John P. Freeman Optional School

Zone 6

2023 Summer 6th Grade Packet

Student Name _____

(Please be sure to write your initials on the line at the bottom of each page.)

This packet contains math concepts that may or may not have been taught in your previous classes but are important for 6th grade. Students enrolled in 6th grade Pre-Algebra for the 2023-2024 school year are expected to submit a completed packet during the first week of school (August 7-11). Exact due dates/procedures will be discussed on August 7th.

6th Grade Summer Math Packet Instructions

Student Name _____

1. This packet has 6 sections, and it is recommended that students work on one section each week during the summer. It is NOT recommended to complete this packet immediately following school dismissal nor the night before the packet is due. Student learning is most effective if the packet is worked on throughout the summer at a steady pace.

2. You should complete the problems without a calculator, and you should **SHOW ALL YOUR WORK.** Use additional paper is needed. No credit will be provided if your work is not shown.

3. After completing a section, rate your understanding of each week's topic by circling the image in the chart below.
   - **Smiley face** – You understand ALL the concepts for that week and would be able to teach it to another student.
   - **Neutral face** – You understand the concepts for the most part
   - **Confused face** – You do not understand these concepts and need help reviewing.

WEEK	MATH TOPIC	MY RATING
1	Integer Operations	

2	Order of Operations	
3	Division with Fractions	
4	Multiplication and Division	
5	Long Division	
6	Mixed Review	

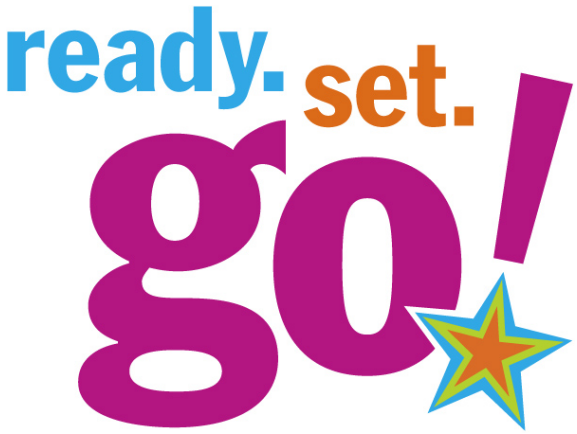
What do I do if I don't understand something?

- Use your resources (online help sites, iReady, videos, parents, siblings, etc.)
- You may use the reference links in this packet to help you.
- Make a note of the topic/question on the rating chart and ask your teacher to review it during the first week of school.

What happens next?

- Concepts will be reviewed and discussed during the first week of school.
- Students will receive both a participation grade and an assessment grade, based on the packet completion. (Your teacher will discuss this with you August 7, 2023.)

We are excited about working with all of the students entering 6th grade in 2023-2024. We want all students to feel prepared, confident, and successful for all of the important new concepts they will learn next year.



Rising 6th Grade RESOURCES (Copy & Paste the Links)

WEEK	MATH TOPIC	VIDEO & TUTORIAL LINKS
1	Integer Operations	• 6.NS.C.5, 7.NS.A.1, 7.NS.A.2 • https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-negative-numbers-add-and-subtract/cc-7th-sub-neg-intro/v/adding-and-subtracting-negative-number-examples • https://www.youtube.com/watch?v=0hEQL3F5mc8 • http://www.mathgames.com/skill/6.57-add-and-subtract-integers • http://www.mathgames.com/skill/6.55-understanding-integers • http://www.mathgames.com/skill/7.81-multiply-and-divide-integers
2	Order of Operations	• 6.EE.A.2 • https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-arithmetic-operations/cc-6th-order-of-operations/v/order-of-operations-1

		• https://www.youtube.com/watch?v=dXvvGc9TldY • http://www.mathgames.com/skill/6.149-order-of-operations
3	Division with Fractions	• 6.NS.A.1 • http://www.mathgames.com/skill/6.24-divide-by-fractions-with-models • http://www.mathgames.com/skill/6.26-divide-fractions-up-to-1-5-1-7-1-9
4	Multiplication and Division	• 6.NS.B.2 • http://www.mathgames.com/skill/4.99-choose-the-multiples-of-a-given-number • http://www.mathgames.com/skill/4.102-divisibility-rules-with-numbers-up-to-10-000
5	Long Division	• 6.NS.B.2 • http://www.mathgames.com/skill/5.44-division-with-divisors-up-to-100 • http://www.mathgames.com/skill/5.43-division-with-remainder-with-dividend-up-to-1000 • http://www.mathgames.com/skill/6.36-division-with-remainder-with-divisor-up-to-1000
6	Mixed Review	• 6.NS.B.2, 6.NS.B.3 • http://www.mathgames.com/skill/6.138-add-fractions-with-unlike-denominators • http://www.mathgames.com/skill/6.139-subtract-fractions-with-unlike-denominators • http://www.mathgames.com/skill/5.84-multiply-fractions

Week 1: Integer Operations

Addition

When addends have the same sign, add. Use that sign when you write the sum:

5 + 8 = 13
-2 + -5 = -7

When addends have different signs, subtract. Use the sign of the greater addend:

-6 + 4 = -2
45 + -10 = 35

Subtraction

To subtract an integer, add its opposite:

*The opposite of 12 is -12

4 — 12 = 4 + -12 = -8
9 — -12 = 9 + 12 = 21

*The opposite of 15 is -15

1 — -15 = 1 + 15 = 16
-20 — -15 = -20 + 15 = -5

Multiplication

When factors have the same sign, the product is positive:

5 · 6 = 30
-13 · -3 = 39

When the factors have different signs, the product is negative:

-6 · 8 = -48
9 · -11 = -99

Division

When the dividend and the divisor have the same sign, the quotient is positive:

45 ÷ 5 = 9
-120 ÷ -6 = 20

When the dividend and the divisor have different signs the quotient is negative:

35 ÷ -5 = -7
-250 ÷ 10 = -25

Solve:

1. $-2 + (+3) =$
2. $-3(-4) =$
3. $45 - (-27) =$
4. $-5 + (+4) =$
5. $24 \div (-6) =$
6. $19(-4) =$
7.. $5 - (-3) =$
8. $5(-18) =$
8. $-42 \div (-6) =$
9. $-7 - (-3) =$
10. $-8 \div (-4) =$
11. $-21 + -19 =$
12. $-14 - 6 =$
13. $17(-4) =$
14. $32 \div (-4) =$
15. $6 + (-8) =$
16. $81 \div (-9) =$
17. $14 - (-7) + (-2) =$
18. $93 - -21 =$
19. $-7 + 2 =$
20. $-21 \div (-7) =$

21. $-3 * -6$

22. $15 * -3$

23. $-4 * 9$

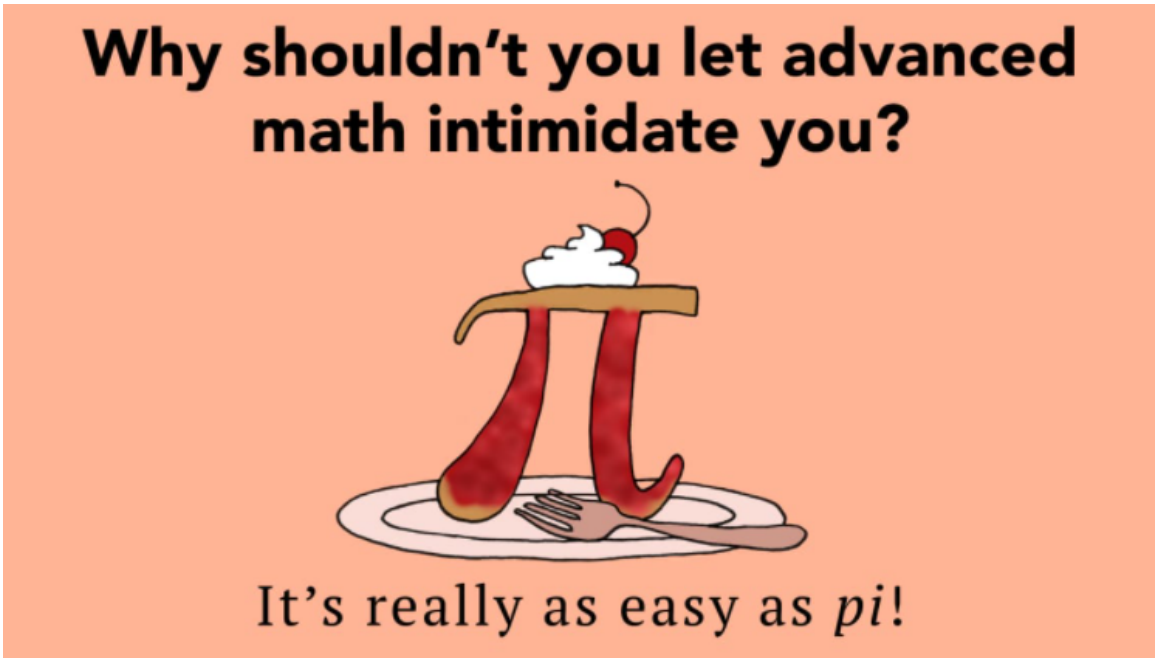
24. $-3 * -5 * -6$

25. $-24 \div -3$

26. $40 \div -8$

27. $10 * -9$

28. $-98 \div 7$



Week 2: Order of Operations

Order of Operations			
1st	Grouping Symbols	$\frac{4+2}{8\cdot7} = \frac{(4+2)}{(8\cdot7)}$ $\sqrt{50-1}$ $50-[3\cdot(15-5)]+23$ Do this 1st!	**Grouping** Symbols include: ( ), { }, [ ], | | ←absolute value bars. In addition, complete all operations **grouped** by the numerator or denominator in a fraction & operations located underneath a radical symbol.
2nd	Radicals & Exponents	3^2 $3^{\frac{1}{2}}$ $\sqrt{3}$ $\sqrt[4]{81}$	Rational Exponents & Roots are included
3rd	Division & Multiplication	$30\div 2\cdot 5 = 75$ versus $30\cdot 2\div 5 = 12$ →	Calculate Left to Right →
4th	Subtraction & Addition	$-2+6-8 = -4$ →	Calculate Left to Right →

Use the order of operations to solve the following problems.

1. $18 - (-12 - 3) =$

2. $-19 + (7 + 4)3 =$

3. $18 + (-7) \bullet (32 - 6) =$

4. $-19 - (-3) + -2(8 + -4) =$

5. $20 + -4(32 - 6) =$

6. $-3 + 2(-6 \div 3)2$

7. $3 \bullet (-4) + (52 + -4 \bullet 2) - (-9.82) =$

8. $23 + (-16) \div 42 \bullet 5 - (-3) =$

9. $-6(12 - 15) + 23 =$

10. $-50 \div (-10) + (5 - 3)4 =$

11. $-4.5 \bullet (-0.53) + (-1)$

12. $5 - 2 + 8$

13. $85 / 5 + (8+9) \times 2 =$

14. 2×6^2

15. $2 \times 4 + 9$

16. $2 + 3 \times 8$

17. $2 \times (8 - 6)$

19. $10 - 3^2$

20. $3 + 2 \times 6$

21. $3 + 9^2$

22. $(9 - 5) \times 4$

23. $9 + 7 \times 5$

24. $10 + 3^3$

Dividing Fractions
by whole numbers

Example:

$$\frac{1}{3} \div 6 =$$

Step 1: Convert the whole number to a fraction

$$\frac{1}{3} \div \frac{6}{1} =$$

Step 2: Turn the second fraction into its reciprocal and multiply

$$\frac{1}{3} \times \frac{1}{6} = \frac{1}{18}$$

Step 3: Simplify if possible

$$\frac{1}{18}$$

(not possible to simplify)

Practice:

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

$$\frac{7}{10} \div 7 =$$

$$\frac{5}{7} \div 4 =$$

$$\frac{4}{9} \div 3 =$$

How to divide fractions:

1. Leave the first fraction in the equation alone.
2. Turn the division sign into a multiplication sign.
3. Flip the second fraction over (find its reciprocal).
4. Multiply the two fractions.
5. Finally simplify the fraction.

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

$\frac{5}{5} \div \frac{6}{8} =$

$\frac{4}{4} \div \frac{1}{2} =$

$\frac{1}{4} \div \frac{1}{3} =$

$\frac{2}{3} \div \frac{4}{5} =$

$\frac{1}{4} \div \frac{2}{7} =$

$\frac{1}{4} \div \frac{1}{4} =$

$\frac{5}{7} \div \frac{3}{5} =$

$\frac{1}{7} \div \frac{5}{7} =$

$\frac{1}{6} \div \frac{4}{8} =$

$\frac{4}{4} \div \frac{3}{8} =$

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

$\frac{1}{2} \div \frac{7}{9} =$

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

$\frac{4}{9} \div \frac{1}{8} =$

$\frac{4}{8} \div \frac{4}{5} =$

$\frac{1}{3} \div \frac{4}{4} =$

$\frac{5}{8} \div \frac{3}{9} =$

$\frac{4}{4} \div \frac{3}{3} =$

$\frac{2}{2} \div \frac{1}{6} =$

DIVISION AND MULTIPLICATION FACTS SHEET 2

Multiplication and division are inverse operations of each other. Change each division fact to two different multiplication facts.

Example: 4 x 5 = 20 means that 20 ÷ 4 = 5 and 20 ÷ 5 = 4.

1)	6 x 5 = 30	means	30 ÷ 6 = 5	and
2)	7 x 4 = 28	means		and
3)	8 x 5 = 40	means		and
4)	6 x 7 = 42	means		and
5)	4 x 8 = 32	means		and
6)	7 x 8 = 56	means		and
7)	9 x 6 = 54	means		and
8)	5 x 9 = 45	means		and
9)	8 x 3 = 24	means		and
10)	8 x 6 = 48	means		and
11)	9 x 7 = 63	means		and
12)	6 x 5 = 30	means		and
13)	8 x 9 = 72	means		and
14)	10 x 9 = 90	means		and
15)	4 x 12 = 48	means		and

Week 5: Long Division

1) $4\overline{)295}$

2) $6\overline{)475}$

3) $3\overline{)281}$

4) $3\overline{)211}$

5) $4\overline{)201}$

6) $6\overline{)329}$

7) $6\overline{)497}$

8) $3\overline{)145}$

9) $4\overline{)115}$

10) $6\overline{)259}$

11) $4\overline{)379}$

12) $4\overline{)326}$

13) $4\overline{)158}$

14) $6\overline{)575}$

15) $3\overline{)137}$

16) $3\overline{)154}$

17) $3\overline{)116}$

18) $4\overline{)250}$

19) $6\overline{)184}$

20) $3\overline{)217}$

21) $4\overline{)270}$

22) $6\overline{)483}$

23) $6\overline{)106}$

24) $4\overline{)161}$

25) $3\overline{)50}$

26) $6\overline{)369}$

27) $4\overline{)61}$

28) $6\overline{)160}$

29) $3\overline{)182}$

30) $3\overline{)89}$

Week #6 Mixed Review

Mixed Review

$\frac{3}{4} + \frac{1}{2} =$ ☐ $\frac{9}{5} - \frac{1}{3} =$ ☐ $\frac{2}{5} \times \frac{2}{7} =$ ☐

$\frac{6}{8} \div \frac{3}{4} =$ ☐ $\frac{6}{7} - \frac{4}{7} =$ ☐ $\frac{5}{6} + \frac{3}{5} =$ ☐

$\frac{1}{9} \times 18 =$ ☐ $\frac{4}{7} \div \frac{8}{9} =$ ☐ $\frac{9}{2} - \frac{3}{2} =$ ☐

$\frac{12}{5} \div \frac{5}{2} =$ ☐ $\frac{3}{8} \times \frac{4}{9} =$ ☐ $\frac{2}{9} + \frac{5}{6} =$ ☐

$\frac{13}{5} - \frac{3}{5} =$ ☐ $\frac{4}{7} \times \frac{7}{10} =$ ☐ $3 \div \frac{15}{9} =$ ☐