

May 2021

UPPER SCHOOL SUMMER MATH PACKET
All Incoming 6th Grade

Dear Upper School Students,

This summer, we encourage you to continue to foster a belief in the importance and enjoyment of mathematics at home. Being actively involved in mathematical activities enhances learning.

In preparation for the 2021-2022 school year, each student entering middle school is required to complete a summer math review packet. Each packet focuses on the prerequisite concepts and skills necessary for student success in each math class. The topics within this packet are important foundational concepts. **READ THE INSTRUCTIONS.** Even if it doesn't say "Show Your Work" at the top of the page, **you are expected to show your work on all pages.** If you need extra space, you must use and attach scratch paper to the back of the packet.

Please bring your completed math packet (with scratch work attached) with you on the first day of school in August. Your math teachers will be collecting them, and the packets will be graded for timeliness and thoroughness of completion.

Have a wonderful summer!

The Middle School Mathematics Department

Equivalent Ratios

Determine if each pair of ratios or rates are equivalent. Explain your reasoning. (see example)

Example

1. \$18 for 3 bracelets; \$30 for 5 bracelets

$$\frac{18}{3} = \frac{30}{5}$$

$$90 = 90$$

Yes

or

$$\frac{\$18}{3} = \underline{\$6 \text{ each}} \quad \frac{\$30}{5} = \underline{\$6 \text{ each}}$$

Yes

2. 120 Calories in 2 servings; 360 Calories in 6 servings
3. 4 hours worked for \$12; 7 hours worked for \$28
4. 15 blank CDs for \$5; 45 blank CDs for \$15
5. 24 points scored in 4 games; 48 points scored in 10 games
6. 15 out of 20 students own hand-held games; 105 out of 160 students own hand-held games.
7. 30 minutes to jog 3 miles; 50 minutes to jog 5 miles
8. \$3 for 6 muffins; \$9 for 18 muffins
9. 360 miles driven on 12 gallons of fuel; 270 miles driven on 9 gallons of fuel
10. **SHOPPING** Miguel bought 2 pairs of jeans for \$50, and Han bought 4 pairs of jeans for \$90. Did they pay the same rate? Explain your reasoning.

Decimals and Fractions

Write each decimal as a fraction or mixed number in simplest form.

1. 0.6

2. 10.9

3. 0.08

4. 6.25

5. 4.125

6. 0.075

7. 9.35

8. 3.56

9. 8.016

10. 21.5

11. 0.055

12. 7.42

13. 5.006

14. 3.875

15. 1.29

Write each fraction or mixed number as a decimal.

16. $\frac{5}{8}$

17. $3\frac{7}{8}$

18. $9\frac{2}{5}$

19. $\frac{66}{200}$

20. $\frac{3}{20}$

Add and Subtract Decimals (Show your work on graph paper)

Find each sum or difference.

1. $9.868 + 6.329$

2. $0.87 + 6.12$

3. $4.672 + 15.31$

4. $4.609 + 2.81$

5. $5.8 + 4.289$

6. $1.09 + 0.65$

7. $43.68 - 40.67$

8. $9 - 5.2$

9. $7 - 4.29$

10. $38.94 - 8.25$

11. $20.1 - 16.37$

12. $9.8 - 3.24$

13. Gasoline prices are given to the nearest thousandth of a dollar. If a gallon of gasoline costs \$3.499 and increases \$0.09, what is the price of gasoline after the increase?
14. The area of Max's room, not including his closet, is 235.675 square feet. The area of his closet is 10.45 square feet. What is the area of his room, including the closet?

Multiply Decimals by Decimals

Multiply. (Do your work on graph paper)

1. 0.3×0.9

2. 2.6×1.7

3. 1.09×5.4

4. 17.2×12.86

5. 0.56×0.03

6. 4.9×0.02

7. 2.07×2.008

8. 26.02×2.006

9. 4.68×0.034

10. 2.9×4.05

11. **MINING** A mine produces 42.5 tons of coal per hour. How much coal will the mine produce in 9.5 hours?

12. **SHOPPING** Ms. Morgan bought 3.5 pounds of bananas at \$0.51 a pound and 4.5 pounds of pineapple at \$1.19 a pound. How much did she pay for the bananas and pineapple?

Divide Decimals by Decimals

Divide. (Do your work on graph paper)

1. $12.92 \div 3.4$

2. $22.47 \div 0.7$

3. $0.025 \div 0.5$

4. $7.224 \div 0.08$

5. $0.855 \div 9.5$

6. $0.9 \div 0.12$

7. $3.0084 \div 0.046$

8. $0.0868 \div 0.007$

9. $14.43 \div 0.39$

10. **WHALES** After its first day of life, a baby blue whale started growing. It grew 47.075 inches. If the average baby blue whale grows at a rate of 1.5 inches a day, for how many days did the baby whale grow, to the nearest tenth of a day?

Multiply Mixed Numbers (Hint: change all mixed numbers to improper fractions first)

Multiply. Write in simplest form.

1. $\frac{4}{5} \times 3\frac{1}{8}$

2. $\frac{9}{10} \times 3\frac{1}{3}$

3. $1\frac{3}{5} \times \frac{3}{5}$

4. $2\frac{5}{8} \times \frac{2}{3}$

5. $\frac{2}{3} \times 3\frac{1}{4}$

6. $\frac{3}{4} \times 2\frac{2}{3}$

7. $1\frac{1}{4} \times 2\frac{2}{3}$

8. $5\frac{1}{3} \times 2\frac{1}{4}$

9. $2\frac{1}{5} \times 1\frac{1}{4}$

10. $6\frac{4}{5} \times 1\frac{2}{3}$

Divide Fractions

Divide. Write in simplest form.

1. $\frac{2}{7} \div \frac{1}{7}$

2. $\frac{1}{9} \div \frac{2}{3}$

3. $\frac{3}{8} \div \frac{1}{2}$

4. $\frac{2}{3} \div \frac{1}{6}$

5. $\frac{1}{2} \div \frac{2}{5}$

6. $\frac{2}{3} \div \frac{1}{4}$

7. $\frac{3}{4} \div \frac{1}{10}$

8. $\frac{2}{5} \div \frac{1}{4}$

9. $\frac{1}{8} \div \frac{2}{5}$

10. $\frac{3}{7} \div \frac{4}{5}$

11. $\frac{5}{8} \div 2$

12. $\frac{3}{7} \div \frac{3}{7}$

13. $\frac{4}{5} \div \frac{7}{10}$

14. $\frac{7}{9} \div 14$

15. $\frac{5}{7} \div \frac{4}{9}$

16. **INSECTS** An average ant is $\frac{1}{4}$ inch long. An average aphid is $\frac{3}{32}$ inch long. How many times longer is an average ant than an average aphid?

Divide Mixed Numbers

Divide. Write in simplest form.

1. $2 \div 3\frac{2}{3}$

2. $10 \div 1\frac{1}{4}$

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

4. $14\frac{15}{16} \div \frac{7}{8}$

5. $7\frac{1}{2} \div 1\frac{1}{4}$

6. $3\frac{3}{8} \div 2\frac{1}{4}$

7. $2\frac{1}{10} \div 1\frac{1}{5}$

8. $4\frac{1}{2} \div 2\frac{7}{10}$

9. **HURRICANES** Suppose a hurricane traveled 130 miles from a point in the Atlantic Ocean to the Florida coastline in $6\frac{1}{2}$ hours. How many miles per hour did the hurricane travel?

10. **PIPES** How many $\frac{3}{4}$ -foot lengths of pipe can be cut from a $6\frac{1}{3}$ -foot pipe?

11. **TRUCKING** A truck driver drove 300 miles in $6\frac{3}{4}$ hours. How many miles per hour did the driver drive?

12. **BAKING** A bag contains $22\frac{1}{2}$ cups of flour. A recipe for pancakes uses $1\frac{1}{4}$ cups of flour. How many batches of pancakes can be made with one bag of flour?

Compare and Order Integers

Fill in each \bigcirc with $<$, $>$, or $=$ to make a true statement.

1. $-5 \bigcirc -55$

2. $4 \bigcirc -66$

3. $-777 \bigcirc -77$

4. $-75 \bigcirc -75$

5. $-898 \bigcirc -99$

6. $0 \bigcirc 44$

7. $56 \bigcirc -1$

8. $-82 \bigcirc -9$

9. $-6 \bigcirc -7$

10. $90 \bigcirc 101$

11. $4 \bigcirc -2,000$

12. $-3 \bigcirc 0$

13. $8 \bigcirc 6$

14. $-5 \bigcirc -7$

15. $-2 \bigcirc 0$

Order each set of integers from least to greatest.

16. 0, 3, -21, 9, -89, 8, -65, -56

17. 70, -9, 67, -78, 0, 45, -36, -19

18. 12, 8, -9, -12, 10, 16

19. 65, 34, -50, 28, -64, -45

20. -4, 39, -14, 22, -30, 33, -70

Graph on the Coordinate Plane

Graph and label each point on the coordinate plane (on the next page)

1. $A(-5, 2)$

2. $I(2, 1)$

3. $J(1, -3)$

4. $B(-5, -1)$

5. $C(3, 3)$

6. $K(-1, 2)$

7. $L(0, -1)$

8. $D(2, -5)$

9. $E(3, -2)$

10. $M(-4, -5)$

11. $N(1, 5)$

12. $F(-2, 5)$

13. $G(-1, -4)$

14. $O(5, -5)$

Coordinate Grid Paper

