4.1 Writing and Graphing Inequalities p.126

| < | > | ≤ | ≥ |
|---|---|---|---|
| • is less than<br>• is fewer than | • is greater than<br>• is more than | • is less than or equal to<br>• is at most<br>• is no more than | • is greater than or equal to<br>• is at least<br>• is no less than |

Examples: Variable, symbol, number

1. A package must weigh under 80 pounds.

$x < 80$ $\quad 80 > x$

2. You must be 55 or over to live in Leisure Village.

$x \geq 55$

3. A number $x$ is at most -10.

$x \leq -10$

4. Twice a number $y$ is more than $-\frac{5}{2}$.

$2y > -\frac{5}{2}$

5. You must be at least 18 years old to vote.

$x \geq 18$

6. The speed limit is 65 mph.

$x \leq 65$

7. A number $q$ plus 5 is greater than or equal to -7.9.

$q + 5 \geq -7.9$

8. At least 256 students are going on the field trip.

$x \geq 256$

Tell whether -2 is a solution of each inequality.
Write yes or no.

a) $y - 5 \geq -6$

$-2 - 5 \geq -6$

$-7 \geq -6$

NO

b) $-5.5y < 14$

$-5.5(-2) < 14$

$11 < 14$

yes

c) Is 8 a solution of:

$3p > 24$

$3(8) > 24$

$24 > 24$ NO

d) Is 18 a solution of:

$n - 6 < 15$

$18 - 6 < 15$

$12 < 15$

yes

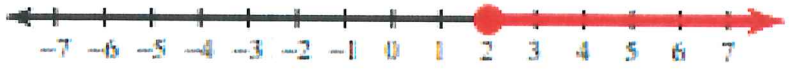
Inequalities have many, many, many, many, many, many, many, many, many, many, many, many, many, many, solutions. The solution of an inequality is any value that makes the inequality true. The set of all solutions of an inequality is called the solution set. The arrow covers all the possible solutions.

Write the inequality that matches the graph:

1.


$x < -1$

2.




$x \geq 2$

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$-2x < 10$ $-6 < -2x$

1. Is $x = 0$ a solution to both inequalities? $0 < 10$ $-6 < 0$ yes
2. Is $x = 4$ a solution to both inequalities? $-8 < 10$ yes $-6 < -8$ no
3. Find all the integer values of x that make BOTH inequalities true.

$-4, -3, -2, -1, 0, 1, 2$

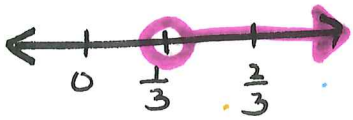
# Graph

a) $n < -4$


b) $12 \geq f$


c) $p \geq 35$


d) $\frac{1}{3} < r$




e) $-0.4 > x$


f) $x \leq \frac{2}{5}$