

Measurement Skills Review

September 5, 2018 9:19 PM

Math 10 – Measurement

Name: _____

Date: _____

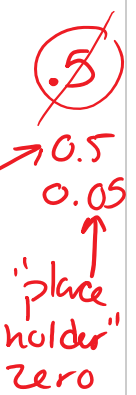
Lesson 1.0 – Skills Review

Rounding

Take a minute to look at the **place value chart**:

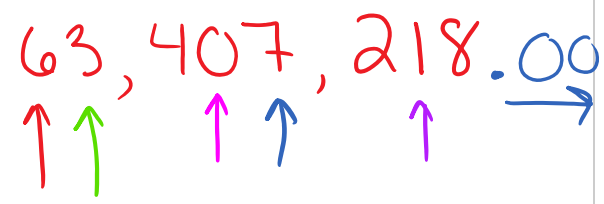
| | | | | | | | | | | | | | | | | | | |
|----|------------------|--------------|----------|-------------------|---------------|-----------|----------|------|--------------|---------|--------|------------|-------------|-----------------|---------------------|------------|----------------|--------------------|
| | hundred millions | ten millions | millions | hundred thousands | ten thousands | thousands | hundreds | tens | units (ones) | decimal | tenths | hundredths | thousandths | ten thousandths | hundred thousandths | millionths | ten millionths | hundred millionths |
| ex | 1 | 3 | 8 | 2 | 7 | 6 | 5 | 5 | 9 | . | 0 | 0 | 1 | 5 | 8 | 7 | 6 | 2 |

Place values show us what each number is worth: a **3 in the tens spot** means you have 3 tens, or **30**. A **5 in the tenths position** means there are 5 tenths, or **5/10 (0.5)**. **Zeros** are used to fill spaces between the digits we have and the decimal place, both **before and after the decimal**. Notice that going up from zero we have units (ones), tens, hundreds... going down from the decimal there is no "units" place, and all the places end with "**ths**": tenths, hundredths, thousandths.



Example 1: In the number **63,407,218**; find the place value of each of the following digits:

- a) 7 thousands
- b) 0 ten thousands
- c) 1 tens
- d) 6 ten millions
- e) 3 million



The Rounding Golden Rule:

- If the number to the right of the number in the desired location is **LESS THAN 5**, then **THE NUMBER STAYS THE SAME**.
- If the number to the right of the number in the desired location is **5 OR MORE**, then **THE NUMBER ROUNDS UP**.

ex. **4 3 2 7 . 6** Look to right



mind to the ...

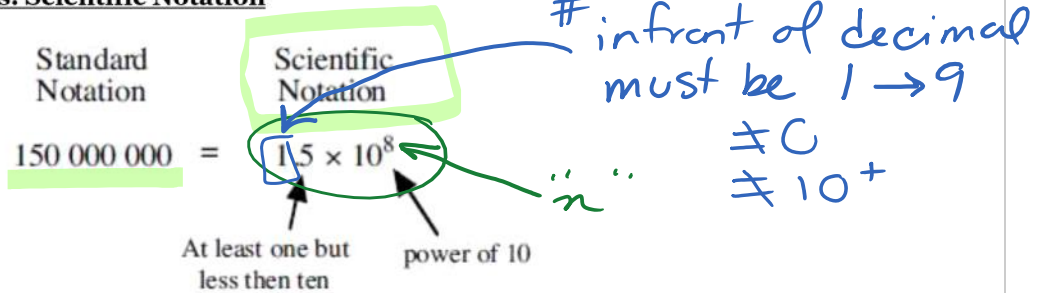
Example 2: Complete the following table:

| Round to the Nearest.. | One | Ten | Hundred | Tenth | Hundredth |
|------------------------|--------|--------|---------|----------|-----------|
| 538.5968 | 539 | 540 | 500 | 538.6 | 538.60 |
| 10 964.893 | 10 965 | 10 960 | 11 000 | 10 964.9 | 10 964.89 |

round to the ...
1st decimal 2nd decimal
↑ round

Try This

Standard Notation vs. Scientific Notation



In other words, $M \times 10^n$ is the proper form of numbers that are expressed in scientific notation, where $1 \leq M < 10$ and n is an integer $\{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}$

For Example:

Conversion Steps:

- Find M.** Place a decimal such that $1 \leq M < 10$.
- Find n.** Count the # of places you moved the decimal. If the number you are converting is less than 1, then n is (-). If it is greater than 1, n is (+).

Example 3: Express each number in scientific notation to the nearest tenth. (2 dec. places)

a) 75 300 000 → 7 places
 $M = 7.53$ ∴ $n = 7$
 $n = 7$

7.5×10^7

start with number > 1
 (+) post. exponent

b) 0.000 038 92
 5 places ∴ $n = 5$

$M = 3.892$
 $= 3.9 \times 10^{-5}$

neg. exponent
 start with small # (decimal) < 1

$EE = \times 10^?$

* use brackets on calc. * $e^x = \times 10^?$

Example #4: In each case, perform the calculation and give the answer in scientific notation to one decimal place.

a) $(4.35 \times 10^2)(5.13 \times 10^{-6})$ b) $\frac{8.64 \times 10^{-2}}{5.18 \times 10^{-10}}$ c) 79.308×34.6021

$= 0.00223155$
 $= 2.2 \times 10^{-3}$
 $22.3155^{2+(-6)}$
 22.3155×10^{-3}

$= 1.667953668$
 $= 1.7 \times 10^8$
 $1.7^{-2-(-10)} = 8$

$= 2744.22 \dots$
 $= 2.7 \times 10^3$

Practice Work: Skills Review Worksheet #1-7

Thursday HW:
Q #1

Substitution in Algebraic Expressions

- When substituting values, **ALWAYS USE BRACKETS**
- WHY? **keep track of +/- signs**

Brackets
Exponents
Divide
Multiply
Add
Subtract

Example 5: Find the value of each of the following if $x = 2$ and $y = -3$.

a) $y^2 - 7x - 3$

$(-3)^2 - 7(2) - 3$
 $9 - 14 - 3$
 $= -8$

b) $9x^2 - y + y^3$

$9(2)^2 - (-3) + (-3)^3$
 $9(4) + 3 + (-27)$
 $36 + 3 - 27$
 $= 12$

Substitution into Formulae

isolate r

Example 6:

- i) solve for the variable indicated, then
ii) substitute the given value and answer to the nearest tenth where necessary.

- a) If $S = \frac{\pi r}{4}$, solve for r and calculate the value of r when $S = 75$.

$$S = \frac{\pi r}{4} \xrightarrow{\times 4} 4S = \frac{\pi r}{\cancel{4}} \rightarrow \frac{4 \cdot (75)}{\pi} = r$$
$$= \frac{45}{\pi} = r \quad \therefore r = 95.5$$

- b) If $A = \pi r^2$, solve for r and calculate the value of r when $A = 72$.

$$A = \pi r^2 \xrightarrow{\div \pi} \frac{A}{\pi} = r^2 \rightarrow \sqrt{\frac{A}{\pi}} = r$$
$$\therefore r = \sqrt{\frac{A}{\pi}}$$
$$r = \sqrt{\frac{(72)}{\pi}} = 4.78 \dots$$
$$\boxed{4.8}$$

Math Tips
Multiplying "undoes" dividing

Dividing "undoes" multiplying

Avoid creating "complex fractions" (fractions inside fractions)

Use π button on calculator, not 3.14

Practice Work: Skills Review Worksheet #8-11