

To which sets of numbers does the number belong? rational, integer, whole, natural, or irrational?

\_\_\_ 1. -17

\_\_\_ 2.  $-\frac{2}{15}$

\_\_\_ 3. An irrational number can always, sometimes, or never be expressed as a quotient of integers.

Insert  $<$ ,  $>$ , or  $=$  to make the sentence true.

\_\_\_ 4.  $\frac{1}{3}$   $\blacksquare$   $-\frac{2}{5}$

\_\_\_ 5.  $20.28$   $\blacksquare$   $\sqrt{256}$

\_\_\_ 6.  $-|-16|$   $\blacksquare$   $|5|$

Find the opposite and the reciprocal of the number.

\_\_\_ 7. -1.74

Name the property of real numbers illustrated by the equation.

\_\_\_ 8.  $2 \cdot (\sqrt{8} \cdot 7) = (2 \cdot \sqrt{8}) \cdot 7$

\_\_\_ 9.  $\pi \cdot 6 = 6 \cdot \pi$

Evaluate the expression for the given value of the variable(s).

\_\_\_ 10.  $\frac{4(3h - 6)}{1 + h}; h = -2$

\_\_\_ 11.  $|4b - 4| + |3 - b^2| + 2b^3; b = 2$

\_\_\_ 12.  $-x^2 - 4x - 4; x = -3$

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\_\_\_ 13. The expression  $-16t^2 + 1800$  models the height of an object  $t$  seconds after it has been dropped from a height of 1800 feet. Find the height of an object after falling for 4.8 seconds.

**Simplify by combining like terms.**

\_\_\_ 14.  $-3(-4y + 3) + 7y$

\_\_\_ 15.  $\frac{x}{2} + \frac{x^2}{3} - \frac{x}{5} - \frac{x^2}{4}$

\_\_\_ 16.  $3y + 20 = 3 + 2y$

\_\_\_ 17.  $\frac{1}{4}r - \frac{1}{16} + \frac{1}{2}r = \frac{1}{2} + r$

\_\_\_ 18.  $|3x + 5| = 1$

\_\_\_ 19.  $3|3x + 4| - 7 = 5$

**Solve for  $x$ . State any restrictions on the variables.**

\_\_\_ 20.  $ax + bx + 9 = 7$

\_\_\_ 21.  $a(bx + 2) = cx - 12$

- \_\_\_ 22. Two cars leave Denver at the same time and travel in opposite directions. One car travels 10 mi/h faster than the other car. The cars are 500 mi apart in 5 h. How fast is each car traveling?

**Solve the inequality. Graph the solution set.**

\_\_\_ 23.  $-4k + 5 \leq 21$

\_\_\_ 24.  
 $2(4y - 5) < -10$

\_\_\_ 25.  $2(2m - 5) - 6 > -36$

\_\_\_ 26.  $4(3b - 5) < -31 + 12b$

**Solve the compound inequality. Graph the solution set.**

\_\_\_ 27.  $5x + 10 \geq 10$  and  $7x - 7 \leq 14$

\_\_\_ 28.  $4x - 5 < -17$  or  $5x + 6 > 31$

\_\_\_ 29.  $-2 \leq 2x - 4 < 4$

- \_\_\_ 30. The perimeter of a square garden is to be at least 22 feet but not more than 36 feet. Find all possible values for the length of its sides.

**Solve the equation. Check for extraneous solutions.**

\_\_\_ 31.  $4|4 - 3x| = 4x + 6$

**Solve the inequality. Graph the solution.**

\_\_\_ 32.  $|2x + 3| \geq 19$

\_\_\_ 33.  $|2x + 10| < 26$