

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.

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|---|-------|--|-------|
| 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

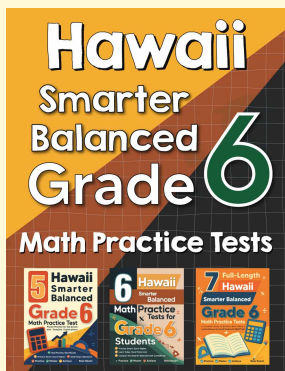
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|-----------------|--------------------------|
| 1. $x > 7$ | 13. $s \geq 70$ |
| 2. $y < 12$ | 14. $t > 2n$ |
| 3. $n \geq 5$ | 15. $c < 25$ |
| 4. $m \leq 20$ | 16. $x + 4 < 10$ |
| 5. $k \geq 0$ | 17. $2y \geq 18$ |
| 6. $p < 30$ | 18. $n - 3 >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

Step-by-Step Explanations

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