Fifth Grade: Module 2

DUVAL Math Parent Tips

DUVAL COUNTY PUBLIC SCHOOLS

Multiplying and Dividing Whole Numbers and Decimals

Fifth Grade, Module 2

In this Module, students will be building upon knowledge of first multiplication and then division. Students will start with whole numbers and then move to decimals as they practice different ways to model these operations.

Before This Module: Students understand the values of numbers on the place value chart.

What Comes After This Module: Students begin to work with base-10 place value system.

Special points of interest:

- ✓ Word to Know
- ✓ Converting Units
- ✓ Mental Strategies and Standard Algorithm
- ✓ Multi-Digit Whole Number and Decimal Fraction operations
- ✓ Standards for Mathematical Practice
- ✓ Want to help with homework?

Words to Know

Decimal: A fraction whose denominator is a power of ten

Decimal Fraction: A proper fraction whose denominator is a power of ten

Equation: A statement that the values of tow expressions are equal

Estimate: Approximation of the value of a quantity or number

Product: The result of a multiplication problem

Quotient: The result of dividing one quantity by another

Remainder: The number left over when one integer is divide by another

Unit Form: Place value counting. E.g., 34 is stated as 3 tens 4 ones

Convert: to express a measurement in a different unit

Kilogram: (kg), gram (g): units of measure for mass

Length: the measurement of something from end to end.

Questions?

Mrs. Wendy Dobson

Supervisor, Mathematics K-5

dobsonw@duvalschools.org

Mental Strategies and Standard Algorithm

Mental Strategies for Multi-Digit Whole Number Multiplication

Find the **product**. Show your thinking

6 x 70
= 6 x 7 x 10
= 42 x 10
= 420

80 x 50
= (8 x 10) x (5 x 10)
= (8 x 5) x (10 x 10) ← **Associative Property**
= 40 x 100
= 4,000

542 x 3
= (500 x 3) + (40 x 3) + (2 x 3) ← **Distributive Property**
= 1,500 + 120 + 6
= 1,626

The Standard Algorithm for Multi-Digit Whole Number Multiplication

Draw using **area model** and then solve using the **standard algorithm**. Use arrows to match the partial products from the **area model** to the partial products of the **algorithm.**

	400	+ 30	+ 2	
4	1600	120	8	=1,728
+				
20	8000	600	40	=8,640

$$\begin{array}{r} {\scriptstyle 1} \\ 432 \\ \times\ 24 \\ \hline {\scriptstyle 1} \\ 1728 \\ +8640 \\ \hline 10{,}368 \end{array}$$

What are 24 groups of 432? 10,368

Properties to Remember :

Commutative Property
Example 2 x 3 = 3 x 2

Associative Property
5 x 7 x 2 = (5 x 2) x 7

Distributive Property
43 x 6 = (40 x 6) + (3 x 6)

Determine if these **equations** are true or false. Defend your answer using your knowledge of place value and the **commutative, associative and/or distributive property.**

850 x 6 x 10 = 85 x 6 x 100
These **equations** are TRUE
(85x 10) x 6 x 10 = 85 x 6 x (10 x10)
85 x 6 x 10 x 10 = 85 x 6 x 10 x 10

77 x 30 x 10 = 770 x 3
These **equations** are FALSE
(77 x 10) x 30 = 770 x 3
770 x 30 ≠ 770 x 3

Multi-Digit Whole Number and Decimal Fraction Operations

Unit Conversions

1 foot = 12 inches

1 yard = 3 feet = 36 inches

1 mile = 5,280 feet

1 mile = 1, 760 yards

1 centimeter = 10 millimeter

1 meter = 100 centimeters = 1,000 millimeters

1 kilometer = 1,000 meters

1 pound = 16 ounces

1 gram = 1,000 milligrams

1 cup = 8 fluid ounces

1 quart = 2 pints

1 liter = 1,000 milliliters

1 ton = 2,000 pounds

1 kilogram = 1,000 grams

1 pint = 2 cups

1 gallon = 4 quarters

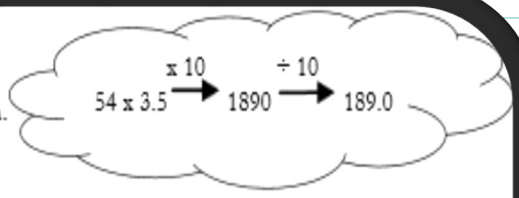
1 kiloliter = 1,000 liters

Multi-Digit Whole Number and Decimal Fraction Operations

Problem 1

Solve using **standard algorithm.**

54 x 3.5



3.5 x 10 → 35

x 54 → x 54

140

+ 1750

1890

1890 ÷ 10 = 189.0

Convert

15 yd = _____ ft

3 ft = 1 yd 15 yd x 3 ft per yd = 45 ft

_____g = 18 kg

1,000 g = 1 kg 18 kg x 1,000 g per kg =18,000 g

16 gal = _____ qt _____ pt

4 qt = 1 gal 1 qt = 2 pt

16 gal x 4 qt per gal = 64 qt

64 qt x 2 pt per qt = 128 pt

_____ fl oz = 6.32 c

8 fl oz = 1 cup

6.32 c x 8 fl oz per c

=632 hundredths c x 8 fl oz per c

5056 hundredths fl oz

50.56 fl oz

9.54 g = _____ mg

1,000 mg = 1 g

9.54 g x 1000 mg per g

= 954 hundredths g x 1,000 mg per g

954,000 hundredths mg

=9540.00 or 9.540 mg

Standards for Mathematical Practice

Mathematical Practices Addressed in this Module:

MP.1 Make sense of problems and persevere in solving them.
Students make sense of problems when they use number disks and area models to conceptualize and solve multiplication and division problems.

MP.2 Reason abstractly and quantitatively.
Students make sense of quantities and their relationships when they use both mental strategies and the standard algorithms to multiply and divide multi-digit whole numbers. Student also "decontextualize" when they represent problems symbolically and "contextualize" when they consider the value of the units used and understand the meaning of the quantities as they compute.

MP.7 Look for and make use of structure.
Students apply the times 10, 100, 100 and the divide
by 10 patterns of the base ten system to mental strategies and the multiplication and division algorithms as they multiply and divide whole numbers and decimals.

MP. 8 Look for and express regularity in repeated reasoning.
Students express the regularity they notice in repeated reasoning when they apply the partial quotients algorithm to divide two, three– and four-digit dividends by two-digit divisors.

Want to help with homework?

A great resource can be found following the link below:

http://www.oakdale.k12.ca.us/ENY_Hmwk_Intro_math