

READY, SET, GO!

Name

Period

Date

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**READY**

Topic: Pythagorean theorem

An easy way to check if a triangle contains a  $90^\circ$  angle (also called a right triangle) is to use the Pythagorean theorem. You may remember the theorem as  $a^2 + b^2 = c^2$ , where  $c$  is the length of the longest side (the hypotenuse) and  $a$  and  $b$  are the lengths of the two shorter sides.

Identify which lengths make a right triangle. Example: Given 5, 12, 13

Replace  $a$ ,  $b$ , and  $c$  with the numbers ( $5^2 + 12^2 = 13^2$ )  $\rightarrow$  ( $25 + 144 = 169$ )  $\rightarrow$  ( $169 = 169$ )

Since  $169 = 169$ , a triangle with side lengths of 5, 12, and 13 must be a right triangle.

**Do these numbers represent the sides of a right triangle? Write YES in the boxes that apply.**

1. 9, 40, 41	2. 3, 4, 5	3. 6, 7, 8	4. 20, 21, 29
5. 9, 12, 15	6. 10, 11, 15	7. 6, 8, 10	8. 8, 15, 17

**SET**

Topic: Solving systems of equations using substitution.

**Solve each system of equations using substitution. Check your solution in both equations.**

In this problem, substitute  $(x + 1)$  in place of  $y$  in the second equation.

$$9. \begin{cases} y = x + 1 \\ x + 2y = 8 \end{cases}$$

In this problem, substitute  $(3 + y)$  in place of  $x$  in the first equation.

$$10. \begin{cases} y + 2x = 7 \\ x = 3 + y \end{cases}$$

$$11. \begin{cases} x = 9 + 2y \\ 3x + 5y = 20 \end{cases}$$

$$12. \begin{cases} y = 2x - 4 \\ 3y + 21x = 15 \end{cases}$$

13. 
$$\begin{cases} x = -1 - 2y \\ 3x + 5y = -1 \end{cases}$$

14. 
$$\begin{cases} y = 2x - 3 \\ x + y = -5 \end{cases}$$

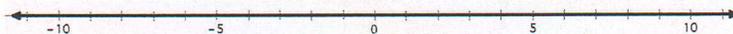
15. Tickets to a concert cost \$10 in advance and \$15 at the door. If 120 tickets were sold for a total of \$1390, how many of the tickets were purchased in advance?

**GO**

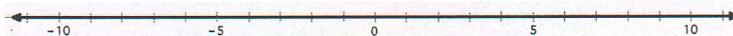
Topic: Solving one variable inequalities

Solve the following inequalities. Write the solution set in *interval notation* and graph the solution set on a number line.

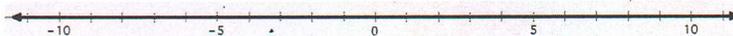
16.  $4x + 10 < 2x + 14$



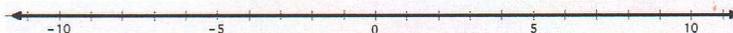
17.  $2x + 6 > 55 - 5x$



18.  $2\left(\frac{x}{4} + 3\right) > 6(x - 1)$



19.  $9x + 4 \leq -2\left(x + \frac{1}{2}\right)$



Solve each inequality. Give the solution in *set builder notation* (e.g.  $\{x \in \mathbb{R} | x < 2\}$ ).

20.  $-\frac{x}{3} > -\frac{10}{9}$

21.  $5x > 8x + 27$

22.  $\frac{x}{4} > \frac{5}{4}$

23.  $3x - 7 \geq 3(x - 7)$

24.  $2x < 7x - 36$

25.  $5 - x < 9 + x$