

EXAMPLE 5

on p. 5
for Exs. 25–30

OPERATIONS AND UNIT ANALYSIS Solve the problem. Use unit analysis to check your work.

25. You work 10 hours and earn \$85. What is your earning rate?
26. You travel 60 kilometers in 1.5 hours. What is your average speed?
27. You work for 5 hours at \$7.25 per hour. How much do you earn?
28. You buy 6 gallons of juice at \$1.25 per gallon. What is your total cost?
29. You drive for 3 hours at 65 miles per hour. How far do you go?
30. You ride in a train for 175 miles at an average speed of 50 miles per hour. How many hours does the trip take?

EXAMPLE 6

on p. 5
for Exs. 31–40

CONVERSION OF MEASUREMENTS Perform the indicated conversion.

- | | |
|----------------------------|------------------------------|
| 31. 350 feet to yards | 32. 15 meters to millimeters |
| 33. 2.2 kilograms to grams | 34. 5 hours to minutes |
| 35. 7 quarts to gallons | 36. 3.5 tons to pounds |
| 37. 56 ounces to tons | 38. 6800 seconds to hours |



ERROR ANALYSIS Describe and correct the error in the conversion.

39.

$$25 \text{ dollars} \cdot \frac{1 \text{ dollar}}{0.82 \text{ euro}} \approx 30.5 \text{ euros}$$



40.

$$5 \text{ pints} \cdot \frac{1 \text{ cup}}{2 \text{ pints}} = 2.5 \text{ cups}$$



CONVERSION OF RATES Convert the rate into the given units.

- | | |
|----------------------------------|------------------------------------|
| 41. 20 mi/h to feet per second | 42. 6 ft/sec to miles per hour |
| 43. 50 km/h to miles per hour | 44. 40 mi/h to kilometers per hour |
| 45. 1 gal/h to ounces per second | 46. 6 oz/sec to gallons per hour |

47. **ROCKET SLED** On a track at an Air Force base in New Mexico, a rocket sled travels 3 miles in 6 seconds. What is the average speed in miles per hour?

48. **ELEVATOR SPEED** The elevator in the Washington Monument takes 60 seconds to rise 500 feet. What is the average speed in miles per hour?

REASONING Tell whether the statement is *always*, *sometimes*, or *never* true for real numbers a , b , and c . Explain your answer.

49. $(a + b) + c = a + (b + c)$ 50. $(a \cdot b) \cdot c = a \cdot (b \cdot c)$ 51. $(a - b) - c = a - (b - c)$

52. $(a \div b) \div c = a \div (b \div c)$ 53. $a(b - c) = ab - ac$ 54. $a(b \div c) = ab \div ac$

55. **REASONING** Show that $\frac{a}{b} \div \frac{c}{d} = \frac{a}{c} \div \frac{b}{d}$ for nonzero real numbers a , b , c , and d . Justify each step in your reasoning.

56. **CHALLENGE** Let $\frac{a}{b}$ and $\frac{c}{d}$ be two distinct rational numbers. Find the rational number that lies exactly halfway between $\frac{a}{b}$ and $\frac{c}{d}$ on a number line.