Summer Enrichment Packet

for

Students going into

Algebra 1-C

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.

Students can expect to have a test on this material during the first marking period.

****

You will need a TI-84^{+} calculator for this class.

****

Fractions: Add, subtract, multiply or divide the fractions. Show all work.

1. $2\frac{7}{10} + 3\frac{1}{5}$

2. $-4\frac{2}{3} - 3\frac{7}{12}$

3. $5\frac{7}{10} - 1\frac{1}{6}$

4. $8 - 2\frac{8}{x}$

5. $1\frac{2}{3} \cdot -2\frac{2}{5}$

6. $-\frac{8}{21} \cdot -2\frac{7}{16}$

7. $3\frac{3}{4} \div 1\frac{7}{8}$

8. $\dfrac{\frac{22}{9}}{\frac{55}{12}}$

9. $24 \cdot \frac{5}{12}$

10. $-5\frac{1}{2} - (-1\frac{7}{8})$

Solve for x. Show your work and make sure all answers are fully simplified.

11. $8x = 4x + 18$

13. $7(x + 2) = 2x - 21$

12. $\frac{2}{3}x = \frac{1}{4}x + 10$

14. $5\left(\frac{2x}{5} - 4\right) = 45$

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

15. Simplify $3x + 4y - 4x - 13y$

16. Simplify $-3(m - n) + 4n - 5m$

17. Simplify $5x - (x - y)$

18. Simplify $3(x - 7y) - 9(y - 3y) + 4(x - 2y)$

19. Mr. Smith, the electrician, charges $150 for a visit, plus $75 for each hour that he is at the house. Ms. Crosby, the plumber, charges $175 per hour.

a. Write an **equation** that represents the cost of a call for *x* hours for the electrician.

b. Write an **equation** that represents the cost of a call for *x* hours for the plumber.

c. Using your equations from part a and b, how many hours would the cost for each be the **same**?

d. If you hired them both for 5 hours, how much would it **cost**?

Find the slope of the line connecting points A and B. Show all work.

Formula for slope: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Example: If point A is (5, 3) and point B is (-1, 1), then $m = \frac{3-1}{5-(-1)} = \frac{2}{6} = \frac{1}{3}$

Calculate the slope of the following.

20. A (–1, 3) and B (5, 4)

21. A (–1, –6) and B (2, –3)

22. A (0, 8) and B (2, 4)

23. $A\ \left(\frac{3}{4}, \frac{3}{2}\right)\ and\ \left(\frac{11}{4}, \frac{5}{2}\right)$

DO THE FOLLOWING ON GRAPH PAPER

For each problem, graph each equation on a separate x, y grid using the y-intercept and slope.

Remember that in the form y = mx + b, m = slope and b = y-intercept. Thus, for $y = \frac{2}{3}x + 2$, $m = \frac{2}{3}$ and b = 2, so the coordinates of the y-intercept are (0, 2). To graph, use the following steps:

a) Plot the y-intercept.

b) Locate the other points using the slope.

c) Connect the points with a line.

24. y = ½ x m = _____ b = _____ y-intercept _____

25. y = –3x – 1 m = _____ b = _____ y-intercept _____

26. $y = -\frac{2}{3}x + 4$ m = _____ b = _____ y-intercept _____

For each problem, solve the inequality and graph the solution on a number line.

Recall that when dividing or multiplying by a negative the inequality sign flips.

27. $-8x \geq 2x - 40$

28. $2\frac{1}{10}x - 15 \geq 27$

29. $4x + 1 < 10 - (5 - 2x)$

30. $2(8x - 5) > 2x + 6$