

WORKSHEET 3.10: CLASSIFYING INEQUALITIES AS TRUE OR FALSE

An inequality is a statement that uses an inequality symbol to compare two or more quantities. Inequality symbols follow:

$>$	is greater than	$3 > 0$
$<$	is less than	$6 < 10$
\geq	is greater than or equal to	$5 \geq 3$
\leq	is less than or equal to	$10 \leq 10$

Some inequalities may be combined:

Example: $3 < 4 < 10$ means that 4 is greater than 3 and 4 is less than 10. This is the same as saying 4 is between 3 and 10.

Example: $7 > 6 > 4$ means that 6 is greater than 4 and 6 is less than 7. This is the same as saying 6 is between 7 and 4.

DIRECTIONS: Decide if each inequality is true or false. If it is false, change one number in the inequality to make it true.

1. $3 < -4$

2. $3 \leq -4$

3. $-3 < -2 < -1$

4. $6 \geq 6$

5. $3 \geq 2 \geq 1$

6. $|-4| \leq -4$

7. $0.5 \leq 1 < 2$

8. $[-3]^2 < 9$

9. $-3^2 < 9$

10. $-2 < -1 \leq 2$

11. $-4 < -2^2 < 4$

12. $1 > \left(\frac{1}{3}\right)^2 > 0$



CHALLENGE: Joe said that $-2 \leq 0$ is false because -2 cannot be equal to zero and less than zero. Is he correct? Explain your answer.

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DIRECTIONS: Decide if each inequality is true or false. If it is false, change one number in the inequality to make it true.

1. $3 < -4$

false; $3 < 4$

2. $3 \leq -4$

false; $3 \leq 4$

3. $-3 < -2 < -1$

true

4. $6 \geq 6$

true

5. $3 \geq 2 \geq 1$

true

6. $|-4| \leq -4$

false; $|-4| \leq 4$

7. $0.5 \leq 1 < 2$

true

8. $[-3]^2 < 9$

false; $(-3)^2 < 10$ true

9. $-3^2 < 9$

true

10. $-2 < -1 \leq 2$

true

11. $-4 < -2^2 < 4$

false; $-5 < -2^2 < 4$

12. $1 > \left(\frac{1}{3}\right)^2 > 0$

true



CHALLENGE: Joe said that $-2 \leq 0$ is false because -2 cannot be equal to zero and less than zero. Is he correct? Explain your answer.

Joe is incorrect. He did not understand the meaning of the \leq symbol. He seems to think it means $-2 < 0$ and $-2 = 0$ instead of $-2 < 0$ OR $-2 = 0$.
 $-2 \leq 0$ is a true statement.