READY, SET, GO! **Name** **Period** **Date**

READY

Topic: Pythagorean theorem

An easy way to check if a triangle contains a 90° 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. $\begin{cases} y = 2x - 3 \\ x + y = -5 \end{cases}$

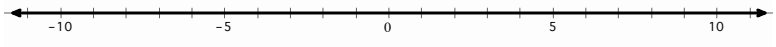
15. Tickets to a concert cost \$10 in advance and \$15 at the door. If 120 tickets were sold for a total of \$1390, how many of the tickets were purchased in advance?

GO

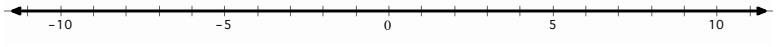
Topic: Solving one variable inequalities

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

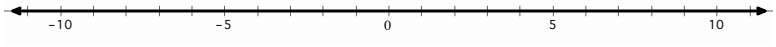
16. $4x + 10 < 2x + 14$



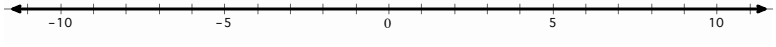
17. $2x + 6 > 55 - 5x$



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



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



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. $5 - x < 9 + x$