

# Writing Inequalities

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 24

## Q Quick Review

An **inequality** compares two amounts that may not be equal. The symbol  $<$  means **less than**,  $>$  means **greater than**,  $\leq$  means **less than or equal to**, and  $\geq$  means **greater than or equal to**. Watch for key phrases: “at least” means  $\geq$ , “at most” means  $\leq$ , “more than” means  $>$ , and “fewer than” means  $<$ . For example, “a number  $n$  is at least 10” becomes  $n \geq 10$ . An inequality usually has **many** solutions, not just one.

◊ **Example:** Write an inequality for “a number  $x$  is at most 25.”

⇒ Let’s focus on the phrase “at most.” It means  $x$  can be 25 or anything smaller — it cannot go above 25. The symbol for “less than or equal to” is  $\leq$ , so we write  $x \leq 25$ . A quick sanity check: 25 works (it equals 25), 20 works (it’s less), but 30 does not — exactly what “at most 25” should mean.

**Answer:**  $x \leq 25$

## PRACTICE

Write an inequality for each phrase or situation.

- |   |       |  |       |
|---|-------|--|-------|
| 1. a number $x$ is greater than 7             | _____ | 11. you must be over 13 to ride (age $a$ )     | _____ |
| 2. a number $y$ is less than 12               | _____ | 12. a backpack holds at most 40 pounds ( $w$ ) | _____ |
| 3. a number $n$ is at least 5                 | _____ | 13. a score $s$ is at least 70 to pass         | _____ |
| 4. a number $m$ is at most 20                 | _____ | 14. a number $t$ is greater than $2n$          | _____ |
| 5. a number $k$ is greater than or equal to 0 | _____ | 15. spend less than 25 dollars ( $c$ )         | _____ |
| 6. a number $p$ is fewer than 30              | _____ | 16. a number $x$ added to 4 is less than 10    | _____ |
| 7. a number $w$ is more than 100              | _____ | 17. twice a number $y$ is at least 18          | _____ |
| 8. a number $a$ is no more than 15            | _____ | 18. a number $n$ minus 3 is greater than 5     | _____ |
| 9. a number $b$ is no less than 8             | _____ | 19. a class has more than 24 students ( $s$ )  | _____ |
| 10. a number $x$ is less than or equal to 50  | _____ | 20. a number $m$ divided by 2 is at most 6     | _____ |

## ◆ Word Problems

21. A ride at the fair requires riders to be at least 48 inches tall. Let  $h$  be a rider’s height. Write an inequality for who can ride.  
\_\_\_\_\_
22. An elevator can safely carry no more than 1200 pounds. Let  $w$  be the total weight inside. Write an inequality for a safe load.  
\_\_\_\_\_
23. To win a prize, you need more than 500 points. Let  $p$  be your points. Write an inequality for the winning scores. \_\_\_\_\_
24. A parking garage has fewer than 80 open spaces. Let  $s$  be the number of open spaces. Write an inequality for this situation.  
\_\_\_\_\_



## Answer Keys

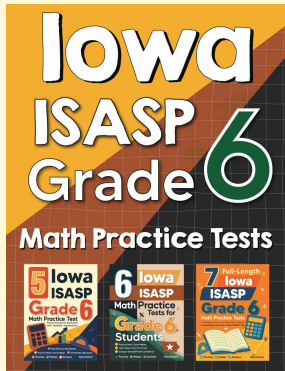
- |   |   |
|---|---|
| <p>1. <math>x &gt; 7</math></p> <p>2. <math>y &lt; 12</math></p> <p>3. <math>n \geq 5</math></p> <p>4. <math>m \leq 20</math></p> <p>5. <math>k \geq 0</math></p> <p>6. <math>p &lt; 30</math></p> <p>7. <math>w &gt; 100</math></p> <p>8. <math>a \leq 15</math></p> <p>9. <math>b \geq 8</math></p> <p>10. <math>x \leq 50</math></p> <p>11. <math>a &gt; 13</math></p> <p>12. <math>w \leq 40</math></p> | <p>13. <math>s \geq 70</math></p> <p>14. <math>t &gt; 2n</math></p> <p>15. <math>c &lt; 25</math></p> <p>16. <math>x + 4 &lt; 10</math></p> <p>17. <math>2y \geq 18</math></p> <p>18. <math>n - 3 &gt; 5</math></p> <p>19. <math>s &gt; 24</math></p> <p>20. <math>\frac{m}{2} \leq 6</math></p> <p>21. <math>h \geq 48</math></p> <p>22. <math>w \leq 1200</math></p> <p>23. <math>p &gt; 500</math></p> <p>24. <math>s &lt; 80</math></p> |
|---|---|

### Step-by-Step Explanations

- |   |   |
|---|---|
| <p>1. "Greater than" is the symbol <math>&gt;</math>, so <math>x &gt; 7</math>.</p> <p>2. "Less than" is the symbol <math>&lt;</math>, so <math>y &lt; 12</math>.</p> <p>3. "At least" means it can equal 5 or be more: <math>n \geq 5</math>.</p> <p>4. "At most" means it can equal 20 or be less: <math>m \leq 20</math>.</p> <p>5. "Greater than or equal to" is the symbol <math>\geq</math>, so <math>k \geq 0</math>.</p> <p>6. "Fewer than" means strictly less: <math>p &lt; 30</math>.</p> <p>7. "More than" means strictly greater: <math>w &gt; 100</math>.</p> <p>8. "No more than" means it cannot exceed 15: <math>a \leq 15</math>.</p> <p>9. "No less than" means it cannot drop below 8: <math>b \geq 8</math>.</p> <p>10. "Less than or equal to" is the symbol <math>\leq</math>, so <math>x \leq 50</math>.</p> <p>11. "Over 13" means strictly greater than 13: <math>a &gt; 13</math>.</p> <p>12. "At most 40" means 40 or less: <math>w \leq 40</math>.</p> | <p>13. "At least 70" means 70 or higher: <math>s \geq 70</math>.</p> <p>14. "Greater than <math>2n</math>" uses the symbol <math>&gt;</math>: <math>t &gt; 2n</math>.</p> <p>15. "Less than 25" means strictly under 25: <math>c &lt; 25</math>.</p> <p>16. The expression <math>x + 4</math> is less than 10: <math>x + 4 &lt; 10</math>.</p> <p>17. "Twice <math>y</math>" is <math>2y</math>, and "at least 18" is <math>\geq 18</math>: <math>2y \geq 18</math>.</p> <p>18. The expression <math>n - 3</math> is greater than 5: <math>n - 3 &gt; 5</math>.</p> <p>19. "More than 24" means strictly greater: <math>s &gt; 24</math>.</p> <p>20. The expression <math>\frac{m}{2}</math> is at most 6: <math>\frac{m}{2} \leq 6</math>.</p> <p>21. "At least 48 inches" means a height of 48 or more, so <math>h \geq 48</math>.</p> <p>22. "No more than 1200" means 1200 pounds or less, so <math>w \leq 1200</math>.</p> <p>23. "More than 500" means strictly above 500, so <math>p &gt; 500</math>.</p> <p>24. "Fewer than 80" means strictly less than 80, so <math>s &lt; 80</math>.</p> |
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