Lesson Check

Do you know HOW?

Find each product. Simplify, if necessary.

1. $-3(-12)$
2. $\frac{5}{8}\left(-\frac{2}{8}\right)$

Find each quotient. Simplify, if necessary.

3. $-48 \div 3$
4. $-\frac{9}{10} \div \left(-\frac{4}{5}\right)$

Do you UNDERSTAND? MATHEMATICAL PRACTICES

5. **Vocabulary** What is the reciprocal of $-\frac{1}{5}$?
6. **Reasoning** Use a number line to explain why $-15 \div 3 = -5$.
7. **Reasoning** Determine how many real square roots each number has. Explain your answers.
   a. 49
   b. 0

Practice and Problem-Solving Exercises MATHEMATICAL PRACTICES

A Practice

Find each product. Simplify, if necessary. See Problem 1.

8. $-8(12)$
9. $8(12)$
10. $7(-9)$
11. $5 \cdot 4.1$
12. $-7 \cdot 1.1$
13. $10(-2.5)$
14. $6\left(-\frac{1}{4}\right)$
15. $-\frac{1}{9}\left(-\frac{3}{4}\right)$
16. $-\frac{3}{7} \cdot \frac{9}{10}$
17. $-\frac{2}{11}\left(-\frac{11}{2}\right)$
18. $\left(-\frac{2}{9}\right)^2$
19. $(-1.2)^2$

Simplify each expression. See Problem 2.

20. $\sqrt{400}$
21. $\sqrt{169}$
22. $-\sqrt{16}$
23. $-\sqrt{900}$
24. $\sqrt{\frac{36}{49}}$
25. $-\sqrt{\frac{25}{81}}$
26. $-\sqrt{\frac{1}{9}}$
27. $-\sqrt{\frac{121}{16}}$
28. $\pm\sqrt{1.96}$
29. $\pm\sqrt{0.25}$

Find each quotient. Simplify, if necessary. See Problem 3.

30. $48 \div 3$
31. $-84 \div 14$
32. $-39 \div (-13)$
33. $\frac{63}{-21}$
34. $-46 \div (-2)$
35. $-8.1 \div 9$
36. $\frac{-121}{11}$
37. $75 \div (-0.3)$

STEM 38. **Scuba Diving** A scuba diver's vertical position in relation to the surface of the water changes by -90 ft in 3 min. What is the average change in the diver's vertical position each minute?

39. **Part-Time Job** You earn the same amount each week at your part-time job. The total amount you earn in 4 weeks is \$460. How much do you earn per week?

Find each quotient. Simplify, if necessary. See Problem 4.

40. $20 \div \frac{1}{4}$
41. $-5 \div \left(-\frac{5}{3}\right)$
42. $\frac{9}{10} \div \left(-\frac{4}{5}\right)$
43. $-\frac{12}{13} \div \frac{12}{13}$

Find the value of the expression $\frac{x}{y}$ for the given values of x and y. Write your answer in the simplest form.

44. $x = -\frac{2}{3}; y = -\frac{1}{4}$
45. $x = -\frac{5}{6}; y = \frac{3}{5}$
46. $x = \frac{2}{7}; y = -\frac{20}{21}$
47. $x = \frac{3}{8}; y = \frac{3}{4}$

B Apply

48. Think About a Plan A lumberjack cuts 7 pieces of equal length from a log, as shown at the right. What is the change in the log's length after 7 cuts?

- What operation can you use to find the answer?
- Will your answer be a positive value or a negative value? How do you know?

49. Farmer's Market A farmer has 120 bushels of beans for sale at a farmer's market. He sells an average of $15\frac{3}{4}$ bushels each day. After 6 days, what is the change in the total number of bushels the farmer has for sale at the farmer's market?

50. Stocks The price per share of a stock changed by −$4.50 on each of 5 consecutive days. If the starting price per share was $67.50, what was the ending price?

Open-Ended **Write an algebraic expression that uses x, y, and z and simplifies to the given value when $x = -3$, $y = -2$, and $z = -1$. The expression should involve only multiplication or division.**

51. −16 **52.** 1 **53.** 12

Evaluate each expression for $m = -5$, $n = \frac{3}{2}$, and $p = -8$.

54. $-7m - 10n$ **55.** $-3mnp$

56. $8n \div (-6p)$ **57.** $2p^2(-n) \div m$

58. Look for a Pattern Extend the pattern in the diagram to six factors of −2. What rule describes the sign of the product based on the number of negative factors?

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-2(-2) = 4
-2(-2)(-2) = -8
-2(-2)(-2)(-2) = 16
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STEM **59. Temperature** The formula $F = \frac{9}{5}C + 32$ changes a temperature reading from the Celsius scale C to the Fahrenheit scale F. What is the temperature measured in degrees Fahrenheit when the Celsius temperature is −25°C?

60. Reasoning Suppose a and b are integers. Describe what values of a and b make the statement true.

a. Quotient $\frac{a}{b}$ is positive. **b.** Quotient $\frac{a}{b}$ is negative.

c. Quotient $\frac{a}{b}$ is equal to 0. **d.** Quotient $\frac{a}{b}$ is undefined.

61. Writing Explain how to find the quotient of $-1\frac{2}{3}$ and $-2\frac{1}{2}$.

62. Reasoning Do you think a negative number raised to an even power will be positive or negative? Explain.

63. History The Rhind Papyrus is one of the best-known examples of Egyptian mathematics. One problem solved on the Rhind Papyrus is $100 \div 7\frac{7}{8}$. What is the solution of this problem?