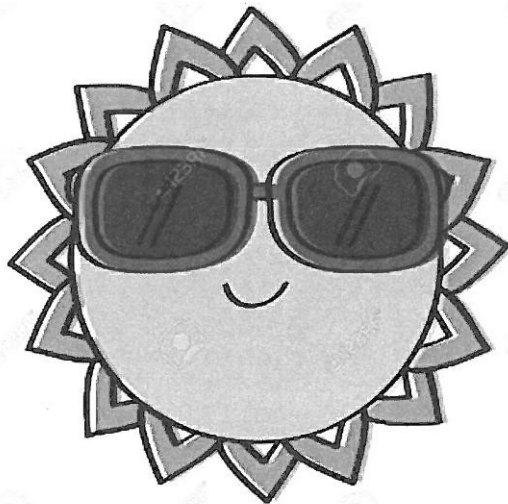




Summer Math Packet

Students entering 8th grade
Fall of 2023

Name: _____

Date Completed: _____

Hello! I hope you enjoy your summer, but it is good to work throughout the summer to keep your skills sharp. This packet may seem long, but most of the problems should be quick to solve and there are some diagrams that take up space. Please do not use a calculator and I look forward to seeing you in the fall.

Sincerely,

Mrs. Cocchi

MMS Math Department

jcocchi@town.hull.ma.us

addition

~ **Same Signs** ~
Add & KEEP the sign!

$$2 + 2 = 4$$

$$-6 + (-4) = -10$$

~ **Different Signs** ~
SUBTRACT & take the sign
of the HIGHER absolute
value!

$$-18 + 14 = -4$$

$$-10 + 40 = 30$$

subtraction

KEEP... The first number the same.

$$4 - 6$$

CHANGE... The subtraction to
addition.

$$4 + 6$$

CHANGE... The sign of the second
number.

$$4 + -6$$

Then follow the rules for addition!



integer operations

Multiply or Divide like normal.

~ **Same Signs: POSITIVE ANSWER** ~

$$6(8) = 48$$

$$-7 \cdot -4 = 28$$

~ **Different Signs: NEGATIVE ANSWER** ~

$$-4(5) = -20$$

$$56/-8 = -7$$

+	-	-
-	+	-
-	-	+

multiplication & division

Integer Operations Review

Name: _____

Adding Integers

1) $85 + (-96) =$ _____

2) $80 + 57 =$ _____

3) $86 + (-38) =$ _____

4) $22 + (-41) =$ _____

5) $-18 + (-45) =$ _____

6) $-32 + 48 =$ _____

7) $6 + (-33) =$ _____

8) $6 + (-47) =$ _____

9) $(-78) + 69 =$ _____

10) $-72 + (-30) + 10 =$ _____

11) $-83 + (-36) + 20 =$ _____

Subtracting Integers

1) $1 - 3 =$ _____

2) $2 - (-5) =$ _____

3) $6 - (-9) =$ _____

4) $-7 - (-1) =$ _____

5) $-7 - 4 =$ _____

6) $3 - (-2) =$ _____

7) $-1 - 9 =$ _____

8) $2 - 9 =$ _____

9) $-8 - (-1) =$ _____

Multiplying Integers

1) $(-4)(-12) =$ _____

2) $-8 \times (-8) =$ _____

3) $(-8)(-10) =$ _____

4) $5 \times 1 =$ _____

5) $(-10)(11) =$ _____

6) $(-3)(-8) =$ _____

7) $-2 \times 6 =$ _____

8) $7(-12) =$ _____

9) $4 \times (-10) =$ _____

10) $(-9)(-6)(2) =$ _____

11) $(-10)(-7)(-4) =$ _____

Dividing Integers

1) $-48 \div 6 =$ _____

2) $-81 \div (-9) =$ _____

3) $-18 \div (-6) =$ _____

4) $25 \div (-5) =$ _____

5) $-10 \div 2 =$ _____

6) $-35 \div (-5) =$ _____

7) $-42 \div 6 =$ _____

8) $-70 \div (-7) =$ _____

9) $-16 \div (-8) =$ _____

Rules for the Order of Operations

Please Excuse My Dear Aunt Sally

Parenthesis- Do any operations in parenthesis

Exponents- Do any exponents

Multiplication

Division



Do all multiplication and division in order from left to right

Addition

Subtraction



Do all addition and subtraction in order from left to right

Example:

$$12 + 4 \times (11 - 6)$$


$$12 + 4 \times 5$$


$$12 + 20 = 32$$

**Remember to only do one step at a time! ☺*

Name : _____

Order of Operations: Basic

L3ES1

Solve.

1) $6 + 42 \div 2 - 15$

Ans =

2) $36 - 10 \times 2 \div 5 - 11$

Ans =

3) $25 \times 2 - 42 \div 6 + 18$

Ans =

4) $3 + 32 \div 8 - 9$

Ans =

5) $8 + 9 - 2 \times 3$

Ans =

6) $4 - 6 \times 2 \div 2 + 2$

Ans =

7) $12 \div 2 \times 6 + 4 - 3$

Ans =

8) $63 \div 7 \times 3 - 4$

Ans =

9) $4 + 8 - 5 \times 6$

Ans =

10) $5 + 36 \div 2 \times 3 - 4$

Ans =

5 simple rules for simplifying fractions:

- #1—check to see if the numerator fits evenly into the denominator. If so, divide by the numerator.
- #2—check to see if both the numerator and denominator are even. If so, divide by 2. *(This helps cover 2's, 4's, 6's, and 8's.)*
- #3—check to see if both the numerator and denominator are multiples of 3. If so, divide by 3. *(This helps cover 3's, 6's, and 9's.)*
- #4—check to see if both the numerator and the denominator are multiples of 5. If so, divide by 5. *(This helps cover 5's and 10's.)*
- #5—check to see if the numerator and denominator are any other obvious multiples of basic prime numbers, like 7, 11, or 13. *(This gets most of the others)*

Recheck each of these rules after each step of simplifying to make sure you are in SIMPLEST form. Also remember, that if you get the numerator to 1, you are done!

The 5 rules in simplest form are: $\div N \div 2 \div 3 \div 5 \div \text{Primes}$

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The 5 rules in simplest form are: $\div N \div 2 \div 3 \div 5 \div \text{Primes}$

Name : _____

Simplifying Proper Fractions

Sheet 1

A) Reduce each proper fraction to its lowest terms.

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

2) $\frac{32}{56} =$

3) $\frac{30}{48} =$

4) $\frac{9}{81} =$

5) $\frac{6}{22} =$

6) $\frac{4}{8} =$

7) $\frac{5}{35} =$

8) $\frac{27}{51} =$

B) 1) Which of the following fractions is the simplest form of $\frac{7}{14}$?

a) $\frac{1}{2}$

b) $\frac{2}{3}$

c) $\frac{5}{6}$

d) $\frac{1}{7}$

2) Which of the following fractions is the simplest form of $\frac{18}{40}$?

a) $\frac{9}{10}$

b) $\frac{6}{20}$

c) $\frac{9}{20}$

d) $\frac{6}{15}$

p. 6

Decimal Place Value Chart



Hundred Thousands	HTH	100,000	10,000	1,000	100	10	.	tenths	hundreds	thousands	ten thousands	hundred thousands
	Th	Th	H	T	O	.	t	h	th	th	th	th
	100,000	10,000	1,000	100	10	1	10	100	1,000	10,000	100,000	1,000,000

Whole Number Part

Decimal Point

Fractional Part

Name : _____

Score : _____

Underline the Digit

Up to thousandths: S1

1) Underline the digit in thousandths place.

- a) 756.218 b) 3.672 c) 821.053 d) 46.809

2) Underline the digit in ones place.

- a) 2.70 b) 13.586 c) 562.1 d) 309.14

3) Underline the digit in hundreds place.

- a) 197.8 b) 823.40 c) 261.349 d) 594.1

4) Underline the digit in tenths place.

- a) 423.16 b) 5.2 c) 235.46 d) 86.357

5) Underline the digit in tens place.

- a) 729.85 b) 962.5 c) 80.403 d) 215.69

6) Underline the digit in hundredths place.

- a) 473.529 b) 12.896 c) 3.602 d) 742.93

7) Underline the digit in thousandths place.

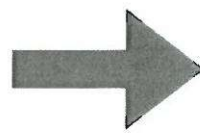
- a) 387.215 b) 2.674 c) 92.561 d) 54.362

8) Underline the digit in tenths place.

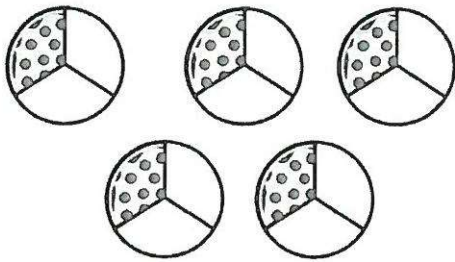
- a) 5.829 b) 67.208 c) 76.943 d) 123.567

P.8

IMPROPER FRACTION

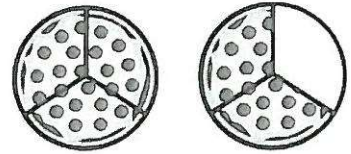


MIXED NUMBER



$$\frac{5}{3}$$

numerator
is larger than the
denominator



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

whole number
and
fraction

Step 1

Divide the numerator by the denominator

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

Step 2

Solve the division problem with a remainder

$$5 \div 3 = 1r2$$

Step 3

Convert the quotient back into a fraction.

$$1r2 = 1 \text{ whole and } 2 \text{ pieces left over} = 1\frac{2}{3}$$

$$\frac{5}{3} = 1\frac{2}{3}$$



*Denominator stays the same!

Name : _____

Converting Improper Fractions to Mixed Numbers

Sheet 1

Convert each improper fraction to a mixed number.

1) $\frac{9}{2} =$ _____

2) $\frac{27}{8} =$ _____

3) $\frac{85}{9} =$ _____

4) $\frac{19}{3} =$ _____

5) $\frac{47}{6} =$ _____

6) $\frac{67}{12} =$ _____

7) $\frac{29}{10} =$ _____

8) $\frac{53}{6} =$ _____

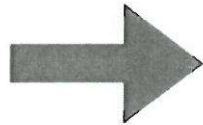
9) $\frac{71}{8} =$ _____

10) $\frac{6}{5} =$ _____

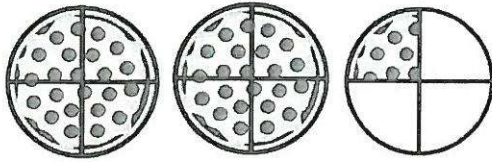
11) $\frac{7}{4} =$ _____

12) $\frac{92}{11} =$ _____

MIXED NUMBER

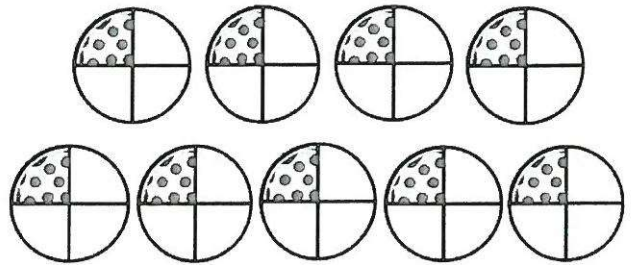


IMPROPER FRACTION



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

whole number
and
fraction



$$\frac{9}{4}$$

numerator
is larger than the
denominator

Step
1

Multiply the whole number by the denominator

$$2\frac{1}{4} \rightarrow 4 \times 2 = 8$$

*There are 8 fourths in
the two whole pizzas*

Step
2

Add the numerator

$$8 \text{ fourths} + 1 \text{ fourth} = 9 \text{ fourths}$$

Step
3

Denominator stays the same

$$2\frac{1}{4} \times 4 = \frac{9}{4}$$

Name : _____

Converting Mixed Numbers to Improper Fractions

Sheet 1

Convert each mixed number to an improper fraction.

1) $5\frac{2}{7} =$ _____

2) $1\frac{3}{4} =$ _____

3) $9\frac{7}{10} =$ _____

4) $7\frac{3}{8} =$ _____

5) $1\frac{4}{5} =$ _____

6) $6\frac{7}{12} =$ _____

7) $4\frac{8}{9} =$ _____

8) $2\frac{1}{2} =$ _____

9) $5\frac{5}{11} =$ _____

10) $3\frac{1}{6} =$ _____

11) $1\frac{1}{7} =$ _____

12) $8\frac{2}{3} =$ _____

* Add the numerators and keep the denominator.
* Then simplify.

Adding Like Fractions

Proper / Improper: S1

1) $\frac{1}{3} + \frac{1}{3} =$

2) $\frac{8}{5} + \frac{9}{5} =$ $\frac{17}{5} = 3\frac{2}{5}$
 $\frac{8+9}{5} = \frac{17}{5}$

3) $\frac{4}{26} + \frac{7}{26} =$

4) $\frac{5}{12} + \frac{7}{12} =$

5) $\frac{13}{30} + \frac{17}{30} =$

6) $\frac{5}{2} + \frac{3}{2} =$

7) $\frac{13}{15} + \frac{4}{15} =$

8) $\frac{10}{36} + \frac{17}{36} =$

9) $\frac{3}{4} + \frac{9}{4} =$

10) $\frac{3}{7} + \frac{2}{7} =$

11) $\frac{12}{20} + \frac{11}{20} =$

12) $\frac{15}{14} + \frac{17}{14} =$

13) $\frac{3}{8} + \frac{7}{8} =$

14) $\frac{19}{18} + \frac{12}{18} =$

P.13

Find a common denominator, then add
*Then simplify

Adding Proper Fractions

ES1

1) $\frac{3}{8} + \frac{1 \times 2}{4 \times 2} = \boxed{\frac{5}{8}}$
 $\frac{3}{8} + \frac{2}{8} = \frac{5}{8}$

2) $\frac{2}{3} + \frac{8}{9} = \boxed{}$

3) $\frac{5}{6} + \frac{7}{12} = \boxed{}$

4) $\frac{4}{10} + \frac{3}{5} = \boxed{}$

5) $\frac{1}{2} + \frac{3}{4} = \boxed{}$

6) $\frac{2}{3} + \frac{1}{2} = \boxed{}$

7) $\frac{7}{11} + \frac{2}{5} = \boxed{}$

8) $\frac{1}{4} + \frac{4}{7} = \boxed{}$

9) $\frac{2}{3} + \frac{2}{6} = \boxed{}$

10) $\frac{3}{5} + \frac{1}{2} = \boxed{}$

11) $\frac{1}{4} + \frac{11}{12} = \boxed{}$

12) $\frac{3}{4} + \frac{5}{6} = \boxed{}$

13) $\frac{4}{5} + \frac{2}{3} = \boxed{}$

14) $\frac{1}{2} + \frac{3}{8} = \boxed{}$

P.14

* Subtract the numerator and keep denominator.
* Then simplify *

Subtracting Proper Fractions

Easy: S1

1) $\frac{10}{12} - \frac{3}{12} =$ $\frac{7}{12}$

$\frac{10-3}{12} = \frac{7}{12}$

2) $\frac{5}{7} - \frac{3}{7} =$

3) $\frac{2}{3} - \frac{1}{3} =$

4) $\frac{3}{4} - \frac{2}{4} =$

5) $\frac{4}{5} - \frac{2}{5} =$

6) $\frac{9}{10} - \frac{3}{10} =$

7) $\frac{7}{8} - \frac{4}{8} =$

8) $\frac{5}{6} - \frac{4}{6} =$

9) $\frac{8}{10} - \frac{1}{10} =$

10) $\frac{11}{12} - \frac{10}{12} =$

11) $\frac{6}{7} - \frac{2}{7} =$

12) $\frac{10}{11} - \frac{4}{11} =$

13) $\frac{7}{9} - \frac{4}{9} =$

14) $\frac{3}{5} - \frac{2}{5} =$

p.15

*Convert to improper fraction
 *Then find a common denominator

Subtracting Unlike Fractions

All fractions: S1

$$1) \quad 8\frac{1}{2} - 2\frac{2}{8} = \frac{50}{8} = 6\frac{2}{8} = 6\frac{1}{4}$$

Handwritten work for problem 1:

$$\begin{array}{r} 17 \times 4 \\ 2 \times 4 \\ \hline 68 \end{array} - \frac{18}{8} = \frac{50}{8}$$

$$3) \quad \frac{9}{5} - \frac{22}{20} =$$

$$4) \quad 9\frac{4}{7} - \frac{30}{28} =$$

$$5) \quad 5\frac{1}{2} - \frac{4}{10} =$$

$$6) \quad \frac{10}{3} - \frac{2}{5} =$$

$$7) \quad \frac{11}{12} - \frac{5}{6} =$$

$$8) \quad 4\frac{1}{2} - 1\frac{2}{3} =$$

$$9) \quad 7\frac{1}{3} - \frac{40}{39} =$$

$$10) \quad \frac{9}{4} - \frac{20}{16} =$$

$$11) \quad \frac{7}{2} - \frac{4}{5} =$$

$$12) \quad 3\frac{1}{6} - \frac{15}{18} =$$

$$13) \quad 4\frac{3}{4} - 2\frac{6}{12} =$$

$$14) \quad \frac{13}{7} - \frac{12}{14} =$$

p. 16

Simplify, then multiply straight across

Multiplying Fractions - Cross Cancellation

L151

Find the product.

1) $\frac{\cancel{3}^1}{\cancel{10}_5} \times \frac{\cancel{2}^1}{\cancel{3}_1} = \frac{3 \times 1}{5 \times 1} = \frac{3}{5}$

2) $\frac{12}{8} \times \frac{18}{16}$

3) $\frac{33}{7} \times \frac{14}{21}$

4) $\frac{6}{18} \times \frac{9}{42}$

5) $\frac{22}{15} \times \frac{45}{4}$

6) $\frac{3}{28} \times \frac{35}{6}$

7) $\frac{2}{7} \times \frac{35}{12}$

8) $\frac{16}{15} \times \frac{21}{24}$

multiply by the reciprocal

Dividing Fractions

Sheet 1

Find the quotient.

1) $\frac{6}{7} \div \frac{2}{7}$

$3 \frac{\cancel{6}}{\cancel{7}} \cdot \frac{\cancel{7}^1}{\cancel{2}_1} = \frac{3 \times 1}{1 \times 1} = \frac{3}{1} = 3$

2) $\frac{1}{4} \div \frac{19}{12}$

3) $\frac{2}{5} \div \frac{7}{9}$

4) $\frac{5}{3} \div \frac{3}{8}$

5) $\frac{3}{4} \div \frac{9}{8}$

6) $\frac{12}{18} \div \frac{17}{9}$

7) $\frac{11}{10} \div \frac{5}{2}$

8) $\frac{15}{17} \div \frac{5}{3}$