

Summer Work Packet for MPH Math Classes

**Students going into ALGEBRA I S
Sept. 2022**

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 need to be completed in the space provided. Show all work.

If you have any questions, email Mr. Ochs at jochs@mphschool.org.

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

Rules with negative numbers

For questions 1-4, fill in the blank with either positive or negative.

1. A negative number times a negative number is a _____ number.
2. A negative number times a positive number is a _____ number.
3. A positive number divided by a negative number is a _____ number.
4. A negative number divided by a negative number is a _____ number.

Adding and Subtracting Fractions: Remember that you must have a common denominator to add fractions. You can work the problems across (horizontally) or up and down (vertically).

Example: $\frac{3}{4} + \frac{5}{6} = \frac{9}{12} + \frac{10}{12} = \frac{19}{12} = 1 \frac{7}{12}$

5. $\frac{2}{9} + \frac{1}{6}$

7. $3\frac{3}{8} + 8\frac{3}{32}$

6. $\frac{3}{4} + \frac{4}{x}$

8. $2\frac{7}{10} - 6\frac{4}{15}$

Multiplying fractions: When you are multiplying fractions, you do not need to find a common denominator. Change any whole number or mixed number to an improper fraction. Remember, when you are multiplying fractions, it is easier to simplify first.

EXAMPLE: $5\frac{1}{3} \cdot \frac{9}{8} = \frac{16}{3} \cdot \frac{9}{8} = \frac{2}{1} \cdot \frac{3}{1} = \frac{6}{1} = 6$

9. $\frac{27}{4} \cdot \frac{2}{9} =$

11. $-2\frac{2}{27} \cdot 3\frac{3}{8} =$

10. $15 \cdot \frac{7}{6} =$

12. $\frac{-42}{b} \cdot \frac{-10}{b} =$

Dividing fractions: The rule for dividing fractions is to keep the first number the same and multiply by the reciprocal of the second fraction.

EXAMPLE: $2\frac{4}{5} \div \frac{8}{15} = \frac{14}{5} \div \frac{8}{15} = \frac{14}{5} \cdot \frac{15}{8} = \frac{7}{1} \cdot \frac{3}{4} = \frac{21}{4}$

13. $\frac{27}{4} \div \frac{18}{5}$

15. $6\frac{3}{4} \div \frac{45}{8}$

14. $-18 \div \frac{x}{y}$

16. $\frac{\frac{9}{20}}{\frac{3}{10}}$

Solve for the variable without the use of a calculator. Show your work.

17. $\frac{p}{7} + 2 = 8$

19. $\frac{3x+12}{4} = 6$

18. $5(j - 4) = j - 8$

20. $2\frac{1}{2}x + \frac{1}{4} = \frac{7}{8}$

Write the sentence as an algebraic equation and then solve it. Identify your variable.

21. **Twice** a number **increased** by **five**, *is equal to* **3 times** the **sum** of the number and 4.
Find the number.

22. If the **difference** of **three times** a number and 15 is **divided** by 12, the result *is equal to* the **difference** between 5 and the number. Find the number.

Write each inequality in algebraic form.

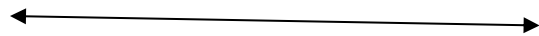
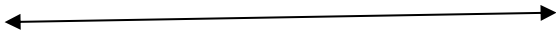
23. One fifth of a number is no less than eight.

24. Negative five times a number at least twenty.

Solve the inequality. Graph your answer on a number line. The domain is the set of all Real Numbers. Remember, if you multiply or divide by a negative number you must switch the direction of the inequality sign.

25. $15 - 8f > 39$

26. $5 - \frac{t}{2} \leq 10$



Combine like terms. Example: $3(m + n) - 2(3m - 4n) = 3m + 3n - 6m + 8n = -3m + 11n$

27. $7x + 2y - 4x - 5y$

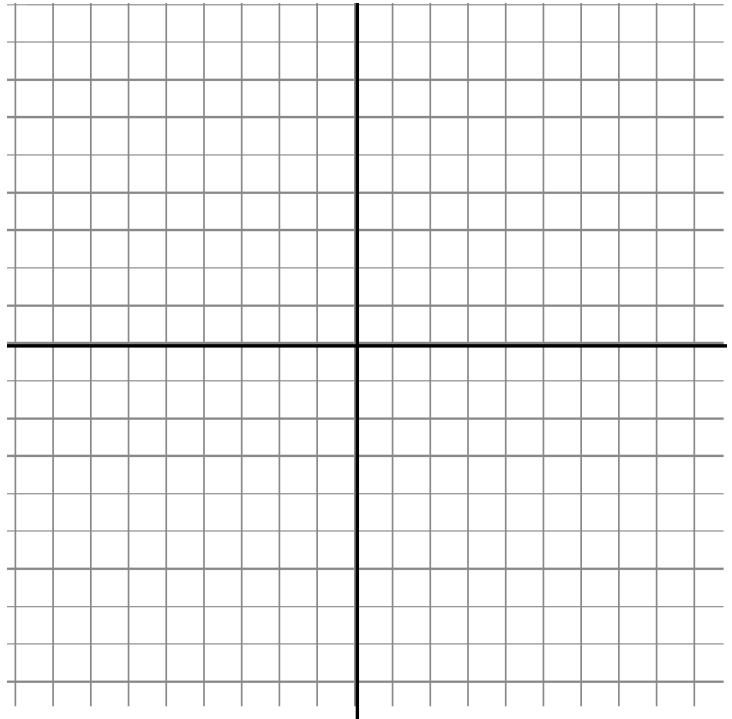
29. $10x - 3(x - 5y)$

28. $20a + 2(a - 8x) - 10x$

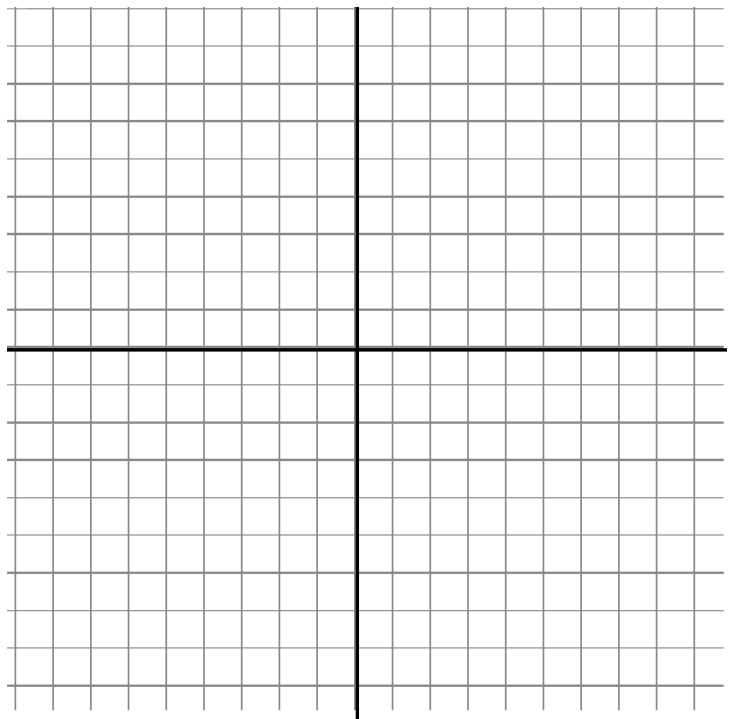
30. $7(x + 2y) - (4x - 5y)$

Graph the following equations. Label 3 points on the line.

31. $y = 5x - 3$



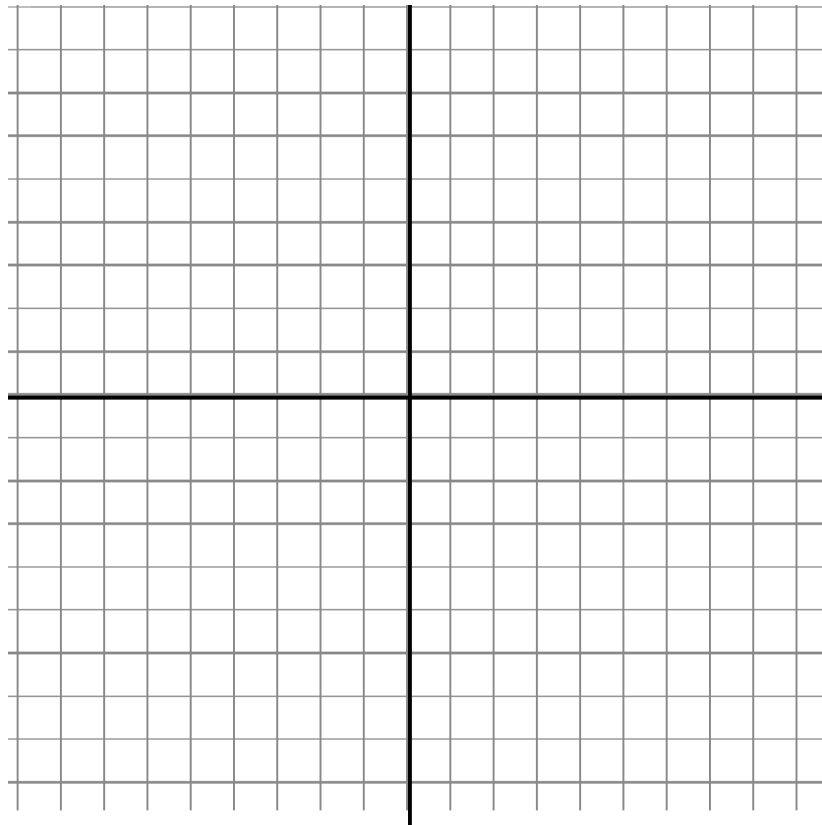
32. $y = -x + 3$



33. Given the equation $y - 4 = 2(x - 1)$, answer the following.

a. Put the equation in **slope-intercept form** ($y = mx + b$) by solving for y .

b. Sketch the graph



c. State the **slope** of the graph

d. Give the **coordinates** of the **x and y intercepts**.