

Chapter 3 Chapter Review

SKILLS Procedures used to get answers

OBJECTIVE A Order and compare decimals and fractions. (Lessons 3-1, 3-2, 3-5)

In 1-4, order from greatest to least 1-4 See margin

1. $-7.01, 7.012, -7.12, 7.12$

2. $128.4, -2.13, -2.07, 12.04$

3. $\frac{1}{6}, \frac{2}{3}, \frac{1}{4}$ 4. $\frac{5}{8}, \frac{4}{9}, \frac{1}{3}$

In 5 and 6, compare using $<$ or $>$

5. $-7\frac{1}{8} ? -7\frac{1}{4} >$ 6. $0.2 ? 0.\bar{2} <$

OBJECTIVE B Add and subtract fractions. (Lesson 3-3)

In 7-11, write the sum or difference as a simple fraction. 7-11 See margin.

7. $\frac{3}{5} + \frac{3}{4}$ 8. $6 + \frac{2}{7}$ 9. $2\frac{2}{3} - 1\frac{1}{36}$

10. $21\frac{1}{7} - 6\frac{4}{7}$ 11. $\frac{11}{15} - \frac{2}{3} + \frac{1}{5}$

OBJECTIVE C Round any number up, down, or to the nearest value of a fraction or decimal place (Lesson 3-4)

12. Round 432.78 down to the preceding tenth.

13. Round 257 down to the preceding hundred

14. After nine decimal places, Jocelyn's calculator rounds to the nearest place value. What will the calculator display for 0.6666666666? $? 0.6666666667$

15. Round -4.87 to the nearest integer -5

16. Round -0.463 up to the next hundredth. -0.46

17. Round -365 down to the preceding ten -370

In 18 and 19, estimate to the nearest integer without using a calculator.

18. $73.43478 + 67.8972$ 19. 0.99×142.14

SKILLS PROPERTIES USES REPRESENTATIONS

OBJECTIVE D Convert among decimals, fractions, and percents. (Lessons 3-5, 3-6, 3-7)

20. Find a simple fraction equal to 6.3.
See margin

21. Find the simple fraction in lowest terms equal to 0.735. $\frac{147}{200}$

22. Give a key sequence for converting $\frac{83}{63}$ to decimal form. $83 \square 6 \square 3 \square =$

In 23 and 24, convert to a percent.

23. 7.4740% 24. $2\frac{2}{9}\%$

25. What fraction equals $33\frac{1}{3}\%$? $\frac{1}{3}$

26. Zack and Jack were both asked to convert the decimal q to a percent. Zack wrote $100q\%$, Jack wrote $\frac{q}{100}\%$. Who is correct? Explain your reasoning. See margin

In 27 and 28, rewrite as a decimal.

27. $\frac{14}{6}2\bar{3}$ 28. $-\frac{17}{8}-2.125$

OBJECTIVE E Calculate the percent of a quantity. (Lesson 3-7)

29. What is 15% of 7,000? 1,050

30. If $g = 13.4$, what is 250% of g ? 33.5

31. The sales tax in New York City is 8.25%. How much would you pay in sales tax on a \$24.50 watch? \$2.03

32. There is a total of 535 Senators and members of the House of Representatives in the United States. A news article referred to three of these people as "0.006 percent" of legislators. Is this correct? Justify your reasoning. See margin

Chapter Review

The main objectives for the chapter are organized in the Chapter Review under the four types of understanding this book promotes: Skills, Properties, Uses, and Representations (SPUR).

Whereas end-of-chapter material may be considered optional in some texts, in *UCSMP Transition Mathematics* we have selected these objectives and questions with the expectation that they will be covered. Students should be able to answer these questions with about 85% accuracy after studying the chapter.

You may assign these questions over a single night to help students prepare for a test the next day, or you may assign the questions over a two-day period. If you work the questions over two days, then we recommend assigning the evens for homework for the first night so that students get feedback in class the next day, then assigning the odds the night before the test, because the answers are provided to the odd-numbered questions.

It is effective to ask students which questions they still do not understand and use the day or days as a total class discussion of the material that the class finds the most difficult.

Resources

- Assessment Resources: Chapter 3 Test, Forms A-D; Chapter 3 Test, Cumulative Form; Chapter 3 Test, Comprehensive Form



Technology Resources

Teacher's Assessment Assistant, Ch 3
Electronic Teacher's Edition, Ch 3

Additional Answers

1. 7.12, 7.012, -7.01 , -7.12

2. 128.4, 12.04, -2.07 , -2.13

3. $\frac{2}{3}, \frac{1}{4}, \frac{1}{6}$

4. $\frac{1}{3}, \frac{4}{9}, \frac{5}{8}$

7. $\frac{27}{20}$

8. $\frac{44}{7}$

9. $\frac{59}{36}$

10. $\frac{102}{7}$

11. $\frac{4}{15}$

12. 432.7

13. 200

20. Answers vary. Sample: $\frac{63}{10}$

26. Zack; to rewrite a decimal as a percent, you multiply by 100.

32. No; 3 people out of 535 is about 0.006 = 0.6%, not 0.006%.

Additional Answers

- 37a. 9 and 10
- 37b. $9^2 = 81 < 85 < 10^2 = 100$
- 38a. 31 and 32
- 38b. $31^2 = 961 < 1,001 < 32^2 = 1,024$
- 39 Multiply the numerator and denominator by the same nonzero number; they are equivalent because of the Equal Fractions Property
40. $\frac{632-4}{36-4} = \frac{158}{9}$
41. yes; $6\frac{1}{3} = 6 + \frac{1}{3} = \frac{18}{3} + \frac{1}{3} = \frac{19}{3}$
42. $19,257; \frac{917}{7} = \frac{j}{7 \cdot 21}$, so $j = 917 \cdot 21$
- 45 Yes; the tenths place does not repeat because the bar starts over the hundredths place.
47. If two numbers are equal, then one can be substituted for the other in any computation without changing the results of the computation.
48. Answers vary. Sample $\frac{6}{8}, \frac{12}{16}$
- 54 round \$4 85 up to \$5 00
- 55 \$0 60
- 56a. estimate; Guests may want differing amounts of ice cream.
- 56b. estimate; Prizes come in packages, so overestimate so each guest gets one.
- 56c. exact; Use exactly one candle for each year
- 56d. exact; Ingredients for cakes are measured accurately.

OBJECTIVE F Estimate the square root of a number to a stated decimal place. (Lesson 3-8)

In 33-36, estimate each number to the indicated decimal place.

33. $\sqrt{2}$ (thousandths) 1.414

34. $\sqrt{25 + 49}$ (hundredths) 8.60

35. $\sqrt{168}$ (tenths) 4.136. $\sqrt{0.4}$ (tenths) 0.6

In 37 and 38, 37-38 See margin.

a. determine what two consecutive whole numbers the given number is between and

b. explain how you determined the whole numbers.

37 $\sqrt{85}$ 38 $\sqrt{1,001}$

PROPERTIES: Principles behind the mathematics

39-42. See margin

OBJECTIVE G Use the Equal-Fractions Property to rewrite fractions. (Lesson 3-2)

39. Explain how you would find two fractions equal to $\frac{2}{5}$. Why are they equivalent?

40 Explain how you know that $\frac{632}{36} = \frac{158}{9}$

41. Does $6\frac{1}{3} = \frac{19}{3}$? Justify your answer

42. $\frac{917}{7} = \frac{j}{147}$ Determine the value of j and explain how you arrived at this value.

OBJECTIVE H Correctly use the raised-bar symbol for repeating decimals. (Lesson 3-5)

43. Identify the 11th decimal digit in $0.\overline{2345}$. 4

44. Identify the 14th decimal digit in $23.\overline{649}$. 4

45 Barbara wrote the number $6.\overline{12431}$ as 6.1243124312431... Is this correct? Explain your reasoning. See margin

46. Write 4.09090909 using raised-bar notation. $4.\overline{09}$

OBJECTIVE I Know and apply the Substitution Principle. (Lessons 3-6, 3-7)

47 State the Substitution Principle. See margin.

48 Write two numerical expressions that can be substituted for $\frac{3}{4}$. See margin.

49 According to the substitution principle, $0.20 + 0.875 = \underline{\quad}\% + \underline{\quad}\%$ 20; 87.5

50. Which of the following can be substituted for 0.31%? a, e, f

a. 3.1×10^{-3} b. 0.31 c. 0.031

d. $\frac{31}{100}$ e. $\frac{31}{10^4}$ f. 0.0031

USES: Applications of mathematics in real-world situations

OBJECTIVE J Use fractions to answer questions in real situations. (Lessons 3-3, 3-4, 3-5)

51. A recipe for trail mix calls for 1 cup of $\frac{2}{8}$ cups pretzels, $\frac{1}{2}$ cup of almonds, and $\frac{7}{8}$ cup of dried fruit. How many cups is this in all?

52 Trent began his road trip with $\frac{3}{4}$ tank of gas. When he stopped for lunch, he had only $\frac{1}{8}$ tank of gas remaining. How much of his gas had he used? $\frac{5}{8}$ of a tank

53. At the deli counter, Kanya ordered $\frac{1}{2}$ pound of smoked ham. The deli worker placed 0.35 pound of it on the scale. How much more smoked ham does Kanya need? 0.15 pound

OBJECTIVE K Deal with estimates in real situations. (Lesson 3-4) 54-56. See margin.

54 To quickly estimate the cost of 6 magazines at \$4.85 each, what rounding can you do?

55. A store sells 5 granola bars for \$2.99. You want one bar. Dividing on your calculator gives you 0.598. What will one bar cost?

56. In planning a birthday party, which would you estimate? For which would you use an exact number? Justify your answers.

a. ice cream b. prizes

c. candles for the cake

d. ingredients for the cake

OBJECTIVE L Use square roots in real situations. (Lesson 3-8) 57-58. See margin

- 57. A square in the center of a town has an area of 0.25 mi^2 . What is the length of one side?
- 58. A ladder is leaning against a wall. Its base is 4.5 feet away from the wall, and its top rests against the wall at a point 12 feet above the ground. How long is the ladder?

OBJECTIVE M Calculate probabilities involving mutually exclusive events. (Lesson 3-9)

- 59. Mai buys 5 tickets in a raffle and Clara buys 4 tickets. In all, 60 raffle tickets were sold. If only one ticket will be drawn for the grand prize, what is the probability that Mai will win the drawing? $\frac{1}{12}$
- 60. A bag of 136 letter tiles contains 12 A's, 15 E's, 9 F's, 9 O's, and 6 U's. Find the probability of pulling a consonant out of the bag $\frac{5}{8}$
- In 61 and 62, assume a regular 6-sided die is rolled once.
- 61. What is the probability that the result will be 2 or less? $\frac{1}{3}$
- 62. What is the probability that the result will be 3 or greater? $\frac{2}{3}$

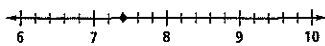
REPRESENTATIONS Pictures, graphs, or objects that illustrate concepts

OBJECTIVE N Graph and read numbers on number lines and coordinate grids. (Lesson 3-1) 63-65. See margin

In 63-65, graph the numbers on a number line

- 63. $\frac{1}{2}, \frac{3}{4}, \frac{1}{4}$ 64. 0.36, 0.42, 0.3 65. -3, 5, 0

- 66. Use this number line.

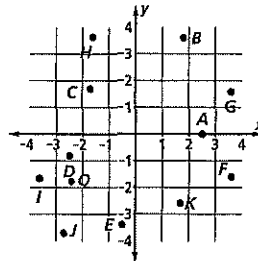


- a. What is the distance between consecutive tick marks? 0.2 7 4
- b. What number is represented by the dot?

- 67. Use this number line

- a. What is the distance between consecutive tick marks? 0.5
- b. List two numbers that are within the highlighted portion. See margin.

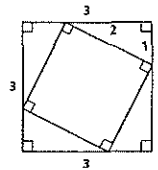
In 68 and 69, use the coordinate grid below.



- 68. What letter is found at $(3.6, -1.6)$? F
- 69. Copy the grid and plot point Q at $(-2.4, -1.8)$

OBJECTIVE O Apply the geometric definition of square root. (Lesson 3-8)

- 70. Suppose a square has area 10 square units.
 - a. What is the exact length of a side? $\sqrt{10}$ units
 - b. Estimate the length of a side to the nearest hundredth. 3.16 units
- 71. The tilted square has side length $\sqrt{5}$. What is its area? 5 square units



- 72. Explain geometrically why $\sqrt{70} \cdot \sqrt{70} = 70$. See margin
- 73. a. If a square has side 6.4, then its area is ? 40.96 square units
- b. Part a shows that the square root of ? is 6.4. 40.96

Assessment

Evaluation The *Assessment Resources* provide five forms of the Chapter 3 Test. Forms A and B present parallel versions in a short-answer format. Form C consists of four to six short response questions that cover all of the SPUR objectives from Chapter 3. Form D offers performance assessment that covers a subset (or even just one) of the SPUR objectives for the chapter. The fifth type of test is a Chapter 3 Test, Cumulative Form. About 50% of this test covers Chapter 3, and the remaining 50% covers the previous chapters.

Of course, you can prepare your own chapter test. If so, we suggest that it be similar to the SPUR Mastery Self-Test. Whichever you choose, here are our recommendations for assigning a letter grade. 85-100 = A; 72-84 = B; 60-71 = C; 50-59 = D.

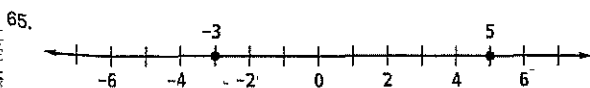
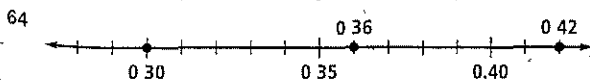
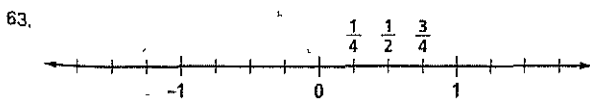
Feedback After students have taken the test for Chapter 3 and you have scored the results, return the tests to students for discussion. Class discussion on the questions that caused trouble for most students can be very effective in identifying and clarifying misunderstandings. You might want to have them write down the items they missed and work either in groups or at home to correct them. It is important for students to receive feedback on every chapter test, and we recommend that students see and correct their mistakes before proceeding too far into the next chapter.

Suggestions for Assignment Assign Lesson 4-1 for homework the evening of the test. It gives students work to do after they have completed the test and keeps the class moving. If you do not do this, you may cover one less chapter over the course of the year.

Additional Answers

57. 0.5 miles

58. $\sqrt{164.25} \approx 12.82$ feet



67b. Answers vary. Sample. 0.2, 0.45

72. Answers vary. Sample. Think of $\sqrt{70}$ as the length of a side of a square and 70 as the area of the square.