

**Summer Enrichment
Packet
for
Students going into
Algebra 1-S**

Sept. 2023

This summer packet is intended to help students retain the mathematical skills and knowledge they have acquired during the school year, preventing the loss of academic progress.

While completion of this packet is not mandatory, we strongly recommend students utilize this packet. Practicing skills reinforces students' understanding of concepts that they may have struggled with during the school year, helping them to start the new year with a stronger foundation. It can also help students prepare for the challenges of the upcoming school year, and promote problem-solving skills, logical reasoning, and critical thinking abilities, which are valuable not just in math, but in many other areas of life.

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.

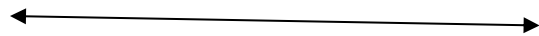
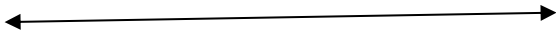
23. One fifth of a number is no less than eight.

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

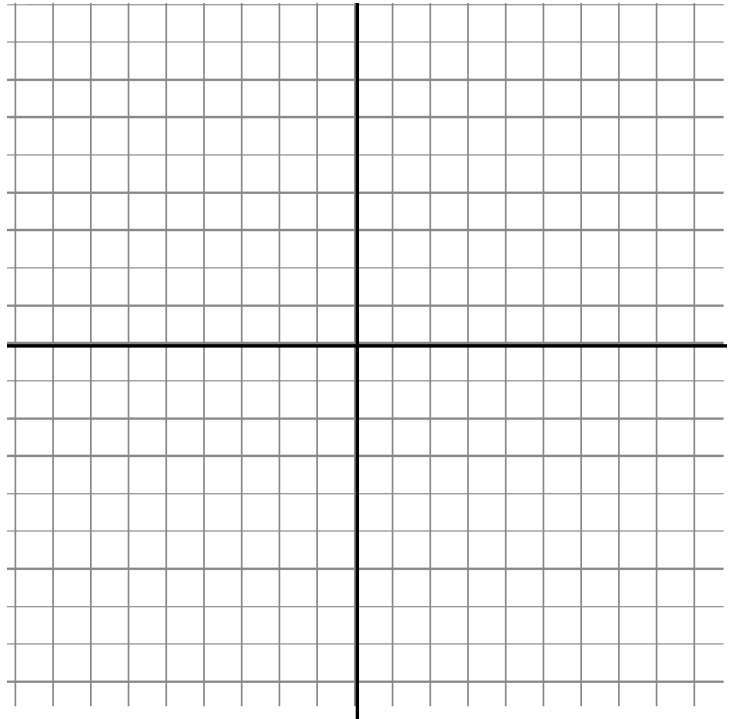
29. $10x - 3(x - 5y)$

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

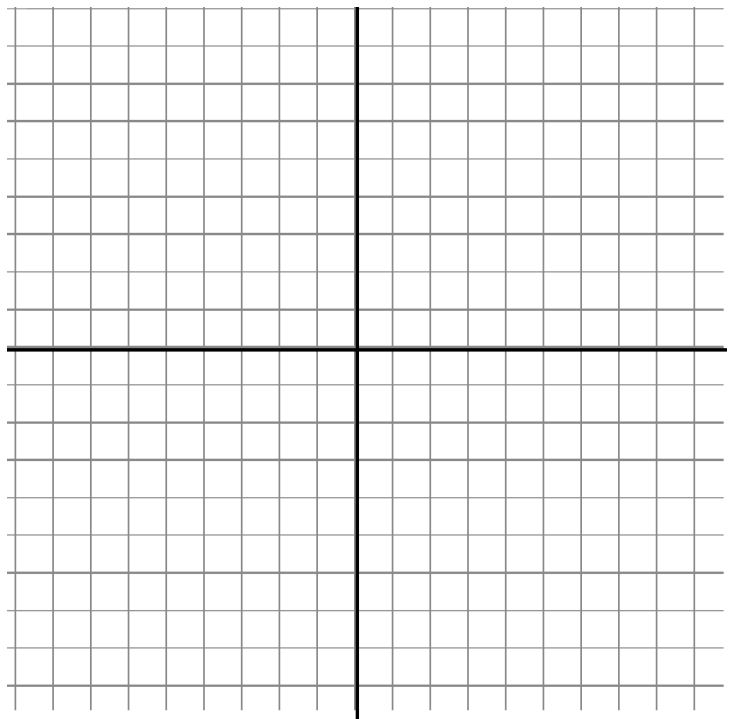
30. $7(x + 2y) - (4x - 5y)$

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

31. $y = 5x - 3$



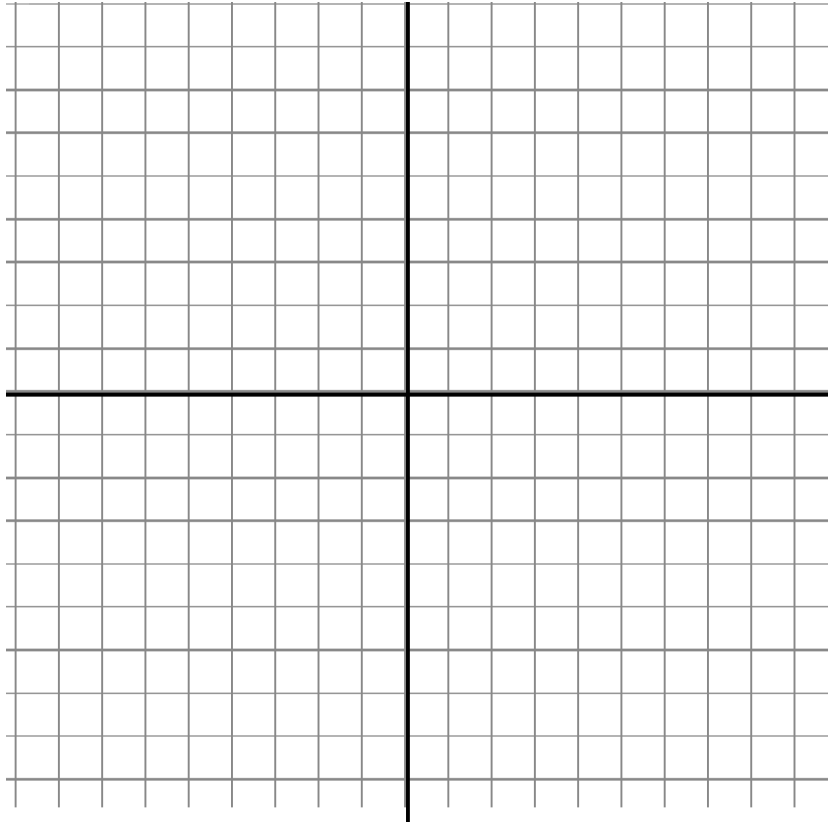
32. $y = -x + 3$



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**.