MATH NEWS

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Grade 5, Mission 2, Topic C

5th Grade Math

Mission 2: Multi-Digit Whole Number and Decimal Fraction Operations

Math Parent Letter

Mission 2 covers Multi-Digit Whole Number and Decimal Fraction Operations. This newsletter will address decimal multi-digit multiplication.

Topic C. Decimal Multi-Digit Multiplication

Words to know

- Product
- Estimate
- Decimal Fraction
- Factor
- Standard Algorithm

Things to Remember:

- A **decimal fraction** uses a point to separate the whole number part from the fractional part of a number. Example: in the number 36.9 the point separates the 36 (the whole number part) from the 9 (the fractional part, which really means 9 tenths). So 36.9 is 36 and nine tenths.
- When multiplying by a decimal fraction, you convert the decimal fraction to a whole number by multiplying it by a power of 10 (10 or 100) depending on the number of places after the decimal point. The problem now resembles a whole number multiplication problem. Once you finish multiplying, you then have to divide the answer by the same power of 10 you multiplied by.
- If the decimal fraction has one place after the decimal, you multiply by 10. The digits will then shift one place to the left. The result is a number that is 10 times greater than the original number. If the decimal has two places after the decimal, you multiply by 100. The digits will shift two places to the left. The result is a number that is 100 times greater than the original number.
- When a number is divided by 10, the digits shift one place to the right. The result is a number that is $\frac{1}{10}$ as large as the original number. When a number is divided by 100, the digits shift two places to the right. The result is a number that is $\frac{1}{100}$ as large as the original number.

Objectives of Topic C

- Multiply decimal fractions with tenths by multi-digit whole numbers using place value understanding to record partial products.
- Multiply decimal fractions by multi-digit whole numbers through conversion to a whole number problem and reasoning about the placement of the decimal.
- Reason about the product of a whole number and a decimal with hundredths using place value understanding and estimation.

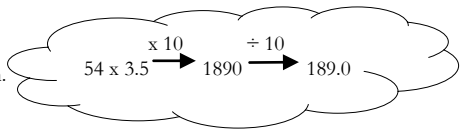
Focus Area– Topic C

Mission 2: 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

Problem 2

Round the **factors** to **estimate** the **products.** (*Symbol ≈ means about)*

Solve

7.5 x 52	17.6 x 22	95 x 3.3
≈ 8 x 50	≈ 18 x 20	≈ 100 x 3
= 400	= 360	= 300

Problem 3

Estimate the **product**. Solve using an **area model** and the **standard algorithm**.

Solve: 4.7 x 24

4.7 x 24
≈ 5 x 20
} **Estimation**

Standard Algorithm

4.7 → (x 10) → 47

x 24	x 24
	188
	+ 940
	1128

1128 ÷ 10 = 112.8

Area Model

	40	+ **7**	tenths
4	160	28	= 188
+			
20	800	140	= 940

1128 tenths
= 112.8

When we compare our answer (112.8) to our estimate (100), we can conclude that our answer is reasonable.

Example Problems and Answers

Pat rides his bike a total of 6.83 miles to and from school every day. How many miles does he ride in 25 days?

6.83 miles x 25 days

6.83 (x 100) → 683

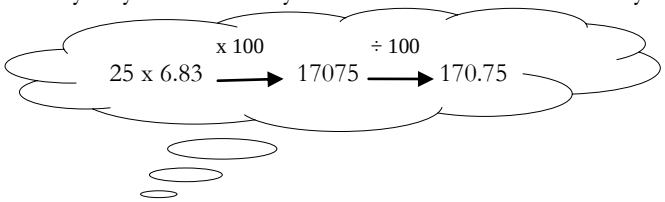
x 25 → x 25

3415

+ 13660

17075

17075 ÷ 100 = 170.75



Pat rides his bike a total of 170.75 miles in 25 days.

A. Courtney buys 79 protractors at $1.09 each and 32 composition notebooks at $2.19 each. About how much money did she spend?

$1.09 per protractor x 79 protractors ≈ $1 x 80 = $80

$2.19 per notebook x 32 notebooks ≈ $2 x 30 = $60

$80 + $60 = $140

Courtney spent about $140 on protractors and notebooks.

B. How much money did she actually spend?

79 x $1.09

$1.09 (x 100) → 109

x 79 → x 79

981

+ 7630

8611

8611 ÷ 100 = $86.11 cost of protractor

32 x $2.19

$2.19 (x 100) → 219

x 32 → x 32

438

+ 6570

7008

7008 ÷ 100 = $70.08 cost of notebooks

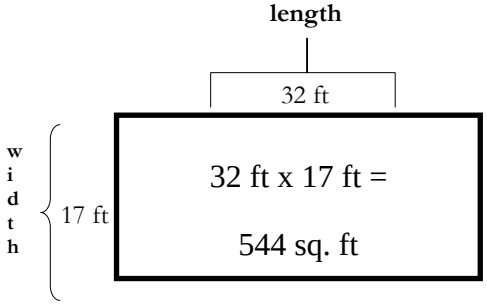
$86.11 cost of protractors

+$70.08 cost of notebooks

$156.19 total cost of supplies

Courtney actually spent $156.19.

A kitchen measures 32 feet by 17 feet. If tile cost $7.98 per square foot, what is the total cost of putting tile in the kitchen?



$7.98 (x 100) → 798

x 544 → x 544

3192

31920

+ 399000

434112

434112 ÷ 100 = $4,341.12

The total cost of putting tile in the kitchen is $4,341.12

Note: *Area refers to the number of square units needed to cover the inside of a shape. To determine the area of this rectangle you multiply the length times the width. The formula for* ***area*** *is* ***Area = length x width****.*