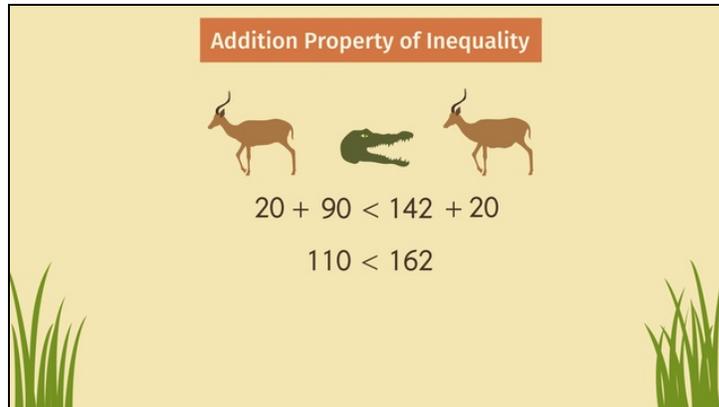




Printable Worksheets from [sofatutor.com](https://www.sofatutor.com)

# Properties of Inequalities



- 1 Identify the inequality symbols you have to use.
- 2 Describe the addition and subtraction properties of inequalities.
- 3 Examine the multiplication and division property of inequalities.
- 4 Determine the corresponding inequality.
- 5 Check the corresponding application of properties of inequalities.
- 6 Identifying the properties of inequalities.
- + with lots of tips, answer keys, and detailed answer explanations for all of the problems.

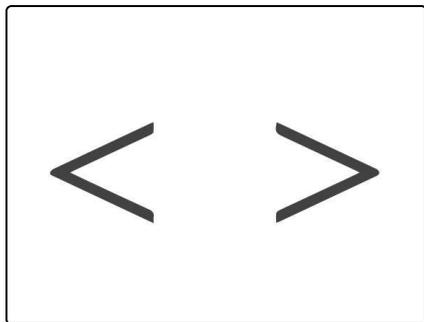


The complete package, including all problems, hints, answers, and detailed answer explanations is available for all [sofatutor.com](https://www.sofatutor.com) subscribers.



## Identify the inequality symbols you have to use.

Fill in the correct inequality symbols.



The left inequality symbol represents a **less than** relationship and the right inequality symbol represents a **greater than** relationship.

- 1 •  $77$  .....<sub>1</sub>  $65$
- 2 •  $-10$  .....<sub>2</sub>  $-5$
- 3 •  $3$  .....<sub>3</sub>  $7$   
•  $3 + 2$  .....<sub>4</sub>  $7 + 2$
- 4 •  $2$  .....<sub>5</sub>  $-7$   
•  $2 + 7$  .....<sub>6</sub>  $-7 + 7$
- 5 •  $13$  .....<sub>7</sub>  $25$   
•  $13 - 12$  .....<sub>8</sub>  $25 - 12$
- 6 •  $10 \cdot 5$  .....<sub>9</sub>  $4 \cdot 5$   
•  $10$  .....<sub>10</sub>  $4$
- 7 •  $55$  .....<sub>11</sub>  $70$   
•  $55 \div (-5)$  .....<sub>12</sub>  $70 \div (-5)$

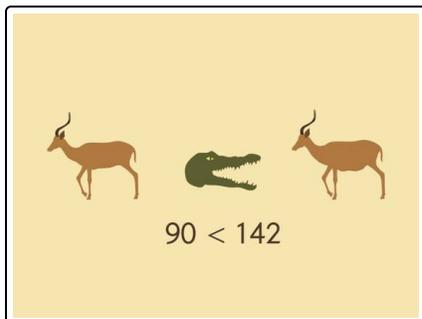


## Hints for solving these problems

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of 6

### Identify the inequality symbols you have to use.

#### Hint #1

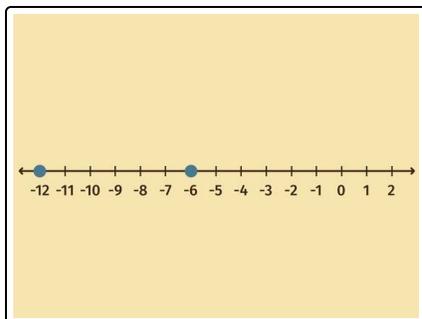


Remember, just like with crocodiles, the inequality symbol opens to, "eats," the bigger number.

#### Hint #2

First, simplify the numbers. Then, read the numbers with the symbol where  $<$  reads "less than," and  $>$  reads "greater than."

#### Hint #3



If you're having difficulty, plot the numbers on a number line to compare.

For example, if we plot  $-6$  and  $-12$  we can see that  $-6 > -12$ .

#### Hint #4

- $<$  "is less than" and can also be read as "is under" or "is fewer than"
- $>$  "is greater than" and can also be read as "is more than," "is over," or "exceeds."



## Answers and detailed answer explanations for these problems

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### Identify the inequality symbols you have to use.

**Answer key:** 1:  $>$  // 2:  $<$  // 3:  $<$  // 4:  $<$  // 5:  $>$  // 6:  $>$  // 7:  $<$  // 8:  $<$  // 9:  $>$  // 10:  $>$  // 11:  $<$  // 12:  $>$

- $77 > 65$ , 77 is greater than 65.
- $-10 < -5$ ,  $-10$  is less than  $-5$ .
- $3 < 7$ , 3 is less than 7.
- $3 + 2 < 7 + 2$  (**simplify**) 5 is less than 9. Notice how when we added the same number to both sides of the inequality we kept the inequality symbol the same because the relationship stayed the same.
- $2 > -7$ , 2 is greater than negative 7.
- $2 + 7 > -7 + 7$  (**simplify**) 9 is greater than 0. Notice again, that we added the same number to both sides of the inequality and the symbol remained the same.
- $13 < 25$ , 13 is less than 25.
- $13 - 12 < 25 - 12$  (**simplify**), 1 is less than 13.
- $10 \cdot 5 > 4 \cdot 5$  (**simplify**), 50 is greater than 20.
- $10 > 4$ , 10 is greater than 4. Notice that when we multiply both sides of the inequality by 5 that the inequality stays the same. (5 is a **positive** number)
- $55 < 70$ , 55 is less than 70.
- $55 \div (-5) > 70 \div (-5)$ , (**simplify**)  $-11$  is greater than  $-14$ . Notice that when we divided both sides by a **negative** 5 the inequality symbol changed directions. Because of the **negative** division the relationship changed between the numbers.

Keep the following properties in mind:

- **Addition Property of Inequalities:** The addition of any number on both sides of an inequality keeps the inequality symbol.
- **Subtraction Property of Inequalities:** The subtraction of any number on both sides of an inequality keeps the inequality symbol.
- **Multiplication or Division Properties of Positive Number Inequalities :** Multiplication or division by any positive number on both sides of an inequality keeps the inequality symbol.
- **Multiplication or Division Properties of Negative Number Inequalities :** Multiplication or division by any negative number on both sides of an inequality changes the inequality symbol.