

EUREKA MATH

A STORY OF UNITS



Mathematics Curriculum



Grade 5 • MODULE 1

Place Value and Decimal Fractions

Homework

Video tutorials: <http://embarc.online>

Version 3



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GRADE 5 • MODULE 1

Place Value and Decimal Fractions

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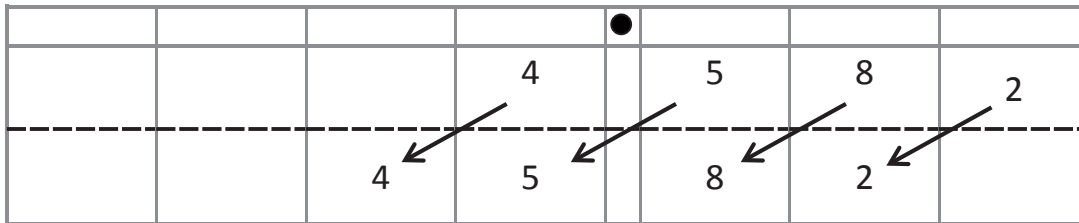
NOTE: Student sheets should be printed at 100% scale to preserve the intended size of figures for accurate measurements. Adjust copier or printer settings to *actual size* and set page scaling to *none*.

Name _____

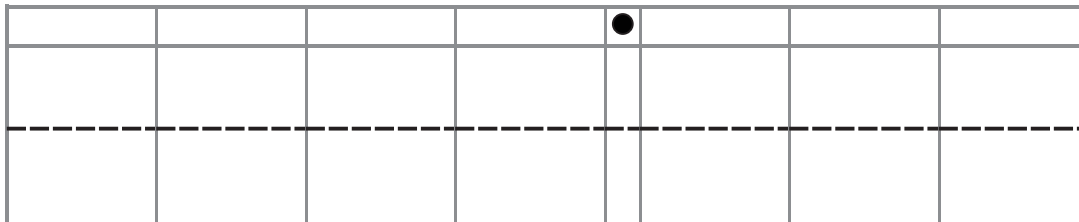
Date _____

1. Use the place value chart and arrows to show how the value of each digit changes. The first one has been done for you.

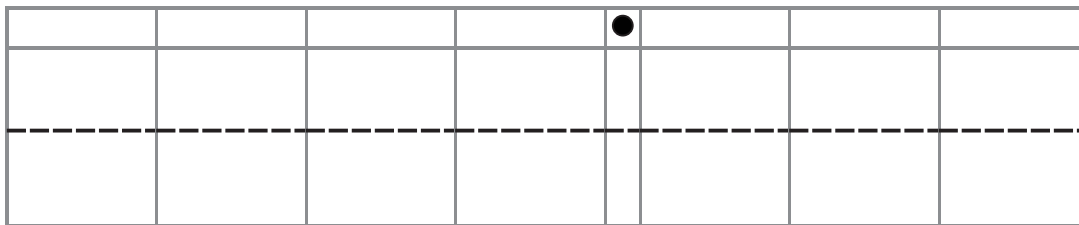
a. $4.582 \times 10 = \underline{45.82}$



b. $7.281 \times 100 = \underline{\hspace{2cm}}$



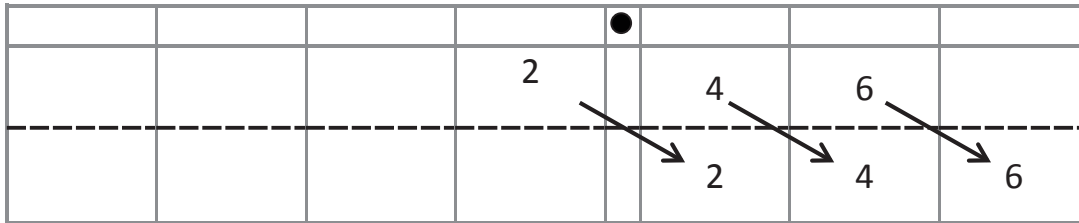
c. $9.254 \times 1,000 = \underline{\hspace{2cm}}$



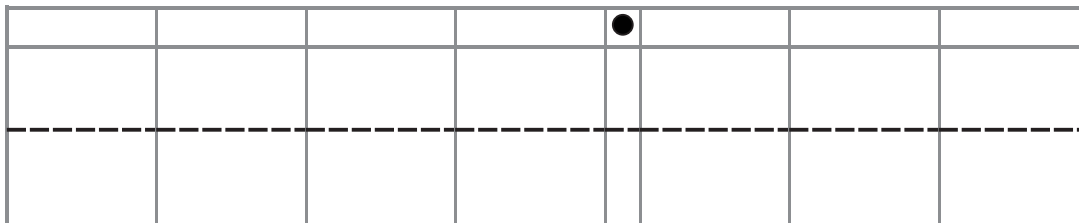
d. Explain how and why the value of the 2 changed in (a), (b), and (c).

2. Use the place value chart and arrows to show how the value of each digit changes. The first one has been done for you.

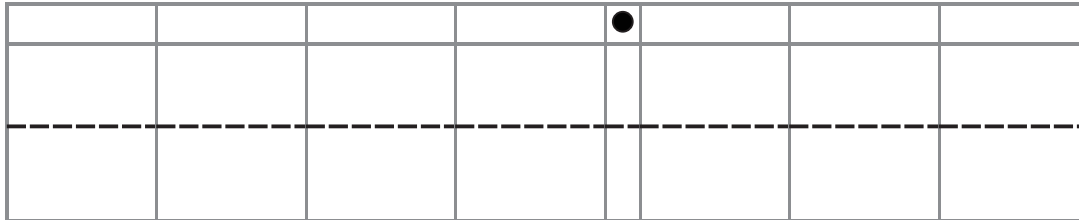
a. $2.46 \div 10 = \underline{\quad 0.246 \quad}$



b. $678 \div 100 = \underline{\hspace{2cm}}$



c. $67 \div 1,000 = \underline{\hspace{2cm}}$



d. Explain how and why the value of the 6 changed in the quotients in (a), (b), and (c).

3. Researchers counted 8,912 monarch butterflies on one branch of a tree at a site in Mexico. They estimated that the total number of butterflies at the site was 1,000 times as large. About how many butterflies were at the site in all? Explain your thinking, and include a statement of the solution.
4. A student used his place value chart to show a number. After the teacher instructed him to divide his number by 100, the chart showed 28.003. Draw a picture of what the place value chart looked like at first.

				●			

Explain how you decided what to draw on your place value chart. Be sure to include reasoning about how the value of each digit was affected by the division.

5. On a map, the perimeter of a park is 0.251 meters. The actual perimeter of the park is 1,000 times as large. What is the actual perimeter of the park? Explain how you know using a place value chart.

Name _____

Date _____

1. Solve.

a. $36,000 \times 10 =$ _____

e. $2.4 \times 100 =$ _____

b. $36,000 \div 10 =$ _____

f. $24 \div 1,000 =$ _____

c. $4.3 \times 10 =$ _____

g. $4.54 \times 1,000 =$ _____

d. $4.3 \div 10 =$ _____

h. $3,045.4 \div 100 =$ _____

2. Find the products.

a. $14,560 \times 10 =$ _____

b. $14,560 \times 100 =$ _____

c. $14,560 \times 1,000 =$ _____

Explain how you decided on the number of zeros in the products for (a), (b), and (c).

3. Find the quotients.

a. $16.5 \div 10 =$ _____

b. $16.5 \div 100 =$ _____

c. Explain how you decided where to place the decimal in the quotients for (a) and (b).

4. Ted says that 3 tenths multiplied by 100 equals 300 thousandths. Is he correct? Use a place value chart to explain your answer.

5. Alaska has a land area of about 1,700,000 square kilometers. Florida has a land area $\frac{1}{10}$ the size of Alaska. What is the land area of Florida? Explain how you found your answer.

Name _____

Date _____

1. Write the following in exponential form (e.g., $100 = 10^2$).

a. $1000 =$ _____

d. $100 \times 10 =$ _____

b. $10 \times 10 =$ _____

e. $1,000,000 =$ _____

c. $100,000 =$ _____

f. $10,000 \times 10 =$ _____

2. Write the following in standard form (e.g., $4 \times 10^2 = 400$).

a. $4 \times 10^3 =$ _____

e. $6.072 \times 10^3 =$ _____

b. $64 \times 10^4 =$ _____

f. $60.72 \times 10^4 =$ _____

c. $5,300 \div 10^2 =$ _____

g. $948 \div 10^3 =$ _____

d. $5,300,000 \div 10^3 =$ _____

h. $9.4 \div 10^2 =$ _____

3. Complete the patterns.

a. 0.02 0.2 _____ 20 _____ _____

b. 3,400,000 34,000 _____ 3.4 _____

c. _____ 8,570 _____ 85.7 8.57 _____

d. 444 4440 44,400 _____ _____ _____

e. _____ 9.5 950 95,000 _____ _____

4. After a lesson on exponents, Tia went home and said to her mom, “I learned that 10^4 is the same as 40,000.” She has made a mistake in her thinking. Use words, numbers, or a place value chart to help Tia correct her mistake.
5. Solve $247 \div 10^2$ and 247×10^2 .
- a. What is different about the two answers? Use words, numbers, or pictures to explain how the digits shift.
- b. Based on the answers from the pair of expressions above, solve $247 \div 10^3$ and 247×10^3 .

Name _____

Date _____

1. Convert and write an equation with an exponent. Use your meter strip when it helps you.

a. 2 meters to centimeters $2\text{m} = 200\text{ cm}$ $2 \times 10^2 = 200$

b. 108 centimeters to meters $108\text{ cm} = \underline{\hspace{1cm}}\text{ m}$ _____

c. 2.49 meters to centimeters $\underline{\hspace{1cm}}\text{ m} = \underline{\hspace{1cm}}\text{ cm}$ _____

d. 50 centimeters to meters $\underline{\hspace{1cm}}\text{ cm} = \underline{\hspace{1cm}}\text{ m}$ _____

e. 6.3 meters to centimeters $\underline{\hspace{1cm}}\text{ m} = \underline{\hspace{1cm}}\text{ cm}$ _____

f. 7 centimeters to meters $\underline{\hspace{1cm}}\text{ cm} = \underline{\hspace{1cm}}\text{ m}$ _____

g. In the space below, list the letters of the problems where smaller units are converted to larger units.

2. Convert using an equation with an exponent. Use your meter strip when it helps you.

a. 4 meters to millimeters $\underline{\hspace{1cm}}\text{ m} = \underline{\hspace{1cm}}\text{ mm}$ _____

b. 1.7 meters to millimeters $\underline{\hspace{1cm}}\text{ m} = \underline{\hspace{1cm}}\text{ mm}$ _____

c. 1,050 millimeters to meters $\underline{\hspace{1cm}}\text{ mm} = \underline{\hspace{1cm}}\text{ m}$ _____

d. 65 millimeters to meters $\underline{\hspace{1cm}}\text{ mm} = \underline{\hspace{1cm}}\text{ m}$ _____

e. 4.92 meters to millimeters $\underline{\hspace{1cm}}\text{ m} = \underline{\hspace{1cm}}\text{ mm}$ _____

f. 3 millimeters to meters $\underline{\hspace{1cm}}\text{ mm} = \underline{\hspace{1cm}}\text{ m}$ _____

g. In the space below, list the letters of the problems where larger units are converted to smaller units.

3. Read each aloud as you write the equivalent measures. Write an equation with an exponent you might use to convert.

a. 2.638 m = _____ mm $2.638 \times 10^3 = 2,638$

b. 7 cm = _____ m _____

c. 39 mm = _____ m _____

d. 0.08 m = _____ mm _____

e. 0.005 m = _____ cm _____

4. Yi Ting's height is 1.49 m. Express this measurement in millimeters. Explain your thinking. Include an equation with an exponent in your explanation.

5. A ladybug's length measures 2 cm. Express this measurement in meters. Explain your thinking. Include an equation with an exponent in your explanation.

6. The length of a sticky note measures 77 millimeters. Express this length in meters. Explain your thinking. Include an equation with an exponent in your explanation.

Name _____

Date _____

1. Express as decimal numerals. The first one is done for you.

a. Five thousandths	0.005
b. Thirty-five thousandths	
c. Nine and two hundred thirty-five thousandths	
d. Eight hundred and five thousandths	
e. $\frac{8}{1000}$	
f. $\frac{28}{1000}$	
g. $7\frac{528}{1000}$	
h. $300\frac{502}{1000}$	

2. Express each of the following values in words.

- a. 0.008 _____
- b. 15.062 _____
- c. 607.409 _____

3. Write the number on a place value chart. Then, write it in expanded form using fractions or decimals to express the decimal place value units. The first one is done for you.

- a. 27.346

Tens	Ones		Tenths	Hundredths	Thousandths
2	7	●	3	4	6

$$27.346 = 2 \times 10 + 7 \times 1 + 3 \times \left(\frac{1}{10}\right) + 4 \times \left(\frac{1}{100}\right) + 6 \times \left(\frac{1}{1000}\right) \text{ or}$$

$$27.346 = 2 \times 10 + 7 \times 1 + 3 \times 0.1 + 4 \times 0.01 + 6 \times 0.001$$

b. 0.362

c. 49.564

4. Write a decimal for each of the following. Use a place value chart to help, if necessary.

a. $3 \times 10 + 5 \times 1 + 2 \times \left(\frac{1}{10}\right) + 7 \times \left(\frac{1}{100}\right) + 6 \times \left(\frac{1}{1000}\right)$

b. $9 \times 100 + 2 \times 10 + 3 \times 0.1 + 7 \times 0.001$

c. $5 \times 1000 + 4 \times 100 + 8 \times 1 + 6 \times \left(\frac{1}{100}\right) + 5 \times \left(\frac{1}{1000}\right)$

5. At the beginning of a lesson, a piece of chalk is 4.875 inches long. At the end of the lesson, it is 3.125 inches long. Write the two amounts in expanded form using fractions.

a. At the beginning of the lesson:

b. At the end of the lesson:

6. Mrs. Herman asked the class to write an expanded form for 412.638. Nancy wrote the expanded form using fractions, and Charles wrote the expanded form using decimals. Write their responses.

Name _____

Date _____

1. Use $>$, $<$, or $=$ to compare the following.

a. 16.45	<input type="radio"/>	16.454
b. 0.83	<input type="radio"/>	$\frac{83}{100}$
c. $\frac{205}{1000}$	<input type="radio"/>	0.205
d. 95.045	<input type="radio"/>	95.545
e. 419.10	<input type="radio"/>	419.099
f. Five ones and eight tenths	<input type="radio"/>	Fifty-eight tenths
g. Thirty-six and nine thousandths	<input type="radio"/>	Four tens
h. One hundred four and twelve hundredths	<input type="radio"/>	One hundred four and two thousandths
i. One hundred fifty-eight thousandths	<input type="radio"/>	0.58
j. 703.005	<input type="radio"/>	Seven hundred three and five hundredths

2. Arrange the numbers in increasing order.

a. 8.08 8.081 8.09 8.008

b. 14.204 14.200 14.240 14.210

3. Arrange the numbers in decreasing order.

a. 8.508 8.58 7.5 7.058

b. 439.216 439.126 439.612 439.261

4. James measured his hand. It was 0.17 meter. Jennifer measured her hand. It was 0.165 meter. Whose hand is bigger? How do you know?

5. In a paper airplane contest, Marcel's plane travels 3.345 meters. Salvador's plane travels 3.35 meters. Jennifer's plane travels 3.3 meters. Based on the measurements, whose plane traveled the farthest distance? Whose plane traveled the shortest distance? Explain your reasoning using a place value chart.

Name _____

Date _____

Fill in the table, and then round to the given place. Label the number lines to show your work. Circle the rounded number.

1. 4.3

- a. Hundredths b. Tenths c. Ones



Tens	Ones	Tenths	Hundredths	Thousandths
		●		

2. 225.286

- a. Hundredths b. Ones c. Tens



Tens	Ones	Tenths	Hundredths	Thousandths
		●		

3. 8.984

Tens	Ones	Tenths	Hundredths	Thousandths
		●		

a. Hundredths



b. Tenths



c. Ones



d. Tens



4. On a Major League Baseball diamond, the distance from the pitcher's mound to home plate is 18.386 meters.

a. Round this number to the nearest hundredth of a meter. Use a number line to show your work.

b. How many centimeters is it from the pitcher's mound to home plate?

5. Jules reads that 1 pint is equivalent to 0.473 liters. He asks his teacher how many liters there are in a pint. His teacher responds that there are about 0.47 liters in a pint. He asks his parents, and they say there are about 0.5 liters in a pint. Jules says they are both correct. How can that be true? Explain your answer.

Name _____

Date _____

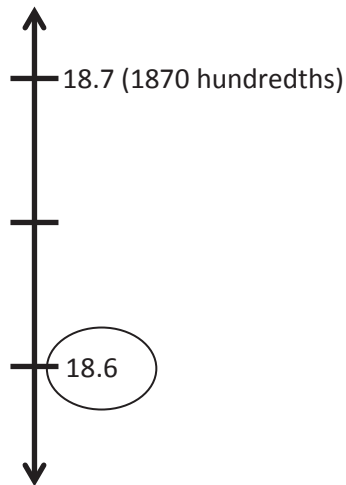
1. Write the decomposition that helps you, and then round to the given place value. Draw number lines to explain your thinking. Circle the rounded value on each number line.

a. 43.586 to the nearest tenth, hundredth, and one.

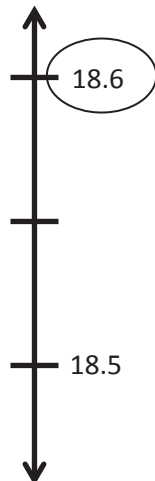
b. 243.875 to nearest tenth, hundredth, ten, and hundred.

2. A trip from New York City to Seattle is 2,852.1 miles. A family wants to make the drive in 10 days, driving the same number of miles each day. About how many miles will they drive each day? Round your answer to the nearest tenth of a mile.

3. A decimal number has two digits to the right of its decimal point. If we round it to the nearest tenth, the result is 18.6.
- a. What is the maximum possible value of this number? Use words and the number line to explain your reasoning. Include the midpoint on your number line.



- b. What is the minimum possible value of this decimal? Use words, pictures, or numbers to explain your reasoning.



Name _____

Date _____

1. Solve.

a. $3 \text{ tenths} + 4 \text{ tenths} = \underline{\hspace{2cm}}$ tenths

b. $12 \text{ tenths} + 9 \text{ tenths} = \underline{\hspace{2cm}}$ tenths = $\underline{\hspace{1cm}}$ one(s) $\underline{\hspace{1cm}}$ tenth(s)

c. $3 \text{ hundredths} + 4 \text{ hundredths} = \underline{\hspace{2cm}}$ hundredths

d. $27 \text{ hundredths} + 7 \text{ hundredths} = \underline{\hspace{1cm}}$ hundredths = $\underline{\hspace{1cm}}$ tenths $\underline{\hspace{1cm}}$ hundredths

e. $4 \text{ thousandths} + 3 \text{ thousandths} = \underline{\hspace{2cm}}$ thousandths

f. $39 \text{ thousandths} + 5 \text{ thousandths} = \underline{\hspace{1cm}}$ thousandths = $\underline{\hspace{1cm}}$ hundredths $\underline{\hspace{1cm}}$ thousandths

g. $5 \text{ tenths} + 7 \text{ thousandths} = \underline{\hspace{2cm}}$ thousandths

h. $4 \text{ ones } 4 \text{ tenths} + 4 \text{ tenths} = \underline{\hspace{2cm}}$ tenths

i. $8 \text{ thousandths} + 6 \text{ ones } 8 \text{ thousandths} = \underline{\hspace{2cm}}$ thousandths

2. Solve using the standard algorithm.

a. $0.4 + 0.7 = \underline{\hspace{2cm}}$	b. $2.04 + 0.07 = \underline{\hspace{2cm}}$
c. $6.4 + 3.7 = \underline{\hspace{2cm}}$	d. $56.04 + 3.07 = \underline{\hspace{2cm}}$

e. $72.564 + 5.137 =$ _____

f. $75.604 + 22.296 =$ _____

3. Walkway Over the Hudson, a bridge that crosses the Hudson River in Poughkeepsie, is 2.063 kilometers long. Anping Bridge, which was built in China 850 years ago, is 2.07 kilometers long.
- a. What is the total span of both bridges? Show your thinking.
- b. Leah likes to walk her dog on the Walkway Over the Hudson. If she walks across and back, how far will she and her dog walk?
4. For his parents' anniversary, Danny spends \$5.87 on a photo. He also buys a balloon for \$2.49 and a box of strawberries for \$4.50. How much money does he spend all together?

Name _____

Date _____

1. Subtract. You may use a place value chart.

a. $9 \text{ tenths} - 3 \text{ tenths} = \underline{\hspace{2cm}}$ tenths

b. $9 \text{ ones } 2 \text{ thousandths} - 3 \text{ ones} = \underline{\hspace{2cm}}$ ones $\underline{\hspace{2cm}}$ thousandths

c. $4 \text{ hundreds } 6 \text{ hundredths} - 3 \text{ hundredths} = \underline{\hspace{2cm}}$ hundreds $\underline{\hspace{2cm}}$ hundredths

d. $56 \text{ thousandths} - 23 \text{ thousandths} = \underline{\hspace{2cm}}$ thousandths = $\underline{\hspace{2cm}}$ hundredths $\underline{\hspace{2cm}}$ thousandths

2. Solve using the standard algorithm.

a. $1.8 - 0.9 = \underline{\hspace{2cm}}$	b. $41.84 - 0.9 = \underline{\hspace{2cm}}$	c. $341.84 - 21.92 = \underline{\hspace{2cm}}$
d. $5.182 - 0.09 = \underline{\hspace{2cm}}$	e. $50.416 - 4.25 = \underline{\hspace{2cm}}$	f. $741 - 3.91 = \underline{\hspace{2cm}}$

3. Solve.

a. 30 tens – 3 tens 3 tenths	b. 5 – 16 tenths	c. 24 tenths – 1 one 3 tenths
d. 6 ones 7 hundredths – 2.3	e. 8.246 – 5 hundredths	f. 5 ones 3 tenths – 0.53

4. Mr. House wrote *8 tenths minus 5 hundredths* on the board. Maggie said the answer is 3 hundredths because 8 minus 5 is 3. Is she correct? Explain.

5. A clipboard costs \$2.23. It costs \$0.58 more than a notebook. Lisa bought two clipboards and one notebook. She paid with a ten-dollar bill. How much change does Lisa get? Use a tape diagram to show your thinking.

Name _____

Date _____

1. Solve by drawing disks on a place value chart. Write an equation, and express the product in standard form.

a. 2 copies of 4 tenths

b. 4 groups of 5 hundredths

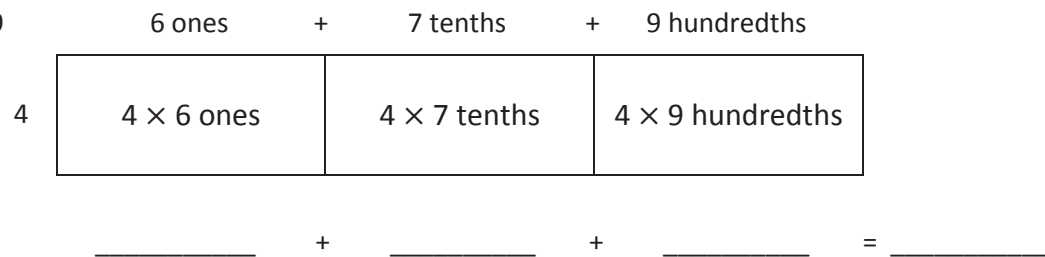
c. 4 times 7 tenths

d. 3 times 5 hundredths

e. 9 times as much as 7 tenths

f. 6 thousandths times 8

2. Draw a model similar to the one pictured below. Find the sum of the partial products to evaluate each expression.

a. 4×6.79 

b. 6×7.49

c. 9 copies of 3.65

d. 3 times 20.175

3. Leanne multiplied 8×4.3 and got 32.24. Is Leanne correct? Use an area model to explain your answer.
4. Anna buys groceries for her family. Hamburger meat is \$3.38 per pound, sweet potatoes are \$0.79 each, and hamburger rolls are \$2.30 a bag. If Anna buys 3 pounds of meat, 5 sweet potatoes, and 1 bag of hamburger rolls, what will she pay in all for the groceries?

Name _____

Date _____

1. Choose the reasonable product for each expression. Explain your thinking in the spaces below using words, pictures, or numbers.

a. 2.1×3 0.63 6.3 63 630

b. 4.27×6 2562 256.2 25.62 2.562

c. 7×6.053 4237.1 423.71 42.371 4.2371

d. 9×4.82 4.338 43.38 433.8 4338

2. Yi Ting weighs 8.3 kg. Her older brother is 4 times as heavy as Yi Ting. How much does her older brother weigh in kilograms?
3. Tim is painting his storage shed. He buys 4 gallons of white paint and 3 gallons of blue paint. Each gallon of white paint costs \$15.72, and each gallon of blue paint is \$21.87. How much will Tim spend in all on paint?
4. Ribbon is sold at 3 yards for \$6.33. Jackie bought 24 yards of ribbon for a project. How much did she pay?

Name _____

Date _____

1. Complete the sentences with the correct number of units, and then complete the equation.

a. 3 groups of _____ tenths is 1.5. $1.5 \div 3 = \underline{\hspace{2cm}}$

b. 6 groups of _____ hundredths is 0.24. $0.24 \div 6 = \underline{\hspace{2cm}}$

c. 5 groups of _____ thousandths is 0.045. $0.045 \div 5 = \underline{\hspace{2cm}}$

2. Complete the number sentence. Express the quotient in units and then in standard form.

a. $9.36 \div 3 = \underline{\hspace{2cm}}$ ones $\div 3 + \underline{\hspace{2cm}}$ hundredths $\div 3$
 $= \underline{\hspace{2cm}}$ ones $+ \underline{\hspace{2cm}}$ hundredths
 $= \underline{\hspace{2cm}}$

b. $36.012 \div 3 = \underline{\hspace{2cm}}$ ones $\div 3 + \underline{\hspace{2cm}}$ thousandths $\div 3$
 $= \underline{\hspace{2cm}}$ ones $+ \underline{\hspace{2cm}}$ thousandths
 $= \underline{\hspace{2cm}}$

c. $3.55 \div 5 = \underline{\hspace{2cm}}$ tenths $\div 5 + \underline{\hspace{2cm}}$ hundredths $\div 5$
 $= \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$

d. $3.545 \div 5 = \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$

3. Find the quotients. Then, use words, numbers, or pictures to describe any relationships you notice between each pair of problems and quotients.

a. $21 \div 7 =$ _____ $2.1 \div 7 =$ _____

b. $48 \div 8 =$ _____ $0.048 \div 8 =$ _____

4. Are the quotients below reasonable? Explain your answers.

a. $0.54 \div 6 = 9$

b. $5.4 \div 6 = 0.9$

c. $54 \div 6 = 0.09$

5. A toy airplane costs \$4.84. It costs 4 times as much as a toy car. What is the cost of the toy car?
6. Julian bought 3.9 liters of cranberry juice, and Jay bought 8.74 liters of apple juice. They mixed the two juices together and then poured them equally into 2 bottles. How many liters of juice are in each bottle?

Name _____

Date _____

1. Draw place value disks on the place value chart to solve. Show each step using the standard algorithm.

a. $5.241 \div 3 = \underline{\hspace{2cm}}$

Ones	Tenths	Hundredths	Thousandths

$$3 \overline{) 5.241}$$

b. $5.372 \div 4 = \underline{\hspace{2cm}}$

Ones	Tenths	Hundredths	Thousandths

$$4 \overline{) 5.372}$$

2. Solve using the standard algorithm.

a. $0.64 \div 4 = \underline{\hspace{2cm}}$	b. $6.45 \div 5 = \underline{\hspace{2cm}}$	c. $16.404 \div 6 = \underline{\hspace{2cm}}$
---	---	---

3. Mrs. Mayuko paid \$40.68 for 3 kg of shrimp. What's the cost of 1 kilogram of shrimp?

4. The total weight of 6 pieces of butter and a bag of sugar is 3.8 lb. If the weight of the bag of sugar is 1.4 lb, what is the weight of each piece of butter?

Name _____

Date _____

1. Draw place value disks on the place value chart to solve. Show each step in the standard algorithm.

a. $0.7 \div 4 =$ _____

Ones	●	Tenths	Hundredths	Thousandths

$$4 \overline{) 0.7}$$

b. $8.1 \div 5 =$ _____

Ones	●	Tenths	Hundredths	Thousandths

$$5 \overline{) 8.1}$$

2. Solve using the standard algorithm.

a. $0.7 \div 2 =$	b. $3.9 \div 6 =$	c. $9 \div 4 =$
d. $0.92 \div 2 =$	e. $9.4 \div 4 =$	f. $91 \div 8 =$

3. A rope 8.7 meters long is cut into 5 equal pieces. How long is each piece?

4. Yasmine bought 6 gallons of apple juice. After filling up 4 bottles of the same size with apple juice, she had 0.3 gallon of apple juice left. How many gallons of apple juice are in each container?

Name _____

Date _____

Solve using tape diagrams.

1. A gardener installed 42.6 meters of fencing in a week. He installed 13.45 meters on Monday and 9.5 meters on Tuesday. He installed the rest of the fence in equal lengths on Wednesday through Friday. How many meters of fencing did he install on each of the last three days?

2. Jenny charges \$9.15 an hour to babysit toddlers and \$7.45 an hour to babysit school-aged children.
 - a. If Jenny babysat toddlers for 9 hours and school-aged children for 6 hours, how much money did she earn in all?

 - b. Jenny wants to earn \$1,300 by the end of the summer. How much more will she need to earn to meet her goal?

3. A table and 8 chairs weigh 235.68 lb together. If the table weighs 157.84 lb, what is the weight of one chair in pounds?
4. Mrs. Cleaver mixes 1.24 liters of red paint with 3 times as much blue paint to make purple paint. She pours the paint equally into 5 containers. How much blue paint is in each container? Give your answer in liters.



Video tutorials: <http://embarc.online>



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