Chapter Review

ISG Interactive Study Guide
See pages 65–68 for:
- Vocabulary Check
- Key Concept Check
- Problem Solving
- Reflect

Lesson-by-Lesson Review

Lesson 3-1 Fractions and Decimals (pp. 94–100)

Write each fraction or mixed number as a decimal. Use a bar to show a repeating decimal.

1. $\frac{3}{10}$ 0.3
2. $\frac{2}{5}$ 0.4
3. $-\frac{5}{6}$ $-0.8\overline{3}$
4. $-7\frac{4}{9}$ $-7.\overline{4}$
5. $\frac{5}{8}$ 0.625
6. $1\frac{4}{15}$ $1.2\overline{6}$

Replace each ● with <, >, or = to make a true sentence.

7. $\frac{3}{7}$ ● $\frac{4}{9}$ <
8. $-\frac{5}{8}$ ● $-\frac{3}{5}$ <
9. $2\frac{1}{2}$ ● $2\frac{5}{12}$ >
10. $\frac{5}{8}$ ● 0.625 =
11. $4.\overline{37}$ ● $4\frac{19}{50}$ <
12. -2.54 ● $-2\frac{27}{50}$ =

13. Antoine is cutting a $5\frac{5}{16}$-inch board for a project. Write $5\frac{5}{16}$ as a decimal. 5.3125

14. A basketball player successfully made 21 out of 39 free throw attempts. To the nearest thousandth, what part of the time was he successful in making his free throws? 0.538

Example 1

Write $\frac{3}{4}$ as a decimal.

$$\begin{array}{r} 0.75 \\ 4\overline{)3.00} \\ -28 \\ \hline 20 \\ -20 \\ \hline 0 \end{array}$$

Divide 3 by 4.

Divide until the remainder is zero or until a sequence of numbers repeats.

Example 2

Replace the ● with <, >, or = to make $\frac{4}{5}$ ● 0.75 a true sentence.

$\frac{4}{5}$ ● 0.75 — Write the sentence.

0.8 ● 0.75 — Write $\frac{4}{5}$ as a decimal.

0.8 > 0.75 — In the tenths place, 8 > 7.

Lesson 3-2 Rational Numbers (pp. 101–106)

Write each decimal as a fraction or mixed number in simplest form.

15. 2.08 $2\frac{2}{25}$
16. −0.45 $-\frac{9}{20}$
17. 0.875 $\frac{7}{8}$
18. −0.56 $-\frac{14}{25}$
19. $0.\overline{1}$ $\frac{1}{9}$
20. $-2.\overline{03}$ $-2\frac{1}{33}$
21. $0.\overline{5}$ $\frac{5}{9}$
22. $10.\overline{27}$ $10\frac{3}{11}$

Identify all sets to which each number belongs.

23. −4 Int, Rat, Real
24. $3\frac{1}{3}$ Rat, Real
25. 1.151551555... Irrat., Real
26. $-0.\overline{67}$ Rat, Real

27. Suzanne practiced playing the piano for $1.\overline{6}$ hours after school. Write $1.\overline{6}$ as a mixed number. $1\frac{2}{3}$

28. James rode his motorbike for 10.4 miles in a competition. Write 10.4 as a mixed number. $10\frac{2}{5}$

Example 3

Write 1.25 as a fraction in simplest form.

$1.25 = 1\frac{25}{100}$ — 1.25 is 1 and 25 hundredths.

$= 1\frac{1}{4}$ — Simplify. The GCF of 25 and 100 is 25.

Example 4

Write $0.\overline{7}$ as a fraction in simplest form.

$N = 0.777\ldots$

$10N = 10(0.777\ldots)$ — Multiply each side by 10.

$10N = 7.777\ldots$

$-N = 0.777\ldots$

$9N = 7$ — Subtract N from $10N$. Simplify.

$N = \frac{7}{9}$ — Divide each side by 9.

Lesson 3-3 Multiplying Rational Numbers (pp. 107–112)

Find each product. Write in simplest form.

29. $\frac{1}{5} \cdot \frac{3}{4}$ $\frac{3}{20}$

30. $-\frac{3}{7} \cdot \frac{4}{9}$ $-\frac{4}{21}$

31. $-\frac{2}{3} \cdot (-5)$ $3\frac{1}{3}$

32. $-3\frac{1}{2} \cdot \left(-5\frac{1}{5}\right)$ $18\frac{1}{5}$

Evaluate each expression if $a = -\frac{2}{3}$ and $b = -4\frac{1}{4}$.

33. ab $2\frac{5}{6}$

34. $2a$ $-1\frac{1}{3}$

35. $-4b$ 17

36. $-3ab$ $-8\frac{1}{2}$

37. Mireille has a piece of ribbon that is 10 inches long. Abi's ribbon is $\frac{5}{8}$ as long. How long is Abi's ribbon? $6\frac{1}{4}$ IN

38. A liter of water weighs approximately $2\frac{1}{5}$ pounds. While backpacking, Enrique wants to carry $3\frac{1}{2}$ liters of water with him. Find the weight of the water that Enrique is taking with him. $7\frac{7}{10}$ lb

Example 5

Find $\frac{3}{8} \cdot \frac{20}{27}$. Write in simplest form.

$\frac{3}{8} \cdot \frac{20}{27} = \frac{3 \cdot 20}{8 \cdot 27}$ Multiply the numerators. Multiply the denominators.

$= \frac{60}{216}$ or $\frac{5}{18}$ Simplify. The GCF of 60 and 216 is 12.

Example 6

Find $-4\frac{1}{6} \cdot \frac{3}{5}$. Write in simplest form.

$-4\frac{1}{6} \cdot \frac{3}{5} = -\frac{25}{6} \cdot \frac{3}{5}$ Rename $-4\frac{1}{6}$ as an improper fraction.

$= -\frac{\overset{5}{\cancel{25}}}{\underset{2}{\cancel{6}}} \cdot \frac{\overset{1}{\cancel{3}}}{\underset{1}{\cancel{5}}}$ Divide by the GCFs, 5 and 3.

$= -\frac{5}{2}$ or $-2\frac{1}{2}$ Multiply. Then simplify.

Lesson 3-4 Dividing Rational Numbers (pp. 114–119)

Find the multiplicative inverse of each number.

39. -16 $-\frac{1}{16}$

40. $\frac{7}{9}$ $\frac{9}{7}$

41. $3\frac{4}{5}$ $\frac{5}{19}$

42. $-4\frac{1}{3}$ $-\frac{3}{13}$

43. $-\frac{1}{11}$ -11

44. $2\frac{9}{10}$ $\frac{10}{29}$

Find each quotient. Write in simplest form.

45. $\frac{7}{9} \div \left(-\frac{4}{15}\right)$ $-2\frac{11}{12}$

46. $-2\frac{2}{3} \div 2\frac{2}{7}$ $-1\frac{1}{6}$

47. $\frac{3}{5} \div \frac{9}{10}$ $\frac{2}{3}$

48. $3\frac{1}{9} \div \left(-1\frac{1}{6}\right)$ $-2\frac{2}{3}$

49. $\frac{4}{5} \div \frac{5}{6}$ $\frac{24}{25}$

50. $6\frac{2}{3} \div \left(-3\frac{1}{3}\right)$ -2

Find each quotient. Write in simplest form.

51. $\frac{2ab}{3} \div \frac{a}{6}$ $4b$

52. $\frac{pq}{5} \div \frac{p}{10}$ $2q$

53. $\frac{3ab}{2} \div \frac{7b}{10}$ $\frac{15a}{7}$

54. $\frac{7mn}{8} \div \frac{3m}{4}$ $\frac{7n}{6}$

55. Pilar drinks $1\frac{3}{4}$ glasses of milk each day. At this rate, how many days will it take her to drink a total of 14 glasses? 8 days

56. Tahn plants $6\frac{1}{2}$ flats of tomatoes in a row. How many rows will she need to plant 52 flats? 8 rows

Example 7

Find the multiplicative inverse of $2\frac{3}{4}$.

$2\frac{3}{4} = \frac{11}{4}$ Rename $2\frac{3}{4}$ as an improper fraction.

$\frac{11}{4} \cdot \frac{4}{11} = 1$ The product is 1.

The multiplicative inverse of $2\frac{3}{4}$ is $\frac{4}{11}$.

Example 8

Find $\frac{4}{9} \div \frac{2}{15}$. Write in simplest form.

$\frac{4}{9} \div \frac{2}{15} = \frac{4}{9} \cdot \frac{15}{2}$ Multiply by the reciprocal of $\frac{2}{15}$, $\frac{15}{2}$.

$= \frac{\overset{2}{\cancel{4}}}{\underset{3}{\cancel{9}}} \cdot \frac{\overset{5}{\cancel{15}}}{\underset{1}{\cancel{2}}}$ Divide out common factors.

$= \frac{10}{3}$ or $3\frac{1}{3}$ Simplify.

$-2\frac{2}{3}$

Example 9

Find $\frac{cd}{4} \div \frac{d}{20}$. Write in simplest form.

$\frac{cd}{4} \div \frac{d}{20} = \frac{cd}{4} \cdot \frac{20}{d}$ Multiply by the reciprocal.

$= \frac{\overset{1}{\cancel{cd}}}{\underset{1}{\cancel{4}}} \cdot \frac{\overset{5}{\cancel{20}}}{\underset{1}{\cancel{d}}}$ Divide out common factors.

$= \frac{5c}{1}$ or $5c$ Simplify.

Lesson 3-5 Adding and Subtracting Like Fractions (pp. 120–125)

Find each sum or difference. Write in simplest form.

57. $\frac{8}{15}+\left(-\frac{2}{15}\right)$ $\frac{2}{5}$

58. $\frac{6}{12}-\frac{11}{12}$ $-\frac{5}{12}$

59. $\frac{3}{7}-\left(-\frac{2}{7}\right)$ $\frac{5}{7}$

60. $-\frac{1}{3}-\left(-\frac{1}{3}\right)$ 0

61. $2\frac{5}{12}-\left(-8\frac{7}{12}\right)$ 11

62. $5\frac{3}{7}+2\frac{6}{7}$ $8\frac{2}{7}$

63. Samantha is going to walk $3\frac{5}{16}$ miles today and $2\frac{3}{16}$ miles tomorrow. What is the total distance she will walk? $5\frac{1}{2}$ miles

64. Last week, Douglas fed his puppy $10\frac{1}{4}$ cups of food. This week, the puppy will be fed an additional $1\frac{1}{4}$ cups of food. Find the total amount of food the puppy will be fed this week. $11\frac{1}{2}$ cups

65. Harry's sunflowers have grown to be $8\frac{1}{4}$ feet tall. Sonya's sunflowers are $6\frac{3}{4}$ feet tall. How much taller are Harry's flowers? $1\frac{1}{2}$ feet

66. Last month Clarissa read $41\frac{3}{8}$ books for the Read-a-thon. Mona read $27\frac{5}{8}$ books. How many more books did Clarissa read? $13\frac{3}{4}$ books

Example 10

Find $\frac{3}{4}-\left(-\frac{3}{4}\right)$. Write in simplest form.

$\frac{3}{4}-\left(-\frac{3}{4}\right)=\frac{3}{4}+\frac{3}{4}$ To subtract $-\frac{3}{4}$, add $\frac{3}{4}$.

$=\frac{3+3}{4}$ The denominators are the same. Add the numerators.

$=\frac{6}{4}$ Simplify.

$=1\frac{1}{2}$ Simplify.

Example 11

Find $5\frac{7}{8}-8\frac{3}{8}$. Write in simplest form.

$5\frac{7}{8}-8\frac{3}{8}=\frac{47}{8}-\frac{67}{8}$ Write the mixed numbers as improper fractions.

$=\frac{47-67}{8}$ Subtract the numerators.

$=\frac{-20}{8}$ Simplify the numerator.

$=-\frac{5}{2}$ or $-2\frac{1}{2}$ Simplify.

Lesson 3-6 Adding and Subtracting Unlike Fractions (pp. 126–131)

Find each sum or difference. Write in simplest form.

67. $\frac{2}{5}+\frac{1}{15}$ $\frac{7}{15}$

68. $-3\frac{5}{6}-2\frac{1}{2}$ $-6\frac{1}{3}$

69. $\frac{4}{7}+\left(-1\frac{1}{3}\right)$ $-\frac{16}{21}$

70. $\frac{3}{10}-\left(-\frac{1}{8}\right)$ $\frac{17}{40}$

71. $25\frac{1}{3}-14\frac{2}{5}$ $10\frac{14}{15}$

72. $7\frac{3}{4}+1\frac{3}{8}$ $9\frac{1}{8}$

73. $-\frac{5}{9}-3\frac{2}{3}$ $-4\frac{2}{9}$

74. $-4\frac{1}{6}+\frac{3}{4}$ $-3\frac{5}{12}$

75. Monica needs $2\frac{3}{4}$ cups of flour for a batch of cookies and $3\frac{1}{3}$ cups of flour for a dozen muffins. How many cups of flour does Monica need altogether? $6\frac{1}{12}$ cups

76. Dane and his family drove 357.9 miles in one day. If their trip is a total of $524\frac{3}{4}$ miles, how much farther do they need to drive? $166\frac{17}{20}$ miles

77. Ricardo swam 75.5 meters in the school pool. Helen swam $93\frac{3}{4}$ meters the same day. How much further did Helen swim that day? $18\frac{1}{4}$ meters

Example 12

Find $-\frac{3}{8}+\frac{5}{6}$. Write in simplest form.

$-\frac{3}{8}+\frac{5}{6}=-\frac{3}{8}\cdot\frac{3}{3}+\frac{5}{6}\cdot\frac{4}{4}$ The LCD is 24. Rename the fractions using the LCD.

$=-\frac{9}{24}+\frac{20}{24}$ Simplify.

$=\frac{-9+20}{24}$ Add the numerators.

$=\frac{11}{24}$ Simplify.

Example 13

Find $6\frac{5}{9}-4\frac{11}{12}$. Write in simplest form.

$6\frac{5}{9}-4\frac{11}{12}=6\frac{20}{36}-4\frac{33}{36}$ The LCD is 36. Rename the fractions using the LCD.

$=5\frac{56}{36}-4\frac{33}{36}$ Since $\frac{20}{36}$ is less than $\frac{33}{36}$, rename $6\frac{20}{36}$.

$=1\frac{23}{36}$ Subtract the whole numbers and then the fractions.