Summer Math Work for Incoming 8th Grade

- Show steps for all problems.
- Simplify all fraction answers.
- If you have questions, write your question next to the problem.
- The packet is due on the first day of school.

1. $15 + (-7)$

2. $-2 + (-14)$

3. $18 - (-4)$

4. $-13 - 8$

5. $63 - 93$

6. $-4 - (-4)$

7. $-156 - (-45)$

8. Is $-\frac{1}{3} - \frac{4}{5}$ positive, negative, or zero?

9. Is $\frac{2}{5} - \left(-\frac{5}{6}\right)$ positive, negative, or zero?

10. Find the sum of $(-8.6) + 7.2$.

11. Find the value of the expression $-\frac{1}{3} - \left(-\frac{5}{12}\right)$.

12. $-4\frac{1}{2} \cdot \left(-3\frac{3}{4}\right)$

13. Evaluate and order each quotient from least to greatest. Identify any expressions that are undefined.

$-30 \div 6$ $\quad 0 \div (-20)$ $\quad \frac{-44}{-4}$ $\quad 21 \div (-7)$ $\quad -\left(\frac{-3}{-2}\right)$

14. Which of the quotients are equivalent to $-\left(\frac{48}{17}\right)$? Select all that apply.

- $\frac{-17}{-48}$
- $\frac{48}{17}$
- $\frac{48}{-17}$
- $\frac{-48}{17}$
- $-2\frac{14}{17}$

15. $-3\frac{1}{6} \div \left(-1\frac{4}{9}\right)$

16. Simplify the complex fraction

$$\frac{\frac{7}{10}}{-\frac{2}{5}}$$

17. There are 3 boys for every 6 girls at a movie. If there are 24 girls, how many boys are at the movie?

18. A car travels 374 meters in 17 seconds. A bus travels 414 meters in 23 seconds.
    a. Which vehicle is traveling faster?
    b. How much faster?

19. At a supermarket, a 6-ounce bottle of salad dressing costs $1.56. A 14-ounce bottle costs $3.36. A 20-ounce bottle costs $5.60. Which bottle has the lowest cost per ounce?

20. A recipe calls for $\frac{1}{2}$ cup of Ingredient A for every $1\frac{2}{3}$ cups of Ingredient B. How many cups of Ingredient B do you need when using 4 cups of Ingredient A?

21. Is the relationship between x and y proportional? If so, what is the constant of proportionality?
    Yes or no? _____
    Constant of proportionality _____

x	y
5	25
6	30
7	35
8	40

22. The relationship between x and y is proportional. When x is 29, y is 275.5.
    a. Find the constant of proportionality of y to x.
    b. Write an equation that relates y to x.
    c. Use the equation to find x when y is 408.5.

23. The table shows the number of calories Jane burns while exercising. How many calories would she burn by exercising for 29 minutes?

Jane's Exercise

Time in Minutes (x)	Calories Burned (y)
20	220
25	275
30	330
40	440

24. An item sells for $40. The sales tax on the item is 8%. What is the sales tax and total cost?

25. The number of students in the marching band this year is 125% as many as the number of students in the marching band last year. If there were 36 students in the marching band last year, how many students are in the marching band this year?

26. Investors buy a studio apartment for $240,000. Of this amount, they have a down payment of $60,000. The down payment is what percent of the purchase price?

27. Mei has 60 milliliters of a solution that is 35% nitric acid. How many milliliters of nitric acid does the solution contain?

28. A student answers 90% of the questions on a math exam correctly. If he answers 27 questions correctly, how many questions are on the exam?

29. A sweater normally costs $35 and is on sale with a 25% discount. What will the new price of the sweater be?

30. 132 is what percent of 880?

31. Two weeks ago, concert tickets cost $30. Now the cost is $39. What is the percent of increase?

32. A diamond ring that normally sells for $1,275 is on sale for $1,020. What is the percent markdown?

33.

Model with Math Water evaporates at a rate of 1.5 ounces per day from a container that holds 34 ounces when full. Which expression represents the amount of water remaining in the container after d days? MP.4

Ⓐ $1.5 + 34d$

Ⓑ $34 + 1.5d$

Ⓒ $34 - 1.5d$

Ⓓ $32.5d$

34. Write an equivalent expression for:

$8(y - 7)$

35. Write an equivalent expression for:

$-2(x + 7)$

36. Combine like terms and write an equivalent expression for:

$h + 5 + 3 - 2h$

37.

Which of the following expressions is equivalent to $-\frac{2}{3}x + 2$? Select all that apply.

- ☐ $-2 - \frac{2}{3}x$
- ☐ $2 - \frac{2}{3}x$
- ☐ $-1 - \frac{2}{3}x + 1$
- ☐ $-\frac{1}{3}x - 4 + 2$
- ☐ $-\frac{2}{3}x - 3 + 5$

38. Simplify the expression:

$-2v + (-4) + 8 + (-3v)$

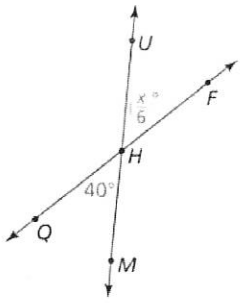
39. Simplify the expression:

$8 - 4y + (-2) + 5$

40. Simplify the expression:

$11 + (-3) - \frac{1}{8}j - \frac{3}{8}j + 7$

57. Use vertical angles to find the value of *x*.



(The figure is not shown to scale.)

58. Find the measure of:

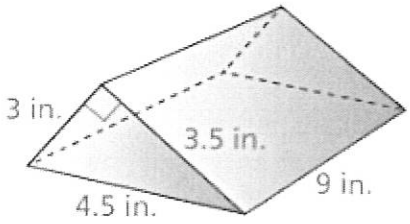
a. the complement to an 18° angle.

b. the supplement to an 65° angle.

59. Find the circumference of the circle at the below in terms of π.

60. A certain coin is a circle with a diameter of 18 mm. What is the exact area of either face of the coin in terms of π?

61. The block of wood shown below is a triangular prism. What is its surface area? Use a calculator, but show steps.



62. Find the volume of the cube shown below. Use a calculator, but show steps.