

Is the given value a solution for the inequality? Yes or no. Prove your answer.

1. $t + 12 > 70$; $t = 55$ No

$55 + 12 > 70$
 $67 > 70$
 No!

2. $12p \leq 76$; $p = 6$ Yes

$12 \cdot 6 \leq 76$
 $72 \leq 76$
 Yes!

3. $-3m - 7 > -16$; $m = 4$ No

$-3(4) - 7 > -16$
 $-12 - 7 > -16$
 $-19 > -16$
 No!

4. $\frac{w}{5} + 4 \geq 2$; $w = -11$ No

$\frac{-11}{5} + 4 \geq 2$
 $-2.2 + 4 \geq 2$
 $-1.8 \geq 2$
 No!

Write an inequality for the given situation AND list at least 3 possible solutions.

5. A checking-account balance is no more than \$500.

$x \leq \$500$ Possible Solutions
 \$499; \$62; \$3
 Answers will vary

6. A maximum ceiling height of 8 feet was required in the new buildings.

$x \leq 8 \text{ ft.}$ Possible Solutions
 8ft; 6ft; 5.5ft.
 Answers will vary

7. A minimum number of 12 participants is required to hold a bike rally.

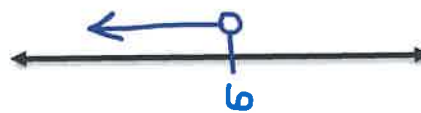
$x \geq 12 \text{ participants}$ Possible Solutions
 13; 200; 1000
 Answers will vary

Represent each inequality on the number line.

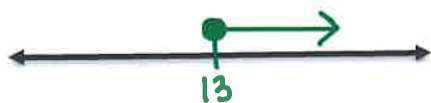
8. $x > 15$



9. $s < 6$



10. $b \geq 13$

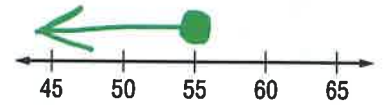


11. $m \leq -7$



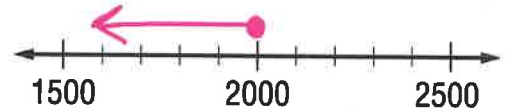
12. The speed limit on most state roads is 55 miles per hour. **Write and graph an inequality** to describe the legal speed on state roads.

$$x \leq 55 \text{ mph}$$



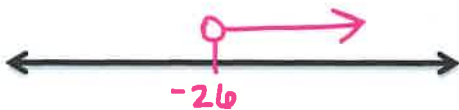
13. One forklift can raise a maximum of 2,000 kilograms. **Write and graph an inequality** to describe the number of kilograms the forklift can raise.

$$x \leq 2000 \text{ kg}$$



Solve and graph the following inequalities.

14. $-2 \cdot \frac{b}{-2} < 13 \cdot -2$ $\sqrt{-24} < 13$
 $b > -26$ $12 < 13$ ☺



15. $\frac{3n}{3} < \frac{21}{3}$ $\sqrt{3 \cdot 6} < 21$
 $n < 7$ $18 < 21$ ☺



16. $-13b + 13 \leq -39$ $\sqrt{-13 \cdot 5 + 5} \leq -39$
 $-13b \leq -52$ $-65 + 5 \leq -39$
 $b \geq 4$ $-60 \leq -39$ ☺



17. $3w + 18 \geq 30$ $\sqrt{3 \cdot 5 + 18} \geq 30$
 $3w \geq 12$ $15 + 18 \geq 30$
 $w \geq 4$ $33 \geq 30$ ☺



18. $-\frac{z}{8} + 4 \geq -3$ $\sqrt{\frac{16}{8} + 4} \geq -3$
 $-\frac{z}{8} \geq -7$ $-2 + 4 \geq -3$
 $z \leq 56$ $-2 \geq -3$ ☺



19. $4y + 5 < 13$ $\sqrt{4 \cdot 0 + 5} < 13$
 $4y < 8$ $0 + 5 < 13$
 $y < 2$ $5 < 13$ ☺



* Flip the sign when you \div or \times by a negative.

20. To qualify for a store discount, Caroline's soccer team must spend at least \$480 for new jerseys. The team needs 15 jerseys. **Write, solve and graph an inequality** to represent how much the team should spend on each jersey to qualify for the discount.

$$15j \geq 480$$

$$\frac{15j}{15} \geq \frac{480}{15}$$

$$j \geq \$32$$

$$\sqrt{15 \cdot 33 \geq 480}$$

$$495 \geq 480$$

😊



21. Julia has \$80. She wants to purchase a nail paint set for \$16 and earrings. She spends the rest of the money on earrings. Each pair of earrings costs \$8. **Write and solve an inequality** for the number of pairs of earrings she can purchase.

$$16 + 8e \leq 80$$

$$16 + 8e \leq 80$$

$$8e \leq 64$$

$$\frac{8e}{8} \leq \frac{64}{8}$$

$$e \leq 8 \text{ pair of earrings}$$

$$\sqrt{16 + 8 \cdot 7 \leq 80}$$

$$16 + 56 \leq 80$$

$$72 \leq 80$$

😊



22. Erin has \$50. She wants to purchase a cell phone (\$20) and spend the rest on music CDs. Each music CD costs \$6. **Write and solve an inequality** for the number of music CDs she can purchase.

$$20 + 6m \leq 50$$

$$20 + 6m \leq 50$$

$$-20 \quad -20$$

$$\frac{6m}{6} \leq \frac{30}{6}$$

$$m \leq 5 \text{ cds}$$

$$\sqrt{20 + 6 \cdot 4 \leq 50}$$

$$20 + 24 \leq 50$$

$$44 \leq 50$$

😊



23. Which algebraic inequality represents the phrase "9 decreased by twice a number is no more than 16?"

- A $2n + 9 > 16$
- B $2n - 9 < 16$
- C $9 - 2n \leq 16$
- D $9 - 2n \geq 16$

