

Hello future 7th Graders,

Attached is your summer work. There are six weeks of work focusing on different concepts (about 60-90 minutes each week). The last page has 10 mixed word problems.

A couple reminders:

- Show all your work.
- Take notes of questions or concepts you are having trouble with.
- You can use your summer packet for your first Quiz.
- Try to spread out the time of when you complete your summer work.

Enjoy your summer and I look forward to seeing everyone in September.

Mr. Fallone

Week 1: Decimal Operations (Translate words into algebraic expressions.)

Adding & Subtracting Decimals

ex: $14.2 - 7.934$

1. Write the problem vertically, lining up the decimal points
2. Add additional zeroes at the end, if necessary, to make the numbers have the same number of decimal places
3. Add/subtract as if the numbers are whole numbers
4. Bring the decimal point straight down

$$\begin{array}{r} 14.200 \\ - 7.934 \\ \hline 6.266 \end{array}$$

Multiplying Decimals

ex: 6.94×7.8

1. Write the problem vertically with the numbers lined up to the right. The decimal points do NOT need to be lined up.
2. Ignore the decimals and multiply as if the numbers are whole numbers.
3. Count the total number of decimal places in the factors and put a decimal point in the product so that it has that same number of decimal places.

$$\begin{array}{r} 6.94 \rightarrow 2 \text{ decimal places} \\ \times 7.8 \rightarrow 1 \text{ decimal place} \\ \hline 5552 \\ + 48580 \\ \hline 54132 \end{array}$$

2 decimal places

$$\boxed{54.132}$$

Dividing Decimals

ex: $25.3 \div 0.3$

1. Write the dividend under the long division symbol and the divisor to the left of it.
2. Move the decimal point in the divisor after the number to turn it into a whole number, and then move the decimal in the dividend the same number of places. Then bring the decimal point straight up.
3. Divide as if the numbers are both whole numbers.
4. Add zeros in the dividend as needed until there is no remainder. If your answer is a repeating decimal, write the answer using bar notation.

$$\begin{array}{r} \overline{)84.3} \\ 0.3 \overline{)25.3} \uparrow 0 \\ \underline{-24} \\ 13 \\ \underline{-12} \\ 10 \\ \underline{-9} \\ 1 \end{array}$$

Order of Operations

ex: $5 + 4(3 - 1.2)$

1. Grouping symbols
2. Exponents
3. Multiplication & Division (Left to Right)
4. Addition & Subtraction (Left to Right)

$$\begin{array}{r} 5 + 4(1.8) \\ 5 + 7.2 \\ \hline 12.2 \end{array}$$

Evaluate each expression.

1. $5.983 + 2.99$

5. $0.23 \cdot 0.7$

9. $147 \div 2.25$

2. $224 - 56.73$

6. $3.86 \cdot 9.15$

10. $24.33 - 2.5 \cdot 7$

3. $6.12 - 4.923$

7. $14.8 \div 0.5$

11. $3.9 + 4.5^2$

4. $24.5 \cdot 3.2$

8. $46.3 \div 1.5$

12. $9.25(18.4 - 2 \cdot 1.2)$

Solve each word problem, showing all work.

13. Ms. Bowler had \$46.18 in her wallet Monday morning. She gave half of her money to her brother. She then bought two donuts for \$0.75 each and a cup of coffee for \$2.99. How much money did Ms. Bowler have left?

14. You and four friends split a \$65.20 bill at Tommy's. Everyone left \$2.75 for the tip. How much money did each person pay in all?

Translate words into algebraic expressions.

(a) three less than twice a number

(b) the quotient of a number and seven

(c) the product of eight and a number decreased by four

(d) two-thirds of a number

(e) the difference of twenty and a number

(f) three-fourths of the sum of a number and twelve

Week 2: Fraction Operations

Adding Fractions & Mixed Numbers

1. Find a common denominator
2. Add the two numerators and keep the denominator the same
3. Add the whole numbers
4. Simplify the answer and/or change improper fraction answers to mixed numbers

ex: $3\frac{3}{4} + 2\frac{1}{2}$

$$\begin{array}{r} 3\frac{3}{4} = 3\frac{3}{4} \\ + 2\frac{1}{2} = 2\frac{2}{4} \\ \hline 5\frac{5}{4} = \boxed{6\frac{1}{4}} \end{array}$$

Subtracting Fractions & Mixed Numbers

1. Find a common denominator
2. Subtract the two numerators and keep the denominators the same. If the top numerator is smaller than the bottom numerator, borrow from the whole number and rename the top fraction.
3. Subtract the whole numbers.
4. Simplify.

ex: $5\frac{1}{4} - 1\frac{2}{3}$

$$\begin{array}{r} 5\frac{1}{4} = 5\frac{3}{12} = 4\frac{15}{12} \\ - 1\frac{2}{3} = 1\frac{8}{12} = \frac{8}{12} \\ \hline 3\frac{7}{12} \end{array}$$

Multiplying Fractions & Mixed Numbers

1. Turn any mixed numbers into improper fractions.
2. Cross-cancel if possible.
3. Multiply the numerators and the multiply the denominators
4. Simplify.

ex: $2\frac{1}{6} \cdot \frac{4}{7}$

$$\frac{13}{\cancel{3}^2} \cdot \frac{\cancel{4}^2}{7} = \frac{26}{21} = \boxed{1\frac{5}{21}}$$

Dividing Fractions & Mixed Numbers

1. Turn any mixed numbers into improper fractions.
2. Keep the first fraction the same, change the division to multiplication, and flip the second fraction to its reciprocal. (KeeP, Change, Flip)
3. Multiply the fractions.
4. Simplify.

ex: $7 \div 1\frac{3}{4}$

$$\begin{array}{r} 7 \div 1\frac{3}{4} \\ \frac{7}{1} \div \frac{7}{4} \\ \downarrow \\ \frac{7}{1} \cdot \frac{4}{7} = \frac{4}{1} = \boxed{4} \end{array}$$

Evaluate each expression.

1. $\frac{4}{5} + \frac{3}{4}$

5. $8\frac{3}{5} - 2\frac{1}{3}$

9. $6\frac{5}{8} \cdot 3\frac{1}{2}$

2. $4\frac{2}{7} + 2\frac{9}{14}$

6. $\frac{4}{25} \cdot \frac{15}{16}$

10. $\frac{7}{9} \div \frac{2}{3}$

3. $12 - 3\frac{4}{7}$

7. $4\frac{1}{6} - \frac{8}{9}$

11. $\frac{4}{5} \div 10$

4. $6 - \frac{3}{8}$

8. $2\frac{3}{4} \cdot 8$

12. $5\frac{2}{3} \div 2\frac{5}{6}$

Solve each word problem, showing all work.

13. Goose ran $3\frac{1}{2}$ miles on Monday. She ran half as far on Tuesday as she did on Monday. How far did Goose run in all on Monday and Tuesday?

14. A $5\frac{1}{2}$ quart pot is filled $\frac{2}{3}$ of the way with water. How many more quarts of water can the pot hold?

15) $7\frac{3}{8} + 8\frac{5}{6} + 4\frac{3}{4}$

16) The perimeter of a rectangle is $9\frac{7}{15}$ inches. The width of the rectangle is $1\frac{2}{3}$ inches. What is the length?

17) The RCDS soccer team is working on their endurance. They hope to run 12 miles in a week. On Monday, they ran $2\frac{2}{5}$ miles, on Tuesday, they ran $1\frac{5}{6}$ miles, and on Wednesday, they ran $3\frac{3}{10}$ miles. How many miles do they have to run for the rest of the week, if they want to meet their goal?

Week 3: Ratios and Rates

Ratios

Ratios are comparisons of two numbers.
There are 3 different ways to write ratios:
-Fraction
-Colon
-Word Form
Ratios can be simplified like fractions.

ex: write the ratio of triangles to circles
in 3 ways: $\triangle \triangle \triangle \triangle \circ \circ$

$$\frac{4}{2} = \boxed{\frac{2}{1}, 2:1, 2 \text{ to } 1}$$

Rates & Unit Rates

Rates are ratios that compare two quantities measured in different units.
A unit rate is a rate with a denominator of 1.

ex: express as a unit rate:
125 miles in 4 hours

$$\frac{125 \text{ mi}}{4 \text{ hr}} \quad 125 \div 4 = 31.25$$

To convert a rate to a unit rate:

1. Divide the numerator by the denominator
2. Either write your answer as a fraction with a label for both the numerator and denominator OR as one number labeled with the first unit "per" the second unit

$$\boxed{\frac{31.25 \text{ mi}}{1 \text{ hr}} \text{ or } 31.25 \text{ miles per hr}}$$

Write each ratio in simplest form and 3 different ways.

1. A bank contains 15 pennies and 12 nickels. Write the ratio of nickels to pennies.
2. A bowl contains 6 apples and some bananas. If there are a total of 10 pieces of fruit, find the ratio of apples to bananas.

Convert each rate to a unit rate.

3. \$4.25 for 64 fluid
ounces

4. 297 miles on 11
gallons of gas

5. 124 feet in 10
seconds

Solve each word problem, showing all work.

6. You can buy 5 cans of green beans at Sickle's for \$2.20. You can buy 10 of the same cans of beans at Acme for \$6.50. Which place is the better buy?
7. A jet travels 560 miles in 2 hours. At this rate, how far could the jet fly in 10 hours? What is the rate of speed of the jet?
8. Nicholas' Creamery makes 120 quarts of ice cream in 2 hours. How many quarts could be made in 12 hours? What was the rate per day?
9. A ferris wheel can accommodate 60 people in 25 minutes. How many people could ride the ferris wheel in 2 hours? What was the rate per hour?
10. Gas mileage is the number of miles you can drive on a gallon of gas. A test of a new Tesla results in 580 miles on 10 gallons of gas. How far could you drive on 75 gallons of gas? What is the car's gas mileage?

11)

Find the missing number (variable) in the equivalent fractions.

$$\textcircled{1} \quad \frac{4}{6} = \frac{3}{d}$$

$$\textcircled{2} \quad \frac{6}{b} = \frac{3}{5}$$

$$\textcircled{3} \quad \frac{1}{b} = \frac{4}{16}$$

$$\textcircled{4} \quad \frac{1}{3} = \frac{c}{24}$$

$$\textcircled{5} \quad \frac{a}{7} = \frac{14}{49}$$

$$\textcircled{6} \quad \frac{a}{3} = \frac{2}{6}$$

$$\textcircled{7} \quad \frac{4}{10} = \frac{6}{d}$$

$$\textcircled{8} \quad \frac{11}{12} = \frac{22}{d}$$

$$\textcircled{9} \quad \frac{15}{4} = \frac{x}{20}$$

$$\textcircled{10} \quad \frac{6}{a} = \frac{4}{32}$$

$$\textcircled{11} \quad \frac{x}{6} = \frac{55}{66}$$

$$\textcircled{12} \quad \frac{5}{a} = \frac{45}{54}$$

Week 4: Percents

Fractions, Decimals, & Percents

- Decimal to Percent: move the decimal point 2 places to the right
- Percent to Decimal: move the decimal point 2 places to the left
- Decimal to Fraction: write the decimal over the place value of the last digit, then simplify
- Fraction to Decimal: divide the numerator by the denominator
- Percent to Fraction: write the percent over 100 and then simplify
- Fraction to Percent: convert the fraction to a decimal and then convert the decimal to a percent

$$\text{ex: } 0.345 = \boxed{34.5\%}$$

$$\text{ex: } 7\% = \boxed{0.07}$$

$$\text{ex: } 0.008 = \frac{8}{1000} = \boxed{\frac{1}{125}}$$

$$\text{ex: } \frac{1}{5} = 5 \overline{)1.0} = \boxed{0.2}$$

$$\text{ex: } 45\% = \frac{45}{100} = \boxed{\frac{9}{20}}$$

$$\text{ex: } \frac{3}{10} = 0.3 = \boxed{30\%}$$

Percent Proportion

1. Translate the statement
2. Solve the percent proportion

$$\frac{\text{part}}{\text{whole}} = \frac{\%}{100}$$

$$\frac{\text{is}}{\text{of}} = \frac{\%}{100}$$

Complete the chart by converting each number to a percent, fraction, and/or decimal.

	Fraction	Decimal	Percent
1.	$\frac{3}{8}$		
2.		0.45	
3.			72%
4.		0.1	
5.	$5\frac{7}{10}$		

6. What is 24% of 35?

10. 30% of 117 is what?

7. What percent of 126 is 22?

11. 46 is what percent of 107?

8. 81 is 56% of what number?

12. What is 3% of 74?

9. 17% of what is 156?

13. 40 is 25% of what number?

14) Find a percent of a number.

(a) Find 10% of 462

(b) Find 75% of 924

(c) Find 40% of 2.4

(d) Find 1% of 8900

(e) Find 350% of 8

Week 5: Expressions and Equations (Operations with integers.)

Evaluating Algebraic Expressions

1. Substitute the given numbers for the variables
2. Evaluate the expression using the order of operations

ex: evaluate $x + 4y$ for
 $x = 4$ & $y = 6$

$$\begin{array}{r} 4 + 4(6) \\ 4 + 24 = \boxed{28} \end{array}$$

One-Step Addition & Subtraction Equations

- Addition Equations: Subtract the number being added to the variable from both sides of the equation

$$\begin{array}{r} \text{ex: } 4 + x = 18 \\ -4 \quad -4 \\ \hline x = 14 \end{array}$$

- Subtraction Equations: Add the number being subtracted from the variable to both sides of the equation

$$\begin{array}{r} \text{ex: } 20 = a - 5 \\ +5 \quad +5 \\ \hline 25 = a \rightarrow \boxed{a = 25} \end{array}$$

One-Step Multiplication & Division Equations

- Multiplication Equations: Divide both sides of the equation by the number being multiplied to the variable

$$\begin{array}{r} \text{ex: } 7b = 28 \\ \div 7 \quad \div 7 \\ \hline b = 4 \end{array}$$

- Division Subtraction: Multiply both sides of the equation by the number dividing the variable

$$\begin{array}{r} \text{ex: } 5 \cdot \frac{n}{5} = 10 \cdot 5 \\ \hline n = 50 \end{array}$$

Inequalities

1. Solve for the variable.
2. Then graph the solution.
< or > use an open circle
 \leq or \geq use a closed circle

$$\begin{array}{r} x - 12 \leq 4 \\ +12 \quad +12 \\ \hline x \leq 16 \end{array}$$



16

Evaluate each expression for $a = -5$, $b = -12$, $c = 10$, and $d = 2$.

1. $2a^2 - c$

2. $d(ab - c)$

3. $3 + b \div d$

Solve each equation.

4. $\frac{r}{10} + 4 = 5$

6. $4n - 9 = -9$

8. $0.4x + 3.9 = 5.78$

5. $3p - 2 = -29$

7. $-9 + \frac{n}{4} = -7$

9. $\frac{m}{2.8} - 4.9 = -7.11$

Solve each inequality and graph its solution.

10. $-4t > 16$

12. $\frac{x}{5} \geq -\frac{3}{5}$

14. $18 + s \leq -7$

11. $\frac{x}{-2} \leq 3$

13. $-14v < 28$

15. $v - 4 > 13$

16) Operations with integers.

Be Careful....when are you adding & subtractiong (tell stories)

When are you multiplying & dividing (use your rules).

(a) $(4)(-2)(-5)(-3) =$

(b) $-10 - 6 - 7 - 4 =$

(c) $2 * -5 * -12 =$

(d) $-300 \div -25 =$

(e) $-8 + (-7) - (-2) =$

(f) $-450/9 =$

(g) $-9 + 6 + 11 - 1 =$

(h) $(-20)(-60) =$

(i) $\frac{75}{-5} =$

(j) $3 - (-4) + (-15) =$

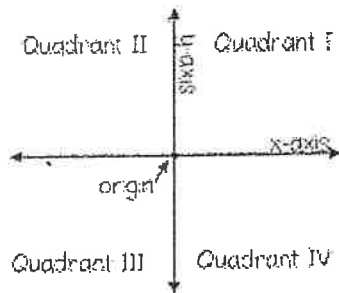
(k) $-10 * -10 * -10 =$

(l) $(-4)^3 =$

The Coordinate Plane

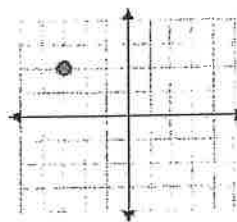
To graph a point on the coordinate plane, start at the origin. The first number in the ordered pair (x-coordinate) tells you how far left (negative) or right (positive) to move. The second number (y-coordinate) tells you how far up (positive) or down (negative) to move.

ex: Graph the point $(-3, 2)$
and state the quadrant
in which it is located.



Ordered Pair: (x, y)

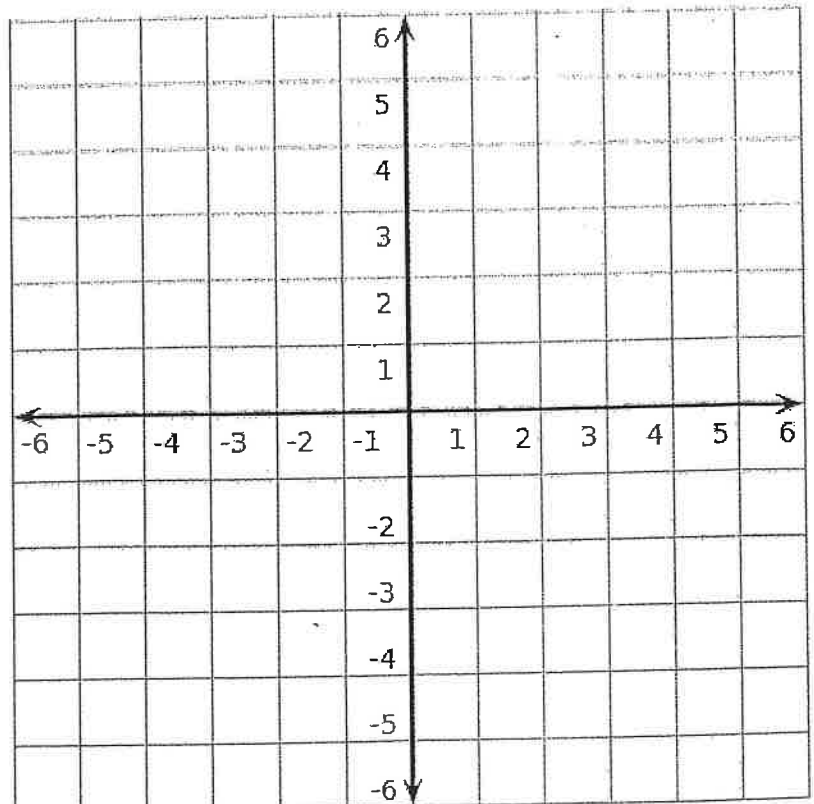
Graph the point and state
quadrant of P.



Quadrant II

Graph and label each of the ordered pairs in the coordinate plane. Then state the quadrant or axis in/on which the point is located.

1. A(2,4)	2. B(0,-3)
3. C(1,-1)	4. D(3,3)
5. E(-4,1)	6. F(2,0)
7. G(-3,-2)	8. H(-2,3)
9. I(-1,-4)	10. J(0,2)



11) The following properties describe what shapes?

(a) A polygon with four sides is a _____.

(b) A quadrilateral with exactly one pair of parallel sides is a

_____.

(a) A parallelogram with four right angles is a

_____.

(a) A quadrilateral with two pairs of parallel sides is a

_____.

(a) A rectangle with congruent sides is a _____.

12) An isosceles triangle has side lengths of 8.2cm, 8.2cm, and 4.7 cm.

(a) Draw a picture of the triangle and label all the lengths given.

(b) Find the perimeter of the triangle.

Simplify the expression using order of operations.

Underline what you work on in each step.

Remember: 4 STEPS 1. Parenthesis ()

2. Exponents

3. Multiply/Divide (left to right)

4. Add/Subtract (left to right)

13) $5(18 - 3^2) + 12$

14) $[(7 - 3)^2 + 2] \div 3$

15) $32 \div (11 - 9)^3 - 1$

16) $\frac{10^2 - 5^2}{2^3 + 7}$

17) **Simplify** (meaning combine like terms).

(a) $n + 3 + n + 3 + n + 3 + n + 3$

(b) $9x + 4 + 4x + 7x + 2$

(c) $-5x + 9y - 10 + x - 4y - 7$

18)

Apply the **distributive property**.
(You are multiplying when you distribute.)

(a) $5(a + 5)$

(b) $-5(y - 9) =$

(c) $-(4x^2 + 8x - 5)$

(d) $m(m - 7)$

(e) $-10(3b + 2c)$

6) The Washington Monument has 897 steps that go to the top. Michael climbed 25 fewer than $\frac{1}{3}$ of the steps. How many steps did Michael climb?

7) Ann and Pat are working together on a report. They have agreed to each write exactly $\frac{1}{2}$ of the report. Ann wrote $2\frac{1}{4}$ pages last night and will write $1\frac{1}{2}$ pages tonight. Pat has written $1\frac{3}{8}$ pages. How much more does Pat have to write?

8) Anthony and Abby had the same number of paperclips. After Anthony gave 30 to Abby, Abby had twice as many paperclips as Anthony. How many paperclips did they have in all?

9) A trucking company is replacing all of the tires on their 115 trucks. Each truck uses 18 tires. How many tires is the company replacing?

10) Britney had \$304 more than Isabel. Together they had \$1,350. How much money did each girl have?

Cumulative Worksheet - Word Problems

- 1) Amanda and her best friend found some money buried in a field. They split the money evenly, each getting \$24.28. How much money did they find?
- 2) A recipe for cookies calls for $3\frac{1}{4}$ cups of sugar. Amy has already put in $2\frac{1}{2}$ cups. How many more cups of sugar does she need to put in?
- 3) A stray dog ate 12 of your muffins. That was $\frac{3}{10}$ of all of them! With how many did you start with?
- 4) Harry is typing his Social Studies paper. He can type 300 words in 6 minutes. If there are 900 words, how long will it take him to type his paper?
- 5) Frank is baking pies. He has 18 pounds of cherries. If he needs $\frac{1}{3}$ pound of cherries for each pie, how many pies can he bake?