

Summer Work Packet for MPH Math Classes

**Students going into
College Algebra
Sept. 2021**

Name: _____

This packet is designed to help students stay current with their math skills. Each math class expects a certain level of number sense, algebra sense, and graph sense in order to be successful in the course.

These problems should be completed in the space provided. Be sure to show all work.

Students should complete this by the September 17th. If you have any questions, please email Mr. Ochs at jochs@mphschool.org or Mrs. Meehan at dmeehan@mphschool.org.

****You will need a TI-84+ calculator for this class.****

Show all work.

NAME _____

I. Rational Expressions. Leave no negative exponents.

a. Simplify $\frac{(5ab^2)^2c^{-4}}{10a^2(bc)^4}$

d. Simplify $(2x^2y^{-1})^{-4} \cdot 20x^0$

b. Simplify $\frac{x^4y^5}{8xy} \cdot \left(\frac{4}{xy^2}\right)^3$

e. Combine $\frac{5}{6x} + \frac{3}{4y}$ to create one fraction.

c. Simplify $(2x^2y)^3 \cdot (-3xy)^2$

f. Combine $\frac{x}{x+2} - \frac{1}{x-4}$ to create one fraction

g. Factor the expression and cancel to simplify:

$$\frac{(y^2-64)(y^3-10y^2-24y)}{y(y^2+10y+16)(y^2-y-56)}$$

II. Simplifying Radicals

a. Simplify $5\sqrt{98} - 4\sqrt{45} - 8\sqrt{200}$

b. Simplify $2xy\sqrt{20x^4y^5z^2}$ where $x, y, z > 0$

c. Rationalize and simplify $\frac{2xy}{\sqrt{10xy}}$

III. Factoring. Factor the following completely.

a. $-x^2 + 3x + 18$

c. $3x^2 - 8x + 4$

b. $x^4 - 625y^4$

d. $2xy + 8y^2 + 11abx + 44aby$

IV. Solving quadratic equations.

a. Solve for x given $15x^3 = 27x^2 + 6x$

b. Solve for x given $11x^2 = 22x$

c. Solve for x given $9x^3 - 27x^2 = 4x - 12$

d. Solve for x given $2x^2 + 9 = 10x$

V. Systems of Equations

- a. Solve the system of equations using the substitution or elimination method.

$$5x - 2y = 10$$

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

- b. Brenda's Marketplace sells Creamed Corn Yogurt for \$5.75 and Pork Loaf in Fish Sauce for \$7.50. Last weekend the marketplace sold a total of 33 cans to the Bingo Parlor for \$221.25. How many cans of each product were sold?

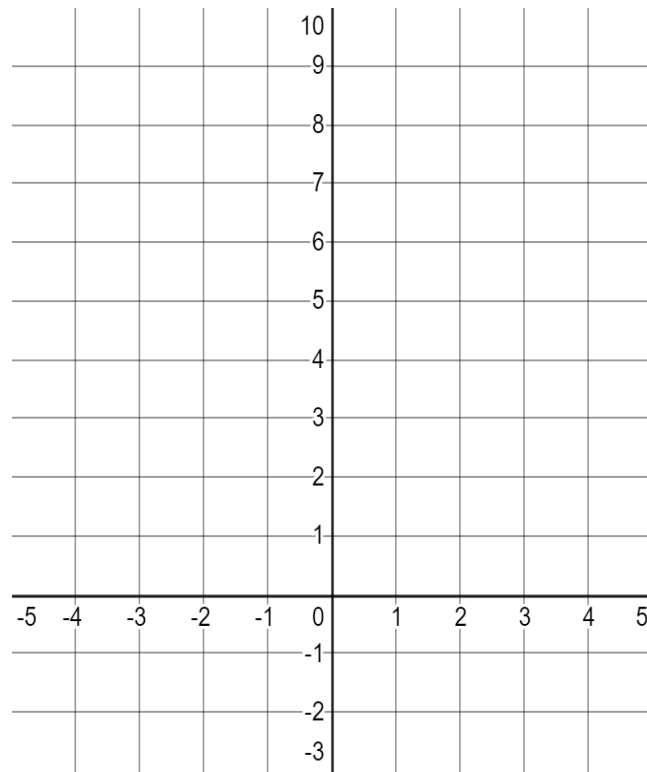
VI. Graphing and function notation.

a. Given $g(x) = 2x - 10$, find $g(2a - 1)$ and give the answer as a coordinate.

b. Given $f(x) = x - 2$ and $g(x) = x^2 - x - 20$. Find $g(f(x))$ in standard form.

c. Find an equation of a line in point-slope form that passes through the points $(6, 3)$ and $(2, -7)$.

- d. Graph $y = x^2$ and $y = (x - 1)^2 - 2$ on the same graph. Then answer the questions below.



- e. How did $y = x^2$ become $y = (x - 1)^2 - 2$ from part c? Look at the movement of the vertex.

VII. Calculator Use

a. Using your calculator, find the x-intercepts of $f(x) = x^2 - 5x - 7$ to the nearest hundredth.

b. Using your calculator, solve for x given $\frac{\pi}{2}x + \frac{47}{11} = 3.227(2x + \frac{13}{14}) - 2.75x$.
Round to nearest thousandth.

c. Using your table function on your calculator graph $y = \sqrt{x + 5}$.

