

# Solving Inequalities: math practice, Grade 7 – download the PDF

22 problems graded by difficulty (★ easy, ★★ medium, ★★★ hard). Try first, without looking at the solutions!

## 1 Words to symbols



Write each statement as an inequality.

- a.  $y$  is less than 9.
- b.  $n$  is at most 12.
- c.  $p$  is more than 3.
- d.  $t$  is no less than  $-2$ .

## 2 True or false?



Decide whether each statement is true or false.

- a.  $3 < 7$
- b.  $-4 > -1$
- c.  $-5 \leq -5$
- d.  $0 > -2$
- e.  $-8 < -9$

### 3 Is it a solution?



For the inequality  $x + 4 > 10$ , decide whether each value is a solution: 5, 6, 7, 12.

### 4 One-step with addition



Solve each inequality.

a.  $x + 5 > 12$

b.  $x - 3 \leq 4$

c.  $6 \leq x + 1$

### 5 One-step with multiplication



Solve each inequality.

a.  $3x < 18$

b.  $\frac{x}{4} \geq 2$

c.  $5x > -20$

### 6 Graph it

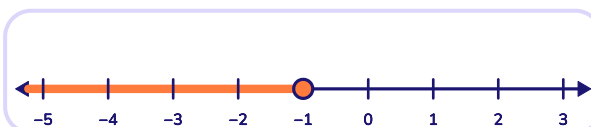


Graph the solution set of  $x > 2$  on a number line. Explain your choice of circle.

### 7 Read the graph



Write the inequality shown by this graph, then name two solutions and one number that is not a solution.



8

**Two-step inequalities**

Solve each inequality.

a.  $2x + 3 > 11$

b.  $5x - 7 \leq 18$

c.  $4x + 1 < -11$

9

**Dividing by a negative**

Solve each inequality and flip the sign when needed.

a.  $-2x < 10$

b.  $-3x \geq 12$

c.  $\frac{x}{-5} > 2$

10

**Bike rental budget**

A bike shop charges a 6-dollar fee plus 2.50 dollars per hour. Lena has 21 dollars. Write and solve an inequality for the number of hours  $h$  she can rent the bike, and interpret the answer.

11

**Find the mistake**

Marco solved  $-4x > 20$  and wrote  $x > -5$ . Test his answer with  $x = 0$  and with  $x = -10$ , find his error, and give the correct solution set.

**12 Negative coefficient first**

Solve each inequality.

a.  $7 - 2x > 1$

b.  $10 - x \leq 4$

**13 Elevator limit**

A freight elevator can carry at most 1,200 pounds (about 544 kg). A crate weighs 150 pounds and each box weighs 45 pounds. Write an inequality for the number of boxes  $n$  that can ride with the crate, solve it, and state the greatest number of boxes.

**14 Saving for a laptop**

Mia has 85 dollars and saves 12 dollars each week. She wants at least 200 dollars for a laptop. After how many whole weeks  $w$  can she buy it?

**15 Warming a pool**

A pool is at 70°F (about 21°C) and a heater raises it by 2°F each hour. The water must be warmer than 78°F. Write and solve an inequality for the time  $t$  in hours, then graph it.

**16 Distribute first**

Solve each inequality.

a.  $3(x - 2) + 5 < 20$

b.  $2(4 - x) \geq 14$

**17 Fractions in inequalities**

★★★

Solve each inequality.

a.  $\frac{2}{3}x - 4 \geq 6$

b.  $-\frac{1}{2}x + 3 < -1$

**18 Variables on both sides**

★★★

Solve each inequality.

a.  $5x + 2 > 3x + 10$

b.  $7x - 4 \leq 4x + 11$

**19 Two conditions at once**

★★★

A whole number  $x$  satisfies both  $2x - 1 > 5$  and  $x < 8$ . Solve the first inequality, graph the combined solutions on a number line, and list all possible whole numbers.

**20 Food truck profit**

★★★

A food truck pays 240 dollars per day to operate. Each meal sells for 8 dollars and costs 3 dollars in ingredients. Write an inequality for the number of meals  $n$  needed to make a profit (more than 0), solve it, and state the smallest number of meals.

**21 Draining a tank**

★★★

A tank holds 90 gallons (about 340 liters) and drains at 6 gallons per minute. After  $m$  minutes, for how long must it drain so that fewer than 30 gallons remain? Solve and interpret.

22

**Always, sometimes, never**

For each inequality, say whether it is true for *all* numbers, *some* numbers, or *no* numbers, and explain.

a.  $x + 1 > x$

b.  $x > x + 1$

c.  $2x > x$

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