

# Math Worksheet for 6th Grade

## Intro to inequalities with variables

### Answers

1. Yes ( $3 + 4 = 7 < 10$ ).
2. Yes ( $2 \cdot 6 = 12 > 12$ ).
3. Yes ( $-1 - 5 = -6 < -6$ ).
4. Yes ( $-2 \cdot 0 = 0 > -3$ ).
5. Yes ( $3 \cdot 4 + 1 = 13 < 13$ ).
6. Yes ( $\frac{7}{2} = 3.5 < 4$ ).
7. Yes ( $8 - 9 = -1 < -2$ ).
8. No ( $5 \cdot 2 = 10$ , and 10 is not  $> 10$ ).
9. Yes ( $-(-3) = 3 < 4$ ).
10. Yes ( $4 \cdot 5 = 20 < 20$ ).
11. No ( $3 + 7 = 10$  is not  $> 11$ ).
12. No ( $2 \cdot 10 - 5 = 15$  is not  $< 15$ ).
13. Yes ( $-3 \cdot 1 = -3 < -3$ ).
14. Yes ( $\frac{0}{3} = 0 < 0$ ).
15. Yes ( $2 \cdot (-4) + 3 = -5 < 0$ ).
16. Yes ( $9 - 4 = 5 < 5$ ).
17. Yes ( $\frac{6}{2} = 3 < 3$ ).
18. Yes ( $-2 + 5 = 3 > 2$ ).
19. No ( $7 - 1 = 6$  is not  $> 5$ ).
20. Yes ( $3(2 + 1) = 9 < 12$ ).
21.  $x > 2$ : open circle at 2, shade to the right.
22.  $x < -1$ : closed (filled) circle at -1, shade to the left.
23.  $x > 0$ : closed circle at 0, shade to the right.
24.  $x < -3$ : open circle at -3, shade to the left.
25.  $x > 5$ : closed circle at 5, shade to the right.
26.  $x < 4$ : closed circle at 4, shade to the left.
27.  $-2 < x \leq 3$ : open circle at -2, closed at 3, shade the segment between them (including 3).
28.  $-4 \leq x < 1$ : closed circle at -4, open circle at 1, shade between.
29. Five integers  $> -2$ : -1, 0, 1, 2, 3.
30. Five integers  $\leq 2$ : 2, 1, 0, -1, -2.
31. For  $x \leq -3$ : filled at -3 and 0 are included; -5 is not.

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

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

Teacher: \_\_\_\_\_

Parent Sign: \_\_\_\_\_

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32. For  $x < 1$ : open circle at 1 and shade to the left.
33.  $2x + 1 \geq 7 \rightarrow 2x \geq 6 \rightarrow x \geq 3$ . Graph: closed circle at 3, shade left.
34.  $3x - 2 > 4 \rightarrow 3x > 6 \rightarrow x > 2$ . Graph: open circle at 2, shade right.
35.  $\frac{x}{2} + 3 \leq 5 \rightarrow \frac{x}{2} \leq 2 \rightarrow x \leq 4$ . Graph: closed circle at 4, shade right.
36.  $-x + 4 < 2 \rightarrow -x < -2 \rightarrow x > 2$  (flip sign). Graph: open circle at 2, shade right.
37.  $4x \geq 8 \rightarrow x \geq 2$ . Graph: closed circle at 2, shade left.
38.  $5 - x \leq 3 \rightarrow -x \leq -2 \rightarrow x \geq 2$ . Graph: closed circle at 2, shade left.
39.  $2(x - 1) > 4 \rightarrow 2x - 2 > 4 \rightarrow 2x > 6 \rightarrow x > 3$ . Graph: open circle at 3, shade right.
40.  $x + 6 < 10 \rightarrow x < 4$ . Graph: open circle at 4, shade left.
41. Inequality:  $18 + x \leq 50 \rightarrow x \leq 32$ . Minimum  $x = \$32$ .
42. Inequality:  $22 + y \leq 28 \rightarrow y \leq 6$ . At most 6 more students.
43. Inequality:  $5p \geq 12 \rightarrow p \geq \frac{12}{5} = 2.4 \rightarrow$  smallest whole  $p = 3$  packs.
44. Inequality:  $65 + m \geq 80 \rightarrow m \geq 15$ . She needs at least 15 more points.
45. Inequality:  $a \geq 12$ . A 10-year-old is not allowed ( $10 \geq 12$  is false). A 14-year-old is allowed ( $14 \geq 12$  is true).
46. Inequality:  $47 + w \leq 50 \rightarrow w \leq 3$ . At most 3 kg more.
47. Inequality:  $1 + s < 3 \rightarrow s < 2$ . You can add less than 2 cups more (up to but not including 2 cups).
48. Inequality:  $88 + c \leq 120 \rightarrow c \leq 32$ . At most 32 more cars.
49. Inequality:  $26 + p \leq 40 \rightarrow p \leq 14$ . At most 14 more people.
50. Inequality:  $n > 3$ . If a customer buys 4 items:  $4 > 3$  is true, so they are eligible.