3.4 Exercises

Concept Check

Fill-in-the-Blank. Complete each sentence using information found in this section.

1. If the divisor is a decimal number, multiply both the divisor and dividend by a power of 10 so that the divisor is a/an _____ number.
2. If the decimal point is moved 3 places to the right in the divisor, then the decimal point in the _____ must also be moved 3 places to the right.
3. Once the divisor is a whole number and the decimal point is in the proper place in the quotient, divide as with _____ _____.
4. If a remainder is eventually 0, the decimal number is said to be a/an _____ decimal number.
5. When dividing by a power of 10, move the decimal point to the _____ the same number of places as there are zeros in the power of 10.

True/False. Determine whether each statement is true or false. If a statement is false, explain how it can be changed so the statement will be true. (**Note:** There may be more than one acceptable change.)

6. The first step in division with decimal numbers is to move the decimal point in the divisor to the right so that the divisor is a whole number.
7. Moving the decimal point in a divisor requires that the decimal point also be moved in the dividend.
8. The decimal point should be placed in the quotient before actually dividing.
9. Dividing by a power of 10 involves dividing by 10, 20, 30, 40, etc.

Practice

Divide. See Examples 1 and 2.

1. $4.68 \div 2$
2. $9.36 \div 3$
3. $1.71 \div 3$
4. $1.36 \div 4$
5. $1.62 \div 9$
6. $4.95 \div 5$
7. $0.064 \div 0.8$
8. $0.063 \div 0.7$
9. $4.484 \div 1.9$
10. $7.336 \div 1.4$
11. $82.24 \div 0.04$
12. $37.02 \div 0.03$
13. $16.35 \div 2.5$
14. $30.94 \div 6.5$
15. $48 \div 2.4$
16. $168 \div 5.6$

Divide and round to the nearest tenth. See Example 3.

17. $8\overline{)455}$
18. $8\overline{)261}$
19. $\dfrac{6.538}{9.4}$
20. $\dfrac{3.927}{5.3}$
21. $4.6 \div 5$
22. $5.7 \div 8$

23. $43.721 \div 0.06$

24. $12.847 \div 0.06$

25. $1.62\overline{)34}$

26. $1.33\overline{)75}$

Divide and round to the nearest hundredth. See Example 4.

27. $\dfrac{0.1463}{24}$

28. $\dfrac{0.2249}{23}$

29. $0.42753 \div 0.074$

30. $0.2433 \div 0.065$

31. $1.23\overline{)14.91129}$

32. $3.14\overline{)15.25631}$

33. $9\overline{)5}$

34. $9\overline{)2}$

Divide mentally by using your knowledge of division by powers of 10. See Example 7.

35. $\dfrac{38}{10}$

36. $\dfrac{167}{10}$

37. $\dfrac{138.1}{10}$

38. $\dfrac{42.31}{10}$

39. $\dfrac{7.85}{10}$

40. $\dfrac{6.82}{10}$

41. $79.4 \div 100$

42. $68.9 \div 100$

43. $50.36 \div 100$

44. $87.96 \div 100$

45. $316.4963 \div 100$

46. $125.725 \div 100$

47. $18.6 \div 1000$

48. $96.4 \div 1000$

49. $45.621 \div 1000$

50. $10.413 \div 1000$

51. $1173.85 \div 1000$

52. $98{,}716.742 \div 1000$

53. $\dfrac{1.54}{10{,}000}$

54. $\dfrac{169.9}{10{,}000}$

Applications

Solve.

55. If four new tires with custom rims cost $958.24, what did each individual tire with rim cost?

56. If you bought 6 books for a total price of $142.98, what average amount did you pay per book, including tax?

57. If the total price of a stereo was $312.70 including a tax of 0.06 times the list price, you can find the list price by dividing the total price by 1.06. What was the list price? (**Note:** 1.06 represents the list price plus 0.06 times the list price.)

58. If the total price of a tablet PC was $266.43 including a tax of 0.07 times the list price, you can find the list price by dividing the total price by 1.07. What was the list price? (**Note:** 1.07 represents the list price plus 0.07 times the list price.)

59. In 2021, the Houston Astros had a team batting average of .267 and 1496 hits. Find the number of team at bats, to the nearest whole number, by dividing hits by batting average.

Batter, Batter, Swing!

The Houston Astros team batting average of .267 was the best of the 2021 season. The Astros had a great season that year and eventually played against the Atlanta Braves in the World Series. The Astros lost to the Braves in 2021, but went on to win the World Series in 2022.

60. In 2021, Julio Urias of the Los Angeles Dodgers had 20 wins and a 0.87 wining percentage. Find Julio Urias's total number of pitching decisions (games won or lost), to the nearest whole number, by dividing wins by winning percentage.

61. Walter Payton played football for the Chicago Bears for 13 years. In those years he carried the ball 3838 times for a total of 16,726 yards. What was his average yardage per carry (to the nearest tenth)?

62. If a car travels 330 miles on 15 gallons of gas, how many miles per gallon does it average?

63. A professor has graded a test of five students, and their scores were 76.4, 100, 84.7, 10.2, and 68.3. What is the average of these five scores?

64. Suppose that the total interest paid on a 30-year mortgage of $60,000 will be $189,570. What will be the payment each month if the payments are to pay off both the loan and the interest?

Writing & Thinking

65. In your own words, discuss the similarities and differences between division with whole numbers and division with decimal numbers.

66. List the steps you would follow in working a division problem with decimal numbers.

67. Discuss briefly, situations in which you might use division with decimal numbers in your daily life.

Collaborative Learning

68. Do you know how to find the gas mileage (miles per gallon) that your car is using? If you are not sure, proceed as follows and compare your mileage with other students in the class. (Your car might need some work if the mileage is not consistent or it is much worse than other similar sized cars.)

Step 1: Fill up your gas tank and write down the mileage indicated on the odometer.

Step 2: Drive the car for a few days.

Step 3: Fill up your gas tank again and write down the number of gallons needed to fill the tank and the new mileage indicated on the odometer.

Step 4: Find the number of miles that you drove by subtracting the new and old numbers indicated on the odometer.

Step 5: Divide the number of miles driven by the number of gallons needed to fill the tank. This number is your gas mileage (miles per gallon).