Summer Enrichment Packet

for

Students going into
Pre-Algebra

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.

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

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Adding Fractions

Name _____

1. $2\frac{1}{6} + 3\frac{5}{6} =$

2. $\begin{aligned} 6\frac{3}{8} \\ + 2\frac{3}{32} \\ \hline \end{aligned}$

3. $\begin{aligned} 4\frac{7}{12} \\ + 1\frac{5}{8} \\ \hline \end{aligned}$

Subtracting Fractions

4. $\frac{17}{21} - \frac{8}{21} =$

5. $\begin{aligned} 6\frac{7}{10} \\ - 3\frac{4}{5} \\ \hline \end{aligned}$

6. $\begin{aligned} 4\frac{2}{9} \\ - 3\frac{1}{6} \\ \hline \end{aligned}$

Multiplying fractions

Name _____

7. $\dfrac{2}{3} \times \dfrac{1}{2} =$

8. $18 \times \dfrac{4}{27} =$

9. $2\dfrac{2}{27} \times 3\dfrac{3}{8} =$

10. $\dfrac{42}{35} \times \dfrac{10}{21} =$

11. $\dfrac{27}{4} \div \dfrac{18}{5} =$

12. $18 \div \dfrac{54}{7} =$

13. $6\dfrac{3}{4} \div 5\dfrac{5}{9} =$

14. $6\dfrac{3}{16} \div 18 =$

Use a *factor tree* to find the prime factors of each number.

15.   120   16.   75

17.   98   18.   64

Decimals   **Name** _____

Fill in the blank with >, < or = to make a true statement that compares the following decimals.

19.   3.230 _____   3.23

20.   2.1   _____   1.25

21.   35.9 _____   35.896

Round each to the nearest whole number.

22.   6.3   _____

23.   45.7   _____

24.   98.5   _____

Round each number to the nearest tenth.

25.   10.38   _____

26.   .418   _____

27.   9.99   _____

Round each number to the nearest hundredth.

28.   0.4508   _____

29.   4.782   _____

30.   .7859   _____

Decimals

Name _____

Adding

    31. $1.234 + 62.3 + 32.32$

Subtract.

    32. $16.469 - 2.49$

Multiply.

    33. 4.57×8.3

    34. 234.56×1000

Divide.   Name _____

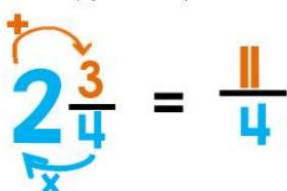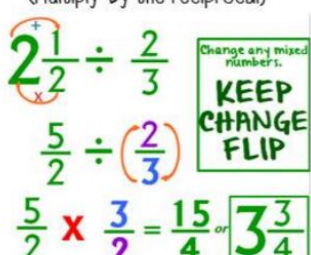   35. $71.25 \div 7.5$ 36. $6308 \div 7.6$

Find <u>a) the perimeter</u> and <u>b) the area</u> of the shape.

  37. A rectangle with width 4 and length of 12.
       (Perimeter- add all sides or P = 2l + 2w)
       (Area- Side x adjacent side or A = LxW)
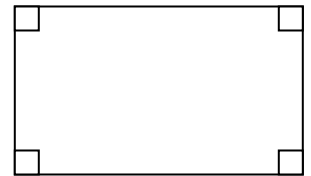
Reference Sheet

Fractions

Changing Mixed Numbers	Multiplying Fractions	Dividing Fractions
Multiply, add, keep denominator	Multiply numerators, multiply denominators, simplify.	(Multiply by the reciprocal)

Changing Mixed Numbers
Multiply, add, keep denominator

$$2\frac{3}{4} = \frac{\text{II}}{4}$$

Multiplying Fractions
Multiply numerators, multiply denominators, simplify.

Step 1: Multiply the Numerators   Step 2: Multiply the Denominators   Step 3: Simplify

$$\frac{2}{5} \times \frac{3}{4} = \frac{6}{20} \overset{\div 2}{\underset{\div 2}{=}} \boxed{\frac{3}{10}}$$

Dividing Fractions
(Multiply by the reciprocal)

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

Change any mixed numbers.
KEEP CHANGE FLIP

$$\frac{5}{2} \div \left(\frac{2}{3}\right)$$

$$\frac{5}{2} \times \frac{3}{2} = \frac{15}{4} \text{ or } \boxed{3\frac{3}{4}}$$

Notes: When you are multiplying or dividing fractions, you do not need a common denominator. You do have to change any whole number or mixed number to an improper fraction (shown above). Be sure to state the final fraction in simplest form.

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adding fractions

You need a common denominator

$$5\frac{1}{4} + 2\frac{2}{6} = \qquad 5\frac{1\times 3}{4\times 3} + 2\frac{2\times 2}{6\times 2} = \qquad 5\frac{3}{12} + 2\frac{4}{12} = \qquad 7\frac{7}{12}$$

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subtracting fractions

You need a common denominator

$$5\frac{2}{3} - 3\frac{1}{2} = \qquad 5\frac{2\times 2}{3\times 2} - 3\frac{1\times 3}{2\times 3} = \qquad 5\frac{4}{6} - 3\frac{3}{6} = \qquad 2\frac{1}{6}$$

Notes: You can add or subtract fractions horizontally (across) or vertically (up and down). The process is the same. You always need a common denominator to add or subtract fractions.

Decimals

decimal place value:

Ten Thousands	Thousands	Hundreds	Tens	Ones	Decimal Point	Tenths	Hundredths	Thousandths	Ten Thousandths
5	8	5	4	9	.	2	4	8	2

Rounding decimals	Comparing decimals
Round 549.2482 to the nearest tenth 549.2482 any number below 5 keeps the place value the same. 549.2	549.2482 _____ 549.2470 Compare the numbers in the same place values from left to right. 8 > 7 549.2482 > 549.2470

Adding & Subtracting Decimals	Multiplying Decimals	Dividing Decimals
2.75 +4.30 ――― 7.05 9.20 -3.45 ――― 5.75 LINE UP the decimals! (Add zeros if necessary)	2.75 X 4.3 ―――― 825 +1100 ―――― 11.825 Count the decimal places and place it in the product. (No need to line up)	0.02⟌3.80 195. 2⟌380 Can't have decimal in the 2nd number (or outside "house") move it → in both numbers!

Notes: When we add or subtract, we line up the decimals and go straight down. When we multiply, we multiply as normal, then count the decimal places to find where the decimal should go. When we divide, we move the decimal first, then bring it straight up.

Prime Factorization

A prime factor is a number that has exactly 2 factors, 1 and itself.

Example: Use a factor tree to find the prime factors of 360.

$$360$$
$$36 \times 10$$
$$4 \times 9 \times 2 \times 5$$
$$2 \times 2 \times 3 \times 3 \times 2 \times 5$$
$$= 2^3 \cdot 3^2 \cdot 5$$

Note: Not all trees will look the same, but your final answer will.

$$360$$
$$36 \times 10$$
$$6 \times 6 \times 2 \times 5$$
$$2 \times 3 \times 2 \times 3 \times 2 \times 5$$
$$= 2^3 \cdot 3^2 \cdot 5$$