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2019 Summer Math Packet

Incoming 7th Graders

Dear KPMS Students and Parents,

Welcome to King Philip Middle School! We look forward to getting to know you and your child! Research studies have shown that during an extended summer vacation, children can lose an average of 2.6 months' worth of knowledge.[1] The KPMS mathematics teachers want all students to be as successful as possible in middle school math. This math packet has been designed so that students will maintain and review their math skills during the summer months. Please monitor the progress of your child so that work is completed on a weekly basis, not the day before school begins in September. All students are required to complete this packet. This packet will count for a grade in the 1st quarter of the school year. To receive credit for this packet, all of the problems must be completed and ALL SUPPORTING WORK MUST BE SHOWN! No calculators are allowed. During the first week of school, your child's math teacher will review all packets. Please note that the quality of effort is more important to us than getting all the correct answers.

The review packet is set up in two sections. The front section is an optional review of each concept. There are rules and examples of each concept. Under each concept, there are a few examples for you to try and check your answers at the end of the first section to make sure that you know what you are doing. The second section is the mandatory summer math work. It is broken down into weekly assignments. The set-up is the same each week. For example, the first problem each week is always the Order of Operations problem. Be sure to check back to the first section if you are having trouble. This packet will be due the first week of school and will help prepare your child for 7th grade.

Have a great summer!!!

KPMS Middle School Teachers

Some great resources:

www.khanacademy.com	www.learnzillion.com	www.mathgoodies.com
www.coolmath.com	www.aaamath.com	www.ixl.com
www.mathchimp.com	www.mathisfun.com	www.aplusmath.com

[1] http://learningexpressblog.typepad.com/blog/2010/06/summerbridge.html

Review: Order of Operations

Key Concept and Vocabulary

"**P**lease **E**xcuse **M**y **D**ear **A**unt **S**ally"

1^{st} **P**arentheses

2^{nd} **E**xponents

3^{rd} **M**ultiplication and Division (from left to right)

4^{th} **A**ddition and **S**ubtraction (from left to right)

Simplify $4^2 \div 2 + 3(9 - 5)$.

$4^2 \div 2 + 3(9 - 5) = 4^2 \div 2 + 3 * 4$

$= 16 \div 2 + 3 * 4$

$= 8 + 12$

$= 20$

Try Some: (Answers can be found on page 6)

1. $18 \div 2 - 4 =$

2. $12 * (6 - 2) =$

3. $20 \div 10 + 21 * 5$

4. $(2 + 3)^2 - 5 =$

Review: The Distributive Property

Multiplying a sum or difference of two numbers by a third number is the same as multiplying each number in the sum or difference by the third number, then adding or subtracting.

Distributive Property	
Simplify:	
With addition: $4(6 + 3) = 4(6) + 4(3)$	$2(x + 5) = 2(x) + 2(5) = 2x + 10$
With subtraction: $4(6 - 3) = 4(6) - 4(3)$	$2(x - 5) = 2(x) - 2(5) = 2x - 10$

Try Some: (Answers can be found on page 6)

5. $4(x + 5)$

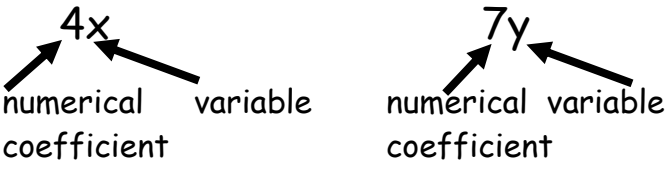
6. $3(x + 8)$

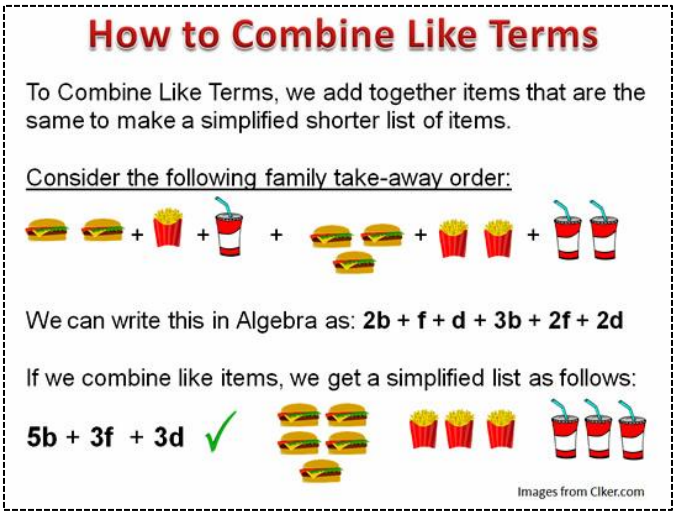
7. $7(x - 2)$

8. $9(x - 6)$

Review: Combining Like Terms

The parts of an algebraic expression are called terms. **LIKE TERMS** are terms with the same variables raised to the same exponents. Constant terms are also like terms. An algebraic expression is in ***simplest form*** when it has no like terms. To combine like terms that have variables, add the numerical coefficients.





Try Some: (Answers can be found on page 6)

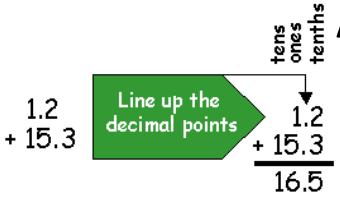
9. 8y + 7y

10. 3x + 7x + x

11. 2x + 7 + 9x + 2

Review: Decimals

Adding and Subtracting Decimals



16.34 − 3.18

$$\begin{array}{r} 16.34 \\ -\ 3.18 \\ \hline \end{array}$$

Line up the decimal points... borrow (regroup) if you need to!

$$\begin{array}{r} {}^{2}\not{3}{}^{1}4 \\ -\ 3.18 \\ \hline 13.16 \end{array}$$

Adding and Subtracting Decimals:

a. Write the numbers with their decimal points lined up.
b. Annex (add) zeros so that the numbers have the same number of decimal places.
c. Add or subtract the digits.
d. Place the decimal point in the answer.

Try Some: (Answers can be found on page 6)

12. 42.5 + 69.78

13. 17 + 136.47

14. 18 – 12.69

15. 123.6 – 78.38

Multiplying Decimals

Multiplying Decimals:

a. Multiply as with whole numbers.
b. Place the decimal point in the product so that it has the same number of decimal places as the sum of the decimal places in the factors.

$3.77 \times 2.8 = ?$

$$\begin{array}{r} 3.77 \text{ (2 decimal places)} \\ \times\ 2.8 \text{ (1 decimal place)} \\ \hline 3016 \\ +754 \\ \hline 10.556 \text{ (3 decimal places)} \end{array}$$

Try Some: (Answers can be found on page 6)

16. 123.45 * 6.7 17. 879.3 * 0.004 18. 987.65 · 65.3

Dividing Decimals

$$0.08\overline{)7.224} \qquad 0.08\overline{)7.224} = 90.3$$

$$\begin{array}{r} -72 \\ \hline 024 \\ -24 \\ \hline 0 \end{array}$$

The decimal point was moved two spaces to the right in both the divisor and the dividend

Dividing Decimalsove the decimal point the same number of places to the right in both the divisor and the dividend until the divisor is a whole number.

a. Divide as you divide by a whole number.

Try Some: (Answers can be found on page 6)

19. 64.26 ÷ 0.03 20. 12.78 ÷ 0.24 21. 30 ÷ 0.12

Review: Fractions

Adding and Subtracting Fractions and Mixed Numbers

Adding Fractions or Mixed Numbers.

a. If needed, rewrite the fraction part with a common denominator.
b. Add the whole numbers and the fraction part.
c. If the fraction part is improper, rewrite it as a mixed number. Regroup the whole number.
d. Simplify to lowest terms.

$$\begin{array}{rl} 4\frac{1}{3} & = 4\frac{5}{15} \\ +\ 3\frac{2}{5} & = 3\frac{6}{15} \\ \hline & 7\frac{11}{15} \end{array}$$

Subtracting Fractions or Mixed Numbers.

a. If needed, rewrite the fractions with a common denominator
b. If necessary do the following:
   i. Rename one from the whole number
   ii. The denominator tells you how many you rowed, so add the denominator to the numerator to find out how many you have.
c. Subtract the fraction parts and the whole numbers.
d. Simplify to lowest terms.

1. $3 - \frac{1}{4}$ — $3 = 2\frac{4}{4}$ "Borrow" a 1 from the 3 and change to $\frac{4}{4}$. $-\frac{1}{4} = -\frac{1}{4}$ → $2\frac{3}{4}$

2. $2\frac{1}{3} + 3\frac{1}{8}$ — $2\frac{1}{3} = 2\frac{8}{24}$, $+3\frac{1}{8} = +3\frac{3}{24}$ → $5\frac{11}{24}$

The LCD of 3 and 8 is 24.

$3\frac{3}{9} + \frac{9}{9} = 2\frac{12}{9}$

$-1\frac{5}{9} = -1\frac{5}{9}$

$1\frac{7}{9}$

Try Some: (Answers can be found on page 6)

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

23. $\frac{3}{7} - \frac{2}{5} =$

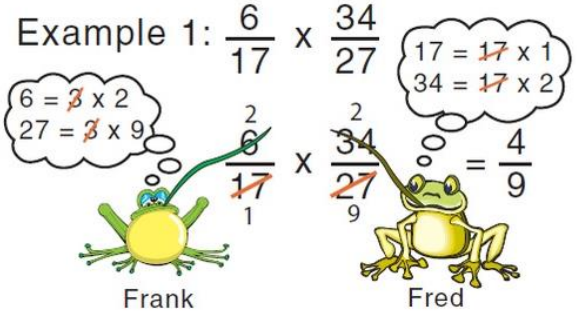
24. $3\frac{5}{6} + 2\frac{5}{9} =$

25. $6\frac{4}{5} - 2\frac{3}{15} =$

Multiplying Fractions and Mixed Numbers

Multiplying fractions and Mixed Numbers

a. Rewrite mixed numbers and whole numbers as improper fractions.
b. If possible, cross-cancel.
c. Multiply numerators.
d. Multiply denominators.
e. Simplify to lowest terms.



Multiply these mixed numbers.

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

Solution:

$2\frac{3}{5} \times 5\frac{1}{2} = \frac{13}{5} \times \frac{11}{2} = \frac{13 \times 11}{5 \times 2} = \frac{143}{10} = 14\frac{3}{10}$

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

Solution:

$8\frac{1}{4} \times 4\frac{1}{2} = \frac{33}{4} \times \frac{9}{2} = \frac{33 \times 9}{4 \times 2} = \frac{297}{8} = 37\frac{1}{8}$

Try Some: (Answers can be found on page 6)

26. $\frac{2}{3} * \frac{1}{4} =$

27. $3\frac{1}{2} * 2\frac{1}{3} =$

28. $\frac{3}{8} * \frac{2}{9} =$

29. $4 * 3\frac{1}{4} =$

Dividing Fractions and Mixed Numbers

Dividing Fractions

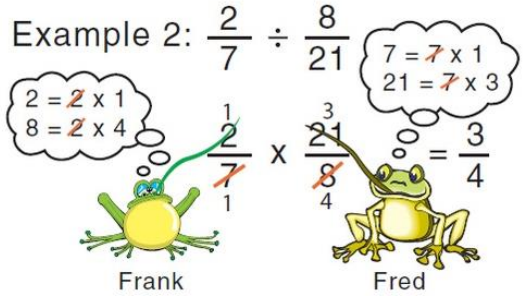
a. To divide by a fraction, multiply by its reciprocal. (Dividing fractions, easy as pie, flip the right and multiply).

$5\frac{5}{6} \div 2\frac{1}{10}$

$\frac{35}{6} \div \frac{21}{10} =$

$\frac{35}{6} * \frac{10}{21} = \frac{25}{9} = 2\frac{7}{9}$

Example 2: $\frac{2}{7} \div \frac{8}{21}$



$\frac{2}{7} \times \frac{21}{8} = \frac{3}{4}$

Try Some: (Answers can be found on page 6)

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

31. $\frac{2}{5} \div 5 =$

32. $3\frac{3}{4} \div 2\frac{1}{2} =$

33. $5 \div 2\frac{1}{2} =$

Check your answers to the "Try Some" problems:

1.) 18 ÷ 2 – 4 = 9 – 4 = 5

2.) 12 * (6 – 2) = 12 * 4 = 48

3.) 20 ÷ 10 + 21 * 5 = 2 + 105 = 107

4.) $(2 + 3)^2 - 5 = 25 - 5 = 20$

5.) 4(x) + 4(5) = 4x + 20

6.) 3(x) + 3 (8) = 3x + 24

7.) 7(x) – 7(2) = 7x – 14

8.) 9(x) – 9(6) = 9x – 54

9.) 15y

10.) 11x

11.) 11x + 9

12.) 112.28

13.) 153.47

14.) 5.31

15.) 45.22

16.) 827.115

17.) 3.5172

18.) 64,493.545

19.) 2,142

20.) 53.25

21.) 250

22.) $\frac{1}{5} + \frac{2}{3} = \frac{3}{15} + \frac{10}{15} = \frac{13}{15}$

23.) $\frac{3}{7} - \frac{2}{5} = \frac{15}{35} - \frac{14}{35} = \frac{1}{35}$

24.) $3\frac{5}{6} + 2\frac{5}{9} = 3\frac{15}{18} + 2\frac{10}{18} = 5\frac{25}{18} = 6\frac{7}{18}$

25.) $6\frac{4}{5} - 2\frac{3}{15} = 6\frac{12}{15} - 2\frac{3}{15} = 4\frac{9}{15} = 4\frac{3}{5}$

26.) $\frac{2}{3} * \frac{1}{4} = \frac{2*1}{3*4} = \frac{2}{12} = \frac{1}{6}$

27.) $3\frac{1}{2} * 2\frac{1}{3} = \frac{7}{2} * \frac{7}{3} = \frac{49}{6} = 8\frac{1}{6}$

28.) $\frac{3}{8} * \frac{2}{9} = \frac{6}{72} = \frac{1}{12}$

29.) $4 * 3\frac{1}{4} = \frac{4}{1} * \frac{13}{4} = \frac{52}{4} = 13$

30.) $\frac{2}{5} \div \frac{1}{5} = \frac{2}{5} * \frac{5}{1} = \frac{10}{5} = 2$

31.) $\frac{2}{5} \div 5 = \frac{2}{5} * \frac{1}{5} = \frac{2}{25}$

32.) $3\frac{3}{4} \div 2\frac{1}{2} = \frac{15}{4} \div \frac{5}{2} = \frac{15}{4} * \frac{2}{5} = \frac{30}{20} = 1\frac{1}{2}$

33.) $5 \div 2\frac{1}{2} = \frac{5}{1} \div \frac{5}{2} = \frac{5}{1} * \frac{2}{5} = 2$

Week 1 **Name: _____**

PLEASE DO NOT USE A CALCULATOR AND REMEMBER TO SHOW ALL WORK!

Order of Operations	Distributive Property	Combining Like Terms
Simplify: $3^2 + 5(4 - 2)$	Simplify the expression: $6(y + 8)$	Simplify the expression: $7x + 15x$

Decimals	Fractions
Add: $4.56 + 2.13$ Multiply: $1.23 * 3$	Add: $\frac{3}{10} + \frac{2}{10}$ Multiply: $\frac{3}{5} * \frac{1}{6}$

Week 2 **Name: _____**

PLEASE DO NOT USE A CALCULATOR AND REMEMBER TO SHOW ALL WORK!

Order of Operations	Distributive Property	Combining Like Terms
Simplify: $3 + 4 \div 2$	Simplify the expression: $5(x - 6)$	Simplify the expression: $8y + 12y$

Decimals	Fractions
Subtract: $64.51 - 4.32$	Subtract: $\frac{5}{6} - \frac{3}{5}$
Divide: $2.7 \div 0.9$	Divide: $\frac{2}{3} \div \frac{1}{6}$

Week 3 **Name: _____**

PLEASE DO NOT USE A CALCULATOR AND REMEMBER TO SHOW ALL WORK!

Order of Operations	Distributive Property	Combining Like Terms
Simplify: $10 \div 5 * 3$	Simplify the expression: $7(x + 4)$	Simplify the expression: $4x + 15x$

Decimals	Fractions
Add: $103 + 144.221$ Multiply: $1.25 * 1.3$	Add: $\frac{1}{8} + \frac{2}{5}$ Multiply: $4\frac{2}{3} * 1\frac{1}{2}$

Week 4 **Name: _____**

PLEASE DO NOT USE A CALCULATOR AND REMEMBER TO SHOW ALL WORK!

Order of Operations	Distributive Property	Combining Like Terms
Simplify: $4(3^3 - 8) \div 2$	Simplify the expression: $4(x + 9)$	Simplify the expression: $2x + 6 + 5x$

Decimals	Fractions
Subtract: $52.1 - 3.99$ Divide: $25.15 \div 0.5$	Subtract: $2\frac{3}{4} - \frac{2}{5}$ Divide: $\frac{3}{4} \div 4$

Week 5 **Name: _____**

PLEASE DO NOT USE A CALCULATOR AND REMEMBER TO SHOW ALL WORK!

Order of Operations	Distributive Property	Combining Like Terms
Simplify: $3 * 6 - 4 \div 2$	Simplify the expression: $8(y - 2)$	Simplify the expression: $5x + 11x + 9 + 7$

Decimals	Fractions
Subtract: $42 - 2.36$ Divide: $3.18 \div 15$	Add: $4\frac{1}{3} + 3\frac{2}{5}$ Multiply: $2\frac{2}{3} * 2\frac{1}{4}$

Week 6 **Name: _____**

PLEASE DO NOT USE A CALCULATOR AND REMEMBER TO SHOW ALL WORK!

Order of Operations	Distributive Property	Combining Like Terms
Simplify: $12 + 7 * 3 - 24$	Simplify the expression: $11(x - 3)$	Simplify the expression: $3x + 4 + 6x + 9$

Decimals	Fractions
Add: $43.21 + 167.1 + 19.6$ Multiply: $0.0023 * 4.9$	Subtract: $6\frac{5}{6} - 3\frac{1}{2}$ Divide: $4\frac{1}{6} \div 1\frac{2}{3}$

Week 7 **Name: _____**

PLEASE DO NOT USE A CALCULATOR AND REMEMBER TO SHOW ALL WORK!

Order of Operations	Distributive Property	Combining Like Terms
Insert parenthesis to make the statement true: $5^2 - 15 \div 5 = 2$	Simplify the expression: $4(19 + x)$	Simplify the expression: $8 + 9y + 14 + 5y$

Decimals	Fractions
Solve. It takes Marsha 15.34 seconds to finish the math problem. It takes Billy 34.30 seconds to finish the problem. How much longer does it take Billy to do the problem than Marsha?	Solve. You ride your bike $\frac{3}{8}$ mile to the store. Then you ride $1\frac{1}{2}$ mile to school. How far do you ride altogether?
Solve. Sandra makes $9.75 an hour babysitting her sister. She made $126.75 this weekend. How many hours did Sandra babysit?	Solve. A recipe calls for $\frac{3}{4}$ cup of flour. You want to make $\frac{1}{2}$ of the recipe. How much flour should you use?

Week 8 **Name: _____**

PLEASE DO NOT USE A CALCULATOR AND REMEMBER TO SHOW ALL WORK!

Order of Operations	Distributive Property	Combining Like Terms
Solve: At a baseball game, 6 adults pay $20 each and 4 children pay $10 each. What is the total cost of the tickets?	Simplify the expression: $2(23 + y)$	Simplify the expression: $4x + 7y + 3x + 11 + 2y$

Decimals	Fractions
Solve. I want to put three bookshelves against the wall. One is 6.25 feet long, another is 5.75 feet long, and another is 6.5 feet long. What is the total length of the three bookshelves?	Solve. You swam at a rate of $\frac{3}{8}$ miles per hour in March. You swam at a rate of $\frac{3}{7}$ mile per hour in April. How much faster did you swim in April?
Solve. Ben bought 12 goldfish. Each goldfish cost $3.98. How much did Ben spend at the pet store?	Solve. You are stacking books into a shipping box that is 15 inches high. Each book is $1\frac{1}{4}$ inches thick. How many books can you fit in a stack?