

Can you divide by zero? Consider these related problems.

$$6 \div 3 = 2 \qquad 3 \cdot 2 = 6$$

$$6 \div 0 = \square \qquad 0 \cdot \square \stackrel{?}{=} 6$$

There is no value for \square that makes sense! So, division by zero is undefined.

? For more practice, see *Extra Practice*.

EXERCISES

A Practice by Example

Find each product.

Example 1
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1. 0.2×0.7

2. 0.4×0.6

3. 0.3×0.5

4. 1.02×3.6

5. 8.7×0.45

6. 1.45×2.6

7. 41×7.5

8. 1.3×0.05

9. **Fitness** If you walk 3.5 miles per hour, how far will you walk in 1.2 hours?

Example 2
(page 18)

Mental Math Find each product.

10. $0.2 \cdot 3.41 \cdot 5$

11. $1.09 \cdot 23.6 \cdot 0$

12. $(2.3 \cdot 0.5) \cdot 4$

13. $5 \cdot (4.3 \cdot 1)$

14. $0 \cdot 2.78 \cdot 1$

15. $0.4 \cdot 3.29 \cdot 25$

Example 3
(page 19)

Find each quotient.

16. $17.172 \div 3.24$

17. $1.89 \overline{)5.103}$

18. $\frac{53.58}{4.7}$

19. $\frac{186.9}{8.9}$

20. $62.37 \div 2.7$

21. $5.47 \overline{)41.572}$

22. **Hobbies** You spend \$13.92 for fabric. Each yard costs \$4.35. How many yards of fabric do you buy?
23. **Entertainment** You buy five movie tickets for \$23.75. How much does each ticket cost?

Example 4
(page 19)

Find each quotient.

24. $0.04 \overline{)10}$

25. $0.054 \div 0.72$

26. $\frac{0.078}{1.2}$

27. $592 \div 0.8$

28. $0.0282 \div 0.6$

29. $\frac{0.003}{0.5}$

30. $224.5 \div 0.05$

31. $1.25 \overline{)0.1}$

32. **Shopping** If peanuts cost \$1.75 per jar, how many jars can you buy with \$14?

B Apply Your Skills

Mental Math Find each quotient.

33. $0.9 \div 100$

34. $236.7 \div 0.1$

35. $5.02 \div 0.01$

36. $0.7 \div 10$

37. **a. Food** Rice costs \$1.33 per kilogram. How much will 1.3 kg of rice cost?
b. Milk costs \$0.71 per liter. How many liters can you buy with \$3?
c. Reasoning How are part (a) and part (b) different?

38. **Money** A penny weighs about 0.1 oz. How much is a pound of pennies worth? (*Hint: 1 lb = 16 oz*)

Find the missing numbers. Name the property of multiplication shown.

39. $3.6 \cdot \square = 0$

40. $\square \cdot 1 = 25.5$

41. $\square \cdot 4 = 4 \cdot 3$

42. $(2.5 \cdot \square) \cdot 2.3 = 2.5 \cdot (1.4 \cdot 2.3)$

43. a. **Patterns** Look at the division problems at the right. What pattern do you see in the divisors?

- b. Copy the table. Fill in the missing divisors. Find each quotient.

- c. **Reasoning** As the divisor gets closer and closer to zero, what happens to the quotient? Why?

Dividend	Divisor	Quotient
50	$\div 100$	$= 0.5$
50	$\div 10$	$= \square$
50	$\div 1$	$= \square$
50	$\div 0.1$	$= \square$
50	$\div 0.01$	$= \square$
50	$\div 0.001$	$= \square$
50	$\div \square$	$= \square$
50	$\div \square$	$= \square$
50	$\div \square$	$= \square$

44. **Sales** A dozen pens cost a store \$11.28. Each pen sells for \$1.99.

a. What is the profit per pen?

b. How many pens does the store need to sell to get back its cost?

45. Find the missing numbers.

a. $1.2 \times \square = 588$

b. $\square \times 2.7 = 3.51$

c. $0.37 \times \square = 23.68$

d. **Number Sense** Explain how you found the missing numbers. How did you know that your method would work?

46. **Landscaping** After digging up lilac bushes in the garden, a landscape architect uses sod to cover the dirt. The sod costs \$2.25/yd. He pays \$31.50. How much sod does he buy?

Find each product or quotient.

47. $641.7 \div 9$

48. $2.07 \cdot 15$

49. 14.8×9.1

50. $8.4(6.2)$

51. $0.0882 \div 6$

52. $325.28 \div 30.4$

53. $82.3 \cdot 2.9$

54. 15.6×7.4

55. $20.08 \div 25.1$

56. **Writing in Math** How are the identity properties of multiplication and addition similar? How are they different?

57. a. Find $75 \overline{)300}$.

b. Find $7.5 \overline{)300}$.

c. Find $0.75 \overline{)300}$.

d. **Patterns** Describe what happens to a quotient when the dividend remains the same and the divisor decreases.

58. **Banking** You decide to take the coins that you have been saving to the bank. You count 17 pennies, 31 nickels, 22 dimes, and 14 quarters. How much money will you deposit into your account?



Real-World Connection

Landscape architects use their knowledge of design and construction to develop a landscape project.