

PACKET FOR STUDENTS ENTERING ALGEBRA

June 2016

Dear Parents/Guardians:

As your children's 7th grade school year comes to an end, thoughts of sleeping late and spending time with friends are, no doubt, on their minds. We hope your children will have a fun-filled and relaxing summer. We also hope they will spend just a little time reviewing and maintaining the math skills they acquired this year.

To ensure that your children have a successful start in their Algebra class, we have prepared a Summer Math Assignment that will be completed by students prior to the start of classes in September. They will be assessed on the concepts in the packet at the start of the school year. All the objectives included in the assignment have been taught to your children in 7th grade.

Please encourage your child to work on the assignment consistently throughout the summer. Thank you for your help and cooperation.

Have a wonderful summer!

Mrs. Garrido & Mrs. Delia

Solving Equations

Solve each equation for x. Check your answer.

a) $5x - 6 = -7x + 24$

b) $-4x = 4 + 8x$

c) $7x + 8 - 9x = 22$

d) $31 + 14x = 7x - 18$

e) $18 = 2x - 7x + 7$

f) $8(6 - x) = 2x - 2$

g) $9 - 7x = -26$

h) $8 + 4x - 12 = -4$

i) $9 + \frac{x}{5} = -3$

j) $\frac{2}{3}x - 4 = 12$

- a) You pay \$100 to rent a moving van and an additional \$12 for each hour it is used. Write an equation for the total cost for any number of hours the van is used.

equation: _____

How long did you rent the van if you paid \$268?

- b) A 4-foot tall tree is purchased. It will grow about 18 inches per month. Write an equation for the total height after any number of months.

equation: _____

How tall will the tree be in 2 years if it continues to grow at this rate?

- c) You pay \$100 to get t-shirts made. You charge \$14 per shirt. Write an equation for the profit after selling any number of t-shirts.

equation: _____

How many t-shirts did you sell if you made \$180?

- d) You pay a \$10 sign-up fee and then \$6 every 6 months to join a book club. Write an equation for the cost for being a member after any number of years.

equation: _____

What is the cost after being a member of the club for 5 years?

Linear Functions

1. Circle the equation below that represents the standard form of a linear function.

$ax - by = c$

$y = mx + b$

$x + y = c$

$ax + by = c$

2. Circle the equation below that represents a line parallel to $y = -6x + 7$

$y = \frac{1}{6}x + 5$

$y = -\frac{1}{6}x + 1$

$y = -6x + 7$

$y = -6x - 1$

3. Write an equation of a line that is perpendicular to $y = -2x - 2$.

4. Solve the following equations for y .

a.) $2x + y = 5$

b.) $x - 3y = -6$

c.) $-3x + 2y = 14$

5. The slope of all horizontal lines is _____.

6. Circle the equation that represents a horizontal line.

$y = x$

$y = -9$

$y = -5x$

$x = -4$

7. The slope of all vertical lines is _____.

8. Circle the equation that represents a vertical line.

$y = -x$

$y = -1$

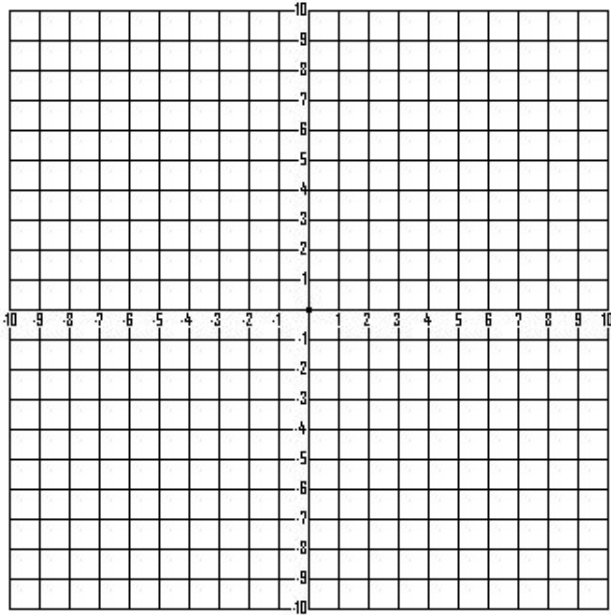
$y = -\frac{2}{3}x$

$x = 5$

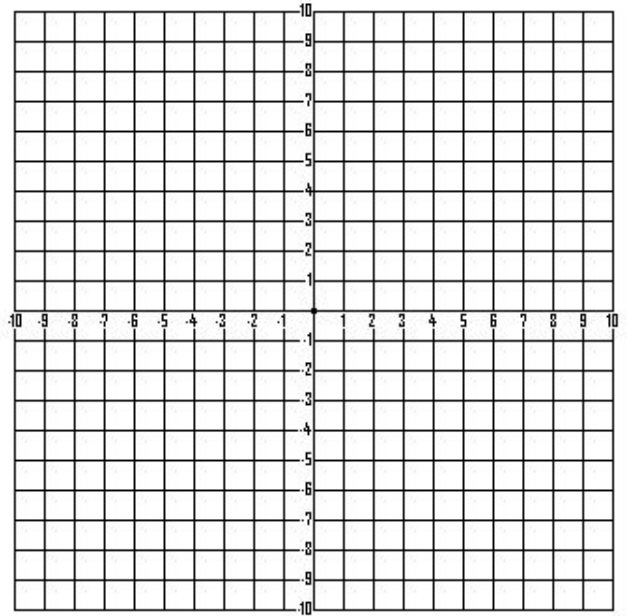
Graphing Linear Equations

Graph each linear equation on the graphs below.

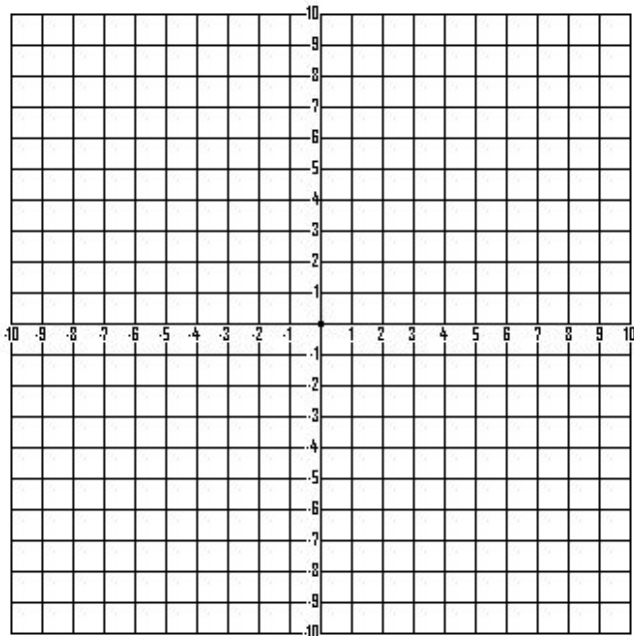
a) $y = 2x - 4$



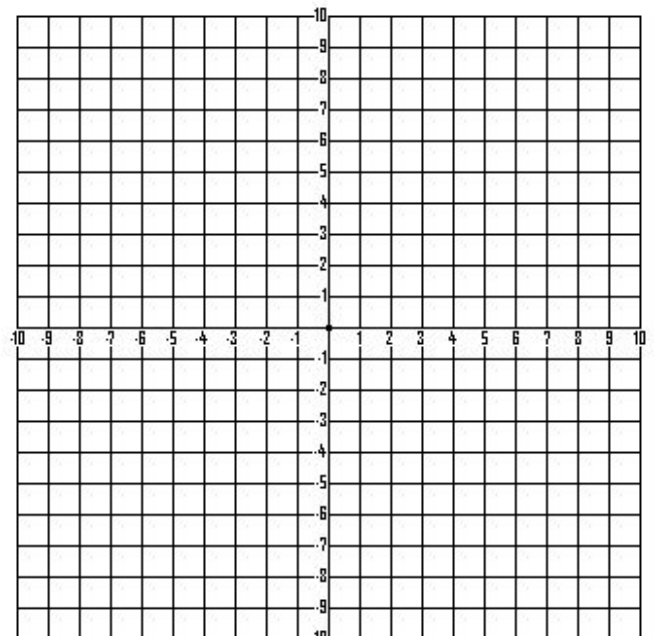
b) $y = -\frac{1}{4}x + 6$



c) $2x + 3y = 12$



d) $y = 4$



Slope-Intercept Form of Linear Equations

Find the slope of the line that passes through the given points.

a) (3, 7) and (-1, -1)

b) (2, -8) and (4, 1)

c) (-3, -2) and (-3, 7)

Write a linear equation in slope-intercept form given the slope and a point.

a) slope = $\frac{1}{2}$, point (6, -3)

b) slope = -3, point (-2, 4)

Write a linear equation in point slope form given the slope and a point.

a) slope = $\frac{2}{3}$, point (2, 0)

b) slope = -5, point (-1, -7)

Write a linear equation in slope-intercept form given the pair of points.

a) (0,0) and (-3, 7)

b) (6, -2) and (7, 4)

c) (8, 4) and (-1, 4)

d) (2, 2) and (4, 3)

e) (-2, 5) and (8, 5)

f) (2, 4) and (0, -4)

g) (3, 1) and (6, 7)

h) (-3, 0) and (-3, 2)

Write the slope-intercept form of the equation of the line described.

a) through (4, 2), parallel to $y = 3x - 5$

b) through (-3, -3), slope of -2

g) through (-1, 4), perpendicular to $y = -5x + 2$

h) through (-4, 4), parallel to $y = 3$

Proportions

Use cross products to solve for x.

1. $\frac{5}{8} = \frac{x}{36}$

2. $\frac{12}{x} = \frac{40}{55}$

3. $\frac{x}{15} = \frac{24}{16}$

4. $\frac{16}{7} = \frac{9}{x}$

5. $\frac{6}{14} = \frac{7}{x-3}$

6. $\frac{5}{3} = \frac{6}{x+2}$

7. A flagpole casts a shadow that is 10 feet long at the same time that a 6 foot man casts a shadow that is 4 feet long. How tall is the flagpole?

8. A drawing on a transparency is 11.25 cm wide and 23.5 cm tall. The width of the image projected onto a screen is 2.7 meters. How tall is the projected image on the screen?

Inequalities

Translate each sentence into an inequality.

a) Six more than twelve times x is at most 45. _____

b) Seven less than five times x is a no less than of 25. _____

c) The cost of Megan's lunch, c , can be a maximum of \$6. _____

d) One-third of Jeff's age, a , is a minimum of 15. _____

e) Bill's hourly salary, s , is at least \$45. _____

Solve each inequality and graph the solution on the number line.

f) $7(x - 2) \leq 7$



g) $3x + 5 - 2x > -9$



h) $-8 < 9x + 10$



i) $-\frac{2}{3}x \geq 18$



Distributive Property & Combining Like Terms

Simplify by applying the Distributive Property and combining similar terms.

1. $7(4p + 5)$

2. $5(2w - 9)$

3. $4(-x + 8)$

4. $9(-r - 3)$

5. $-2(8p + 5)$

6. $-7(3n - 8)$

7. $-15(4g + 7)$

8. $-4(-2p + 5)$

9. $-(7y + 18)$

10. $-(4r - 7)$

11. $-(-3 + 7w)$

12. $-(-8f - 7)$

13. $5 + 6(3r + 9)$

14. $-14 + 8(9w - 10)$

15. $23 + 5(2x - 7)$

16. $5 + 12(x - 6)$

17. $-4(8m - 1) + 10(m + 4)$

18. $-6(y - 15) - 3(7y - 11)$

19. $-4(-12) + 7(2w - 8) - (9w + 3)$

20. $-(p - 4) - 5(2p - 4) - 20(-p - 7) + 15$

Simplifying Algebraic Expressions (Properties of Exponents)

Simplify. Your answer should contain only positive exponents and have no parentheses.

1) $xy^4 \cdot 2x^3y$

2) $3x^2y^5 \cdot -7x^4y^8$

$$3) (-4u^4v^6)^3$$

$$4) (5ab^9)^3$$

$$5) \frac{3u^3v^5}{-2u^2}$$

$$6) \frac{24x^4y^{-6}}{4y}$$

$$7) \frac{(2u^4v^2)^4 \cdot (v^4)^2}{10u^8v^7}$$

$$8) \frac{(2x^3y^{-4})^3 \cdot 2y}{4x^{10}y^3}$$