Fractions

Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. A train stops at Atherton, then at Belmont, and then at Carson. The distance from Atherton to Carson is 13 miles, and the distance from Atherton to Belmont is $10\frac{2}{3}$ miles. Estimate the distance from Belmont to Carson.
   a. about $1\frac{9}{100}$ miles  
   b. about $1\frac{1}{2}$ miles  
   c. about 4 miles  
   d. about $2\frac{1}{2}$ miles

2. Estimate the difference $-1\frac{1}{10} - 1\frac{8}{11}$.
   a. about $-2\frac{1}{2}$  
   b. about $-1\frac{1}{2}$  
   c. about $-1\frac{8}{25}$  
   d. about $-\frac{1}{2}$

3. Estimate the product.
   $3\frac{2}{3} \cdot 2\frac{2}{13}$
   a. 12  
   b. 14  
   c. 13  
   d. 15

4. Add. Express your answer in simplest form.
   $\frac{1}{6} + \frac{3}{6}$
   a. $\frac{1}{3}$  
   b. $\frac{1}{6}$  
   c. $\frac{1}{2}$  
   d. $\frac{1}{3}$

5. Add. Express your answer in simplest form.
   $\frac{3}{8} + \frac{4}{7}$
   a. $\frac{11}{56}$  
   b. $\frac{1}{56}$  
   c. $\frac{7}{15}$  
   d. $\frac{53}{16}$

6. Two carpenters are building a fence. After 5 minutes, one carpenter is finished $\frac{4}{7}$ of the way and the other is finished $\frac{1}{7}$ of the way. How much of the way ahead of the second carpenter is the first carpenter?
   a. $\frac{25}{14}$ of the way  
   b. $\frac{13}{28}$ of the way  
   c. $\frac{25}{56}$ of the way  
   d. $\frac{39}{56}$ of the way

7. There are two bookcases against a wall. If one takes up $\frac{5}{7}$ of the wall and the other takes up $\frac{1}{3}$ of the wall, how much of the wall is covered by bookcases?
   a. $\frac{17}{9}$ of the wall  
   b. $\frac{3}{7}$ of the wall  
   c. $\frac{34}{45}$ of the wall  
   d. $\frac{11}{15}$ of the wall
8. Two boxes are stacked. One is $\frac{22}{7}$ feet tall; the other is $\frac{25}{7}$ feet tall. How high is the stack?
   a. $\frac{4}{21}$ feet
   b. $\frac{7}{21}$ feet
   c. $2\frac{1}{5}$ feet
   d. $5\frac{1}{21}$ feet

9. One day, a plant is $\frac{31}{6}$ cm tall. Three weeks later, it is $\frac{31}{5}$ cm tall. How much did the plant grow in three weeks?
   a. $3$ cm
   b. $\frac{1}{30}$ cm
   c. $\frac{1}{15}$ cm
   d. $6\frac{11}{30}$ cm

10. Add. Express your answer in simplest form.
    $2\frac{2}{3} + 3\frac{3}{7}$
    a. $2\frac{1}{2}$
    b. $\frac{10}{21}$
    c. $5\frac{11}{14}$
    d. $5\frac{45}{56}$

11. Subtract. Express your answer in simplest form.
    $3\frac{6}{7} - 3\frac{1}{7}$
    a. $1\frac{1}{10}$
    b. $4\frac{1}{2}$
    c. $\frac{10}{21}$
    d. $\frac{11}{21}$

12. A restaurant had $n$ kg sugar in its stock. Then, $5\frac{3}{5}$ kg sugar was used to make the first dessert on the menu. Next, $3\frac{1}{2}$ kg sugar was used to make the second dessert on the menu. Write an expression to show how many kilograms of sugar were left in the stock, and then simplify the expression.
    a. $n - (5\frac{3}{5} - 3\frac{1}{2}) = n - 2\frac{1}{10}$
    b. $n - (5\frac{3}{5} + 3\frac{1}{2}) = n - 9\frac{1}{10}$
    c. $n + (5\frac{3}{5} + 3\frac{1}{2}) = n + 9\frac{1}{10}$
    d. $n - (5\frac{3}{5} + 3\frac{1}{2}) = n - 8\frac{1}{10}$

13. Find two fractions equivalent to $\frac{2}{5}$.
    a. $\frac{2}{1}$ and $\frac{8}{4}$
    b. $\frac{1}{2}$ and $\frac{4}{8}$
    c. $\frac{1}{2}$ and $\frac{6}{8}$
    d. $\frac{2}{2}$ and $\frac{4}{8}$

14. Write the fraction $\frac{21}{24}$ in simplest form.
    a. $\frac{24}{21}$
    b. $\frac{7}{24}$
    c. $\frac{-7}{8}$
    d. $\frac{7}{8}$

15. Tell whether the fractions $\frac{8}{4}$ and $\frac{76}{38}$ are equivalent.
    a. equivalent
    b. not equivalent

16. Write $\frac{60}{9}$ as a mixed number.
    a. $7\frac{1}{2}$
    b. $6\frac{1}{5}$
    c. $6\frac{7}{9}$
    d. $7\frac{2}{3}$
17. Write $2\frac{3}{4}$ as an improper fraction.
   a. $\frac{7}{4}$
   b. $\frac{23}{8}$
   c. $\frac{11}{4}$
   d. $\frac{7}{1}$

18. Victoria and Anne are sisters who both take piano lessons. Each day, Victoria practices piano for $\frac{5}{3}$ hours, and Anne practices piano for $1\frac{2}{3}$ hours. Do the sisters practice piano for the same amount of time?
   a. No
   b. Yes

19. Write the fraction $\frac{22}{12}$ as a decimal. If necessary, round your answer to the nearest hundredth.
   a. 0.55
   b. 1.83
   c. 22.12
   d. 2.03

20. Write the fraction $\frac{9}{50}$ as a decimal. If necessary, round your answer to the nearest hundredth.
   a. 0.28
   b. 0.18
   c. 0.5
   d. 0.09

21. Write the decimal 0.51 as a fraction in simplest form.
   a. $\frac{1}{2}$
   b. $\frac{1}{51}$
   c. $\frac{51}{100}$
   d. $\frac{1}{51}$

22. Write the decimal 1.71 as a mixed number in simplest form.
   a. $1\frac{71}{100}$
   b. $1\frac{2}{10}$
   c. $1\frac{71}{100}$
   d. $\frac{1}{71}$

23. During a review game, Mr. Pai’s class correctly answered 69 questions on the first try. If there were 72 questions in the game, at what rate were questions answered correctly on the first try? Express your answer as a decimal. Round to the nearest hundredth.
   a. 0.958
   b. 1.043
   c. 0.042
   d. 0.096

24. Write $\frac{57}{18}$ as a decimal.
   a. 3.16
   b. 2.05
   c. 4.16
   d. 3.05

25. Compare the fractions $\frac{1}{10}$ and $\frac{2}{8}$. Write < or >.
   a. <
   b. >

26. Compare the decimals 0.22 and 0.79. Write < or >.
   a. <
   b. >

27. Order $-0.985, -0.95, \frac{3}{4}$ from least to greatest.
   a. $-0.95, -0.985, \frac{3}{4}$
   b. $-0.985, \frac{3}{4}, -0.95$
   c. $\frac{3}{4}, -0.95, -0.985$
   d. $-0.985, -0.95, \frac{3}{4}$
28. The table shows success rates for two computer games sessions. Whose success rate changed the most between session 1 and session 2?

<table>
<thead>
<tr>
<th>Player</th>
<th>Session 1</th>
<th>Session 2</th>
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<tbody>
<tr>
<td>Ethan</td>
<td>0.420</td>
<td>0.270</td>
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<tr>
<td>Rita</td>
<td>0.310</td>
<td>0.325</td>
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<tr>
<td>Naomi</td>
<td>0.325</td>
<td>0.325</td>
</tr>
<tr>
<td>Jake</td>
<td>0.325</td>
<td>0.325</td>
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</tbody>
</table>

a. Jake  

b. Ethan  

c. Naomi  

d. Rita  

29. In 2001, bus fare on the Metropolitan Bus Line was $4.00. In 1975, the fare was $\frac{1}{2}$ the fare in 2001. What was the fare in 1975?

a. $1.46  

c. $8.00  

b. $2.00  

d. $7.42  

30. A computer processor costs $96.00. It is expected that in 8 months the processor will cost $\frac{3}{4}$ its current price. How much will it cost in 8 months?

a. $72.14  

c. $128.00  

b. $72.00  

d. $127.34  

31. Multiply. Express your answer in simplest form.

$-3 \cdot \frac{1}{4}$

a. $-\frac{1}{12}$  

c. $-12$  

b. 12  

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

32. Multiply. Express your answer in simplest form.

$-\frac{7}{9} \cdot \frac{1}{2}$

a. $-\frac{7}{18}$  

c. $-\frac{7}{3}$  

b. $-\frac{14}{9}$  

d. $-\frac{7}{54}$  

33. Multiply. Express your answer in simplest form.

$3\frac{2}{7} \cdot \frac{5}{8}$

a. $\frac{56}{115}$  

c. $\frac{5}{35}$  

b. $\frac{25}{56}$  

d. $\frac{35}{184}$  

34. Marcus hikes at a rate of 2 miles per hour. If he hikes for $6\frac{1}{3}$ hours, how many miles will he hike?

a. 12$\frac{1}{3}$ miles  

c. 12$\frac{2}{3}$ miles  

b. 14 miles  

d. 8$\frac{1}{3}$ miles  

___ 35. Divide. Express your answer in simplest form.

\( \frac{3}{10} \div \frac{13}{14} \)

a. \( \frac{21}{65} \)

b. \( \frac{65}{21} \)

c. \( \frac{140}{39} \)

d. \( \frac{39}{140} \)

___ 36. Divide. Express your answer in simplest form.

\( 1 \frac{7}{11} \div 2 \frac{1}{2} \)

a. \( \frac{36}{55} \)

b. \( \frac{11}{36} \)

c. \( \frac{41}{11} \)

d. \( \frac{11}{45} \)

___ 37. How many \( \frac{3}{8} \)-foot pieces of wood can you cut from a board that is \( 1 \frac{2}{8} \) feet long?

a. \( \frac{45}{64} \) pieces of wood

b. 3 pieces of wood

c. \( \frac{1}{5} \) pieces of wood

d. 5 pieces of wood

___ 38. Solve \( w - \frac{2}{7} = \frac{2}{3} \). Express your answer in simplest form.

a. \( w = \frac{30}{13} \)

b. \( w = \frac{20}{21} \)

c. \( w = \frac{19}{21} \)

d. \( w = \frac{11}{14} \)

___ 39. Solve \( -\frac{2}{9}t = \frac{2}{3} \). Express your answer in simplest form.

a. \( t = -\frac{37}{12} \)

b. \( t = -\frac{1}{3} \)

c. \( t = -3 \)

d. \( t = -\frac{4}{27} \)

___ 40. In a fish tank, \( \frac{1}{2} \) of the fish have a red stripe on them. If 10 of the fish have red stripes, how many total fish are in the tank?

a. 25 fish

b. 22 fish

c. 24 fish

d. 20 fish

___ 41. On one day, the temperature at dawn in Chattanooga, Tennessee is \( 21 \frac{1}{4} \)°C. During the day, it warms up \( 6 \frac{2}{7} \)°C. What is the new temperature?

a. \( 11 \frac{8}{11} \)°C

b. \( 27 \frac{1}{2} \)°C

c. \( 14 \frac{22}{28} \)°C

d. \( 27 \frac{15}{28} \)°C

___ 42. Suppose an ant can carry \( 28 \frac{1}{4} \) times its own weight. If the ant weights \( 4 \frac{7}{8} \) mg, how much can it carry?

a. \( \frac{39}{230} \) mg

b. \( 12 \frac{5}{6} \) mg

c. \( 140 \frac{3}{16} \) mg

d. \( 140 \frac{5}{32} \) mg

Numeric Response

43. A bookstore buys 10 books for $69 each and sells them for $96 \( \frac{1}{10} \) each. Estimate how much money is the bookstore’s profit from selling the 10 books by rounding each fraction of a dollar to the nearest dollar.
44. The table shows the results from a survey where people rated the service at a restaurant. Find the fraction of people who were very satisfied, satisfied, dissatisfied, or very dissatisfied with the service.

<table>
<thead>
<tr>
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<th>Fraction</th>
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<tbody>
<tr>
<td>Very satisfied</td>
<td>( \frac{9}{100} )</td>
</tr>
<tr>
<td>Satisfied</td>
<td>( \frac{2}{25} )</td>
</tr>
<tr>
<td>Neither satisfied</td>
<td>( \frac{7}{20} )</td>
</tr>
<tr>
<td>Dissatisfied</td>
<td>( \frac{7}{50} )</td>
</tr>
<tr>
<td>Very dissatisfied</td>
<td>( \frac{17}{50} )</td>
</tr>
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</table>

45. Write the fraction \( \frac{5}{20} \) in simplest form.

46. A restaurant uses \( 47\frac{1}{3} \) cups of rice to make its daily pot of rice. Write a fraction that shows how many \( \frac{1}{6} \)-cups are used to cook rice each day at the restaurant.

47. A gift store owner used 9 rolls of wrapping paper to wrap his customers’ gifts last week. Each roll was \( 66\frac{1}{2} \) in. long. How many gifts did he wrap if a \( 9\frac{1}{2} \) in. long piece of wrapping paper was used to wrap each gift?

Matching

*Match each vocabulary term with its definition.*

- a. opposite
- b. reciprocal
- c. ratio
- d. compatible numbers
- e. mixed numbers

48. one of two numbers whose product is 1

- a. opposite
- b. integers
- c. absolute value
- d. multiple
- e. mixed number
- f. prime number
- g. composite number

49. a number made up of a whole number that is not zero and a fraction

- a. equivalent fractions
- b. improper fraction
- c. nonterminating decimal
- d. rational number
- e. terminating decimal
- f. mixed number
- g. repeating decimal

50. fractions that name the same value

51. a fraction in which the numerator is greater than or equal to the denominator

52. a decimal number that comes to an end

53. a decimal in which one or more digits repeat infinitely

54. any number that can be expressed as a ratio of two integers
Short Answer

55. If \( \frac{3}{7} \) of a pizza is eaten for lunch and \( \frac{2}{5} \) is eaten for dinner, how much of the pizza is eaten?

56. If \( 3\frac{2}{3} \) inches of string is cut from a piece that is \( 5\frac{3}{5} \) inches long, how much is left?

57. To make her favorite chocolate cake, Mrs. Green uses \( \frac{3}{5} \) cup of sugar. If she makes 6 of these cakes to give to the neighbors as holiday gifts, she needs \( \frac{18}{4} \) cups of sugar. Express \( \frac{18}{4} \) as a mixed number in simplest form.

58. Benjamin has read \( 5 \) out of the 12 books he is required to read for his literature class. What portion of the books has he read? Write your answer as a decimal. Round to the nearest hundredth.

59. Consider the numbers 5\( \frac{2}{5} \), 5.2, 5.02, 5\( \frac{1}{4} \), and 5.333.
   a. Order the numbers from least to greatest.
   b. Write each of the fractions as a decimal, and each of the decimals as a fraction in simplest form.

60. A 12\( \frac{1}{2} \)-ounce ice cream sundae is \( \frac{3}{4} \) ice cream. How many ounces of ice cream does the sundae contain?

61. A pitcher can hold 1\( \frac{2}{8} \) pints of juice.
   a. How many \( \frac{2}{5} \) pint glasses can the pitcher fill? Show your work.
   b. How many \( \frac{1}{4} \) pint glasses can the pitcher fill? Show your work.

Essay

62. Is the estimate of 11 greater than or less than the actual sum of 5\( \frac{1}{4} \) and 6\( \frac{3}{16} \)? Explain.

63. Can one cake be split into portions of \( \frac{1}{3} \), \( \frac{3}{5} \), and \( \frac{4}{15} \)? Why or why not?

64. Explain the process of comparing two fractions. Use \( \frac{7}{5} \) and \( \frac{11}{9} \) as an example.

65. What is a rational number? Is each of the following numbers rational or irrational? Explain why.
   \( -6, \pi, 0, 0.\overline{2}, \frac{-7}{3}, \sqrt{6}, \frac{5}{6} \)

66. Explain how to find the product of mixed numbers. Give an example with your explanation.
Fractions
Answer Section

MULTIPLE CHOICE

1. ANS: D
Use these benchmarks to help you round fractions.
Round the fraction to 0 if the numerator is much smaller than the denominator.
Round the fraction to \( \frac{1}{2} \) if the numerator is about half the denominator.
Round the fraction to 1 if the numerator is nearly equal to the denominator.

Round the mixed number, and then subtract.
\[ 13 - \frac{2}{3} = 2 \frac{1}{2} \]

The distance from Belmont to Carson is about \( 2 \frac{1}{2} \) miles.

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<th>Feedback</th>
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PTS: 1  DIF: Average  REF: Page 180  OBJ: 3-7.1 Application  NAT: 8.1.3.g  TOP: 3-7 Estimate with Fractions  KEY: difference | fraction | estimate

2. ANS: A
Use these benchmarks to help you round fractions.
Round the fraction to 0 if the numerator is much smaller than the denominator.
Round the fraction to \( \frac{1}{2} \) if the numerator is about half the denominator.
Round the fraction to 1 if the numerator is nearly equal to the denominator.

Round each mixed number, and then subtract.
\[ -1 \frac{1}{10} - 1 \frac{1}{11} = -2 \frac{1}{2} \]

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PTS: 1  DIF: Average  REF: Page 181  OBJ: 3-7.2 Estimating Sums and Differences  NAT: 8.1.3.a  TOP: 3-7 Estimate with Fractions  KEY: difference | fraction | estimate | sum
3. ANS: A
Round each mixed number to the nearest whole number, and then multiply.
If the fraction in the mixed number is greater than or equal to $\frac{1}{2}$, round the mixed number up to the next whole number. If the fraction is less than $\frac{1}{2}$, round down to a whole number by dropping the fraction.

$3\frac{2}{3} \cdot 2\frac{1}{13} = 4 \cdot 3 = 12$

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<tr>
<td>A Correct!</td>
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<tr>
<td>B If the fraction in a mixed number is greater than or equal to 1/2, round the mixed number up to the next whole number.</td>
<td></td>
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<tr>
<td>C Round each mixed number to the nearest whole number, and then multiply.</td>
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<tr>
<td>D If the fraction in a mixed number is less than 1/2, round down to a whole number by dropping the fraction.</td>
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PTS: 1    DIF: Average    REF: Page 181
OBJ: 3-7.3 Estimating Products and Quotients    NAT: 8.1.3.a
TOP: 3-7 Estimate with Fractions

4. ANS: D
Add the numerators and keep the common denominator.

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<tbody>
<tr>
<td>A Perform the correct operation.</td>
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<td>B Check the signs.</td>
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<tr>
<td>C The fractions have like denominators, so keep the common denominator.</td>
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<tr>
<td>D Correct!</td>
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</table>

PTS: 1    DIF: Basic    REF: Page 186
OBJ: 3-8.1 Adding and Subtracting Fractions with Like Denominators
NAT: 8.1.3.a    TOP: 3-8 Adding and Subtracting Fractions
KEY: addition | fraction | like denominators | subtraction
5. ANS: B
\[
\frac{3}{8} + \frac{4}{7} = \frac{21}{56} + \frac{32}{56} = \frac{53}{56}
\]
Multiply the denominators. Write equivalent fractions using a common denominator.
Add. If necessary, simplify.

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<tbody>
<tr>
<td>A</td>
<td>Perform the correct operation.</td>
</tr>
<tr>
<td>B</td>
<td>Correct!</td>
</tr>
<tr>
<td>C</td>
<td>Check the signs.</td>
</tr>
<tr>
<td>D</td>
<td>The fractions have different denominators, so multiply the denominators to find a common denominator.</td>
</tr>
</tbody>
</table>

PTS: 1  DIF: Average  REF: Page 187  OBJ: 3-8.2 Adding and Subtracting Fractions with Unlike Denominators  NAT: 8.1.3.a  TOP: 3-8 Adding and Subtracting Fractions  KEY: addition | fraction | subtraction | unlike denominators

6. ANS: C
\[
\frac{4}{7} - \frac{1}{8} = \frac{32}{56} - \frac{7}{56} = \frac{25}{56}
\]
Multiply the denominators. Write equivalent fractions using a common denominator.
Subtract. If necessary, simplify.

The first carpenter is \(\frac{25}{56}\) of the way ahead of the second carpenter.

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<tbody>
<tr>
<td>A</td>
<td>The fractions have different denominators, so multiply the denominators to find a common denominator.</td>
</tr>
<tr>
<td>B</td>
<td>Check your calculations.</td>
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<tr>
<td>C</td>
<td>Correct!</td>
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<tr>
<td>D</td>
<td>Use subtraction.</td>
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</table>

PTS: 1  DIF: Average  REF: Page 187  OBJ: 3-8.3 Application  NAT: 8.1.3.g  TOP: 3-8 Adding and Subtracting Fractions  KEY: addition | fraction | subtraction
7. ANS: C
First find a common denominator, and then add. If necessary, simplify.

The wall is \( \frac{34}{45} \) covered by bookcases.

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PTS: 1  DIF: Average  REF: Page 187  OBJ: 3-8.3 Application  
NAT: 8.1.3.g  TOP: 3-8 Adding and Subtracting Fractions  
KEY: addition | fraction | subtraction

8. ANS: D
To add mixed numbers, first find a common denominator. Then, add the integers, and add the fractions. If necessary, simplify.

The stack is \( 5\frac{11}{21} \) feet high.

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PTS: 1  DIF: Average  REF: Page 190  OBJ: 3-9.1 Application  
NAT: 8.1.3.g  TOP: 3-9 Adding and Subtracting Mixed Numbers  
KEY: addition | mixed number | subtraction
9. **ANS:** B
To subtract mixed numbers, first find a common denominator. Then, subtract the integers, and subtract the fractions. If necessary, simplify.

The plant grew \( \frac{1}{30} \) cm.

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<td>D</td>
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**PTS:** 1  **DIF:** Average  **REF:** Page 190  **OBJ:** 3-9.1 Application
**NAT:** 8.1.3.g  **TOP:** 3-9 Adding and Subtracting Mixed Numbers
**KEY:** addition | mixed number | subtraction

10. **ANS:** D
To add mixed numbers, first find a common denominator. Then, add the integers, and add the fractions. If necessary, simplify.

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<td>D</td>
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</table>

**PTS:** 1  **DIF:** Average  **REF:** Page 190  **OBJ:** 3-9.2 Adding Mixed Numbers
**NAT:** 8.1.3.a  **TOP:** 3-9 Adding and Subtracting Mixed Numbers
**KEY:** addition | mixed number

11. **ANS:** D
To subtract mixed numbers, first find a common denominator. Then, subtract the integers, and subtract the fractions. If necessary, regroup and/or simplify.

<table>
<thead>
<tr>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
<tr>
<td>B</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>D</td>
</tr>
</tbody>
</table>

**PTS:** 1  **DIF:** Average  **REF:** Page 191  **OBJ:** 3-9.3 Subtracting Mixed Numbers
**NAT:** 8.1.3.a  **TOP:** 3-9 Adding and Subtracting Mixed Numbers
**KEY:** mixed number | subtraction
12. ANS: B

\[ n - (5 \frac{3}{2} + 3 \frac{1}{7}) \]

Write the expression.

\[ = n - (5 \frac{6}{10} + 3 \frac{5}{10}) \]

Find a common denominator.

\[ = n - (8 + \frac{11}{10}) \]

Add the integers and then the fractions.

\[ = n - (8 + 1 \frac{1}{10}) \]

Rewrite the improper fraction as a mixed number.

\[ = n - 9 \frac{1}{10} \]

Add.

Feedback

<table>
<thead>
<tr>
<th>Feedback</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Add the amounts of sugar used, and then subtract from the amount of sugar in the stock.</td>
</tr>
<tr>
<td>B</td>
<td>Correct!</td>
</tr>
<tr>
<td>C</td>
<td>Subtract the amount of sugar that was used from the amount of sugar in the stock.</td>
</tr>
<tr>
<td>D</td>
<td>After writing the improper fraction as a mixed number, you should add 1 to the integers.</td>
</tr>
</tbody>
</table>

PTS: 1   DIF: Advanced   NAT: 8.5.3.a   TOP: 3-9 Adding and Subtracting Mixed Numbers

13. ANS: B

Multiply or divide the numerator and denominator by the same nonzero number.

Feedback

<table>
<thead>
<tr>
<th>Feedback</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Make sure that both fractions are equivalent to the given fraction.</td>
</tr>
<tr>
<td>B</td>
<td>Correct!</td>
</tr>
<tr>
<td>C</td>
<td>To find an equivalent fraction, multiply or divide the numerator and denominator by the same nonzero number.</td>
</tr>
<tr>
<td>D</td>
<td>To find an equivalent fraction, multiply or divide the numerator and denominator by the same nonzero number.</td>
</tr>
</tbody>
</table>

PTS: 1   DIF: Basic   REF: Page 120   OBJ: 2-9.1 Finding Equivalent Fractions   NAT: 8.1.1.e   TOP: 2-9 Equivalent Fractions and Mixed Numbers   KEY: equivalent fraction
14. ANS: D
Find the GCF of 21 and 24. Divide the numerator and denominator by the GCF, 3.

\[
\frac{21}{24} = \frac{21 \div 3}{24 \div 3} = \frac{7}{8}
\]

Feedback

A  This is the reciprocal of the fraction which is not an equivalent fraction.
B  A fraction is in simplest form when the GCF of its numerator and denominator is 1.
C  First, find the GCF of the numerator and denominator. Then, divide the numerator and denominator by the GCF.
D  Correct!

PTS: 1   DIF: Average   REF: Page 120
OBJ: 2-9.2 Writing Fractions in Simplest Form   NAT: 8.1.1.e
TOP: 2-9 Equivalent Fractions and Mixed Numbers   KEY: equivalent \| fraction

15. ANS: A
Find a common denominator and compare the numerators. If both fractions can be written with a common denominator and the numerators are equal, then the fractions are equivalent.

Feedback

A  Correct!
B  Find a common denominator and compare the numerators.

PTS: 1   DIF: Average   REF: Page 121
OBJ: 2-9.3 Determining Whether Fractions Are Equivalent   NAT: 8.1.1.e
TOP: 2-9 Equivalent Fractions and Mixed Numbers   KEY: equivalent \| fraction

16. ANS: B
Divide the numerator by the denominator. Use the quotient and the remainder to write the mixed number.

Feedback

A  Divide the numerator by the denominator. Use the quotient as the whole number, and put the remainder over the denominator.
B  Correct!
C  Divide the numerator by the denominator. Use the quotient as the whole number, and put the remainder over the denominator.
D  Divide the numerator by the denominator. Use the quotient as the whole number, and put the remainder over the denominator.

PTS: 1   DIF: Average   REF: Page 121
OBJ: 2-9.4 Converting Between Improper Fractions and Mixed Numbers
NAT: 8.1.1.e   TOP: 2-9 Equivalent Fractions and Mixed Numbers   KEY: convert \| improper fraction \| mixed number
17. **ANS: C**
Multiply the denominator and the whole number, and then add the numerator. Write the result over the denominator.

<table>
<thead>
<tr>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Multiply the denominator and the whole number, and then add the numerator. Put this result over the original denominator.</td>
</tr>
<tr>
<td>B Multiply the denominator and the whole number, and then add the numerator. Put this result over the original denominator.</td>
</tr>
<tr>
<td>C Correct!</td>
</tr>
<tr>
<td>D Multiply the denominator and the whole number, and then add the numerator. Put this result over the original denominator.</td>
</tr>
</tbody>
</table>

**PTS: 1**  **DIF: Average**  **REF: Page 121**

**OBJ: 2-9.4 Converting Between Improper Fractions and Mixed Numbers**

**NAT: 8.1.1.e**  **TOP: 2-9 Equivalent Fractions and Mixed Numbers**

**KEY: convert | improper fraction | mixed number**

18. **ANS: B**
Write the improper fraction as a mixed number.
\[ \frac{5}{3} = 1 \frac{2}{3} \]

Compare the mixed numbers.
\[ 1 \frac{2}{3} = 1 \frac{2}{3} \]

Yes, the sisters practice piano for the same amount of time.

<table>
<thead>
<tr>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Write the improper fraction as a mixed number and compare.</td>
</tr>
<tr>
<td>B Correct!</td>
</tr>
</tbody>
</table>

**PTS: 1**  **DIF: Advanced**  **REF: Page 121**

**OBJ: 2-9.4 Converting Between Improper Fractions and Mixed Numbers**

**NAT: 8.1.1.i**  **TOP: 2-9 Equivalent Fractions and Mixed Numbers**

**KEY: convert | improper fraction | mixed number**

19. **ANS: B**
To write a fraction as a decimal, divide the numerator by the denominator.

<table>
<thead>
<tr>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Divide the numerator by the denominator.</td>
</tr>
<tr>
<td>B Correct!</td>
</tr>
<tr>
<td>C Divide the numerator by the denominator.</td>
</tr>
<tr>
<td>D Check your calculations.</td>
</tr>
</tbody>
</table>

**PTS: 1**  **DIF: Average**  **REF: Page 124**

**OBJ: 2-10.1 Writing Fractions as Decimals**

**NAT: 8.1.1.e**  **TOP: 2-10 Equivalent Fractions and Decimals**

**KEY: convert | decimal | fraction | rational number**
20. **ANS: B**

Multiply to get a power of 10 in the denominator.

\[
\frac{9}{50} \cdot \frac{2}{2} = \frac{18}{100}
\]

<table>
<thead>
<tr>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong> Multiply to get a power of 10 in the denominator.</td>
</tr>
<tr>
<td><strong>B</strong> Correct!</td>
</tr>
<tr>
<td><strong>C</strong> Use mental math.</td>
</tr>
<tr>
<td><strong>D</strong> Divide the numerator by the denominator.</td>
</tr>
</tbody>
</table>

**PTS:** 1  **DIF:** Average  **REF:** Page 125  
**OBJ:** 2-10.2 Using Mental Math to Write Fractions as Decimals  
**NAT:** 8.1.1.e  **TOP:** 2-10 Equivalent Fractions and Decimals  
**KEY:** convert | decimal | fraction | rational number

21. **ANS: D**

Use the place value of the last digit to the right of the decimal point as the denominator of the fraction.

<table>
<thead>
<tr>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong> Use the place value of the last digit to the right of the decimal point as the denominator of the fraction.</td>
</tr>
<tr>
<td><strong>B</strong> Use the place value of the last digit to the right of the decimal point as the denominator of the fraction.</td>
</tr>
<tr>
<td><strong>C</strong> The decimal is less than 1, so the answer should be a fraction, not a mixed number.</td>
</tr>
<tr>
<td><strong>D</strong> Correct!</td>
</tr>
</tbody>
</table>

**PTS:** 1  **DIF:** Basic  **REF:** Page 125  
**OBJ:** 2-10.3 Writing Decimals as Fractions  
**NAT:** 8.1.1.e  **TOP:** 2-10 Equivalent Fractions and Decimals  
**KEY:** decimal | fraction | mixed number

22. **ANS: C**

Use the place value of the last digit to the right of the decimal point as the denominator of the fraction.

<table>
<thead>
<tr>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong> The decimal is greater than 1, so the answer should be a mixed number.</td>
</tr>
<tr>
<td><strong>B</strong> If there is a number to the left of the decimal, write that number as the whole number. Write the decimal part as a fraction over 100, and simplify.</td>
</tr>
<tr>
<td><strong>C</strong> Correct!</td>
</tr>
<tr>
<td><strong>D</strong> Write the number to the left of the decimal as the whole number.</td>
</tr>
</tbody>
</table>

**PTS:** 1  **DIF:** Average  **REF:** Page 125  
**OBJ:** 2-10.3 Writing Decimals as Fractions  
**NAT:** 8.1.1.e  **TOP:** 2-10 Equivalent Fractions and Decimals  
**KEY:** decimal | fraction | mixed number
23. ANS: A
Divide the number of questions in the game by the number correctly answered on the first try.

<table>
<thead>
<tr>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Correct!</td>
</tr>
<tr>
<td>B Use a calculator to help you.</td>
</tr>
<tr>
<td>C Divide the number of questions in the game by the number correctly answered on the first try.</td>
</tr>
<tr>
<td>D Divide the number of questions in the game by the number correctly answered on the first try.</td>
</tr>
</tbody>
</table>

PTS: 1  DIF: Average  REF: Page 125  OBJ: 2-10.4 Application
NAT: 8.1.1.e  TOP: 2-10 Equivalent Fractions and Decimals
KEY: convert | decimal | fraction | rational number

24. ANS: A
Use long division. Divide the numerator by the denominator.

\[
\begin{array}{c|c}
3.16 & 57 \\
\hline
18 & \\
\end{array}
\]

<table>
<thead>
<tr>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Correct!</td>
</tr>
<tr>
<td>B To write a fraction as a decimal, divide the numerator by the denominator.</td>
</tr>
<tr>
<td>C Multiply your answer by the denominator and compare it to the numerator.</td>
</tr>
<tr>
<td>D Check your division.</td>
</tr>
</tbody>
</table>

PTS: 1  DIF: Advanced  NAT: 8.1.1.d
TOP: 2-10 Equivalent Fractions and Decimals

25. ANS: A
If the fractions have different signs, the negative fraction is less than the positive fraction. When both fractions have the same sign, write them with a common denominator. Then, compare the numerators to determine which fraction is greater.

<table>
<thead>
<tr>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Correct!</td>
</tr>
<tr>
<td>B To compare fractions with unlike denominators, first write equivalent fractions with a common denominator. Then, compare the numerators.</td>
</tr>
</tbody>
</table>

PTS: 1  DIF: Basic  REF: Page 128  OBJ: 2-11.1 Comparing Fractions
NAT: 8.1.1.i  TOP: 2-11 Comparing and Ordering Rational Numbers
KEY: compare | fraction
26. **ANS: A**

Line up the decimal points.

Compare the tenths place. If the tenths are the same, then compare the hundredths place.

\[0.22 < 0.79.\]

**Feedback**

<table>
<thead>
<tr>
<th>A</th>
<th>Correct!</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Line up the decimal points and compare the digits from left to right.</td>
</tr>
</tbody>
</table>

**PTS:** 1  **DIF:** Average  **REF:** Page 129  **OBJ:** 2-11.2 Comparing Decimals  
**NAT:** 8.1.1.i  **TOP:** 2-11 Comparing and Ordering Rational Numbers

27. **ANS: D**

Write all of the numbers as decimals with the same number of places. Then, compare the decimals.

**Feedback**

<table>
<thead>
<tr>
<th>A</th>
<th>Use a number line to help you.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Write all of the numbers as decimals with the same number of places. Then, compare the decimals.</td>
</tr>
<tr>
<td>C</td>
<td>Order the numbers from least to greatest, not greatest to least.</td>
</tr>
<tr>
<td>D</td>
<td>Correct!</td>
</tr>
</tbody>
</table>

**PTS:** 1  **DIF:** Average  **REF:** Page 129  
**OBJ:** 2-11.3 Ordering Fractions and Decimals  
**NAT:** 8.1.1.i  **TOP:** 2-11 Comparing and Ordering Rational Numbers  
**KEY:** compare | decimal | fraction | order

28. **ANS: C**

**Step 1** Write each fraction as a decimal.

\[
\frac{3}{8} = 0.375 \quad \frac{1}{4} = 0.250 \quad \frac{1}{5} = 0.200 \quad \frac{3}{10} = 0.300
\]

**Step 2** Find the difference between the success rates of the two sessions for each player.

- **Ethan** \[0.420 - 0.375 = 0.045\]
- **Rita** \[0.310 - 0.250 = 0.060\]
- **Naomi** \[0.270 - 0.200 = 0.070\]
- **Jake** \[0.325 - 0.300 = 0.025\]

Naomi had the greatest difference in success rate.

**Feedback**

<table>
<thead>
<tr>
<th>A</th>
<th>Write each fraction as a decimal. Then find the difference between the success rates of the two sessions for each player.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Write each fraction as a decimal. Then find the difference between the success rates of the two sessions for each player.</td>
</tr>
<tr>
<td>C</td>
<td>Correct!</td>
</tr>
<tr>
<td>D</td>
<td>Write each fraction as a decimal. Then find the difference between the success rates of the two sessions for each player.</td>
</tr>
</tbody>
</table>

**PTS:** 1  **DIF:** Advanced  **NAT:** 8.1.1.i  
**TOP:** 2-11 Comparing and Ordering Rational Numbers  
**KEY:** multi-step
29. **ANS: B**

Multiply the fare in 2001 by the fraction. Write the result as a decimal.

<table>
<thead>
<tr>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>A To write a fraction as a decimal, divide the numerator by the denominator.</td>
</tr>
<tr>
<td>B Correct!</td>
</tr>
<tr>
<td>C Check whether the fare in 1975 is less than or greater than the fare in 2001.</td>
</tr>
<tr>
<td>D Multiply the fare in 2001 by the fraction. Write the result as a decimal.</td>
</tr>
</tbody>
</table>

**PTS: 1**  
**DIF: Average**  
**REF: Page 196**  
**OBJ: 3-10.1 Application**  
**NAT: 8.1.3.g**  
**TOP: 3-10 Multiplying Fractions and Mixed Numbers**  
**KEY: fraction | multiplication**

30. **ANS: B**

Multiply the current cost by the fraction. Write the result as a decimal.

<table>
<thead>
<tr>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>A To write a fraction as a decimal, divide the numerator by the denominator.</td>
</tr>
<tr>
<td>B Correct!</td>
</tr>
<tr>
<td>C Check whether the current cost is less than or greater than the cost in 8 months.</td>
</tr>
<tr>
<td>D Multiply the current cost by the fraction. Write the result as a decimal.</td>
</tr>
</tbody>
</table>

**PTS: 1**  
**DIF: Average**  
**REF: Page 196**  
**OBJ: 3-10.1 Application**  
**NAT: 8.1.3.g**  
**TOP: 3-10 Multiplying Fractions and Mixed Numbers**  
**KEY: fraction | multiplication**

31. **ANS: D**

Write $-3$ as a fraction with a denominator of 1. Then, multiply the numerators and multiply the denominators. If necessary, simplify.

$$\frac{-3}{1} \cdot \frac{1}{4} = \frac{-3}{4}$$

<table>
<thead>
<tr>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Perform the correct operation.</td>
</tr>
<tr>
<td>B Check the signs.</td>
</tr>
<tr>
<td>C First, write the integer as a fraction with a denominator of 1. Then, multiply the numerators and multiply the denominators.</td>
</tr>
<tr>
<td>D Correct!</td>
</tr>
</tbody>
</table>

**PTS: 1**  
**DIF: Average**  
**REF: Page 196**  
**OBJ: 3-10.2 Multiplying Fractions**  
**NAT: 8.1.3.a**  
**TOP: 3-10 Multiplying Fractions and Mixed Numbers**  
**KEY: fraction | multiplication**
32. ANS: A
Multiply the numerators and multiply the denominators. If necessary, simplify.
\[-\frac{7}{9} \cdot \frac{1}{2} = \frac{7}{18}\]

Feedback
A Correct!
B Perform the correct operation.
C Multiply the numerators and multiply the denominators.
D Multiply the numerators and multiply the denominators.

PTS: 1 DIF: Average REF: Page 196 OBJ: 3-10.2 Multiplying Fractions
NAT: 8.1.3.a TOP: 3-10 Multiplying Fractions and Mixed Numbers
KEY: fraction | multiplication

33. ANS: B
Write any mixed numbers as improper fractions. Then, multiply the numerators and multiply the denominators. If necessary, simplify.
\[\frac{3\frac{2}{7}}{\frac{5}{8}} = \frac{25}{56}\]

Feedback
A Write any mixed numbers as improper fractions. Then, multiply the numerators and multiply the denominators.
B Correct!
C Write any mixed numbers as improper fractions. Then, multiply the numerators and multiply the denominators.
D Write any mixed numbers as improper fractions. Then, multiply the numerators and multiply the denominators.

PTS: 1 DIF: Average REF: Page 197 OBJ: 3-10.3 Multiplying Mixed Numbers
NAT: 8.1.3.a TOP: 3-10 Multiplying Fractions and Mixed Numbers
KEY: mixed number | multiplication
34. ANS: C

\[ 2 \cdot \frac{6}{3} \]

\[ = \frac{2}{1} \cdot \frac{19}{3} \]

Rewrite the mixed number as an improper fraction.

\[ = \frac{38}{3} \]

Multiply.

\[ = 12\frac{2}{3} \]

Rewrite the improper fraction as a mixed number.

Feedback

A Rewrite the mixed number as an improper fraction, and then multiply.
B Check your answer.
C Correct!
D Multiply, not add.

PTS: 1 DIF: Advanced NAT: 8.1.3.a TOP: 3-10 Multiplying Fractions and Mixed Numbers

35. ANS: A

Multiply \( \frac{3}{10} \) by the reciprocal of \( \frac{13}{14} \). If necessary, simplify.

\[ \frac{3}{10} \div \frac{13}{14} = \frac{3}{10} \cdot \frac{14}{13} = \frac{21}{65} \]

Feedback

A Correct!
B Multiply the first fraction by the reciprocal of the second fraction.
C Multiply the first fraction by the reciprocal of the second fraction.
D Perform the correct operation.

PTS: 1 DIF: Basic REF: Page 200 OBJ: 3-11.1 Dividing Fractions NAT: 8.1.3.a TOP: 3-11 Dividing Fractions and Mixed Numbers KEY: division | fraction

36. ANS: A

Write any mixed numbers as improper fractions. Multiply the first fraction by the reciprocal of the second fraction. If necessary, simplify.

Feedback

A Correct!
B Dividing by a fraction is equivalent to multiplying by its reciprocal.
C Perform the correct operation.
D First, write any mixed numbers as improper fractions. Then, multiply the first fraction by the reciprocal of the second fraction.

PTS: 1 DIF: Average REF: Page 200 OBJ: 3-11.2 Dividing Mixed Numbers NAT: 8.1.3.a TOP: 3-11 Dividing Fractions and Mixed Numbers KEY: division | mixed number
37. ANS: D
Write any mixed numbers as improper fractions. Then, multiply by the reciprocal. If necessary, simplify.
\[
1\frac{7}{8} \div \frac{3}{8} = \frac{15}{8} \cdot \frac{8}{3} = 55
\]

You can cut 5 pieces of wood.

<table>
<thead>
<tr>
<th>Feedback</th>
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<tbody>
<tr>
<td>A</td>
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<tr>
<td>B</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>D</td>
</tr>
</tbody>
</table>

PTS: 1 DIF: Average REF: Page 201 OBJ: 3-11.3 Application
NAT: 8.1.3.g TOP: 3-11 Dividing Fractions and Mixed Numbers
KEY: division | fraction | mixed number

38. ANS: B
Isolate the variable by performing the opposite operation.

<table>
<thead>
<tr>
<th>Feedback</th>
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<tbody>
<tr>
<td>A</td>
</tr>
<tr>
<td>B</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>D</td>
</tr>
</tbody>
</table>

PTS: 1 DIF: Average REF: Page 204
OBJ: 3-12.1 Solving Equations by Adding and Subtracting
NAT: 8.5.4.a
TOP: 3-12 Solving Equations Containing Fractions
KEY: addition | equation | fraction | solving | subtraction
39. ANS: C
\[ \frac{2}{9}t = \frac{2}{3} \]
\[ \frac{2}{9}t \div \frac{2}{9} = \frac{2}{3} \div \frac{2}{9} \]
Divide by \(\frac{2}{9}\) to undo the multiplication.
\[ t = \frac{2}{3} \cdot \frac{9}{2} \]
Multiply by the reciprocal.
\[ t = -3 \]
Simplify.

Feedback
A. Divide to undo the multiplication.
B. Dividing by a fraction is equivalent to multiplying by its reciprocal.
C. Correct!
D. Divide to undo the multiplication.

PTS: 1 DIF: Average REF: Page 205
OBJ: 3-12.2 Solving Equations by Multiplying NAT: 8.5.4.a
TOP: 3-12 Solving Equations Containing Fractions
KEY: equation | fraction | multiplication | solving

40. ANS: D
\[
\frac{1}{2}f = 10
\]
\[ (2) \frac{1}{2}f = 10(2) \]
Multiply by the reciprocal to isolate \(f\).
\[ f = 20 \]
There are a total of 20 fish in the tank.

Feedback
A. Dividing by a number is the same as multiplying by its reciprocal.
B. Set up an equation and solve for the variable.
C. Dividing by a number is the same as multiplying by its reciprocal.
D. Correct!

PTS: 1 DIF: Average REF: Page 205 OBJ: 3-12.3 Application
NAT: 8.1.3.g TOP: 3-12 Solving Equations Containing Fractions
KEY: fraction | multiplication | division | equation | problem solving
41. ANS: D

Let \( x \) represent the new temperature.

\[
x - \frac{6^2}{7} = 21\frac{1}{4}
\]

Add to isolate \( x \).

\[
x - \frac{6^2}{7} + \frac{6^2}{7} = 21\frac{1}{4} + \frac{6^2}{7}
\]

Find a common denominator. Subtract. If necessary, simplify.

\[
x = 21\frac{1}{4} + \frac{6^2}{7}
x = 27\frac{15}{28}
\]

The new temperature is \(27\frac{15}{28} \text{°C} \).
42. ANS: D

\[
\frac{\text{weight of the ant}}{\text{weight the ant can carry}} = \text{factor by which the ant can carry}
\]

\[
\frac{4\frac{7}{8}}{x} = 28\frac{3}{4}
\]

\[
4\frac{7}{8} \div x = 28\frac{3}{4}
\]

\[
(4\frac{7}{8})(4\frac{7}{8} \div x) = 28\frac{3}{4}(4\frac{7}{8})
\]

Multiply to isolate \(x\).

\[
x = 28\frac{3}{4}(4\frac{7}{8})
\]

\[
x = \frac{115}{4}(\frac{39}{8})
\]

\[
x = \frac{4485}{32} = 140\frac{5}{32}
\]

Simplify.

The ant can carry 140\(\frac{5}{32}\) mg.

**Feedback**

A. The fractions have different denominators, so multiply the denominators to find a common denominator.

B. Set up an equation and solve.

C. Check your calculations.

D. Correct!

PTS: 1  DIF: Advanced  NAT: 8.1.3.a  TOP: 3-12 Solving Equations Containing Fractions  KEY: addition | equation | fraction | multiplication | solving

**NUMERIC RESPONSE**

43. ANS: $270

PTS: 1  DIF: Advanced  NAT: 8.1.2.b  TOP: 3-7 Estimate with Fractions

44. ANS: \(\frac{13}{20}\)

PTS: 1  DIF: Advanced  NAT: 8.1.3.a  TOP: 3-8 Adding and Subtracting Fractions

45. ANS: \(\frac{1}{4}\)

PTS: 1  DIF: Average  REF: Page 120  OBJ: 2-9.2 Writing Fractions in Simplest Form  NAT: 8.1.1.d  TOP: 2-9 Equivalent Fractions and Mixed Numbers

46. ANS: \(\frac{284}{6}\)

PTS: 1  DIF: Advanced  NAT: 8.1.1.d  TOP: 2-9 Equivalent Fractions and Mixed Numbers
47. **ANS:** 63  
**PTS:** 1  **DIF:** Advanced  **NAT:** 8.1.3.a  
**TOP:** 3-11 Dividing Fractions and Mixed Numbers  **KEY:** multi-step

**MATCHING**

48. **ANS:** B  **PTS:** 1  **DIF:** Basic  **REF:** Page 200  
**TOP:** 3-9 Adding and Subtracting Mixed Numbers  **KEY:** division | fraction

49. **ANS:** E  **PTS:** 1  **DIF:** Basic  **REF:** Page 121  
**TOP:** 2-9 Equivalent Fractions and Mixed Numbers  **KEY:** convert | improper fraction | mixed number

50. **ANS:** A  **PTS:** 1  **DIF:** Basic  **REF:** Page 120  
**TOP:** 2-9 Equivalent Fractions and Mixed Numbers  **KEY:** equivalent | fraction

51. **ANS:** B  **PTS:** 1  **DIF:** Basic  **REF:** Page 121  
**TOP:** 2-9 Equivalent Fractions and Mixed Numbers  **KEY:** convert | improper fraction | mixed number

52. **ANS:** E  **PTS:** 1  **DIF:** Basic  **REF:** Page 124  
**TOP:** 2-10 Equivalent Fractions and Decimals  **KEY:** convert | decimal | fraction | rational number

53. **ANS:** G  **PTS:** 1  **DIF:** Basic  **REF:** Page 124  
**TOP:** 2-10 Equivalent Fractions and Decimals

54. **ANS:** D  **PTS:** 1  **DIF:** Basic  **REF:** Page 129  
**TOP:** 2-11 Comparing and Ordering Rational Numbers  **KEY:** convert | decimal | fraction | rational number
SHORT ANSWER

55. ANS:
\[ \frac{29}{35} \text{ of the pizza} \]
\[ \frac{3}{7} + \frac{2}{5} = \frac{15}{35} + \frac{14}{35} \]
\[ = \frac{29}{35} \]

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| or    | A different logical method is used to find the correct solution. |
| 3     | The solution is correct, but not all of the work is shown. |
| 2     | The solution is incorrect, but the work shows understanding of the concept. |
| 1     | The solution is incorrect, and the work shows no understanding of the concept. |

PTS: 1  DIF: Average  REF: Page 187  OBJ: 3-8.3 Application  
NAT: 8.1.3.a  TOP: 3-8 Adding and Subtracting Fractions  
KEY: addition | fraction

56. ANS:
\[ 1 \frac{14}{15} \text{ inches} \]
\[ 5 \frac{3}{5} - 3 \frac{2}{3} = 5 \frac{9}{15} - 3 \frac{10}{15} \]
\[ = 4 \frac{24}{15} - 3 \frac{10}{15} \]
\[ = 1 \frac{14}{15} \]

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PTS: 1  DIF: Average  NAT: 8.1.3.a  
TOP: 3-9 Adding and Subtracting Mixed Numbers  
KEY: mixed number | subtraction
57. ANS:
\[ 4 \frac{1}{2} \]

\[ \frac{18}{4} = \frac{9}{2} = 4 \frac{1}{2} \]

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PTS: 1  DIF: Average   OBJ: 2-9.PA05 Equivalent Fractions and Mixed Numbers<br>NAT: 8.1.1.d   TOP: 2-9 Equivalent Fractions and Mixed Numbers<br>KEY: convert | improper fraction | mixed number | Performance Assessment

58. ANS:
0.42

\[ \frac{5}{12} = 5 \div 12 = 0.42 \]

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PTS: 1  DIF: Average   OBJ: 2-10.PA06 Equivalent Fractions and Decimals<br>NAT: 8.1.1.e   TOP: 2-10 Equivalent Fractions and Decimals<br>KEY: convert | decimal | fraction | Performance Assessment
59. ANS:
   a. 5.02, 5.2, 5\frac{1}{4}, 5.333, and 5\frac{2}{5}

   b. 5\frac{2}{5} = 5.4
      5.2 = 5\frac{1}{5}
      5.02 = 5\frac{1}{50}
      5\frac{1}{4} = 5.25
      5.333 = 5\frac{1}{3}

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<tr>
<td>4</td>
<td>The solution is correct, and all of the work is shown as above. or A different logical method is used to find the correct solution.</td>
<td>5\frac{2}{5} = 5.4</td>
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<tr>
<td>3</td>
<td>Both solutions are correct, but not all of the work is shown.</td>
<td>5.2 = 5\frac{1}{5}</td>
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<td>2</td>
<td>The solution for part a is correct, but the solution for part b is incorrect. or The solution for part a is incorrect, but the work for part b is correct.</td>
<td>5.02 = 5\frac{1}{50}</td>
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<tr>
<td>1</td>
<td>Both solutions are incorrect, and the work shows no understanding of the concept.</td>
<td>5\frac{1}{4} = 5.25</td>
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PTS: 1 DIF: Average OBJ: 2-11.PA09 Comparing and Ordering Rational Numbers
NAT: 8.1.1.e TOP: 2-11 Comparing and Ordering Rational Numbers
KEY: compare | convert | decimal | fraction | order | Performance Assessment

60. ANS:
   9\frac{3}{8} ounces
   12\frac{1}{2} \times \frac{3}{4} = 9\frac{3}{8}

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<td>12\frac{1}{2} \times \frac{3}{4} = 9\frac{3}{8}</td>
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<td>5.2 = 5\frac{1}{5}</td>
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<td>5.02 = 5\frac{1}{50}</td>
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PTS: 1 DIF: Average NAT: 8.1.3.a
TOP: 3-10 Multiplying Fractions and Mixed Numbers
KEY: fraction | mixed number | multiplication
61. **ANS:**
   a. 4 glasses
   \[1 \frac{7}{8} \div \frac{2}{5} = 4 \frac{11}{16}\]
   The number of glasses that can be filled is 4, with \(\frac{11}{16}\) of a glass left over.
   
   b. 7 glasses
   \[1 \frac{7}{8} \div \frac{1}{4} = 7 \frac{1}{2}\]
   The number of glasses that can be filled is 7, with \(\frac{1}{2}\) of a glass left over.

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PTS: 1  DIF: Average  REF: Page 201  OBJ: 3-11.3 Application  
NAT: 8.1.3.a  TOP: 3-11 Dividing Fractions and Mixed Numbers  
KEY: division | fraction | mixed number

**ESSAY**

62. **ANS:**
Eleven is less than the actual sum. When estimating, both fractions are rounded down. Therefore, the actual sum should be greater than the estimate.

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PTS: 1  DIF: Average  TOP: 3-7 Estimate with Fractions  
KEY: estimate | mixed number | sum
63. ANS:
No. The sum of all the fractions is greater than 1.
\[
\frac{1}{3} + \frac{3}{9} + \frac{8}{15} = \frac{5}{15} + \frac{5}{15} + \frac{8}{15} = \frac{18}{15} = 1 \frac{1}{5}
\]
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PTS: 1 DIF: Average NAT: 8.1.3.a TOP: 3-8 Adding and Subtracting Fractions KEY: addition | fraction

64. ANS:
First you must write the fractions with common denominators. Then compare the numerators to tell which is greater. In this case, the least common denominator is 18; thus the fractions are \(\frac{21}{18}\) and \(\frac{22}{18}\). Since \(22 > 21\), \(\frac{22}{18}\), which is \(\frac{11}{9}\), is greater.

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PTS: 1 DIF: Average NAT: 8.1.1.i TOP: 2-9 Equivalent Fractions and Mixed Numbers KEY: compare | fraction | Performance Assessment
65. **ANS:**

Rational numbers are numbers that can be written as fractions with integers for numerators and denominators.

The following examples are rational: \(-6, 0, \frac{7}{3}, \frac{2}{3}, \) and \(\frac{5}{6}\).

The following examples are irrational: \(\pi\) and, \(\sqrt{6}\).

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PTS: 1 DIF: Average NAT: 8.1.1.b
TOP: 2-10 Equivalent Fractions and Decimals
KEY: irrational number | Performance Assessment | rational number

66. **ANS:**

To find the product of two mixed numbers, convert both fractions to improper fractions. Place the product of the numerators over the product of the denominators. Write the fraction in simplest form. For example:

\[2 \frac{1}{3} \times 4 \frac{2}{7} = \frac{7}{3} \times \frac{30}{7} = \frac{210}{21} = 10\]

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PTS: 1 DIF: Average NAT: 8.1.3.a
TOP: 3-10 Multiplying Fractions and Mixed Numbers
KEY: mixed number | multiplication
Fractions [Answer Strip]


A 23.  D 40.

B 5.  A 32.  D 41.


A 26.  

D 42.


B 16.
B 48.

E 49.

A 50.
B 51.
E 52.
G 53.
D 54.