6$ by graphing each inequality separately. Then graph the compound inequality.



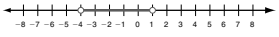




Solve each compound inequality and graph the solutions.

4. $-5 < k - 1 < 0$

$-4 < k < 1$



5. $-4 < 2x - 8 \le 6$

$2 < x \le 7$