

# INEQUALITIES NOTES KEY

|  |   |
|--|---|
| <b>Definition:</b><br>A mathematical _____<br>indicating that _____ quantities are _____ | <b>Symbols:</b><br>$<$ ; $>$ ; $\leq$ ; $\geq$<br><small>Less than ; Greater than</small> |
| <b>Examples:</b><br>$5 > 4$<br>$5 \geq x$ $6 < 7$<br>$6 \leq x$                          | <b>Nonexamples:</b>   |

Compare the following using  $<$  or  $>$ .

- the cost to download 10 songs is  $>$  the cost to download 2 songs
- the height of a 1<sup>st</sup> grade student is  $<$  the height of a 6<sup>th</sup> grade student

## > Inequalities

| Symbols  | $<$   | $>$   | $\leq$   | $\geq$   |
|----------|---|---|--|--|
| Words    | <ul style="list-style-type: none"> <li>is less than</li> <li>is fewer than</li> </ul> | <ul style="list-style-type: none"> <li>is greater than</li> <li>is more than</li> </ul> | <ul style="list-style-type: none"> <li>is less than or equal to</li> <li>is at most</li> </ul> | <ul style="list-style-type: none"> <li>is greater than or equal to</li> <li>is at least</li> </ul> |
| Examples | $3 < 5$   | $8 > 4$   | $7 \leq 10$  | $12 \geq 9$  |

Write an inequality for each. Use  $<$  or  $>$ .

3. A number  $n$  is greater than 25

$$n > 25$$

4. A number  $p$  is greater than 40

$$p > 40$$

5. A number  $x$  is less than 16

$$x < 16$$

6. 10 is less than a number  $r$ .

$$r > 10$$

Determine which number is a solution of the inequality.

7. Of the numbers 6, 7 or 8, which is a solution of the inequality  $f + 2 < 9$ ?

$$\begin{aligned} 6 + 2 &= 8 & 8 < 9 & \checkmark \\ 7 + 2 &= 9 & 9 < 9 & \times \\ 8 + 2 &= 10 & 10 < 9 & \times \end{aligned}$$

only 6

8. Of the numbers 8, 9 or 10, which is a solution of the inequality  $n - 3 > 6$ ?

$$\begin{aligned} 8 - 3 &= 5 & 5 > 6 & \times \\ 9 - 3 &= 6 & 6 > 6 & \times \\ 10 - 3 &= 7 & 7 > 6 & \checkmark \end{aligned}$$

Is the given value a solution of the inequality?

9.  $x + 3 > 9$ ,  $x = 4$

$$4 + 3 = 7 > 9 \times$$

NO

10.  $12 \leq 18 - y$ ,  $y = 6$

$$\begin{aligned} 18 - 6 \\ 12 \leq 12 \checkmark \end{aligned}$$

Yes

List 4 numbers that would be a solution for the inequality (one is given for you).

11.  $9 + n < 17$

$n$  could be 1, 4, 5, 11, 3, 7, 1, 0

12.  $c - 10 > 5$

$c$  could be 20, 16, 17, 18, 19, 21, ...

13.  $x - 5 \leq 5$

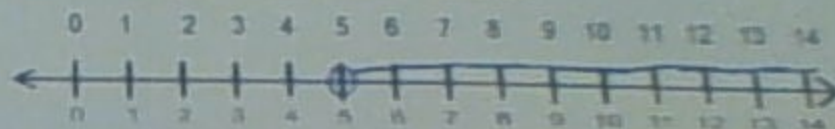
$x$  could be 7, 10, 11, 12, 13, 14, 15

14.  $24 \geq 8n$

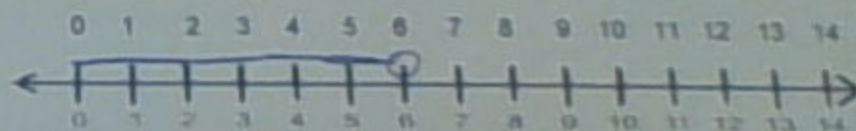
$n$  could be 2, 3, 1, 0

Look at the situations below. Circle the numbers that are possible answers in each situation then graph using points on the number line.

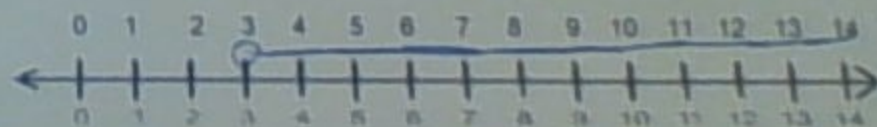
15. Jessica spent more than \$5 at the arcade.



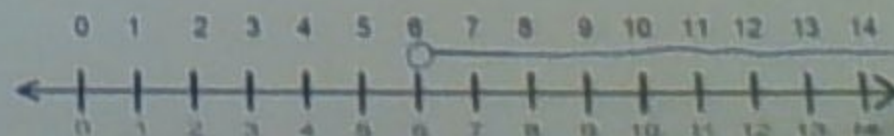
16. John is less than 6 feet tall.



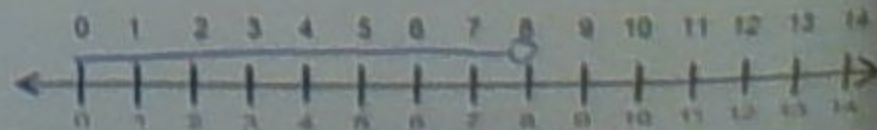
17. She was able to jump more than 3 feet high.



18. It costs more than \$6 to ride the bumper cars.



19. There are less than 8 lemonade stands.



Describe any patterns you see in numbers 15 - 19.