

Lesson

14-5

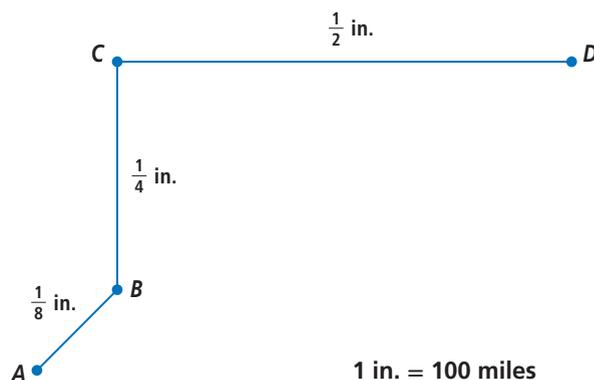
Mixed Decimal
Operations

Questions

- Consider the numbers 0.5, 0.4, and 0.8.
 - Choose two of the numbers and tell what operation you can do on those numbers that will give you the third number.
 - Find a different answer to Part a.
- Multiple Choice** Which of the following is not true?
 - $655.008 + 87.2 = 655.008 + 870.200$
 - $246.8 \cdot 1.005 = 2.468 \cdot 100.5$
 - $85.427 \div 100 = 85.427 \cdot 0.01$
 - $10.705 \div 0.55 = 1070.5 \div 55$
- Multiple Choice** Which of the following is true?
 - $807.92 - 25.8 = 25.8 - 807.92$
 - $807.92 - 25.8 - 0.905 = (807.92 - 25.8) - 0.905$
 - $807.92 \cdot (25.8 \cdot 0.905) = 807.92 \cdot 25.8 + 807.92 \cdot 0.905$
 - $807.92 - 25.8 = -(807.92 - 25.8)$
- At one steakhouse in Chicago, you can get a 16-ounce New York Strip Steak for \$37 and a 12-ounce New York Strip Steak for \$31. Which steak is more expensive per ounce, and by how much?
- The area of a circle with radius r is given by the formula $A = \pi r^2$.
 - To the nearest tenth of a square foot, give the area of the center jump circle on a basketball court which has a radius of 6 feet. (Except for the players doing the jumping in a jump ball, other players must stay outside this circle.) Use 3.141592 for π .
Source: <http://www.basketball-court.com/pages/specs.html>
 - If you use the approximation 3.14 for π , do you get the same answer as you got in Part a?
- Use the fact that $25 \cdot 0.04 = 1$ to calculate each of the following.
 - $0.25 \cdot 4$
 - $0.25 \cdot 0.004$
 - $250 \cdot 0.04$
 - $2,500,000 \cdot 0.04$
 - $2.5 \cdot 0.04$
 - $0.00025 \cdot 0.004$

7. When the fraction $\frac{n}{1234}$ is converted to a decimal, the decimal begins 0.567... What is the value of n ?
8. Mrs. Blanda is shopping for school supplies. She plans on purchasing one each of the items listed in the table at the right.
- Estimate how much money she plans on spending.
 - What is the exact amount she plans on spending (excluding any sales tax)?
 - If the sales tax is \$8 for every \$100 spent, about how much should she expect to pay in sales tax?
9. The men's world record for the 1500-meter run is 3 minutes, 26.00 seconds, set by Hicham El Guerrouj of Morocco in 1999. The women's world record for this distance is 3 minutes, 50.46 seconds, set in 1993 by Qu Yunxia of China.
- Source: <http://www.trackandfieldnews.com/records/>
- Which runner ran faster?
 - If the two runners had set these records in the same race, by how many seconds would one runner have beaten the other in crossing the finish line?
 - To the nearest hundredth, how many meters per second did El Guerrouj average in his record-setting race?
 - A meter is about 39.37 inches. Use your answer to Part c to determine how many feet per second El Guerrouj averaged in his record-setting race.
10. If \$500 is put into a one-year CD that pays 1.823% interest, how much interest will be earned and how much will there be at the end of the year?
11. Evaluate the expression.
- $$35.6 \div 3.56 + 90 \cdot 0.5 - 55$$
12. Reuben plans to travel from point A to point D through points B and C . He used a ruler to determine the map distances between those points. Use the map's scale to determine how many total miles he will travel.

| Item | Price |
|------------------|----------|
| Backpack | \$37.79 |
| Binder | \$2.49 |
| Crayons | \$3.19 |
| Calculator | \$119.99 |
| Combination lock | \$8.39 |



13. In the problem below, the decimal points are missing from the factors. Where do you think the decimal points should go to obtain the given product? Is there more than one possible way to place the decimal points in the factors? Explain your answer.

$$96 \cdot 8059 = 773.664$$

14. Consider a problem to calculate $4.89 \# 6.21$, where the $\#$ may be $+$, $-$, \times , or \div . In copying this problem, an editor wrote 6.12 instead of 6.21. To the nearest hundredth, by how much would the calculation be off if $\#$ stands for:

a. $+$? b. $-$? c. \times ? d. \div ?

15. The top four finishers in the women's 3-meter springboard diving competition at the 2008 Summer Olympics are listed below.

Source: http://2008games.nytimes.com/olympics/results.asp?id=dvw_001100&Sport=DIV

| 2008 Olympic Results for Diving: Women's 300 m Springboard | | |
|---|-------------------------|--------------|
| Place | Name | Final Points |
| Gold | Guo Jingjing, China | 415.35 |
| Silver | Julia Pakhalina, Russia | 398.60 |
| Bronze | Wu Minxia, China | 389.85 |
| 4th place | Blythe Hartley, Canada | 374.60 |

- a. How many fewer points did Pakhalina earn than Jingjing?
- b. Of the four results in the table, which two are closest to each other? How far apart are those point totals?
- c. In 2004 for this event, Jingjing won the gold, Minxia won the silver, and Pakhalina won the bronze. Jingjing, with 633.15 total points, beat Minxia by 21.15 points. Pakhalina had 1.38 fewer points than Minxia. How many points did Minxia and Pakhalina have? (The points used to determine the rankings in 2004 were calculated differently from how they were determined in 2008.)
16. Add the fractions $\frac{7}{40}$ and $\frac{11}{5}$ by rewriting both fractions as decimals, adding the decimals, and converting the decimal answer back to a fraction.
17. Which of these two probabilities is greater: 1 chance in 1.5, or 7 chances in 11? Explain your answer.
18. At Mario's Pizza, you can buy a 7-inch pizza (diameter 7 inches) or a 14-inch pizza.
- a. Which gives more pizza, two 7-inch pizzas or one 14-inch pizza? Explain your answer. (Use 3.14 for π .)
- b. Suppose the 7-inch pizza and the 14-inch pizza are priced so that the price per square inch is the same. If one 7-inch pizza costs \$6.98, how much should a 14-inch pizza cost?

19. A student performed the multiplication shown at the right.
- a. Describe the error the student made.
- b. What is the correct answer?

$$\begin{array}{r}
 47.05 \\
 \times 8.09 \\
 \hline
 42345 \\
 0000 \\
 \hline
 37640 \\
 \hline
 7.9985
 \end{array}$$

20. In 2010, over 500,000 spectators watched 26,790 runners in the Boston Marathon. The winner was Robert Kiprono Cheruiyot of Kenya, who set a new record time of 2:05:52 (2 hours, 5 minutes, 52 seconds). The course of the Boston Marathon is a distance of 42.195 kilometers.

Source: <http://www.examiner.com/business-headlines-in-providence/boston-marathon-2010-winners-cross-the-finish-line-find-marathon-results-qualifying-times-online>

- a. About how many times as many spectators were there as runners?
- b. About how many total minutes did it take Cheruiyot to complete the marathon?
- c. To the nearest hundredth of a mile, about how long is the course of the Boston Marathon? (Use $1 \text{ km} \approx 0.6214 \text{ mi.}$)
- d. Use your results from Parts b and c to find Cheruiyot's approximate pace in minutes per mile.
21. In 2010, the total sales of hardcover consumer books were about \$1.47 billion. The total sales of e-books were about \$0.13 billion. Authors of consumer books generally earn about 15% on hardcover sales and about 25% on e-book sales.

Sources: Wall Street Journal, Sept. 28, 2010, pp. A1 and A18
<http://mayareynoldswriter.blogspot.com/2010/03/e-book-vs-p-book.html>

- a. How much greater were the total hardcover sales than e-book sales? Write the answer first as a decimal number of billions of dollars and then as a whole number of dollars.
- b. How many times as great were the total hardcover sales than the e-book sales?
- c. For a certain book, suppose 500 hardcover copies are sold at \$28 each and 45 e-books are sold at \$12.99 each. How much will the author earn in royalties on those sales?