Geometry Gap Analysis   Notes   Name_____

Algebra Properties of Equality for Real Numbers A.REI.1

Reflexive Property of Equality
For every number a, $a = a$.

Symmetric Property of Equality
If $a = b$, then $b = a$.

Transitive Property of Equality
If $a = b$, and $b = c$, then $a = c$.

Addition & Subtraction Properties of Equality
If $a = b$, then $a \pm c = b \pm c$.

Multiplication & Division Properties of Equality
If $a = b$, then $a \bullet c = b \bullet c$, and $a/c = b/c$.

Distributive Property of Equality
$a(b + c) = ab + ac$.

Substitution Property of Equality
If $a = b$, then a may be replaced by b in an equation.
This includes COMBINING LIKE TERMS.

Examples: Tell which property justifies each conclusion.

1. Given: $6x + 2 = 12$
   Conclusion: $6x = 10$

2. Given: $45 = x$
   Conclusion: $x = 45$

3. Given: $3x - 7x = 20$
   Conclusion: $-4x = 20$

4. Given: $4(q - x) = r$
   Conclusion: $4q - 4x = r$

5.   If $a = r$ and $r = 60°$,
       then $a = 60°$.

6.   If $2x + 3x = 10$,
       then $5x = 10$

Geometry Gap Analysis

Name_____

1. Complete the proof
   Given: $6(6x + 6) - 5 = 1 + 6x$
   Prove: $x = -1$

Statement

Reason

1. _____

1. _____

2. _____

2. _____

3. _____

3. _____

4. _____

4. _____

5. _____

5. _____

6. _____

6. _____

Solving Linear Equations & Evaluating Expressions A.REI.3

7. $DO = 4x + 8$
   $OG = 20$

   a. If $DO = OG$, find the value of x.

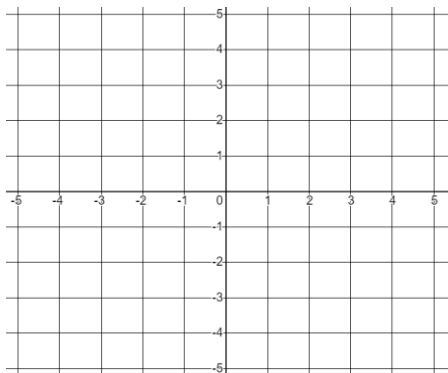   b. Find DO.

8. $DO = 3x + 4$
   $OG = 20$
   $DG = 5x + 18$

   a. If $DO + OG = DG$, find the value of x.
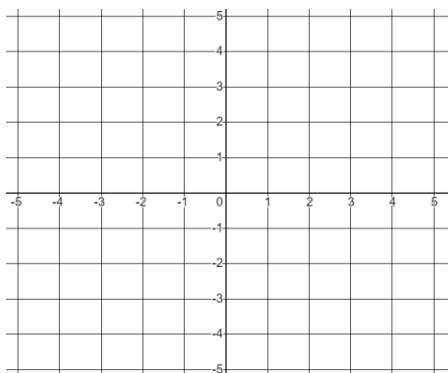
   b. Find DO

Graphing Lines A.CED.1, A.CED.2

Graph each line.

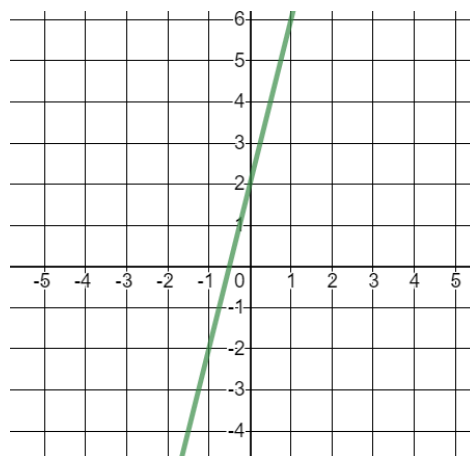9. $y = -\frac{3}{4}x + 5$

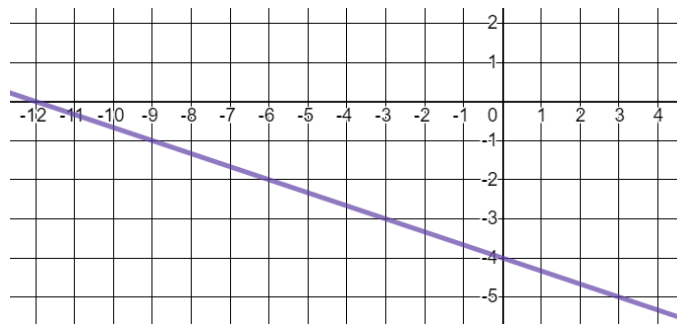10. $y = \frac{1}{3}x - 2$
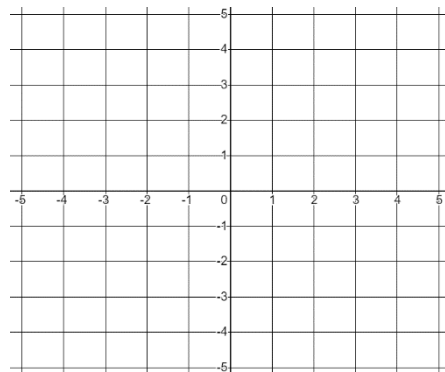

Given the graph, write the equation.

11. _____

12. _____

13. George has 5 used Q-tips to sell and 10 used tissues to sell. He needs to sell these items to purchase a $30 cat hat.

a. Write an equation, with x = price per Q-tip and y = price per tissue, that George could use represent all the prices he charges per item to make enough money to buy a cat hat.
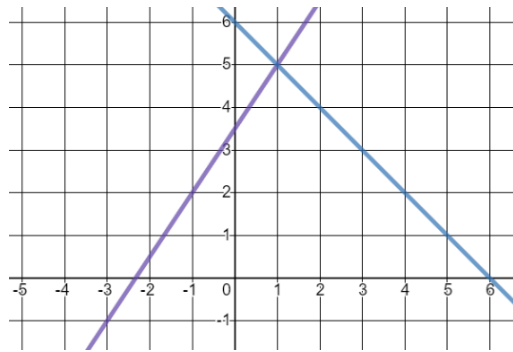
b. Graph the equation you made in *part a*
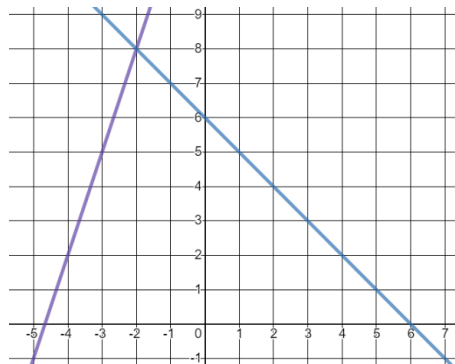
Systems of Equations A.REI.5 A.REI.6

Find the solution to the system of equations graphed.

Solve each system of equations.

14. Solution = _____

$$3x - 2y = -7$$
$$y = -x + 6$$

16. Solution = _____

$$-2x - 3y = -7$$
$$y = 6x - 11$$

15. Solution = _____

$$y = 3x + 14$$
$$y = -x + 6$$

17. Solution = _____

$$-4x - 2y = -12$$
$$4x + 8y = -24$$

Super George fell from the top of a building into the ocean.

18. While witnessing a gerbil rob a cockroach, Super George decides to rescue the gerbil in distress. Super George flies for x feet until he becomes too tired to flap his arms. He walks the remaining y feet. The sum of two distances is 12 feet. The difference of the flying distance and walking distance is 4.

    a. Make a system of equations to represent this situation.

    b. Find the value of the two distances.

Factoring F.IF.8

Factor each expression.

19. $x^2 + 8x + 7$

20. $5x^2 - 45$

21. $2x^2 + 2x - 4$

Solve each equation by factoring.

22. $x^2 - x - 6 = 0$

23. $x^2 + 5x - 35 = 3x$

Projectile Vomit.

24. The height in feet of George's projectile vomit is modeled by the equation $H(t) = -t^2 + 10t + 5$, where t stands for the number of seconds after George ate his toe jam.

   a. At what time(s) is the vomit 14 feet high?