

This year, we will focus on the work of becoming mathematicians. Mathematicians look for patterns, persevere in solving difficult problems, construct reasonable arguments, and work together. To do these things, we need some tools. This packet will help you sharpen your tools to be prepared for 6th grade math.

Please complete each of these problems over the summer and **bring the completed packet with you on the first day of school.** This will be your first quiz grade of the year.

Fraction Operations

If each rectangle below represents 1 whole, what fraction is the shaded region?

1.



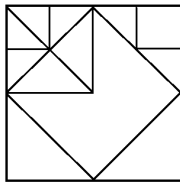
Shaded region = _____

2.



Shaded region = _____

3. Shade $\frac{1}{4}$ of the figure below. The entire outer square represents one unit.



Convert the mixed numbers into fractions greater than 1:

4. $1 \frac{1}{2} =$ _____

5. $3 \frac{5}{8} =$ _____

6. $14 \frac{2}{5} =$ _____

Convert the fractions into mixed numbers:

7. $\frac{45}{10} =$ _____

8. $\frac{8}{5} =$ _____

9. $\frac{26}{7} =$ _____

Add or Subtract:

10. $\frac{3}{8} + \frac{1}{8} =$ _____

11. $\frac{1}{3} + \frac{4}{9} =$ _____

12. $\frac{4}{5} - \frac{1}{10} =$ _____

13. $\frac{2}{3} - \frac{1}{6} =$ _____

Decimal Operations (Hint: Rewrite and line up the decimals before adding.)

14. $5.1 + 6.4 =$ _____

15. $10.7 + 3.2 =$ _____

16. $150.4 + 83.7 =$ _____

17. $27.6 - 15.4 =$ _____

18. $72.35 - 38.49 =$ _____

Word Problems

19. Leigha is a snowboarder. She aced half of her tricks in a recent competition. On one-third of her tricks, she did okay. She wiped out on the rest. On what fraction of the tricks did Leigha wipe out?

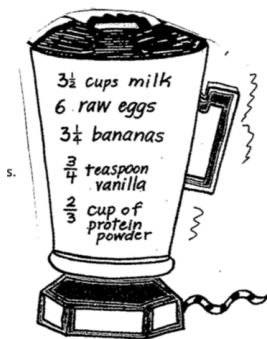
$$1 - \left(\frac{1}{2} + \frac{1}{3}\right) = ?$$

$$? = \underline{\hspace{2cm}}$$

20. Over three weeks of practice Sadie ate 46 energy bars. The first week, she ate $16\frac{3}{4}$ bars. In the second week, she ate the same amount as during the first. How many bars did Sadie eat in the third week?

$$\left(16\frac{3}{4} + 16\frac{3}{4}\right) + ? = 46 \quad ? = \underline{\hspace{2cm}}$$

Jeff makes energy shakes for his friends. One batch makes enough for four football players. Answer the following questions using the recipe below.



21. By mistake, Jeff put in $2\frac{1}{2}$ times the amount of vanilla. How much vanilla was in the shake?
22. Jeff decided to multiply the amount of protein powder by 4 times. How much powder did he put in?
23. Jeff shared $\frac{1}{5}$ of the total shake with a friend. How much milk would be in $\frac{1}{5}$ of this shake?

Problem-Solving

24. Lucy has measuring cups of sizes 1 cup, $\frac{1}{2}$ cup, $\frac{1}{3}$ cup, and $\frac{1}{4}$ cup. She is trying to measure out $\frac{1}{6}$ of a cup of water and says, "If I fill up the $\frac{1}{2}$ cup and then pour that into the $\frac{1}{3}$ cup until it is full, there will be $\frac{1}{6}$ of a cup of water left."

a. Is Lucy's method to measure $\frac{1}{6}$ of a cup of water correct? Explain.

b. Lucy wonders what other amounts she can measure. Is it possible for her to measure out $\frac{1}{12}$ of a cup? Explain.

c. What other amounts of water can Lucy measure?

25. Cora and Cecilia each use chalk to make their own number patterns on the sidewalk. They make each of their patterns 10 boxes long and line their patterns up so they are next to each other.
- Cora puts 0 in her first box and decides that she will add 3 every time to get the next number.
- Cecilia puts 0 in her first box and decides that she will add 9 every time to get the next number.

Cora:

0	3								
---	---	--	--	--	--	--	--	--	--

Cecilia:

0	9								
---	---	--	--	--	--	--	--	--	--

- Complete each girl's sidewalk pattern.
- How many times greater is Cecilia's number in the 5th box be than Cora's number in the 5th box? What about the numbers in the 8th box? The 10th box?
- What pattern do you notice in your answers for part b? Why do you think that pattern exists?
- If Cora and Cecilia kept their sidewalk patterns going, what number will be in Cora's box when Cecilia's corresponding box shows 153?

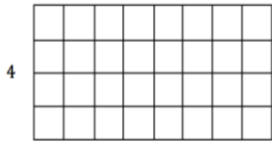
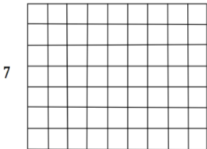
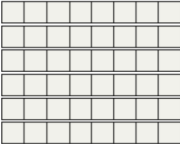

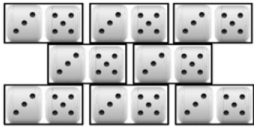

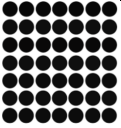
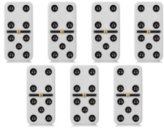

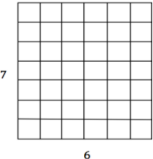

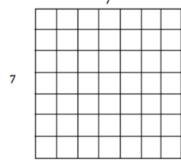
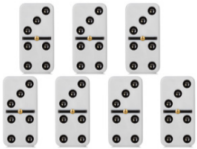

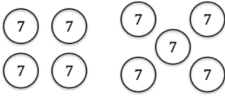

Number Sense (skip this part if you don't have a printed copy of the packet)

Number sense is extremely important to math learning! The best mathematicians use numbers flexibly and creatively, so brush up your skills before school starts.

Look at the boxes below. Several boxes show the same numerical answer through different representations.

Color all the boxes that show the same numerical answer with the same color.

Number	Color	Number	Color
32	red	49	green
42	orange	63	blue
48	yellow	64	purple

9×7		63	
	8×6		
8×8		6×7	49
	7×9	7^2	
7×6	4×8		42
	64	7×7	
8^2		8×4	
			48