

NAME _____

Module 5 Decimal Operations, Exponents, and Powers
 Lesson 4 Multiplying Decimals

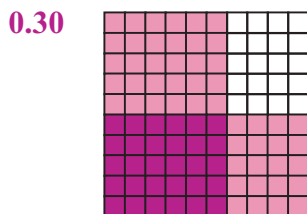
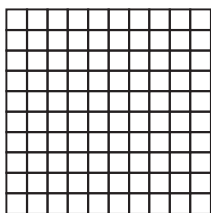
Lesson Objectives

- Estimate products using rounding and compatible numbers.
- Model multiplication of decimals using diagrams and/or illustrations of manipulatives.
- Develop and use algorithms to multiply decimals (hundredths \times tenths up to thousandths \times thousandths).

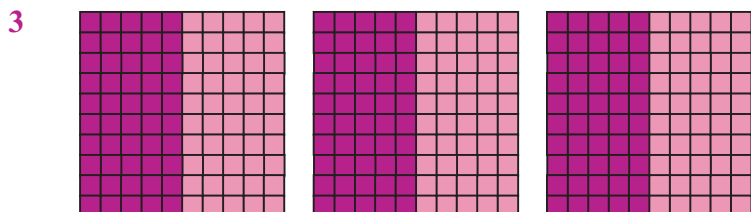
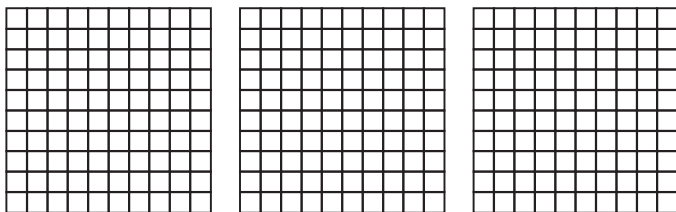
Subtopic 1 Model Multiplication of Decimals

Use a model to solve.

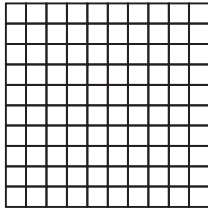
1 0.5×0.6



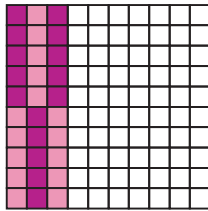
2 6×0.5



3 6×0.05



0.3



Subtopic 2 Multiply Decimals by Powers of Ten

Multiplying a decimal by a Power of Ten

- Move the decimal point in the decimal factor as many places to the right as there are zeros in the power of ten.
- Add zeros as placeholders in the product, if necessary.

Multiply.

4 1.29×100
129

0.321×10
3.21

$12.304 \times 1,000$
12,304

Subtopic 3 Estimating Decimal Products

Estimating decimal products

- Round one or both factor(s).
- Multiply.
- Total the number of decimal places in the factors.
- Place the decimal in the product according to that total.

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Module 5 **Decimal Operations, Exponents, and Powers**
Lesson 4 **Multiplying Decimals**

Estimate before multiplying.

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$$21.103 \times 0.85$$

Estimate: 18

Product: 17.93755

6

$$27.9 \times 3.45$$

Estimate: 90

Product: 96.255

Subtopic 4

Multiplying Decimals Using the Standard Method

Multiply decimals

- Write the problem **vertically**.
- Align **factors** on the right.
- Multiply as with **whole** numbers.
- Count and total the number of decimal places in the **factors**.
- Place the decimal in the **product** according to that total.
- Write **zeros** to the left of the nonzero digits in the product as **placeholders**, if necessary.

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Gas costs \$3.99 per gallon. Myrna's gas tank holds 12.2 gallons. How much would it cost to fill an empty tank?

Estimate: \$48

Product: \$48.68

Multiply.

8

$$0.003 \times 0.002$$

0.000006

