

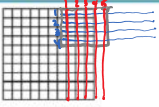

Lesson 4-6

Friday, October 11, 2019 1:59 PM

Name _____

Solve & Share

Julie has 0.5 of her backyard set up for growing vegetables. Of the vegetable area, 0.4 has bell peppers in it. What part of the backyard contains bell peppers?



You can use appropriate tools, such as a grid, to model decimal multiplication.

Lesson 4-6

Multiply Decimals Using Partial Products

I can ...
multiply two decimals using partial products.

Content Standard 5.NBT.B.7
Mathematical Practices MP1, MP2, MP4, MP5

0.5 of 0.4
 $0.5 \times 0.4 = b$
 $b = 0.20$
0.2 of the garden are bell peppers.

Look Back! **MP.2 Reasoning** What do you notice about the factors and their product in the above problem?

Both factors (0.4 and 0.5) are less than 1
The product (0.2) is less than either factor.

How Can You Multiply Decimals Using Partial Products?

Question

June walked 1.7 miles in 1 hour. If she walks at the same rate, how far will she walk in 1.5 hours?

You can use properties or a model to represent the multiplication.

Step 1
Estimate.
 1.7×1.5
 $2 \times 2 = 4$
Since 2 is greater than 1.7 and 1.5, 4 is an overestimate.

Step 2
Find the partial products.
 $1.0 \times 1.0 = 1.0$
 $1.0 \times 0.7 = 0.7$
 $0.5 \times 1.0 = 0.5$
 $0.5 \times 0.7 = 0.35$
Then add the partial products.

Step 3
 1.0
 0.7
 0.5
 $+ 0.35$

 2.55
Since 2.55 is close to your estimate of 4, the answer is reasonable.
In 1.5 hours, June will walk 2.55 miles.

To find out how far June walked, multiply. Find 1.7×1.5 . This model shows 1.7×1.5 . What do the grids in the top row represent?

$2 \times 2 = 4$

1.7×1.5

1.7
 $\times 1.5$

 85
 $+ 170$

 2.55

1dp
+1dp
2dp

1.00
 $+ 0.70$
 $+ 0.50$
 $+ 0.35$

 2.55

Convince Me! **MP.1 Make Sense and Persevere** In the example above, how many miles will June walk in 2.8 hours? Estimate first, then compare your answer to the estimate.

$1.7 \times 2.8 = m$
 $2 \times 3 = 6$

1.7
 $\times 2.8$

 136
 $+ 340$

 4.76

1dp
1dp
2dp

June walks 4.76 miles

Name _____

Guided Practice

Do You Understand?

1. **MP.2 Reasoning** How is multiplying two decimals different from multiplying one decimal by a whole number? Explain your reasoning.

Multiplying two decimals has 2 factors where the decimals need to be placed in the product.

$9.3 \times 4.1 = 36$

9.3
 $\times 4.1$

 3720

 3813

4.1dp
0.6
2dp

2. Carter is filling 6.5-ounce bottles with salsa that he made for gifts. He was able to fill 7.5 bottles. How many ounces of salsa did he make?

5. 0.7×1.9 6. 12.6×0.2

12.6
 $\times 0.2$

 252

1dp
1dp
2dp

$10 \times 0.2 = 2.0$

Complete 8, 17, 20 & 26

Independent Practice

7. Find 7.5×1.8 using partial products.

Estimate: 7.5×1.8

7.5
 $\times 1.8$

 16
 $+ 1350$

 13.50

0.90
 5.60
 0.50
 7.00

 13.50

0.5×0.5
 7×0.9
 0.5×1
 7×1

In 8-19, estimate first. Then find each product. Check that your answer is reasonable.

8. 5.2×4.6

5.2×4.6

 312
 $+ 2060$

 2392

9. 19.1×8.5

19.1×8.5

 955
 $+ 15280$

 16195

10. 0.5×4.5

0.5×4.5

 2.25

11. 8.6×0.8

8.6×0.8

 688

12. 5.5×0.6 13. 3.5×0.4 14. 6.8×7.2 15. 8.3×6.4

16. 9.1×11.6 17. 18.1×3.7 18. 0.6×1.5 19. 2.8×3.7

$20 \times 4 = 80$

18.1×3.7

 1267

 6660

 6213

$3 \times 4 = 12$

2.8×3.7

 196

 840

16. 9.1×11.6

17. 18.1×3.7

18. 0.6×1.5

19. 2.8×3.7

$20 \times 4 = 80$

$3 \times 4 = 12$

$$\begin{array}{r} 8 \\ 2.8 \\ \times 3.7 \\ \hline 196 \\ + 840 \\ \hline 1036 \end{array}$$

$$\begin{array}{r} 18.1 \\ \times 3.7 \\ \hline 1267 \\ + 5430 \\ \hline 66.97 \end{array}$$

1dp
1dp
2dp

Math Practices and Problem Solving

20. **Math and Science** The gravity of Venus is 0.35 times that of Jupiter. What is the gravity of Venus in relation to Earth's gravity?

21. About how many times as great is Jupiter's relative surface gravity as Neptune's relative surface gravity?

Relative (to Earth) Surface Gravity	
Planet	Gravity
Mercury	0.39
Neptune	1.22
Jupiter	2.6

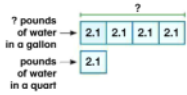
0.35×2.6
 $0.4 \times 3 = 1.2$

$$\begin{array}{r} 0.35 \\ \times 2.6 \\ \hline 210 \\ + 700 \\ \hline 0.910 \end{array}$$

0.91

0.910

22. **MP.4 Model with Math** One quart of water weighs about 2.1 pounds. There are 4 quarts in a gallon. How much does a gallon of water weigh?



23. Isaac bought three packages of nuts. He bought one package of peanuts that weighed 3.07 pounds. He also bought two packages of pecans that weighed 1.46 pounds and 1.5 pounds. Did the peanuts or the pecans weigh more? How much more?

24. **MP.2 Reasoning** How does estimation help you place the decimal point in a product correctly? Explain your reasoning.

25. **Higher Order Thinking** The area of Dimitri's table top is a whole number of square feet. Could the length and width be decimal numbers each with one decimal place? Explain your answer.

Common Core Assessment

26. Joy drinks 4.5 bottles of water per day. Each bottle contains 16.5 fluid ounces. How many fluid ounces of water does she drink per day?

- (A) 20.10 fluid ounces
- (B) 64.00 fluid ounces
- (C) 74.25 fluid ounces
- (D) 82.50 fluid ounces

27. One square mile equals 2.6 square kilometers. How many square kilometers are in 14.4 square miles?

$6.5 \times 4.5 = 29.25$
 $20 \times 5 = 100$
 $16.5 \times 4.5 = 74.25$
 825
 7425

- (A) 11.52 square kilometers
- (B) 17.00 square kilometers
- (C) 74.44 square kilometers
- (D) 140 square kilometers