Writing Inequalities

Name: _____	Date: _____	Score: _____ / 24

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

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

Step-by-Step Explanations

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

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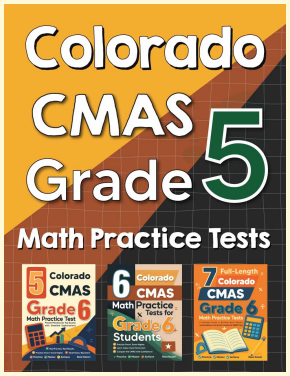

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