

Tab 1

Unit 2 Volume:

Volume

The amount of space a 3D object can take up.

Formula:

Volume = Length x Width x Height

$V = L \times W \times H$

$V = 5 \times 2 \times 4$
 10×4
 $V = 40\text{ft}^3$

Height 4ft

Length 5ft

Width 2ft

Decorative border: A strip of various US state license plates including Minnesota, Nevada, Pennsylvania, Mississippi, Wisconsin, Maine, Michigan, Indiana, Iowa, Kansas, Kentucky, Georgia, Virginia, Delaware, Louisiana, and North Dakota.

Unit 3-4 Decimals:

Add/subtract Decimals

$$3.4 + 2.17$$

Step 1: Stack the decimals

$$\begin{array}{r} 3.4 \\ + 2.17 \\ \hline \end{array}$$

Step 2: Add the place holders

$$\begin{array}{r} 3.40 \\ + 2.17 \\ \hline \end{array}$$

Step 3: Begin adding or subtracting

$$\begin{array}{r} 3.40 \\ + 2.17 \\ \hline 5.57 \end{array}$$

Step 4: Bring DOWN the decimal!

$$\begin{array}{r} 3.40 \\ + 2.17 \\ \hline 5.57 \end{array}$$

Writing Decimals

| Thousands | Hundreds | Tens | Ones | • | Tenths | Hundredths | Thousandths | Ten-Thousandths |
|-----------|----------|------|------|---|--------|------------|-------------|-----------------|
| 2 | 3 | 8 | 7 | . | 1 | 4 | 9 | 5 |

2,387.1495

Word Form: Two thousand, three hundred eighty seven and one thousand four hundred ninety five ten-thousandths

Comparing Decimals

$$48.64 \text{ } \bigcirc \text{ } 48.68$$

$>, <, =$

① Copy down numbers with decimal alignment

$$\begin{array}{r} 48.64 \\ 48.68 \end{array}$$

② Evaluate numbers. Start with highest place value.

$$\begin{array}{r} 48.64 \\ 48.68 \end{array}$$

③ Cross out if equal & repeat evaluation process

$$\begin{array}{r} \cancel{48.64} \\ \cancel{48.68} \end{array}$$

④ Determine which is greater.

$$48.64 < 48.68$$

lary

Division Vocabulary

$$\underline{12} \div \underline{3} = \underline{4}$$

Dividend

Rounding Decimals

① underline the digit in the rounding place.

② Look at the digit to the right.

③ #5, 6, 7, 8, 9 ↑ up the score!

#4, 3, 2, 1, 0 → let it rest!

182.185 round to ones place Answer: 182

182.185 round to tenths place Answer: 182.2

185.396 round to hundredths place Answer: 185.4

189.963 round to hundredths place Answer: 189.96

Division Vocabulary

$$\begin{array}{ccc} 20 & \div & 4 = 5 \\ \text{Dividend} & & \text{Divisor} & & \text{Quotient} \end{array}$$

Forms of Decimals!

Standard Form
Expanded Form
Word Form

Standard Form

83.452

Expanded Form

$$80 + 3 + .4 + .05 + .002$$

OR

$$80 + 3 + \frac{4}{10} + \frac{5}{100} + \frac{2}{1000}$$

Word Form

Eighty three and four hundred fifty two thousandths.

Ro

① Underline Rounding

② LOOK

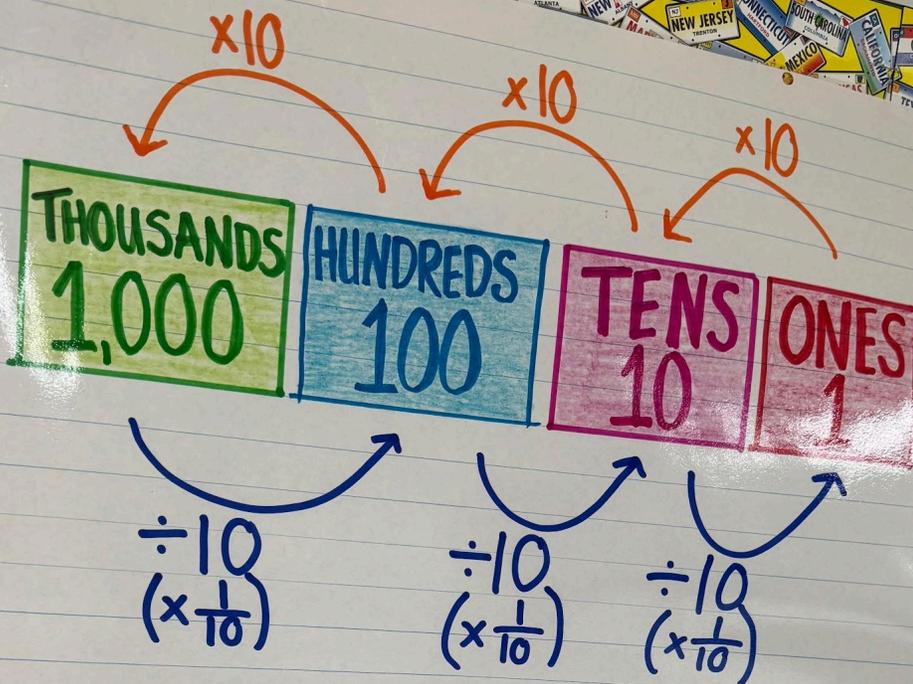
③ #5, 6, 7,
#4, 3, 2,

182.185 round

182.185 round

185.396 round

189.963 round



* When a number gets 10 times bigger, each digit moves one place value to the LEFT.

* When a number gets 10 times smaller ($\frac{1}{10}$), each digit moves one place value to the RIGHT.

Thousands
Hundreds
2 | 3
Word Form
hundred &
four hundr

Unit 5 - Multiply Whole Digit Numbers

★ EXPONENTS and POWERS of TEN ★

Exponents represent how many times a number (base) is multiplied by itself.

10³
base exponent

Powers of Ten ↻

| EXPONENTIAL form | EXPANDED form | STANDARD form (value) |
|------------------|--|-----------------------|
| 10^0 | | 1 |
| 10^1 | 10 | 10 |
| 10^2 | 10×10 | 100 |
| 10^3 | $10 \times 10 \times 10$ | 1,000 |
| 10^4 | $10 \times 10 \times 10 \times 10$ | 10,000 |
| 10^5 | $10 \times 10 \times 10 \times 10 \times 10$ | 100,000 |
| 10^6 | $10 \times 10 \times 10 \times 10 \times 10 \times 10$ | 1,000,000 |

POWERS of 10

10²

Tells you how many times you move your DECIMAL!

Multiply by Powers of 10

$$34.567 \times 10^2 = 3456.7$$

Move decimal to the right when you multiply.

3456.7

Divide by Powers of 10

$$34.567 \div 10^2 = .34567$$

Move decimal to the left when you divide.

.34567

Multiplication Standard Algo.

Step 1: Multiply the top number by the ones digit.

$$\begin{array}{r} 328 \\ \times 14 \\ \hline 1312 \end{array}$$

Step 2: Put your place holder zero.

$$\begin{array}{r} 328 \\ \times 14 \\ \hline 1312 \\ 0 \end{array}$$

Step 3: Multiply the top number by the tens digit.

$$\begin{array}{r} 328 \\ \times 14 \\ \hline 1312 \\ 3280 \end{array}$$

Step 4: Add!

$$\begin{array}{r} 328 \\ \times 14 \\ \hline 1312 \\ + 3280 \\ \hline 4592 \end{array}$$

Unit 6 - Multiply Decimals

Multiplying Decimals

$$\begin{array}{r} \overset{2}{\cdot} \overset{2}{\cdot} \\ 4.67 \\ \times 3.2 \\ \hline + \quad 934 \\ 14010 \\ \hline 14944 \end{array}$$

- ① Line up the numbers normally, ignore the decimal
- ② Multiply as normal
- ③ Starting from the right side of the factors, count how many decimal places you have in both factors.
- ④ Go down to the product, start on the right and count over the amount of total decimal places (#3) and insert your decimal

POWERS of 10

10²

Tells you how many times you move your DECIMAL!

Multiply by Powers of 10

$$34.567 \times 10^2 = 3456.7$$

Move decimal to the right when you multiply.

3456.7

Divide by Powers of 10

$$34.567 \div 10^2 = .34567$$

Move decimal to the left when you divide.

.34567

Unit 7 - Dividing Whole Numbers

Division Vocabulary

$$20 \div 4 = 5$$

Dividend Divisor Quotient

$$\begin{array}{r} 5 \text{ Quotient} \\ 4 \overline{) 20} \\ \text{Divisor} \end{array} \text{ Dividend}$$

$$\begin{array}{r} \text{Dividend } 20 \\ \hline \text{Divisor } 4 \end{array} = 5 \text{ Quotient}$$

Dividend - The large number that is being separated into groups.

Divisor - The number of groups the dividend is being separated into.

Quotient - The answer to a division problem, the number of items in each group.

Long Division

Step 1: Divide

$$2 \overline{) 947}$$

2 goes into 94 times (with some extra)

Step 2: Multiply

$$\begin{array}{r} \times 4 \\ 2 \overline{) 947} \\ \underline{8} \end{array}$$

$$2 \times 4 = 8$$

Step 3: Subtract

Step 4: Bring down

$$\begin{array}{r} 4 \\ 2 \overline{) 947} \\ \underline{-8} \downarrow \\ 14 \end{array}$$

Step 5: Repeat or Remainder

Can 2 go into 14?
Yes: Repeat
NO: Remainder

$$\begin{array}{r} 473 \text{ R}1 \\ 2 \overline{) 947} \\ \underline{-8} \\ 14 \\ \underline{-14} \\ 007 \\ \underline{-6} \\ 1 \end{array}$$

Fixed

6 by 14

7 = 98
(go over 100.)

Divisor is the
number.

Divisor stays
the same.

Dividend is
what is left over.

Multiplication by Powers of 10

Decimal moves to the

RIGHT for **EACH** zero

$$5.26 \times \underline{10} = 52.6$$

$$5.26 \times \underline{100} = 526.$$

$$5.26 \times \underline{1000} = 5260.$$

The Product is **BIGGER**

Division by Powers of 10

Decimal moves to the

LEFT for **EACH** zero

$$52.6 \div \underline{10} = 5.26$$

$$52.6 \div \underline{100} = .526$$

$$52.6 \div \underline{1000} = .0526$$

The quotient is **SMALLER**

When to Multiply

- Do you have fractional groups or amounts and is the problem asking for the total?
- Are you taking part of a whole?
- Are you taking a part of a part?
- Are you trying to determine the total amount you need for amount of people, recipes, etc.

Problem solving words for multiplication

- Each
- times
- Groups of
- in all
- Product
- Doubled
- Each had
- Sets of
- Area
- Altogether

When to divide

- Are you dividing a given amount into equal groups?
- Are you taking an amount and sorting it, breaking it up or cutting it into equal parts?
- Are you eating, drinking, or using an equal amount of a total each day and looking for how much you eat / drink / use each day?

Problem solving words for division

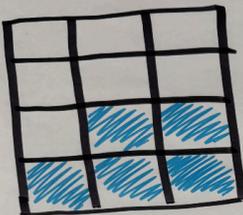
- Shared
- between
- Cut up
- Equal parts
- Split
- Separate
- half of
- quotient
- into groups
- Evenly

Unit 9 - Adding and Subtracting Fractions

1/28/20

Fractions

A fraction is a Part of a whole



$\frac{5}{12}$

Numerator
The top number is the numerator and tells us how many parts out of the whole.

Denominator
The bottom number is the denominator and tells us how many parts are in the ENTIRE whole.

| <u>Proper Frac.</u> | <u>Improper Frac.</u> | <u>Mixed Number</u> |
|--|--|---|
| $\frac{1}{2}$ | $\frac{6}{5}$ or $\frac{3}{3}$ | $8\frac{1}{2}$ |
| A fraction with the numerator that is less than the denominator. | A fraction with a numerator that is greater or equal to the denominator. | A combination of a whole number and fraction. |

😊 ☹️ 😊

Adding Fractions

Step 1:

Do you have a common denominator?

$$\frac{1}{6} + \frac{3}{4}$$

↑ ↑
Uncommon
Denominators

Step 2:

Find the lowest common denominator using a ratio table.

| | | | | | |
|---|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 6 | 12 | 18 | 24 | 30 | 36 |
| 3 | 6 | 9 | 12 | 15 | 18 |
| 4 | 8 | 12 | 16 | 20 | 24 |

Step 3: Rewrite

$$\frac{1 \times 2}{6 \times 2} + \frac{3 \times 3}{4 \times 3}$$
$$\downarrow \qquad \qquad \downarrow$$
$$\frac{2}{12} + \frac{9}{12}$$

Step 4:

Add only numerators, denominator stays the same!

$$\frac{2}{12} + \frac{9}{12} = \frac{11}{12}$$

So,

$$\frac{1}{6} + \frac{3}{4} = \frac{11}{12}$$

Annotation List

Characteristics: traits, physical, growth, changes.

Gen
(Also

Unit 10- Multiplying Fractions

Multiply Fractions

Fraction by a Fraction

Step 1:
Multiply the
numerators.

Step 2:
Multiply the
denominators.

Step 3:
Simplify

$$\frac{2}{5} \times \frac{3}{4} = \frac{6}{20} \div 2 = \frac{3}{10}$$

Fraction by whole

Step 1:
Rewrite whole
as fraction

Step 2:
Multiply
Fractions

Step 3:
Convert back
to mixed #/
or simplify

$$\frac{1}{4} \times 5 \rightarrow \frac{1}{4} \times \frac{5}{1} = \frac{5}{4} = 1\frac{1}{4}$$

Mixed Numbers

Step 1:
Convert mixed #'s
into improper Fractions.

Step 2:
Multiply
Fractions

Step 3:
Convert back
to mixed #

$$1\frac{1}{2} \times 2\frac{1}{5} = \frac{3}{2} \times \frac{11}{5} = \frac{33}{10} = 3\frac{3}{10}$$

Step 1 Step 2 Step 3

Improper Fractions & Mixed Numbers

Mixed to Improper

$$7\frac{8}{14} = \frac{106}{14}$$

Step 1: Multiply denominator and whole number.

$$14 \times 7 = 98$$

Step 2: Add that product to the numerator.

$$98 + 8 = 106$$

Step 3: Put the new number over the original denominator.

$$\frac{106}{14}$$

Improper to Mixed

$$\frac{106}{14} = 7\frac{8}{14}$$

Step 1: Divide 106 by 14

$$\begin{array}{r} 7 \\ 14 \overline{)106} \\ \underline{-98} \\ 8 \end{array} \quad 14 \times 7 = 98 \quad (\text{can't go over } 106.)$$

Step 2: *The quotient is the whole number.

* Denominator stays the same.

* The Numerator is what ever is left over.

$$7\frac{8}{14}$$

Mixed # to IMPROPER

$$3\frac{1}{2} \rightarrow \frac{7}{2}$$

Keep the Denominator!!



Quadrilaterals

A Polygon that has 4 sides
and 4 angles.

(Quadrilaterals)

Parallelogram

- 2 sets of parallel lines



Trapezoid

- 1 set of parallel sides



Rectangle

- 4 right angles
- 2 sets of parallel lines
- 2 sets of congruent sides



Rhombus

- 4 congruent sides
- 2 set of parallel sides

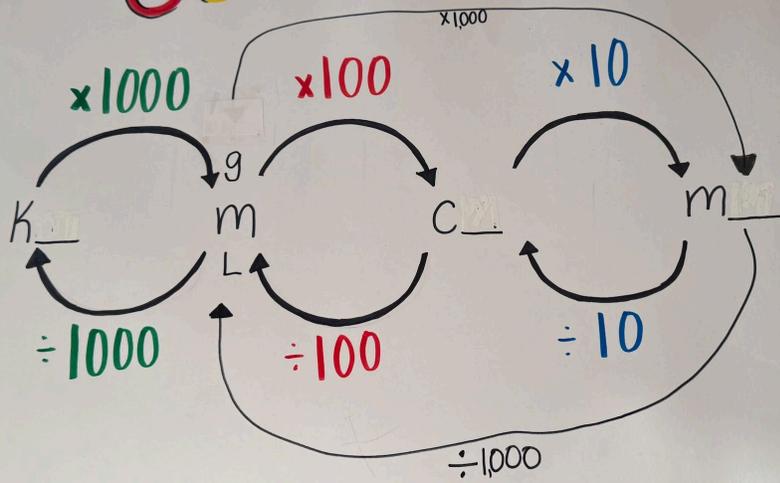


Square

- 2 sets of parallel lines
- 4 congruent sides
- 4 right angles



CONVERT

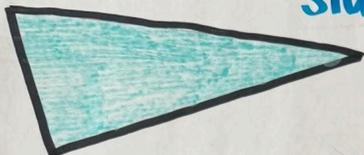


▲▲▲▲▲▲▲▲▲▲ Classifying Triangles ▲▲▲▲▲▲▲▲▲▲

By length of Sides

By types of Angles

Zero Congruent Sides



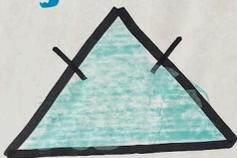
Scalene Triangle

Right Angle



Right Triangle

2 congruent Sides



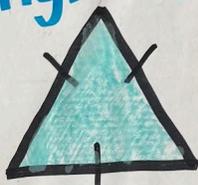
Isosceles Triangle

Acute Angle



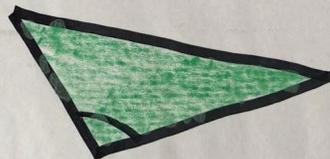
Acute Triangle

3 congruent Sides



Equilateral Triangle

Obtuse Angle



Obtuse Triangle

Metric Conversions Steps

① Converting to a larger unit or a smaller unit?

Larger? Divide!

Smaller? Multiply!

② Determine how many powers of Ten

10 ⇒ 1 place value shift

100 ⇒ 2 place value shifts

1000 ⇒ 3 place value shifts

③ Shift Your Digits!

÷ Powers of ten

Decimal moves
LEFT!



× Powers of ten

Decimal moves
RIGHT!



| Acute Triangle | Obtuse Triangle | Right Triangle |
|--|---|--|
| An <u>acute</u> triangle is a triangle with <u>3</u> acute angles. | An <u>obtuse</u> triangle is a triangle with <u>1</u> obtuse angle. | A <u>right</u> triangle is a triangle with <u>1</u> right angle. |

Decimal Posters :