

3-1A Lesson Master

Questions on SPUR Objectives
See pages 199–201 for objectives.

SKILLS Objective A

In 1–3, order from least to greatest.

1. 1.009, 1.0098, 1.098, 1.0089
- _____

2. -3.021, 3.021, -3.21, 3.21
- _____

3. 135.7, -14.13, -14.1, 13.5
- _____

In 4 and 5, compare using $<$ or $>$.

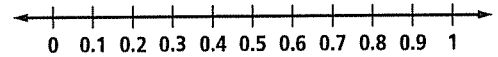
4. 4.505 _____ 4.550

5. -0.8223 _____ -0.823

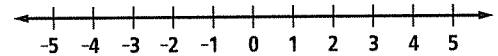
REPRESENTATIONS Objective N

In 6–8, graph on a number line.

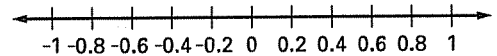
6. 0.16, 0.48, 0.2



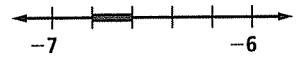
7. -5, 3, 0



8. -0.7, 0.5, -1

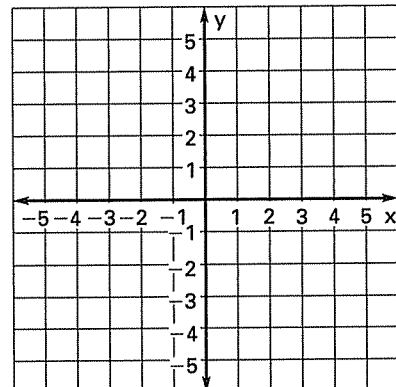


9. Use the number line at the right.



- What is the distance between consecutive tick marks?
 - List two numbers that would exist within the highlighted portion.
- _____
- _____

10. Use the ordered pairs $R = (-2.3, -4.2)$, $A = (-1.5, 3.3)$, and $T = (3.8, 0.6)$. Locate R , A , and T by estimation.



3-1B Lesson Master

Questions on SPUR Objectives

SKILLS Objective A: Order and compare decimals and fractions.

In 1-5, order from least to greatest.

1. 5.005, 5.0505, 5.05, 5.0055

2. -32.0, 320, 32.0, -320

3. 18.18, 1.818, -1.818, -1818

4. -1919, 20.21, -20.21, 1.919

5. -32.45, 3.45, 4.35, 32.45, -4.35

In 6-9, compare using $<$ or $>$.

6. 11.23 _____ -14.789

7. -14.789 _____ -15.3

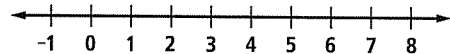
8. -15.3 _____ -11.12

9. -11.73 _____ 7.698

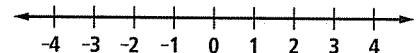
REPRESENTATIONS Objective N: Graph and read numbers on number lines and coordinate grids.

In 10-13, graph on a number line.

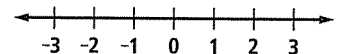
10. 1, 4, 7



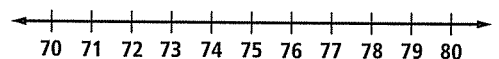
11. -3, -1, 1, 3



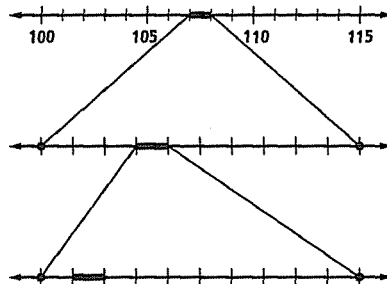
12. -2.8, -1.6, 0.5, 2.3



13. 77.6, 71.2, 73.8



In 14–16, use the number lines below.



14. a. What is the interval between each tick mark on the top number line? _____

b. List the endpoints of the highlighted section on the top line. _____

c. Label the dots on the middle line.

15. a. What is the interval between each tick mark on the middle number line? _____

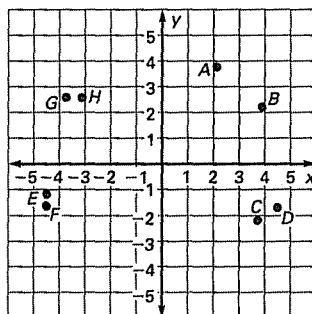
b. List the endpoints of highlighted section of the middle number line. _____

c. Label the dots on the bottom line.

16. a. What is the interval between each tick mark on the bottom number line? _____

b. List the endpoints of the highlighted section on the bottom number line. _____

17. Which letter (if any) corresponds to the given number? _____



a. (3.9, 2.2) _____

b. (-3.9, 2.7) _____

c. (-4.5, -1.5) _____

d. (-4.5, -1.7) _____

e. (-3.5, 2.7) _____

f. (3.9, -2.2) _____

3-2A Lesson Master

Questions on SPUR Objectives
See pages 199–201 for objectives.

SKILLS Objective AIn 1–8, compare, using $>$, $<$, or $=$.

1. 5 _____ $\frac{16}{3}$

2. $-\frac{16}{24}$ _____ $-\frac{4}{6}$

3. $\frac{9}{12}$ _____ $\frac{2.7}{3.6}$

4. $3\frac{3}{8}$ _____ $\frac{13}{4}$

5. $-\frac{3}{32}$ _____ $-\frac{10}{96}$

6. $\frac{7}{31}$ _____ $\frac{28}{124}$

7. $\frac{25}{24}$ _____ $\frac{35}{36}$

8. $\frac{4}{64}$ _____ $\frac{3}{32}$

PROPERTIES Objective G

9. a. Find the prime factorization of 144. _____
 b. Find the prime factorization of 560. _____
 c. Rewrite $\frac{144}{560}$ in lowest terms. _____

In 10–13, a. write the greatest common factor of the numerator and denominator, then b. rewrite the fraction in lowest terms.

10. $\frac{9}{21}$ a. _____ b. _____

11. $\frac{56}{35}$ a. _____ b. _____

12. $\frac{25}{675}$ a. _____ b. _____

13. $\frac{47,000}{1,000}$ a. _____ b. _____

14. Does $\frac{44}{187} = \frac{20}{85}$? Justify your answer.

In 15 and 16, write two fractions equivalent to the given fraction.

15. $\frac{2}{9}$ _____, _____

16. $\frac{434}{196}$ _____, _____

17. *Fill in the blanks* with the smallest whole numbers possible.
 If 548 out of 685 dentists recommend Slide-Floss for their patients,
 then you could say that _____ out of _____ dentists
 recommend it.

3-2B Lesson Master**Questions on SPUR Objectives****SKILLS** Objective A: Order and compare decimals and fractions.In 1-16, compare, using $>$, $<$, or $=$.

1. 7 _____ $\frac{21}{3}$

2. 14 _____ $\frac{42}{6}$

3. $-\frac{48}{64}$ _____ $\frac{48}{64}$

4. $\frac{32}{64}$ _____ $\frac{16}{32}$

5. $\frac{27}{3.6}$ _____ $\frac{3}{4}$

6. $\frac{5.5}{8.8}$ _____ $\frac{2}{3}$

7. $5\frac{7}{8}$ _____ $\frac{47}{8}$

8. $3\frac{1}{2}$ _____ $-\frac{7}{2}$

9. $-\frac{5}{27}$ _____ $-\frac{16}{81}$

10. $-\frac{5}{27}$ _____ $-\frac{14}{81}$

11. $\frac{14}{27}$ _____ $\frac{42}{81}$

12. $-\frac{27}{14}$ _____ $-\frac{108}{56}$

13. $\frac{121}{99}$ _____ $\frac{132}{108}$

14. $-\frac{125}{25}$ _____ $-\frac{100}{25}$

15. $\frac{2}{16}$ _____ $\frac{1}{7}$

16. $\frac{1}{6}$ _____ $\frac{3}{21}$

PROPERTIES Objective G: Use the Equal-Fractions Property to rewrite fractions.

17. a. Find the prime factorization of 80. _____

b. Find the prime factorization of 150. _____

c. Rewrite $\frac{80}{150}$ in lowest terms. _____

18. a. Find the prime factorization of 126. _____

b. Find the prime factorization of 420. _____

c. Rewrite $\frac{126}{420}$ in lowest terms. _____

In 19–26, a. write the greatest common factor of the numerator and denominator, then b. rewrite the fraction in lowest terms.

19. $\frac{15}{35}$ a. _____ b. _____ 20. $\frac{28}{63}$ a. _____ b. _____
21. $\frac{44}{121}$ a. _____ b. _____ 22. $\frac{30}{42}$ a. _____ b. _____
23. $\frac{125}{700}$ a. _____ b. _____ 24. $\frac{270}{210}$ a. _____ b. _____
25. $\frac{52,000}{2,600}$ a. _____ b. _____ 26. $\frac{15,000}{65,000}$ a. _____ b. _____

In 27 and 28, are the two fractions equal? Justify your answer.

27. Does $\frac{22}{65} = \frac{11}{33}$? Justify your answer.

28. Does $\frac{4}{5} = \frac{60}{75}$? Justify your answer.

In 29–32, write two fractions equivalent to the given fraction.

29. $\frac{5}{7}$ _____, _____ 30. $-\frac{5}{11}$ _____, _____
31. $\frac{66}{78}$ _____, _____ 32. $-\frac{210}{270}$ _____, _____

In 33 and 34, fill in the blanks with the smallest whole numbers possible.

33. In a poll of 960 students, 840 said they eat dessert with their lunch.

You could say that _____ out of _____ students eat dessert with their lunch.

34. A veterinarian reported that 291 of her 485 clients bought flea preventatives for their cats and dogs. Therefore, _____ out of _____ clients buy flea preventatives.

3-3A Lesson Master**Questions on SPUR Objectives**

See pages 199–201 for objectives.

SKILLS Objective B

In 1 and 2, a. write the mixed number as a sum,
and b. as a simple fraction.

1. $9\frac{3}{8}$ a. _____

b. _____

2. $58\frac{1}{4}$ a. _____

b. _____

In 3–12, write the sum or difference as a simple fraction in lowest terms.

3. $\frac{3}{32} + \frac{10}{96}$ _____

4. $\frac{7}{31} - \frac{27}{124}$ _____

5. $\frac{17}{24} + \frac{4}{5}$ _____

6. $\frac{29}{8} - \frac{58}{16}$ _____

7. $5 - \frac{16}{3}$ _____

8. $1\frac{1}{60} - \frac{10}{24}$ _____

9. $3\frac{3}{8} - 3\frac{1}{4}$ _____

10. $1\frac{1}{12} + 3\frac{2}{3}$ _____

11. $1\frac{7}{8} - \frac{2}{3} + \frac{1}{5}$ _____

12. $\frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5}$ _____

USES Objective J

In 13–16, use the following information. During the 1700s, the Captain, officers, and crew of the British Navy were awarded prize money equal to the value of any ship they captured, minus an initial cut to the commander-in-chief. This prize money was based on eight shares. The commander-in-chief received $\frac{1}{8}$ of the prize money. The Captain received $\frac{3}{8}$ of the prize money, the officers shared $\frac{1}{4}$ of the prize money, and the crew split the remaining $\frac{1}{4}$.

13. How much of the prize money was paid to the Captain and crew, not including the officers? _____

14. The officers' share was split equally between two groups—the officers and the warrant officers. How much of the prize money did the warrant officers receive? _____

15. How much of the prize money did the Captain and the warrant officers receive? _____

16. How much of the total prize money was not given to the commander-in-chief? _____

3-3B Lesson Master

Questions on SPUR Objectives

SKILLS Objective B: Add and subtract fractions.

In 1-4, a. write the mixed number as a sum, and b. as a simple fraction.

1. $7\frac{4}{5}$ a. _____

b. _____

2. $3\frac{3}{8}$ a. _____

b. _____

3. $61\frac{7}{9}$ a. _____

b. _____

4. $58\frac{1}{6}$ a. _____

b. _____

In 5-16, write the sum or difference as a simple fraction in lowest terms.

5. $\frac{3}{31} + \frac{17}{93}$ _____

6. $\frac{7}{35} - \frac{5}{140}$ _____

7. $\frac{2}{17} + \frac{5}{6}$ _____

8. $\frac{18}{32} - \frac{9}{16}$ _____

9. $\frac{3}{85} + \frac{6}{17}$ _____

10. $\frac{53}{66} - \frac{3}{11}$ _____

11. $\frac{23}{6} + \frac{33}{24}$ _____

12. $\frac{23}{6} - \frac{33}{24}$ _____

13. $8 + \frac{16}{5}$ _____

14. $9 - \frac{22}{4}$ _____

15. $1\frac{14}{42} + \frac{57}{5}$ _____

16. $\frac{57}{5} - 1\frac{14}{42}$ _____

In 17-24, write the sum or difference as a mixed number in lowest terms.

17. $13\frac{5}{8} + 9\frac{1}{5}$ _____

18. $13\frac{5}{8} - 9\frac{1}{5}$ _____

19. $13\frac{5}{8} + 9\frac{4}{5}$ _____

20. $13\frac{5}{8} - 9\frac{4}{5}$ _____

21. $2\frac{3}{4} + \frac{3}{8} - \frac{1}{6}$ _____

22. $4\frac{1}{6} - \frac{4}{5} + \frac{1}{3}$ _____

23. $\frac{2}{3} + \frac{3}{4} + \frac{4}{5}$ _____

24. $1\frac{1}{6} + 2\frac{2}{7} + 3\frac{1}{8}$ _____

25. Lydia needs $2\frac{3}{4}$ quarts of milk for a recipe. She has only a 1-cup measuring cup to measure the milk. Write $2\frac{3}{4}$ as a simple fraction. How many cups are in $2\frac{3}{4}$ quarts? (1 quart = 4 cups) _____

26. Jerry was 5 ft $2\frac{1}{4}$ inches tall at the beginning of the school year. During the school year, he grew $\frac{7}{8}$ inch. How tall was he at the end of the school year? _____

27. Tyler ordered a pizza to eat while he watches a movie. Before the movie began, he ate $\frac{1}{4}$ of the pizza. During the movie, he ate another $\frac{3}{8}$. Before storing the remaining pizza, he ate a final $\frac{1}{16}$ of the pizza. How much leftover pizza does Tyler have? _____

In 28–31, use the information to answer the questions. The seventh grade class is painting a wall mural for the school lunchroom. Homeroom A paints $\frac{1}{3}$ of the mural. Homeroom B paints $\frac{1}{6}$ of the mural. Homerooms C and D paint equal amounts of the remainder of the mural.

28. How much of the mural did Homerooms A and B paint? _____

29. How much of the mural did Homeroom C paint? _____

30. How much more of the mural did Homeroom A paint than Homeroom D? _____

31. Which homeroom painted exactly twice as much of the mural as another homeroom? _____

USES

Objective J: Use fractions to answer questions in real situations.

In 32–35, use the information to answer the questions. During a recent year, the profits at Bizco Company soared into the millions of dollars. The board of directors decided to reward the chief operating officer (COO) with $\frac{3}{10}$ of the profit. The president of the company got $\frac{1}{4}$ of the profits, and the treasurer got $\frac{1}{5}$. The rest went to the shareholders.

32. What part of the profits was paid to the president and the treasurer? _____

33. What part of the profits was paid to the COO and the treasurer? _____

34. Who got a greater part of the profits, the president or the treasurer? _____

35. What part of the profits was paid to the shareholders? _____

3-4A Lesson MasterQuestions on SPUR Objectives
See pages 199–201 for objectives.**SKILLS** Objective C

1. Truncate 348.79 in the units place. _____
2. Round 5.5982 up to the next half. _____
3. Round 378 down to the preceding hundred. _____
4. Round -7.86 up to the next integer. _____
5. Round -0.04837 to the nearest hundredth. _____
6. Round -437 down to the preceding ten. _____
7. Estimate $64.2789 + 37.7825$ to the nearest integer. _____
8. Estimate $3.51348 + 2.38776$ to the nearest tenth. _____

USES Objective J

9. Esther is planning a big brunch and wants to make 90 slices of French toast. If each slice requires $\frac{1}{3}$ egg, how many cartons of a dozen eggs should she buy? _____
10. Maria, Harold, Roy, and Sylvia are splitting sandwiches for lunch at a restaurant. Maria wants $\frac{1}{2}$ of a sandwich, Harold wants $\frac{2}{3}$ of a sandwich, Roy wants $1\frac{1}{3}$ sandwiches, and Sylvia wants $\frac{3}{4}$ of a sandwich. How many whole sandwiches do they need to order? _____

USES Objective K

11. Estimate the cost of 7 CDs if each retails for \$9.87. _____
12. The 2005 population of Illinois was 12,763,371. The 2005 population of Iowa was 2,966,334. To the nearest million, approximately how many more people lived in Illinois than in Iowa in 2005? _____

Name _____

3-4B Lesson Master

Questions on SPUR Objectives

SKILLS Objective C: Round any number up, down, or to the nearest value of a fraction or decimal place.

1. Truncate 534.68 in the tens place. _____
2. Truncate 817.68 in the units place. _____
3. Round 45.1632 up to the next half. _____
4. Round 53.78 up to the next half. _____
5. Round 1,648 down to the preceding hundred. _____
6. Round 438 down to the preceding ten. _____
7. Round -1.354 up to the next integer. _____
8. Round -0.416 up to the next integer. _____
9. Round 1.6428 to the nearest hundredth. _____
10. Round -1.4357 to the nearest thousandth. _____
11. Round -842 down to the preceding ten. _____
12. Round -732 down to the preceding hundred. _____
13. Estimate $111.346 + 90.7592$ to the nearest integer. _____
14. Estimate $111.346 + 90.7592$ to the nearest ten. _____
15. Estimate $111.346 + 90.7592$ to the nearest tenth. _____
16. Estimate $111.346 + 90.7592$ to the nearest hundredth. _____

USES

Objective J: Use fractions to answer questions in real situations.

17. Marty has 56 sports trading cards. He places the cards in protective plastic pages. Each page holds 9 cards. How many pages does Marty need to protect all 56 cards? _____
18. Rosi serves spaghetti dinner for 22 people. She thinks she needs $\frac{1}{2}$ cup of spaghetti sauce for each serving and thinks half of the 22 people will have 2 servings. How many cups of sauce will she need to make? _____
19. Tim earns \$12 mowing lawns for 1 hour and 20 minutes. How much money does he earn in 1 hour? _____
20. Lori buys 24 inches of ribbon for a craft project. She uses two $9\frac{1}{4}$ inch pieces of the ribbon. How many inches of the ribbon is left? _____

USES

Objective K: Deal with estimates in real situations.

21. The battery on Kara's video camera lasts for about $5\frac{1}{4}$ hours. She videotapes her 50-minute math class each day. About how many times can Kara videotape her math class before she needs to recharge the battery? _____
22. Ari serves 34 glasses of lemonade at his party. He garnishes each glass with a lemon wedge. Each lemon wedge is about $\frac{1}{6}$ of a lemon. About how many lemons does Ari cut apart to garnish 34 glasses? _____
23. Nairi figures that it will cost \$6.38 per student to buy new art supplies. About how much will it cost to buy new art supplies for 28 students? _____
24. Robert hires two "Happy-to-Clean" workers at \$8.25 an hour per worker to clean his house. He estimates it will take the two of them working together about 5 hours to clean his home. About how much will the cleaning cost? _____
25. The U.S. population reached 100,000,000 in 1915, reached 200,000,000 in 1967, and then reached 300,000,000 in 2006. To what place-value position was each of those population figures rounded? _____

Name _____

3-5A Lesson Master

Questions on SPUR Objectives
See pages 199–201 for objectives.

SKILLS Objective A

In 1–3, order from least to greatest.

1. $2\frac{1}{2}$, $2\frac{5}{12}$, $2\frac{7}{20}$

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

3. 8.75, $8\frac{2}{3}$, $8\frac{5}{8}$

_____ ; _____ ; _____

_____ ; _____ ; _____

_____ ; _____ ; _____

4. Write the decimal for each fraction from memory.

a. $\frac{2}{3}$ _____

b. $\frac{7}{10}$ _____

c. $\frac{5}{8}$ _____

d. $\frac{3}{4}$ _____

SKILLS Objective D

In 5–7, find a simple fraction equal to the given number.

5. 6.3 _____

6. 0.84 _____

7. $\frac{0.072}{2.88}$ _____

8. Convert $\frac{2}{33}$ to a decimal. _____

9. Find the decimal equal to $7\frac{9}{80}$. _____

PROPERTIES Objective H

10. Give the digit in the 14th decimal place in $1.\overline{3785}$. _____

11. Write 3.5030303... in raised bar notation. _____

12. Write $101\frac{1}{6}$ as a decimal using the raised bar. _____

USES Objective J

13. A marathon is a race that is 26.22 miles long. Erin is running a marathon and passes a sign that says “ $12\frac{1}{2}$ miles remaining.” How far has Erin run so far? _____

14. A recipe calls for $1\frac{1}{4}$ pounds of carrots. If you buy a bag of carrots weighing 2.13 pounds, how many pounds of carrots will you have left over after making the recipe? _____

3-5B Lesson Master**Questions on SPUR Objectives****SKILLS** Objective A: Order and compare decimals and fractions.

In 1-6, order from least to greatest.

1. $3.2, 3\frac{5}{7}, 3\frac{3}{20}$

_____ ; _____ ; _____

2. $4.6, 4\frac{3}{7}, 4\frac{5}{12}$

_____ ; _____ ; _____

3. $-\frac{5}{7}, -\frac{5}{9}, -\frac{5}{11}$

_____ ; _____ ; _____

4. $\frac{4}{7}, \frac{5}{9}, \frac{6}{11}$

_____ ; _____ ; _____

5. $9\frac{2}{5}, 9\frac{3}{5}, 7\frac{5}{2}$

_____ ; _____ ; _____

6. $3\frac{4}{5}, -3.9, 3\frac{7}{10}$

_____ ; _____ ; _____

7. Write the decimal for each fraction from memory.

a. $\frac{1}{2}$ _____

b. $\frac{4}{5}$ _____

c. $\frac{7}{8}$ _____

d. $\frac{1}{4}$ _____

e. $\frac{1}{3}$ _____

f. $\frac{3}{5}$ _____

g. $\frac{3}{8}$ _____

h. $\frac{2}{4}$ _____

SKILLS Objective D: Convert among decimals, fractions, and percents.

In 8-13, find a simple fraction equal to the given number.

8. 8.9 _____

9. 3.74 _____

10. 0.88 _____

11. 0.320 _____

12. $\frac{0.048}{1.6}$ _____

13. $\frac{0.048}{0.64}$ _____

In 14 and 15, convert the fraction to a decimal.

14. $\frac{25}{64}$ _____

15. $\frac{5}{18}$ _____

In 16 and 17, find the decimal equal to the given number.

16. $\frac{23}{20}$ _____

17. $\frac{84}{5}$ _____

PROPERTIES

Objective H: Correctly use the raised-bar symbol for repeating decimals.

18. Give the digit in the 12th decimal place in $8.432\overline{51}$. _____

19. The first six digits in the decimal expansion for $\frac{1}{7}$ repeat. Write $\frac{1}{7}$ as a decimal using a raised bar. _____

In 20–23, write each number as a decimal in raised bar notation.

20. $5.716716716\dots$ _____

21. $23.285714285714\dots$ _____

22. $8\frac{5}{11}$ _____

23. $-11\frac{7}{15}$ _____

USES

Objective J: Use fractions to answer questions in real situations.

24. A recipe for meatloaf calls for $2\frac{1}{2}$ lb of hamburger. Melissa bought two packages of hamburger meat, one that weighed 1.18 lb and one that weighed 1.48 lb. How much extra hamburger meat did Melissa buy? _____

25. Dennis offers to sell 10 comic books to Ted for " $3\frac{1}{2}$ bucks." Ted has \$2.90. How much more money does Ted need to buy the comic books? _____

26. A chemist needs $2\frac{1}{2}$ oz of a chemical. It costs \$24.62 per oz. How much will it cost the chemist to buy the chemical? _____

27. Bottle A holds $2\frac{2}{3}$ oz cologne. Bottle B holds 2.75 oz of cologne. How much more does bottle B hold? Round the amount in Bottle A to the nearest hundredth ounce before computing. _____

3-6A Lesson MasterQuestions on SPUR Objectives
See pages 199–201 for objectives.**SKILLS** Objective D

In 1–6, write the percent for the fraction from memory.

1. $\frac{2}{3}$ _____

2. $\frac{7}{10}$ _____

3. $\frac{3}{8}$ _____

4. $\frac{3}{5}$ _____

5. $\frac{2}{4}$ _____

6. $\frac{1}{8}$ _____

In 7–10, write the decimal as a percent.

7. 0.17 _____

8. 2.87 _____

9. 0.0007 _____

10. 12.1 _____

11. Rewrite the sentence using a percent instead of the fraction. A bank account pays $\frac{3}{80}$ interest.

In 12–15, write the percent as a decimal and as a fraction in lowest terms.

12. 0.37% _____

13. 1.5% _____

14. 325% _____

15. $4\frac{3}{4}\%$ _____

In 16 and 17, convert to a percent.

16. $\frac{114}{100}$ _____

17. $3\frac{1}{2}$ _____

PROPERTIES Objective I18. Name two numerical expressions that can be substituted for $\frac{6}{16}$. _____19. Which of the following can be substituted for 3.87%?
(There may be more than one answer.)

A 38.7×10^{-3}

B 3.87

C 0.387

D $\frac{387}{100}$

E $\frac{387}{10^4}$

F 0.0387

Name _____

3-6B Lesson Master

Questions on SPUR Objectives

SKILLS Objective D: Convert among decimals, fractions, and percents.

In 1-9, write the percent for the fraction from memory.

1. $\frac{1}{2}$ _____

2. $\frac{1}{3}$ _____

3. $\frac{1}{4}$ _____

4. $\frac{1}{5}$ _____

5. $\frac{5}{8}$ _____

6. $\frac{3}{4}$ _____

7. $\frac{9}{18}$ _____

8. $\frac{6}{18}$ _____

9. $\frac{18}{18}$ _____

In 10-15, write the decimal as a percent.

10. 0.58 _____

11. 0.96 _____

12. 4.15 _____

13. 14 _____

14. 0.00096 _____

15. 1.0068 _____

In 16 and 17, rewrite the sentence using a percent instead of the fraction.

16. A good batter in baseball gets a hit about $\frac{3}{10}$ of the time.

17. Jo needs an average of at least $\frac{9.3}{10}$ to earn the grade of "A."

In 18 and 19, rewrite the sentence using a fraction in lowest terms instead of the percent.

18. This shirt is marked down 75%.

19. An item bought in 1966 cost 525% more in 2006.

In 20–27, write the percent as a decimal and as a fraction in lowest terms.

20. 30% _____, _____
21. 150% _____, _____
22. 0.25% _____, _____
23. 67% _____, _____
24. 480% _____, _____
25. $5\frac{3}{5}\%$ _____, _____
26. 2,000% _____, _____
27. 0.0001% _____, _____

In 28–31, convert to a percent.

28. $\frac{250}{200}$ _____
29. $\frac{216}{300}$ _____
30. $4\frac{3}{4}$ _____
31. $2\frac{5}{8}$ _____

PROPERTIES

Objective I: Know and apply the Substitution Principle.

In 32 and 33, name two numerical expressions that can be substituted for each fraction.

32. $\frac{8}{24}$ _____, _____
33. $\frac{12}{16}$ _____, _____
34. Which of the following can be substituted for 2.34%?
(There may be more than one answer.) _____

A $2.34 \cdot 10^{-2}$

B $\frac{117}{50}$

C 2.34

D 0.234

E 0.0234

F $\frac{23.4}{10^3}$

Name _____

3-7A Lesson Master

Questions on SPUR Objectives
See pages 199–201 for objectives.

SKILLS Objective D

In 1–3, convert the percent to a decimal.

1. 20% _____ 2. 5% _____ 3. 103% _____

SKILLS Objective E

In 4–9, rewrite the problem as a decimal multiplication and evaluate.

4. What is 25% of 160?
_____ = _____
5. Evaluate $3\frac{1}{2}\%$ of 15.
_____ = _____
6. Find 6% of 750.
_____ = _____
7. Calculate 0.85% of 1,000.
_____ = _____
8. What is 4.8% of 520?
_____ = _____
9. If $p = 14$, what is 300% of p ?
_____ = _____

10. Travis received a 15% year-end bonus at work. If his annual salary was \$37,850, how much was his bonus? _____
11. During a sale on tennis shoes, a store offered a 25% discount. Connor bought a pair of shoes that normally cost \$79.00. How much did he save? _____
12. Robin invested \$3,600 into a money market account that pays interest monthly at a simple interest rate of 1.75% a year. She takes the interest out as soon as it is posted. How much interest will she earn in 8 months? _____

PROPERTIES Objective I

13. How is the Substitution Principle used to calculate 60% of 300?

14. *Fill in the blanks.* According to the Substitution Principle, $\frac{3}{8} + \frac{1}{16} =$
0. _____ + 0. _____
or _____% + _____%.

3-7B Lesson Master**Questions on SPUR Objectives****SKILLS** Objective D: Convert among decimals, fractions, and percents.

In 1-6, convert the percent to a decimal.

1. 50% _____ 2. 38% _____ 3. 4% _____
 4. 307% _____ 5. $5\frac{1}{2}\%$ _____ 6. 0.95% _____

SKILLS Objective E: Calculate the percent of a quantity.

In 7-16, rewrite the problem as a decimal multiplication and evaluate.

7. What is 10% of 140?
 _____ = _____
8. What is 75% of 120?
 _____ = _____
9. Evaluate $2\frac{1}{2}\%$ of 40.
 _____ = _____
10. Evaluate 8% of 250.
 _____ = _____
11. Find 4% of 500.
 _____ = _____
12. Find 0.43% of 2,000.
 _____ = _____
13. What is 2.8% of 440?
 _____ = _____
14. What is 3.6% of 480?
 _____ = _____
15. If $p = 16$, what is 500% of p ?
 _____ = _____
16. If $q = 410$, what is 200% of q ?
 _____ = _____
17. Marcus bought \$42,500 worth of stock. By the end of the year it increased 15% in value. How much did it increase? _____
18. Tom's grandfather bought a coin collection in 1965 for \$5,300. It is now worth 250% of what he paid for it. How much is the collection worth today? _____
19. A furniture store going out of business offers all items at 65% off the regular price. The Ruholls buy a living room set that regularly sells for \$3,800. How much did the Ruholls save? _____
20. All items at Discount Dave's are priced 30% lower than prices at regular stores. Adrian buys a ladder at Discount Dave's that costs \$26 at a regular store.
- a. How much did Adrian save shopping at Discount Dave's? _____
- b. How much did Adrian pay for the ladder? _____

In 21–23, calculate the amount of simple interest earned based on the given principal, yearly rate, and time.

	Principal	Yearly Rate	Time	Interest Earned
21.	\$1,500	3.05%	1 year	
22.	\$500	2.5%	6 months	
23.	\$36,400	6.8%	9 months	

PROPERTIES Objective I: Know and apply the Substitution Principle.

In 24 and 25, fill in the blanks.

24. The Substitution Principle can be used if two numbers are _____.

25. According to the Substitution Principle, to find 85% of 630, multiply 630 by _____.

26. Justify each step to find 60% of 3,000.

a. $60\% \text{ of } 3,000 = 60\% \cdot 3,000$

b. $60\% \cdot 3,000 = 0.60 \cdot 3,000$

c. $0.60 \cdot 3,000 = 1,800.$

27. Fill in the blanks. According to the Substitution Principle, $\frac{5}{8} + \frac{4}{5} =$

0. _____ + 0. _____

or _____% + _____%.

3-8A

Questions on SPUR Objectives
See pages 199–201 for objectives.

SKILLS Objective F

In 1 and 2, answer without using a calculator.

1. Between which two consecutive whole numbers is $\sqrt{105}$? _____

2. Between which two consecutive whole numbers is $\sqrt{59}$? _____

In 3 and 4, estimate the square root to the tenths place.

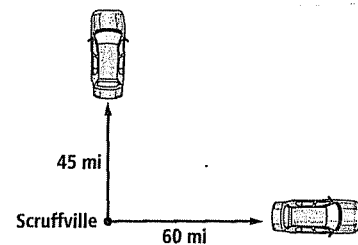
3. $\sqrt{8}$ _____

4. $\sqrt{63}$ _____

USES Objective L

5. The legs of a right triangle are 1 cm and 1.7 cm. Find the length of the hypotenuse to the nearest tenth of a centimeter. _____

6. Two cars leave Scruffville. One travels 60 miles due east. The other travels 45 miles due north. How far apart are the two cars?



7. Bob can run faster than Brenda. They agree to a race from one corner of the football field to the opposite corner. As a handicap, Bob agreed to run along the length and width of the field while Brenda cuts diagonally across the middle. The field is 160 feet wide and 360 feet long. About how much farther does Bob have to run than Brenda? _____

REPRESENTATIONS Objective O

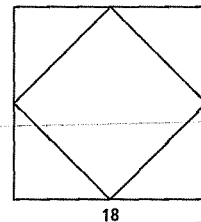
8. At the right, the large square has sides of 18 units. The midpoints of its sides have been connected to create a smaller square.

a. What is the area of the larger square?

b. What is the area of the smaller square?

c. What is the exact length of the side of the smaller square? _____

d. Approximate the length of the smaller square to the nearest hundredth of a unit. _____



3-8B Lesson Master**Questions on SPUR Objectives**

SKILLS Objective F: Estimate the square root of a number to a stated decimal place.

In 1-4, answer without using a calculator.

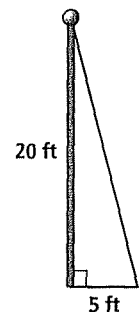
1. Between which two consecutive whole numbers is $\sqrt{95}$? _____
2. Between which two consecutive whole numbers is $\sqrt{39}$? _____
3. Between which two consecutive whole numbers is $\sqrt{48}$? _____
4. Between which two consecutive whole numbers is $\sqrt{72}$? _____

In 5-8, estimate the square root to the tenths place.

5. $\sqrt{27}$ _____
6. $\sqrt{12}$ _____
7. $\sqrt{75}$ _____
8. $\sqrt{45}$ _____

USES Objective L: Use square roots in real situations.

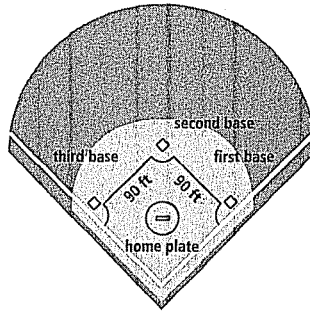
9. The legs of a right triangle are 2 cm and 3.4 cm. Find the length of the hypotenuse to the nearest tenth of a centimeter. _____
10. The legs of a right triangle are 8.4 ft and 11.1 ft. Find the length of the hypotenuse to the nearest tenth of a foot. _____
11. The sides of a rectangle are 8 in. and 12 in. To the nearest tenth of an inch, what is the length of a segment drawn from one corner to the opposite corner? _____
12. A 20-foot flagpole is braced by a cable that meets the ground 5 feet from the base of the flagpole. To the nearest tenth of a foot, how long is the cable?



REPRESENTATIONS

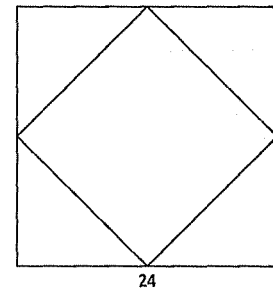
Objective O: Apply the geometric definition of square root.

13. A baseball diamond is a square with sides 90 feet.



- What is the area of the square?
- How far does a batter run if he or she hits a home run?
- Suppose Chris runs directly from home plate to second base. To the nearest hundredth foot, how far does Chris run?

14. At the right, the large square has sides of 24 units. The midpoints of its sides are connected to create a smaller square.



- What is the area of the larger square?
- What is the area of the smaller square?
- What is the exact length of the side of the smaller square?
- Approximate the length of the smaller square to the nearest hundredth of a unit.

15. A rectangle has sides of 8 units and 10 units. To the nearest tenth of a unit, what is the length of a line segment drawn from one corner to the opposite corner?

16. A square has an area of 900 square feet.

- Give the length of a side of the square.
- Give the length of the segment connecting opposite corners to the nearest thousandth of a foot.

17. *Multiple choice.* If the lengths of sides of a triangle satisfy $a^2 + b^2 = c^2$, the triangle is a right triangle. Which set of side lengths forms a right triangle, where the longest side, c , is the hypotenuse?

A 1, 2, 3

B 6, 8, 10

C 1, 10, 11

3-9A Lesson Master

Questions on SPUR Objectives
See pages 199–201 for objectives.

USES Objective M

1. Complete the table describing the probability.

In Words	As a Decimal	As a Percent	As a Fraction
cannot happen			$\frac{0}{N}$
is certain to happen			$\frac{N}{N}$
has a "50-50" chance			
will happen about 3 times out of 4			
has 2 chances in 3 of happening			

In 2–7, write the probability as a percent of randomly selecting a black marble from a jar containing the following marbles:

2. 5 black and 5 white _____
3. 7 white and 3 black _____
4. 10 black and 0 white _____
5. 10 white and 0 black _____
6. 15 black and 5 white _____
7. 43 white and 3 black _____
8. If there is a 60% chance of rain tomorrow, what is the probability that it will not rain? _____
9. Abel, Mabel, and Gable are playing a game. Abel has won 11 rounds, Mabel has won 8 rounds, and Gable has won 1 round. Write the relative frequency of Abel not winning a round as a percent. _____

In 10–13, a fly lands randomly on one of the squares on the diagram shown at the right. Write the probability, as a percent, that the fly will land on a square containing the given type of number.

5	14	9	140
112	39	105	35
40	245	49	154
50	70	77	133

10. a multiple of 7 _____
11. a multiple of 5 _____
12. a multiple of 5 or 7 _____
13. a multiple of both 5 and 7 _____

3-9B Lesson Master

Questions on SPUR Objectives

USES Objective M: Calculate probabilities involving mutually exclusive events.

1. Write one of these letters below each probability in the table.
 A "cannot happen" B "has less than an even chance" C "has an even chance"
 D "has more than an even chance" E "is certain to happen"

Probability	$\frac{2}{4}$	$\frac{16}{16}$	0%	$\frac{3}{4}$	100%	$\frac{1}{3}$	62%	$\frac{18}{36}$	9.9%	$\frac{51}{100}$	$\frac{0}{7}$	1
Letter												

In 2-5, write the probability as a percent of randomly selecting a white marble from a jar containing the following marbles:

2. 8 black and 8 white _____ 3. 4 black and 12 white _____
 4. 10 black and 6 white _____ 5. 6 black and 10 white _____

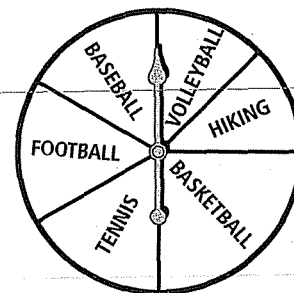
In 6-8, suppose a six-sided die is tossed one time. Write the probability as a percent of tossing the following:

6. an odd number _____
 7. an even number greater than 2 _____
 8. a number less than 2 _____

In 9-11, suppose a six-sided die is tossed two times. Write the probability as a percent that the sum of the numbers that "show up" will be the following:

9. less than 6 _____ 10. greater than 12 _____
 11. equal to 7 _____

In 12-14, a teacher spins the spinner at the right to determine the intramural sport for the week. Write the probability as a percent of the spinner landing on the following:



12. basketball _____
 13. football or baseball _____
 14. any sport except volleyball and hiking _____

15. The weather forecaster announces that there is a 30% chance that it will snow. What is the probability that it will not snow? _____
16. A referee starts a football game by tossing one fair coin. What is the probability that the team making the call wins the toss? _____
17. A hockey team has 12 wins, 5 losses, and 3 ties. Write the relative frequency of the team not winning a game as a percent. _____
18. You toss a fair coin 5 times and get 5 consecutive "heads."
- a. What is the probability that you will get a "heads" on your next toss? _____
- b. Justify your answer.
- _____
- _____
- _____

In 19–22, a beanbag is randomly thrown onto the board shown at right. Write the probability, as a percent, that the beanbag will land on a square containing the following:

6	18	10	24
23	G	A	2
14	E	M	19
29	9	13	28

19. a letter _____
20. a multiple of 4 _____
21. a prime number _____
22. an even number _____

Name _____

4-1A Lesson Master

Questions on SPUR Objectives
See pages 271–275 for objectives.

PROPERTIES Objective C

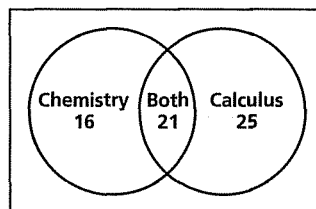
In 1–5, fill in the blanks with *always*, *sometimes but not always*, or *never* to form a true statement.

1. A rectangle is _____ a square.
2. Whole numbers are _____ integers.
3. Integers are _____ whole numbers.
4. Rhombuses are _____ rectangles.
5. Intersecting lines are _____ perpendicular.

In 6–10, determine whether the statement is *true* or *false*. If the statement is false, give a counterexample.

6. For all integers n , $2n + 1$ is odd. _____
7. All decimals are rational numbers. _____
8. All multiples of 9 are also multiples of 6. _____
9. The product of any two odd numbers is even. _____
10. All factors of 4 are factors of 16. _____

In 11 and 12, use the Venn diagram at the right that shows how students are enrolled in chemistry and calculus classes in one school.



USES Objective I

11. What is the total number of students enrolled in chemistry, calculus, or both? _____

REPRESENTATIONS Objective K

12. Is a chemistry student more likely to be taking only chemistry or taking both chemistry and calculus? Explain your answer using the Venn diagram.

