

Continue to Divide with Decimals:

Lesson 6-8
Continue to Divide with Decimals

Name: _____

Estimate, Divide, and Check

Steven feeds his rabbit 2.4 pounds of food each week. How many weeks will a bag of food last?

Rabbit Food
8.4 pounds

I can ...
Divide decimals by adding one or more zeros to the dividend if necessary.

Common Standard 5.NF.7
Mathematical Practices: MP.1, MP.2, MP.6, MP.8

Generate
How can you change the division problem to an equivalent problem with a whole-number divisor?

Look Back! **MP.1 Make Sense and Persevere** How can you check that your answer to the problem makes sense?

The quotient 3.5 is close to my best estimate of 4. That makes the quotient reasonable.

Handwritten notes:
 $10 \div 2 = 5$
 $8.4 \div 2.4 = 3.5$
 $8 \div 2 = 4$
 $2.4 \times 3 = 7.2$
 $2.4 \times 3.5 = 8.4$
 $2.4 \overline{) 8.40}$
 $\underline{- 4.8}$
 3.60
 $\underline{- 2.4}$
 1.20
 $\underline{- 1.20}$
 0
 A bag will last 3.5 weeks.

How Does Annexing Zeros to the Dividend Help You Divide Decimals?

How much protein is in 1 liter of orange juice?
Divide 6.12 by 1.5.

1.5 liters
6.12 grams protein

Sometimes you need to annex zeros to the dividend so you can keep dividing.

Step 1
Estimate the quotient. Use multiplication and number sense.
 $1 \times 1.5 = 1.5$
 $10 \times 1.5 = 15$
 Since 6.12 is between 1.5 and 15, the quotient is between 1 and 10.

Step 2
Multiply the divisor and dividend by the same power of 10 to make the divisor a whole number. Then place the decimal point in the quotient.
 $1.5 \overline{) 6.12} = 15 \overline{) 61.2}$

Step 3
Divide. Annex zeros as needed.
 $15 \overline{) 61.20}$
 $\underline{- 30}$
 31.2
 $\underline{- 30}$
 1.20
 $\underline{- 1.20}$
 0
 6.08 is between 1 and 10, so the answer is reasonable.
 1 liter of orange juice contains 6.08 grams of protein.

Convince Me! **MP.6 Be Precise** Show how to check that the quotient is correct.

Name Math

12/11/19
mb 345-346

③ $4.14 \div 0.45 = x$

$450 \div 50 = 9$

$414 \div 45 = x$

$400 \div 50 = 8$

$0.45 \overline{) 4.140}$

$\underline{- 4.05}$
 90
 $\underline{- 90}$
 0

4.2 1dp
 0.45 2dp
 $\underline{- 1.260}$ 3dp
 $+ 3680$
 $\underline{- 3680}$
 0

Janie needed to get rid of the remainder 6. Annexing a zero lets her divide with no remainder.

Janie	Gary
$\begin{array}{r} 4.5 \\ 1.3 \overline{)56.0} \\ \underline{-48} \\ 60 \\ \underline{-60} \\ 0 \end{array}$	$\begin{array}{r} 3 \\ 1.3 \overline{)39} \\ \underline{-39} \\ 0 \end{array}$

Complete 8, 19, 20

$$\begin{array}{r} 1.3 \overline{)56} = 42 \\ 40 \overline{)50} = 8 \end{array}$$

$$\begin{array}{r} 45 \\ \times 8 \\ \hline 360 \end{array}$$

$$\begin{array}{r} 45 \\ \times 9 \\ \hline 405 \end{array}$$

$$\begin{array}{r} 700 \\ \times 6 \\ \hline 4200 \\ + 3680 \\ \hline 7880 \end{array}$$

(4) $5.60 \div 0.14 = n$

$$\begin{array}{r} 600 \div 12 = 50 \\ 560 \div 14 = n \\ 480 \div 12 = 40 \end{array}$$

$$\begin{array}{r} 14 \\ \times 4 \\ \hline 56 \end{array}$$

$$\begin{array}{r} \times 40 \\ 0.14 \overline{)5.60} \\ \underline{-56} \\ 00 \\ \underline{-0} \\ 0 \end{array}$$

$$\begin{array}{r} 40 \\ \times 0.14 \\ \hline 160 \\ + 400 \\ \hline 5.60 \end{array}$$

Independent Practice

In 6-14, find each quotient. Annex zeros as needed.

- 6. $0.32 \overline{)2.08}$
- 7. $0.43 \overline{)3.01}$
- 8. $6.2 \overline{)6.51}$
- 9. $35 \div 0.5$
- 10. $102.3 \div 4.4$
- 11. $9.3 \div 0.31$
- 12. $25.44 \div 0.06$
- 13. $90 \div 0.45$
- 14. $3.24 \div 0.48$

(8) $12 \overline{)6.51} = 0.5425$

$$\begin{array}{r} 6.51 \\ \times 12 \\ \hline 1302 \\ + 1302 \\ \hline 7812 \end{array}$$

$$\begin{array}{r} \times 1.05 \\ 6.2 \overline{)6.510} \\ \underline{-62} \\ 310 \\ \underline{-310} \\ 0 \end{array}$$

$$\begin{array}{r} 1.05 \\ \times 6.2 \\ \hline 210 \\ + 6300 \\ \hline 6.510 \end{array}$$

Math Practices and Problem Solving

- 15. A lawn service is treating grass with weed killer. They mix 2.5 gallons of weed killer with water for each acre of grass. How many acres can they treat with 18.5 gallons of weed killer?
- 16. Cindy paid \$1.74 for 0.25 pound of tuna salad. What was the cost of 1 pound of tuna salad?

17. MP.3 Construct Arguments Which bag of charcoal costs less per pound? Explain.

Divide the price by the number of pounds for each bag to compare each cost.

- 18. MP.1 Make Sense and Persevere Tickets to a rock concert cost \$32.50 each. The school choir bought 54 tickets for the Saturday concert and 33 tickets for the Sunday concert. How much did the choir pay in all for the tickets?
- 19. Higher Order Thinking Grace uses a different way to divide 2.16 by 0.25. She divides both the divisor and dividend by 0.01 to make an equivalent problem with a whole number divisor. Is her work correct? Explain.

No. To make the divisor a whole you multiply by a power of 10. Grace should have multiplied the divisor and dividend by 100.

Common Core Assessment

- 20. Which is the quotient $3.57 \div 0.84$?
 - (A) 0.0425
 - (B) 0.425
 - (C) 4.25
 - (D) 42.5
- 21. A 2.5-liter tub of ice cream contains 93.5 grams of saturated fat. How many grams of saturated fat are in one liter of ice cream?
 - (A) 37.4 grams
 - (B) 36.4 grams
 - (C) 37.4 grams
 - (D) 37.4 grams

$$\begin{array}{r} 408 \div 88 = 5 \\ 357 \div 84 = 4 \\ 320 \div 80 = 4 \end{array}$$

$$\begin{array}{r} 1700 \\ \times 0.84 \\ \hline 13800 \\ + 17000 \\ \hline 141800 \end{array}$$