

2.2 Exercises

Vocabulary and Concept Check

- OPEN-ENDED** Write a fraction and its reciprocal.
- WHICH ONE DOESN'T BELONG?** Which of the following does *not* belong with the other three? Explain your reasoning.

$$\frac{1}{3}$$

$$\frac{1}{6}$$

$$\frac{2}{9}$$

$$\frac{1}{8}$$

MATCHING Match the expression with its value.

3. $\frac{2}{5} \div \frac{8}{15}$

4. $\frac{8}{15} \div \frac{2}{5}$

5. $\frac{2}{15} \div \frac{8}{5}$

6. $\frac{8}{5} \div \frac{2}{15}$

A. $\frac{1}{12}$

B. $\frac{3}{4}$

C. 12

D. $1\frac{1}{3}$

Practice and Problem Solving

Write the reciprocal of the number.

1 7. 8

8. $\frac{6}{7}$

9. $\frac{2}{5}$

10. $\frac{8}{11}$

Divide. Write the answer in simplest form.

2 3 4 11. $\frac{1}{8} \div \frac{1}{4}$

12. $\frac{5}{6} \div \frac{2}{7}$

13. $12 \div \frac{3}{4}$

14. $8 \div \frac{2}{5}$

15. $\frac{3}{7} \div 6$

16. $\frac{12}{25} \div 4$

17. $\frac{2}{9} \div \frac{2}{3}$

18. $\frac{8}{15} \div \frac{4}{5}$

19. $\frac{1}{3} \div \frac{1}{9}$

20. $\frac{7}{10} \div \frac{3}{8}$

21. $\frac{14}{27} \div 7$

22. $\frac{5}{8} \div 15$


23. $\frac{27}{32} \div \frac{7}{8}$


24. $\frac{4}{15} \div \frac{10}{13}$

25. $9 \div \frac{4}{9}$

26. $10 \div \frac{5}{12}$

ERROR ANALYSIS Describe and correct the error in finding the quotient.

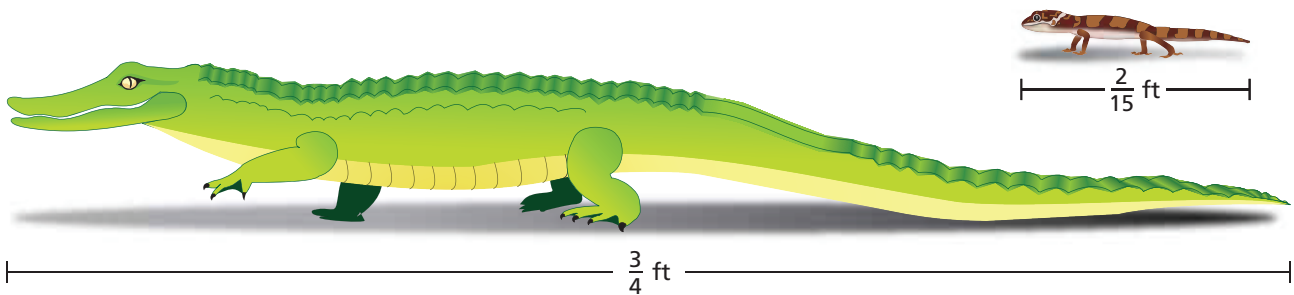
27. 
$$\begin{aligned} \frac{4}{7} \div \frac{13}{28} &= \frac{4}{7} \times \frac{13}{28} \\ &= \frac{\cancel{4}^1 \times 13}{7 \times \cancel{28}_7} \\ &= \frac{13}{49} \end{aligned}$$

28. 
$$\begin{aligned} \frac{2}{5} \div \frac{8}{9} &= \frac{5}{2} \times \frac{8}{9} \\ &= \frac{5 \times \cancel{8}^4}{\cancel{2}_1 \times 9} \\ &= \frac{20}{9} \end{aligned}$$

29. **REASONING** How can you use estimation to show that the quotient in Exercise 28 is incorrect?

30. **APPLE PIE** You have $\frac{3}{5}$ of an apple pie. You divide the remaining pie into 5 equal slices. What fraction of the original pie is each slice?

31. **ANIMALS** How many times longer is the baby alligator than the baby gecko?



Determine whether the numbers are reciprocals. If not, write the reciprocal of each number.

32. $9, \frac{1}{9}$

33. $\frac{4}{5}, \frac{10}{8}$

34. $\frac{5}{6}, \frac{15}{18}$

35. $\frac{6}{5}, \frac{5}{6}$

Copy and complete the statement.

36. $\frac{5}{12} \times \square = 1$

37. $3 \times \square = 1$

38. $7 \div \square = 56$

Without finding the quotient, copy and complete the statement using $<$, $>$, or $=$. Explain your reasoning.

39. $5 \div \frac{7}{9} \square 5$

40. $\frac{3}{7} \div 1 \square \frac{3}{7}$

41. $8 \div \frac{3}{4} \square 8$

42. $\frac{5}{6} \div \frac{7}{8} \square \frac{5}{6}$

Evaluate the expression. Write the answer in simplest form.

5 43. $\frac{1}{6} \div 6 \div 6$

44. $\frac{7}{12} \div 14 \div 6$

45. $\frac{3}{5} \div \frac{4}{7} \div \frac{9}{10}$

46. $4 \div \frac{8}{9} - \frac{1}{2}$

47. $\frac{3}{4} + \frac{5}{6} \div \frac{2}{3}$

48. $\frac{7}{8} - \frac{3}{8} \div 9$

49. $\frac{9}{16} \div \frac{3}{4} \cdot \frac{2}{13}$

50. $\frac{3}{14} \cdot \frac{2}{5} \div \frac{6}{7}$

51. $\frac{10}{27} \cdot \left(\frac{3}{8} \div \frac{5}{24} \right)$

52. **REASONING** Use a model to evaluate the quotient $\frac{1}{2} \div \frac{1}{6}$. Explain.

53. **VIDEO CHATTING** You use $\frac{1}{8}$ of your battery for every $\frac{2}{5}$ of an hour that you video chat. You use $\frac{3}{4}$ of your battery video chatting. How long did you video chat?



54. **NUMBER SENSE** When is the reciprocal of a fraction a whole number? Explain.

55. **BUDGETS** The table shows the portions of a family budget that are spent on several expenses.

Expense	Portion of Budget
Housing	$\frac{1}{4}$
Food	$\frac{1}{12}$
Automobiles	$\frac{1}{15}$
Recreation	$\frac{1}{40}$

- How many times more is the expense for housing than for automobiles?
- How many times more is the expense for food than for recreation?
- The expense for automobile fuel is $\frac{1}{60}$ of the total expenses. What fraction of the automobile expense is spent on fuel?

56. **PROBLEM SOLVING** You have 6 pints of glaze. It takes $\frac{7}{8}$ of a pint to glaze a bowl and $\frac{9}{16}$ of a pint to glaze a plate.



- How many bowls could you glaze? How many plates could you glaze?
- You want to glaze 5 bowls, and then use the rest for plates. How many plates can you glaze? How much glaze will be left over?
- How many of each object could you glaze so that there is no glaze left over? Explain how you found your answer.

57. **Reasoning** A water tank is $\frac{1}{8}$ full. The tank is $\frac{3}{4}$ full when 42 gallons of water are added to the tank.

- How much water can the tank hold?
- How much water was originally in the tank?
- How much water is in the tank when it is $\frac{1}{2}$ full?



Fair Game Review

What you learned in previous grades & lessons

Find the GCF of the numbers. (Section 1.5)

58. 8, 16

59. 24, 66

60. 48, 80

61. 15, 45, 100

62. **MULTIPLE CHOICE** How many inches are in $5\frac{1}{2}$ yards?
(Skills Review Handbook)

(A) $15\frac{1}{2}$

(B) $16\frac{1}{2}$

(C) 66

(D) 198