

Chapter 01: Fractions
Gray Morris: Calculate with Confidence, 1st Canadian Edition

COMPLETION

1. Reduce the following fraction to its lowest terms.

$$54/81 = \underline{\hspace{2cm}}$$

ANS: $2/3$

PTS: 1 REF: Page 10

2. Reduce the following fraction to its lowest terms.

$$105/135 = \underline{\hspace{2cm}}$$

ANS: $7/9$

PTS: 1 REF: Page 10

3. Reduce the following fraction to its lowest terms.

$$39/65 = \underline{\hspace{2cm}}$$

ANS: $3/5$

PTS: 1 REF: Page 10

4. Change the following improper fraction to a whole or mixed number. If the answer is a mixed number, put a space between the whole number and the fraction.

$$325/16 = \underline{\hspace{2cm}}$$

ANS: $20 \ 5/16$

PTS: 1 REF: Page 8

5. Change the following improper fraction to a whole or mixed number. If the answer is a mixed number, put a space between the whole number and the fraction.

$$1,500/100 = \underline{\hspace{2cm}}$$

ANS: 15

PTS: 1 REF: Page 8

6. Change the following improper fraction to a whole or mixed number. If the answer is a mixed number, put a space between the whole number and the fraction.

$$193/62 = \underline{\hspace{2cm}}$$

ANS: $3 \ 7/62$

PTS: 1 REF: Page 8

7. Change the following mixed number to an improper fraction.

$$12 \frac{1}{8} = \underline{\hspace{2cm}}$$

ANS: $97/8$

PTS: 1 REF: Page 8

8. Change the following mixed number to an improper fraction.

$$29 \frac{2}{3} = \underline{\hspace{2cm}}$$

ANS: $89/3$

PTS: 1 REF: Page 8

9. Perform the indicated operation and reduce the result to its lowest terms.

$$\frac{1}{12} + \frac{6}{12} + \frac{5}{12} = \underline{\hspace{2cm}}$$

ANS: 1

PTS: 1 REF: Page 11

10. Perform the indicated operation and reduce the result to its lowest terms.

$$\frac{3}{8} - \frac{1}{3} = \underline{\hspace{2cm}}$$

ANS: $1/24$

PTS: 1 REF: Page 12

11. Perform the indicated operation and reduce the result to its lowest terms.

$$\frac{4}{5} \times \frac{5}{16} = \underline{\hspace{2cm}}$$

ANS: $1/4$

PTS: 1 REF: Page 14

12. Perform the indicated operation and reduce the result to its lowest terms.

$$\frac{1}{12} \times \frac{1}{15} = \underline{\hspace{2cm}}$$

ANS: $1/180$

PTS: 1 REF: Page 14

13. Perform the indicated operation and reduce the result to its lowest terms.

$$\frac{3}{5} \div 5 = \underline{\hspace{2cm}}$$

ANS: $3/25$

PTS: 1 REF: Page 15

14. Perform the indicated operation and reduce the result to its lowest terms.

$$\frac{1}{100} \div \frac{1}{200} = \underline{\hspace{2cm}}$$

ANS: 2

PTS: 1 REF: Page 15

15. Indicate which fraction is the largest.

$1/100, 1/150, 1/200$: _____

ANS: $1/100$

PTS: 1 REF: Page 8

16. Arrange the following fractions from smallest to largest. After each fraction place a comma followed by a space.

$1/6, 1/5, 1/8, 1/4, 1/3$: _____

ANS: $1/8, 1/6, 1/5, 1/4, 1/3$

PTS: 1 REF: Page 8

17. Perform the indicated operation with fractions. Reduce each to its lowest terms.

$1/5 + 1/2 + 1/4 =$ _____

ANS: $19/20$

PTS: 1 REF: Page 11

18. Perform the indicated operation with fractions. Reduce each to its lowest terms. If the answer is a mixed number, put a space between the whole number and the fraction.

$16 \frac{5}{6} - 14 \frac{3}{8} =$ _____

ANS: $2 \frac{11}{24}$

PTS: 1 REF: Page 13

19. Perform the indicated operation with fractions. Reduce each to its lowest terms. If the answer is a mixed number, put a space between the whole number and the fraction.

$6 \frac{10}{12} \times 15/3 =$ _____

ANS: $34 \frac{1}{6}$

PTS: 1 REF: Page 15

20. Perform the indicated operation with fractions. Reduce each to its lowest terms. If the answer is a mixed number, put a space between the whole number and the fraction.

$56 \div 9/20 =$ _____

ANS: $124 \frac{4}{9}$

PTS: 1 REF: Page 15

21. Indicate the largest number in the following set.

$\frac{5}{6}, \frac{5}{8}$: _____

ANS: $\frac{5}{6}$

PTS: 1 REF: Page 8

22. Indicate the largest number in the following set.

$\frac{1}{30}, \frac{1}{4}, \frac{1}{150}$: _____

ANS: $\frac{1}{4}$

PTS: 1 REF: Page 8

23. Reduce the following fraction to its lowest terms.

$\frac{34}{102} =$ _____

ANS: $\frac{1}{3}$

PTS: 1 REF: Page 10

24. Reduce the following fraction to its lowest terms.

$\frac{60}{1200} =$ _____

ANS: $\frac{1}{20}$

PTS: 1 REF: Page 10

25. Express the following improper fraction as a mixed number. Reduce it to its lowest terms. With a mixed number, put a space between the whole number and the fraction.

$\frac{24}{18} =$ _____

ANS: 1 $\frac{1}{3}$

PTS: 1 REF: Page 8 | Page 10

26. Express the following improper fraction as a mixed number. Reduce it to its lowest terms. With a mixed number, put a space between the whole number and the fraction.

$\frac{15}{13} =$ _____

ANS: 1 $\frac{2}{13}$

PTS: 1 REF: Page 8 | Page 10

27. Change the following mixed number to an improper fraction.

$9 \frac{1}{9} =$ _____

ANS: $\frac{82}{9}$

PTS: 1 REF: Page 8

28. Change the following mixed number to an improper fraction.

$$6 \frac{7}{10} = \underline{\hspace{2cm}}$$

ANS: $67/10$

PTS: 1 REF: Page 8

29. Perform the indicated operation with fractions. Reduce each to its lowest terms. If the answer is a mixed number, put a space between the whole number and the fraction.

$$6 \frac{5}{16} + 5 \frac{3}{16} = \underline{\hspace{2cm}}$$

ANS: $11 \frac{1}{2}$

PTS: 1 REF: Page 12

30. Perform the indicated operation with fractions. Reduce each to its lowest terms. If the answer is a mixed number, put a space between the whole number and the fraction.

$$4 \frac{3}{10} + 2 \frac{2}{10} = \underline{\hspace{2cm}}$$

ANS: $6 \frac{1}{2}$

PTS: 1 REF: Page 12

31. Perform the indicated operation with fractions. Reduce each to its lowest terms. If the answer is a mixed number, put a space between the whole number and the fraction.

$$3 \frac{1}{5} + 3 \frac{2}{3} + 2 \frac{1}{2} = \underline{\hspace{2cm}}$$

ANS: $9 \frac{11}{30}$

PTS: 1 REF: Page 12

32. Perform the indicated operation with fractions. Reduce each to its lowest terms. If the answer is a mixed number, put a space between the whole number and the fraction.

$$1 \frac{2}{4} + 3 \frac{1}{3} = \underline{\hspace{2cm}}$$

ANS: $4 \frac{5}{6}$

PTS: 1 REF: Page 12

33. Perform the indicated operation with fractions. Reduce the result to its lowest terms.

$$15/21 - 10/21 = \underline{\hspace{2cm}}$$

ANS: $5/21$

PTS: 1 REF: Page 12

34. Perform the indicated operation with fractions. Reduce the result to its lowest terms.

$$8/16 - 1/4 = \underline{\hspace{2cm}}$$

ANS: $1/4$

PTS: 1 REF: Page 12

35. Perform the indicated operation with fractions. Reduce the result to its lowest terms. If the answer is a mixed number, put a space between the whole number and the fraction.

$$14 - 5/9 = \underline{\hspace{2cm}}$$

ANS: 13 4/9

PTS: 1 REF: Page 14

36. Perform the indicated operation with fractions. Reduce the result to its lowest terms. If the answer is a mixed number, put a space between the whole number and the fraction.

$$6 \frac{1}{4} - 2 \frac{5}{8} = \underline{\hspace{2cm}}$$

ANS: 3 5/8

PTS: 1 REF: Page 14

37. Perform the indicated operation with fractions. Reduce the result to its lowest terms. If the answer is a mixed number, put a space between the whole number and the fraction.

$$5 \frac{1}{3} - 1 \frac{7}{12} = \underline{\hspace{2cm}}$$

ANS: 3 3/4

PTS: 1 REF: Page 14

38. A patient received $2 \frac{1}{2}$ pills at breakfast and $2 \frac{1}{3}$ pills at lunch. How many pills has the patient received? If the answer is a mixed number, put a space between the whole number and the fraction. pills

ANS: 4 5/6

PTS: 1 REF: Page 12

39. A patient who weighed $51 \frac{1}{2}$ kilograms (kg) lost $2 \frac{3}{4}$ kg due to illness. How many kilograms does the patient now weigh? If the answer is a mixed number, put a space between the whole number and the fraction. kg

ANS: 48 3/4

PTS: 1 REF: Page 12

40. A patient drank $\frac{1}{2}$ of a 1-litre can of seltzer water. How many millilitres (mL) of seltzer water did the patient drink? mL

ANS: 500

PTS: 1 REF: Page 14

41. A patient is supposed to drink a 300-millilitre (mL) bottle of magnesium citrate before an X-ray study. The patient was able to drink 120 mL. How much of the magnesium citrate remains? Express the answer as a fraction reduced to its lowest terms. _____ mL

ANS: $2/5$

PTS: 1 REF: Page 10

42. The nurse is instructed to give a patient $2/3$ of a 240-millilitre (mL) cup of solution. How many mL should the nurse administer? _____ mL

ANS: 160

PTS: 1 REF: Page 14

 **ANSWERS**
Answers to Practice Problems

1. LCD = 30; therefore $\frac{6}{30}$ has the lesser value.
2. LCD = 8; therefore $\frac{6}{8}$ has the lesser value.
3. $\frac{1}{150}$ has the lesser value; the denominator (150) is larger.
4. $\frac{6}{18}$ has the lesser value; the numerator (6) is smaller.
5. $\frac{3}{5}$ has the lesser value; the numerator (3) is smaller.
6. $\frac{1}{8}$ has the lesser value; the numerator (1) is smaller.
7. $\frac{1}{40}$ has the lesser value; the denominator (40) is larger.
8. $\frac{1}{300}$ has the lesser value; the denominator (300) is larger.
9. $\frac{4}{24}$ has the lesser value; the numerator (4) is smaller.
10. LCD = 6; therefore $\frac{1}{6}$ has the lesser value.
11. LCD = 72; therefore $\frac{6}{8}$ has the higher value.
12. LCD = 6; therefore $\frac{7}{6}$ has the higher value.
13. LCD = 72; therefore $\frac{6}{12}$ has the higher value.
14. $\frac{1}{6}$ has the higher value; the denominator (6) is smaller.
15. $\frac{1}{75}$ has the higher value; the denominator (75) is smaller.
16. $\frac{6}{5}$ has the higher value; the numerator (6) is larger.
17. LCD = 24; therefore $\frac{4}{6}$ has the higher value.
18. $\frac{8}{9}$ has the higher value; the numerator (8) is larger.
19. $\frac{1}{10}$ has the higher value; the denominator (10) is smaller.
20. $\frac{6}{15}$ has the higher value; the numerator (6) is larger.
21. $\frac{10 \div 5}{15 \div 5} = \frac{2}{3}$
22. $\frac{7 \div 7}{49 \div 7} = \frac{1}{7}$
23. $\frac{64 \div 2}{128 \div 2} = \frac{32}{64} = \frac{1}{2}$
24. $\frac{100 \div 2}{150 \div 2} = \frac{50}{75} = \frac{2}{3}$
25. $\frac{20 \div 4}{28 \div 4} = \frac{5}{7}$
26. $\frac{14 \div 2}{98 \div 2} = \frac{7}{49} = \frac{1}{7}$
27. $\frac{10 \div 2}{18 \div 2} = \frac{5}{9}$
28. $\frac{24 \div 12}{36 \div 12} = \frac{2}{3}$
29. $\frac{10 \div 10}{50 \div 10} = \frac{1}{5}$
30. $\frac{9 \div 9}{27 \div 9} = \frac{1}{3}$
31. $\frac{9 \div 9}{9 \div 9} = \frac{1}{1} = 1$
32. $\frac{15 \div 15}{45 \div 15} = \frac{1}{3}$
33. $\frac{124 \div 31}{155 \div 31} = \frac{4}{5}$
34. $\frac{12 \div 6}{18 \div 6} = \frac{2}{3}$
35. $\frac{36 \div 4}{64 \div 4} = \frac{9}{16}$
36. $3\frac{3}{5}$
37. $4\frac{2}{7}$
38. $1\frac{5}{8}$
39. $2\frac{11}{12}$
40. $1\frac{3}{25}$
41. $\frac{29}{25}$
42. $\frac{34}{8}$
43. $\frac{9}{2}$
44. $\frac{27}{8}$
45. $\frac{79}{5}$
46. $1\frac{1}{2}$
47. $2\frac{19}{24}$
48. $7\frac{1}{6}$
49. $8\frac{1}{15}$
50. $22\frac{5}{6}$
51. $\frac{19}{21}$
52. $1\frac{31}{40}$
53. $\frac{11}{16}$
54. $\frac{1}{12}$
55. $\frac{1}{24}$
56. $13\frac{4}{9}$
57. $1\frac{3}{5}$
58. $\frac{8}{15}$
59. $\frac{18}{125}$
60. $\frac{3}{50}$
61. $7\frac{7}{32}$
62. $\frac{5}{27}$
63. $1\frac{13}{20}$
64. $\frac{1}{30}$
65. 15
66. 1
67. $2\frac{2}{19}$

Answers to Chapter Review

1. $1\frac{2}{8} = 1\frac{1}{4}$
2. $7\frac{2}{4} = 7\frac{1}{2}$
3. $3\frac{4}{6} = 3\frac{2}{3}$
4. $2\frac{3}{4}$
5. $4\frac{3}{14}$
6. $6\frac{7}{10}$
7. $4\frac{1}{2}$
8. $2\frac{1}{5}$
9. $4\frac{4}{15}$
10. $7\frac{9}{13}$
11. $\frac{5}{2}$
12. $\frac{59}{8}$
13. $\frac{43}{5}$
14. $\frac{65}{4}$
15. $\frac{16}{5}$
16. $\frac{13}{5}$
17. $\frac{84}{10}$
18. $\frac{37}{4}$
19. $\frac{51}{4}$
20. $\frac{47}{7}$
21. LCD = 30; $1\frac{13}{30}$
22. LCD = 24; $\frac{13}{24}$
23. LCD = 4; $\frac{88}{4} = 22$
24. LCD = 10; $\frac{7}{10}$
25. LCD = 36; $\frac{234}{36} = 6\frac{18}{36} = 6\frac{1}{2}$
26. $\frac{30}{47}$
27. $22\frac{5}{6}$
28. $140\frac{1}{4}$
29. LCD = 9; $106\frac{8}{9}$
30. LCD = 10; $13\frac{2}{10} = 13\frac{1}{5}$
31. $\frac{1}{9}$
32. LCD = 4; $\frac{3}{4}$
33. $2\frac{2}{4} = 2\frac{1}{2}$
34. LCD = 30; $\frac{19}{30}$
35. LCD = 4; 1
36. LCD = 20; $\frac{11}{20}$
37. LCD = 24; $\frac{7}{24}$
38. LCD = 6; $\frac{17}{6} = 2\frac{5}{6}$
39. LCD = 15; $\frac{19}{15} = 1\frac{4}{15}$
40. LCD = 21; $\frac{5}{21}$
41. LCD = 12; $\frac{3}{12} = \frac{1}{4}$
42. LCD = 24; $26\frac{7}{24}$
43. $24\frac{6}{11}$
44. LCD = 10; $12\frac{1}{5}$
45. LCD = 18; $31\frac{1}{9}$
46. $\frac{4}{36} = \frac{1}{9}$
47. $9\frac{11}{32}$
48. 14
49. 10
50. 27
51. $\frac{10}{16} = \frac{5}{8}$
52. $\frac{2}{30} = \frac{1}{15}$
53. $\frac{12}{120} = \frac{1}{10}$
54. $\frac{7}{27}$
55. $\frac{50}{75} = \frac{2}{3}$
56. $\frac{9}{40}$
57. $1\frac{7}{8}$
58. 10
59. $8\frac{3}{4}$
60. $\frac{1}{2}$
61. $\frac{42}{75} = \frac{14}{25}$
62. $\frac{2}{3}$
63. 2
64. $\frac{7}{18}$
65. 4
66. $1\frac{1}{3}$
67. $1\frac{25}{50} = 1\frac{1}{2}$
68. $7\frac{1}{2}$
69. $\frac{15}{300} = \frac{1}{20}$
70. 1
71. 2
72. 18
73. $\frac{1}{16}$
74. 2
75. $\frac{3}{8}$
76. $\frac{14}{16}, \frac{7}{16}, \frac{5}{16}, \frac{3}{16}, \frac{1}{16}$
77. $\frac{5}{6}, \frac{5}{8}, \frac{5}{12}, \frac{5}{32}, \frac{5}{64}$
78. $\frac{2}{5}$ of water remains
79. $\frac{1}{5}$ of the dosage
80. $\frac{1}{6}$ of Ensure remains
81. 24 tablets
82. 280 mL
83. 84 hours
84. 700 mg
85. 75 doses
86. $1\frac{3}{4}$ bottles
87. $1\frac{11}{21}$
88. $8\frac{2}{4} = 8\frac{1}{2}$
89. $1\frac{3}{4}$

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Lesson Plans for Fractions

OBJECTIVES

1. Compare the size of fractions.
2. Add fractions.
3. Subtract fractions.
4. Divide fractions.
5. Multiply fractions.
6. Reduce fractions to lowest terms.

KEY TERMS

- complex fraction, p. 7
- denominator, p. 6
- improper fraction, p. 7
- mixed number, p. 7
- numerator, p. 6
- proper fraction, p. 7
- whole numbers, p. 7

QUALITY AND SAFETY

- Quality Improvement
 - Introduction, p. 6

CONCEPTS

THEME: Care Competencies

- Concept: Health Care Quality
 - Exemplar: Advisory Bodies, p. 6



STUDENT CHAPTER RESOURCES

**Cha
1****READ—Textbook (pp. 6–22)****REVIEW—Evolve Resources**

- Drug Calculations Companion, version 5

ANSWER—Evolve Resources

- Student Practice Problems

DCO**PRACTISE—Drug Calculations Online—Module 2**

INSTRUCTOR CHAPTER RESOURCES

TB**Test Bank**

- To access the **ExamView** format, go to the [Downloads](#) section.
- Drug Calculations Comprehensive Test Bank—Chapter 1A

PPT**PowerPoint Slides (Slides 1–26)****IC****Images: The following images are available in the text:**

- Figure 1-1. Diagram representing fractions of a whole. Five parts shaded out of the six parts represent: $\frac{5}{6}$ $\frac{\text{Numerator}}{\text{Denominator}}$
- Figure 1-2. Fraction pie charts.

DCO**Drug Calculations Online—Module 2****ETC.**

- TEACH for Nurses
- Drug Label Glossary



TEACHING STRATEGIES		
CONTENT FOCUS	CONTENT HIGHLIGHTS	LEARNING ACTIVITIES
<p>TYPES OF FRACTIONS</p> <p>REDUCING FRACTIONS</p> <p>ADDING FRACTIONS</p>	<p>There are several types of fractions, and nurses must know how to differentiate among them and know the fraction rules in regards to reducing and comparing them.</p> <p>Fractions are easier to comprehend when reduced to their lowest terms.</p> <p>The denominators of fractions must be the same in order to add them together.</p>	<ul style="list-style-type: none"> • Activity #1: For Small Group Activity, Large Group Activity, Clinical Activity, or Remediation Activity. Have the students bring their text to class. Divide the students up into groups of two and practise solving 10 practice questions from Chapter 1. • Online Activity: Continue the online journal by answering the question: “What types of fractions do I see in the clinical setting?” • Activity #2: Clinical Activity. Bring needles of different lengths: $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$. Have the students change the fractional lengths to a common denominator so they can determine which needle is the shortest and the longest based on the fractions.
<p>SUBTRACTING FRACTIONS</p> <p>MULTIPLYING FRACTIONS</p> <p>SUBTRACTING A FRACTION FROM A WHOLE NUMBER</p> <p>SUBTRACTING FRACTIONS USING BORROWING</p>	<p>Just like adding fractions, the denominators of fractions must be the same to subtract one fraction from another.</p> <p>Fractions being multiplied do not need the same denominator.</p> <p>Set up the problem by changing the whole number to a fraction.</p> <p>If necessary, one (in the form of an equivalent fraction) may be added to the fraction so that subtraction is possible. Changing $5\frac{1}{4}$ to $4\frac{5}{4}$ does not change the value of the mixed number, but does allow the subtraction of a smaller fraction.</p>	<ul style="list-style-type: none"> • Activity #3: For Small Group Activity, Large Group Activity, Clinical Activity, or Remediation Activity. Bring needles of different lengths: $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$. Have the students draw three circles and divide one “pie” into two parts and two “pies” into eight parts. Shade the pies to represent the needle lengths. For example, one of the “pies” with eight parts will have three parts shaded and so on. Have the students compare and contrast the three “pies.”
<p>DIVIDING FRACTIONS</p>	<p>To divide fractions, the rule states to invert the second fraction and multiply.</p>	

IN-CLASS/ONLINE CASE STUDY

A nurse is recording the fluid intake for a patient and the volume of medication to administer. The following questions pertain to this situation.

1. The nurse notes that the patient has drunk half of the water in the water pitcher. The pitcher holds 900 millilitres (mL) of water. How many mL would the nurse record?

Answer: 450 mL

Rationale: $900 \text{ mL} \times \frac{1}{2} = 450 \text{ mL}$

2. The nurse notes that $\frac{3}{4}$ of the intravenous (IV) fluids have infused in the last 12 hours. The IV bag contained 1 000 mL of fluid at the beginning of the shift. How many mL would the nurse record for the IV intake?

Answer: 750 mL

Rationale: $1\ 000 \text{ mL} \times \frac{3}{4} = 750 \text{ mL}$

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Chap. 1 READ—Textbook (pp. 6–22)

REVIEW—Evolve Resources

- Drug Calculations Companion, version 5

ANSWER—Evolve Resources

- Student Practice Problems

DCO PRACTISE—Drug Calculations Online—Module 2

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