

Bellwork 2.5A Compound Inequalities

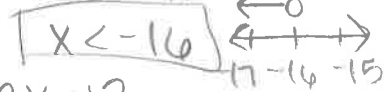
Solve each inequality. Graph your solutions.

1.  $3(x - 4) > 4(x + 1)$

① 
$$\begin{array}{r} 3x - 12 > 4x + 4 \\ -3x \quad -3x \end{array}$$

$$\begin{array}{r} -12 > x + 4 \\ -4 \quad -4 \end{array}$$

$$-16 > x$$



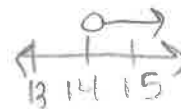
2.  $16 < 2(x - 6)$

② 
$$\begin{array}{r} 16 < 2x - 12 \\ +12 \quad +12 \end{array}$$

$$\frac{28}{2} < \frac{2x}{2}$$

$$14 < x$$

$$x > 14$$

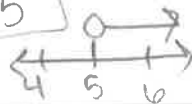


3.  $7 - 4x < -13$

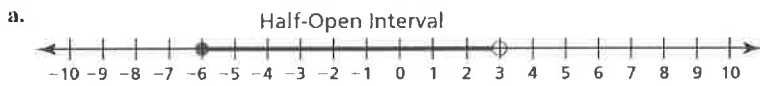
$$\begin{array}{r} -7 \quad -7 \\ \hline -4x < -20 \end{array}$$

$$\begin{array}{r} -4x < -20 \\ -4 \quad -4 \end{array}$$

$$x > 5$$



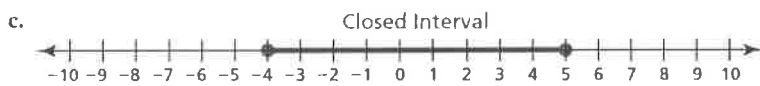
In parts (a)–(d), use two inequalities to describe the interval.



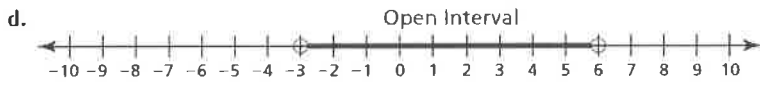
$$\begin{array}{l} x \geq -6 \\ x < 3 \end{array}$$



$$\begin{array}{l} x > -5 \\ x \leq 4 \end{array}$$



$$\begin{array}{l} x \geq -4 \\ x \leq 5 \end{array}$$

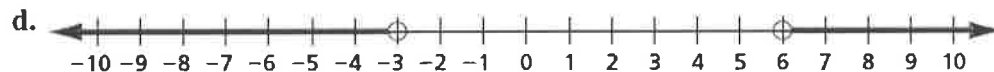
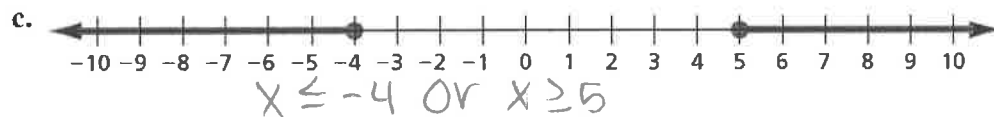
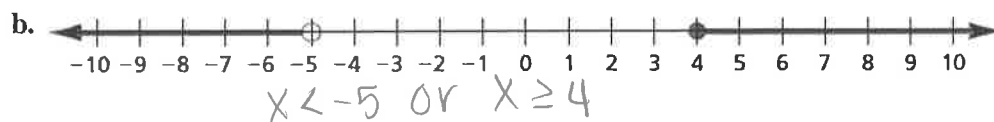
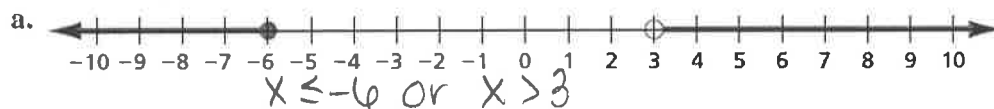


$$\begin{array}{l} x > -3 \\ x < 6 \end{array}$$

e. Do you use “and” or “or” to connect the two inequalities in parts (a)–(d)? Explain.

‘and’

In parts (a)– (d), use two inequalities to describe the interval.



e. Do you use "and" or "or" to connect the two inequalities in parts (a)– (d)? Explain.

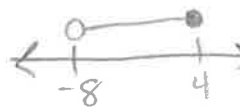
'or'

$x < -3$   
 or  
 $x > 6$

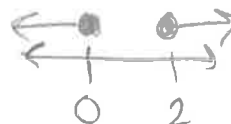
Write each sentence as an inequality. Graph each inequality.

a. A number  $x$  is greater than  $-8$  and less than or equal to  $4$ .

a)  $x > -8$  and  $x \leq 4$



b)  $y \leq 0$  or  $y \geq 2$

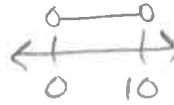


Write the sentence as an inequality. Graph the inequality.

1. A number  $d$  is more than 0 and less than 10.

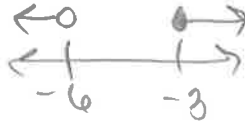
$$d > 0 \text{ and } d < 10$$

$$0 < d < 10$$



2. A number  $a$  is fewer than  $-6$  or no less than  $-3$ .

$$a < -6 \text{ or } a \geq -3$$



Solve  $3y - 5 < -8$  or  $2y - 1 > 5$ . Graph the solution.

$$\begin{array}{r} 3y - 5 < -8 \\ +5 \quad +5 \\ \hline \end{array}$$

$$\frac{3y}{3} < \frac{-3}{3}$$

$$\begin{array}{r} 2y - 1 > 5 \\ +1 \quad +1 \\ \hline \end{array}$$

$$\frac{2y}{2} > \frac{6}{2}$$

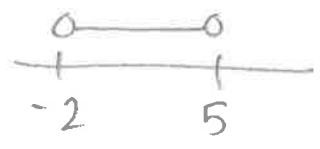
$$y < -1 \text{ or } y > 3$$



Solve each inequality. Graph each solution.

a.  $-4 < x - 2 < 3$   
 $\quad +2 \quad +2 \quad +2$

$$\boxed{-2 < x < 5}$$



b.  $-3 < -2x + 1 \leq 9$   
 $\quad -1 \quad -1 \quad -1$

$$\frac{-4 < -2x \leq 8}{-2 \quad -2 \quad -2}$$

$$2 > x \geq -4$$

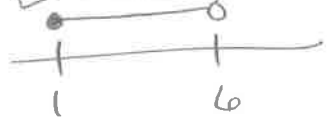
$$\boxed{-4 \leq x < 2}$$



Solve the inequality. Graph the solution.

3.  $5 \leq m + 4 < 10$   
 $\quad -4 \quad -4 \quad -4$

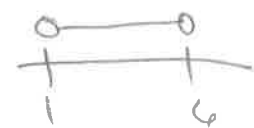
$$\boxed{1 \leq m < 6}$$



4.  $-3 < 2k - 5 < 7$   
 $\quad +5 \quad +5 \quad +5$

$$\frac{2 < 2k < 12}{2 \quad 2 \quad 2}$$

$$\boxed{1 < k < 6}$$



5.  $4c + 3 \leq -5$  or  $c - 8 > -1$   
 $\quad -3 \quad -3 \quad +8 \quad +8$

$$\frac{4c \leq -8}{4 \quad 4}$$

$$\boxed{c \leq -2 \text{ OR } c > 7}$$



6.  $2p + 1 < -7$  or  $3 - 2p \leq -1$   
 $\quad -1 \quad -1 \quad -3 \quad -3$

$$\frac{2p < -8}{2 \quad 2} \quad \frac{-2p \leq -4}{-2 \quad -2}$$

$$\boxed{p < -4 \text{ OR } p \geq 2}$$



Break

Ella's car travels between 380 and 410 miles on a full tank of gas. She filled her tank and drove 45 miles. How many more miles can she drive without running out of gas? Write and solve an inequality to represent this situation.

$$\begin{array}{r} 380 \leq x + 45 \leq 410 \\ -45 \qquad -45 \quad -45 \end{array}$$

$$\boxed{335 \leq x \leq 365}$$

Suzie can spend between \$400 and \$500 during the month, inclusively. She has already spent \$125. Write and solve a compound inequality to determine how much more money Suzie can spend.

$$400 \leq X + 125 \leq 500$$

$$\begin{array}{r} -125 \\ -125 \\ -125 \end{array}$$

$$275 \leq X \leq 375$$

The length of a side of a triangle is less than 25 meters or greater than 56 meters. Write and solve a compound inequality. Graph your solutions.

$$X < 25 \text{ or } X > 56$$



The doctor told the mother that the expected weight for the baby for her age was between 20 and 25 pounds. Write and graph an inequality to represent how much the baby should weigh.

$$20 \leq x \leq 25$$



A store is offering a \$30 mail in rebate on all color printers. Luis is looking at different color printers that range in price from \$175 to \$260. How much can he expect to spend after the rebate?

$$175 \leq x + 30 \leq 260$$

$$\begin{array}{ccc} -30 & & -30 \\ \hline \end{array}$$

$$145 \leq x \leq 230$$

Cindy has scores 72, 82, 83, and 89 on her Algebra tests. Use a compound inequality to find the range of scores she can make on her final exam to receive a C in the course. The final exam counts as two tests, and a C is received if the final course average is from 77 to 84.

$$77 \leq \frac{72 + 82 + 83 + 89 + 2x}{6} \leq 84$$

$$6 \cdot 77 \leq \frac{326 + 2x}{1} \leq 84 \cdot 6$$

$$\begin{array}{r} 462 \leq 326 + 2x \leq 504 \\ -326 \quad -326 \quad -326 \end{array}$$

$$136 \leq 2x \leq 178$$

$$\frac{136}{2} \leq \frac{2x}{2} \leq \frac{178}{2}$$

$$68 \leq x \leq 89$$

$$68 \leq x \leq 89$$

Sasha has scores 79, 87, 90, 94, and 63 on her Algebra tests. Use a compound inequality to find the range of scores she can make on her final exam to receive a B in the course. The final exam counts as two tests, and a B is received if the final course average is from 85 to 89.

$$85 \leq \frac{79 + 87 + 90 + 94 + 63 + 2x}{7} \leq 89$$

$$7 \cdot 85 \leq \frac{413 + 2x}{1} \leq 89 \cdot 7$$

$$\begin{array}{r} 595 \leq 413 + 2x \leq 623 \\ -413 \quad -413 \quad -413 \end{array}$$

$$\frac{182}{2} \leq \frac{2x}{2} \leq \frac{210}{2}$$

$$91 \leq x \leq 105$$