Grade 5 Math

Unit 2: Building Conceptual Understanding of Place Value Using Measurement and Data Reasoning

Dear Families,

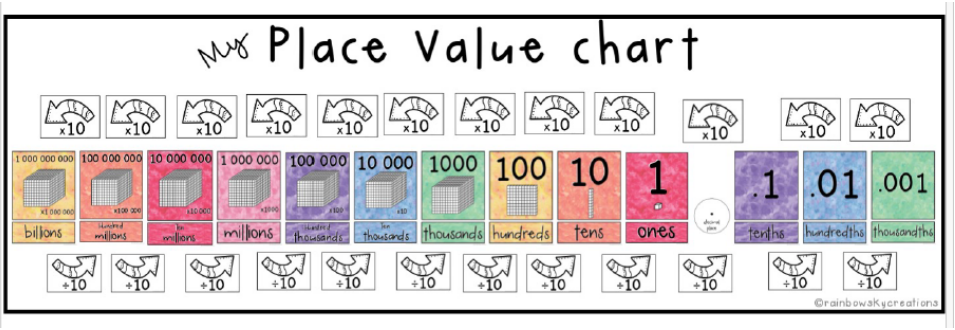
We want to make sure that you understand the mathematics your child will be learning this year. Below you will find the standards we will be learning in Unit 2.

Each standard is in bold print, and below each one is an explanation with student examples. Please let your teacher know if you have any questions. We appreciate your partnership and support.

5.NR.1.1: Explain that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left.

Students should be able to …

- Identify the value of a digit up to 100 times greater or $\frac{1}{1000}$ of the value of a digit.



Examples:

1. Fill in the blank: 0.02 is ten times more than _____.
2. Fill in the blank: 3.92 is 1/10 as much as _____.
3. Mark has a digital scale. He placed one playing card on the scale and it read 1.3 grams. How much would you expect 10 playing cards to weigh?

Answers:

1. 0.002
2. 39.20
3. 13 grams

5.NR.1.2: Explain patterns in the placement of digits when multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10, up to 10^3.

Students should be able to …

- explain what happens to the value of a digit as it shifts to the left or right and discover the decimal point remains between the ones and tenths place as the digits shift.
- understand that the number of zeros to the right of a digit can be used to write a number using a power of 10. (There are 3 zeros to the right of 1 in 1,000, so it can be written as 10^3 . In word form, 1,000 is the third power of ten.)

$$5 \times 10^3 = 5 \times 1{,}000 = 5{,}000$$

$$8 \times 10^2 = 8 \times 100 = 800$$

Examples:

1. The population of a city is 7×10^3. Write the amount as whole number. Show your work.

2. The mass of a large rock is 2×10^2 kilograms. Write the amount as a whole number. Show your work.

Answers:

1. $7 \times 1000 = 7{,}000$ people
2. $2 \times 100 = 200$ kilograms

5.MDR.7.1: Explore real-life problems involving different units of measurement, including distance, mass, weight, volume, and time.

Students should be able …

- solve realistic problems involving different units of measurement, including distance, mass, weight, volume, and time
- solve word problems involving customary and metric measurements

Example:

Felipe used a pipe cleaner for his flower craft. The pipe cleaner was 30 cm long. How many meters long was the pipe cleaner?

Answer:

0.3 m, to convert centimeters to meters, you divide the length in centimeters by 100, since there are 100 centimeters in a meter. Felipe's pipe cleaner = 30 cm divided by 100 = 0.3 meters.

5.MDR.7.3: Convert among units within the metric system and then apply these conversions to solve multistep, practical problems.

Students should be able to …

- convert meters-kilometers, centimeters, milliliters
- convert liters-kilometers, milliliters
- convert grams-kilometers, milliliters

Note: A conversion chart will be provided.

Examples:

1. The weight of a cellphone is 130 grams. The weight of a laptop is 1 kg 150 g. Which is heavier, 5 cellphones or 1 laptop? By how many grams?
2. Jamie played video games for 52 hours last week. How many days and hours is that? (24 hours = 1 day)

Answers:

1. Cellphone: 130 x 5 = 650 g
   Laptop: 1 kg 150 g = 1,150 g
   1,150 g – 650 g = 500 g
   The laptop is 500 g heavier than the 5 cellphones.
2. 2 days and 4 hours

5.MDR.7.4: Convert among units within relative sizes of measurement units within the customary measurement system.

Students should be able to …

- convert fluid ounces, cups, pints, quarts, gallons
- convert inches feet, yards, miles
- convert ounces, pounds, tons

Note: Conversions will be provided, such as 1 gallon = 4 quarts = 8 pints = 16 cups

Example:

Katarina is watering plants. The watering can she uses holds 2 pints of water (1 gallon = 8 pints). How many times does Katrina need to fill her watering can to water a plant that needs $\frac{3}{4}$ gallon of water?

Answer:

3 times

Advanced Standards:

6.NR.4.7: Use ratios to convert within measurement systems (customary and metric) to solve authentic problems that exist in everyday life.

Students should be able to …

- use flexible, strategic thinking to manipulate and transform units appropriately when multiplying or dividing quantities to solve practical, mathematical problems.
- convert measurement units when given a conversion factor within one system of measurement and between two systems of measurement (customary and metric) using proportional reasoning developed through working with ratios and rates.

Example:

Given 1 in. = 2.54 cm, how many centimeters equal 6 inches?

Answer:

6 inches x 2.54 cm/inch = 15.24 cm.