

Lesson

14-3

Decimal Multiplication

Questions

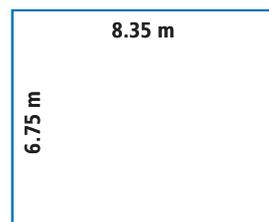
- In each problem, the correct digits in the product are given, but the decimal point is missing. Use estimation to determine where the decimal should be written.
 - $0.499 \cdot 598 = 298402$ (Hint: Think " $\frac{1}{2}$ of 600 = ?")
 - $0.3465 \cdot 12.7 = 440055$ (Hint: Think " $\frac{1}{3}$ of 12 = ?")
 - $1.25 \cdot 403.9994 = 50499925$ (Hint: Think " $1\frac{1}{4} \cdot 400 = ?$ ")
 - $0.999 \cdot 0.002 = 0001998$
- Fill in the Blank** using the words "less than" or "greater than."
 - The product of two decimals each greater than 1 is ? either of the two decimals.
 - The product of a decimal greater than 1 and any positive decimal is ? the second decimal.
 - The product of a positive decimal less than 1 and a second positive decimal less than 1 is ? the second decimal.
- Multiple Choice** Which of the following is *not* true?
 - $7.806 \cdot 25.999 = 25.999 \cdot 7.806$
 - $7.806 \cdot (25.999 \cdot 0.05) = 7.806 \cdot 25.999 + 7.806 \cdot 0.05$
 - $7.806 \cdot (25.999 - 0.05) = 7.806 \cdot 25.999 - 7.806 \cdot 0.05$
 - $7.806 \cdot (25.999 \cdot 0.05) = (7.806 \cdot 25.999) \cdot 0.05$
- Multiple Choice** Which means the same thing as $5 \cdot 6.0948$?
 - $6.0948 \cdot 6.0948 \cdot 6.0948 \cdot 6.0948 \cdot 6.0948$
 - $6.0948 \cdot 6.0948 \cdot 6.0948 \cdot 6.0948 \cdot 6.0948 \cdot 6.0948$
 - $6.0948 + 6.0948 + 6.0948 + 6.0948 + 6.0948$
 - $6.0948 + 6.0948 + 6.0948 + 6.0948 + 6.0948 + 6.0948$
- Kathy heard someone give a rule that if you multiply a number by 100, all you have to do is insert two 0s at the end of the number. For example, $100 \cdot 475 = 47,500$. So, Kathy tried to apply the rule to $100 \cdot 47.5$ and obtained the product 47,500. Did the rule work? If not, explain how the rule should be stated.

6. a. Find each product.
 $150 \cdot 300$ $1.5 \cdot 300$ $0.15 \cdot 30$ $0.0015 \cdot 0.0003$
- b. How is the product $1.5 \cdot 300$ related to the product $150 \cdot 300$?
- c. How is the product $0.15 \cdot 30$ related to the product $150 \cdot 300$?
- d. How is the product $0.0015 \cdot 0.0003$ related to the product $150 \cdot 300$?
7. Use the product $3492 \cdot 6213 = 21,695,796$ to help you find each product below.
- a.
$$\begin{array}{r} 3492 \\ \times 6.213 \\ \hline \end{array}$$
- b.
$$\begin{array}{r} 349.2 \\ \times 62.13 \\ \hline \end{array}$$
- c.
$$\begin{array}{r} 0.3492 \\ \times 621.3 \\ \hline \end{array}$$
- d.
$$\begin{array}{r} 6.213 \\ \times 3.492 \\ \hline \end{array}$$
8. Why do you have to align the decimal points when you add or subtract decimals, but not when you multiply them?
9. a. Find two numbers whose product is 225.
 b. Find two numbers whose product is 0.0225.
10. The euro is the official currency of many European countries, such as France, Germany, and Italy. On a date in September 2010, the exchange rate between the euro and the U.S. dollar was as shown in the table at the right.
- Source: <http://www.x-rates.com/d/EUR/table.html>
- a. Suppose you visit Italy and want to convert \$600 U.S. into euros. Estimate about how many euros you will receive. Then find exactly how many euros you will receive, to the nearest hundredth of a euro, ignoring transfer fees.
- b. Suppose a person from Germany visiting the U.S. wants to convert 600 euro into U.S. dollars. Estimate about how much money the person will receive. Then find the exact amount the person will receive, to the nearest cent, ignoring transfer fees.
11. A gasoline station charges \$3.099 per gallon of gasoline.
- a. Mr. Smith would like to purchase 12 gallons of gasoline. He uses a calculator and finds that it will cost \$47.88 to purchase the 12 gallons. Explain how you can tell if Mr. Smith's obtained answer is reasonable. If the answer is not reasonable, try to figure out what he entered into the calculator.
- b. After he pumps the gasoline, the meter shows that he actually pumped 12.016 gallons. How much will that cost? Round your result to the nearest cent.
- c. If Mr. Smith pays with a \$50 bill, how much change should he get back?

Currency Exchange Rate
\$1 U.S. = 0.750582 euro
1 euro = \$1.3323 U.S.

12. At Bank A, the annual interest rate on a 1-year certificate of deposit (CD) is 0.88%. At Bank B, the annual interest rate on a 1-year CD is 1.03%.
- The decimal equivalent for 0.88% is 0.0088. What is the decimal equivalent for 1.03%?
 - Suppose you have \$500 to deposit in a 1-year CD. In one year, how much more interest will you earn at Bank B than at Bank A?
 - Suppose you invest the \$500 in a 1-year CD at Bank A. How much will be in your account at the end of the year?
13. The fare options for riding a train between two locations in a certain metropolitan area are given in the table at the right.
- Suppose a person who commutes to work makes 22 roundtrips during a month. How much would that person save during the month by purchasing the monthly pass rather than paying the fare for a one-way ticket each way?
 - Suppose a person makes 15 roundtrips during a month. Which fare option is the cheapest? For each of the other options, find how much cheaper the cheapest option is.
14. A drawing of a rectangular room is shown at the right.
- Estimate the area of the room in square meters.
 - Find the actual area of the room to the nearest tenth of a square meter.
 - Suppose carpeting costs \$10.25 per square meter, and you must purchase the carpeting in full square meters. How much will it cost to buy carpeting for the room?
 - Find the area of the room in square centimeters.
15. The probability of winning the jackpot when one Powerball lottery ticket is purchased is about 0.000000005.
- Fill in the Blank** The probability of winning the jackpot when one Powerball ticket is purchased is about 5 chances in ____?____.
 - If a person purchases 100 Powerball tickets, his or her chances to win the jackpot are 100 times greater. What is the probability that a person will win the jackpot if he or she purchases 100 Powerball tickets?
 - To have a probability of 0.005 of winning the jackpot, how many Powerball tickets would a person have to purchase?

Train Fare Schedule	
Ticket Type	Price
Monthly Unlimited Ride Pass	\$116.10
10-ride Ticket (each one-way)	\$36.55
One-way Ticket	\$4.50



16. Find each result using fractions. Then check each result using decimals.
- a. $\frac{3}{7} \cdot \frac{7}{8}$ b. $12\frac{1}{2} \cdot 5\frac{1}{5}$ c. $\frac{4}{5} \left(2\frac{3}{4} + \frac{3}{8} \right)$
17. Find the largest three-place decimal which, when multiplied by itself, is less than 10.
18. Refer to the items listed in the table at the right. Write a word problem based on the items that uses the operations addition, subtraction, and multiplication. Then solve your problem. (You do not have to include all of the items in your problem.)

Item	Price
Socks (1 pair)	\$4.99
Shoes (1 pair)	\$116.88
T-shirt	\$9.29
Jeans (1 pair)	\$38.50
Sales Tax: 8% of total purchase	