Math Connections Worksheets

MAT0018C Developmental Math I

Chapter 6

Ratios, Rates, Proportions, and Percentages

Additional Exercises 6.1

Write each ratio as a ratio of whole numbers using fractional notation in simplest form.

1. 6 to 17 **1.** _____

2. 8 to 24 **2.** _____

3. $2\frac{1}{4}$ to $3\frac{3}{8}$ **3.** _____

4. 3.5 to 10 **4.** _____

5. 12 to 18 **5.** _____

6. 2.8 to 5.6 **6.** _____

7. 60 miles to 15 miles **7.** _____

8. 280 acres to 120 acres **8.** _____

9. 78 gallons to 86 gallons **9.** _____

10. \$85 to \$120 **10.** _____

11. 0.6 meters to 3 meters **11.** _____

A rectangular storage building is 20 feet long and 15 feet wide.

12. Find the ratio of the width to the length in simplest terms. **12.** _____

13. Find the ratio of the length to the perimeter of the building. **13.** _____

14. Find the ratio of the width to the perimeter of the building. **14.** _____

A math class has 18 women and 10 men.

15. Find the ratio of men to women. **15.** _____

16. Find the ratio of men to total students. **16.** _____

Write each rate as a unit rate.

17. 156 calories in 12 ounces **7.** _____

18. 434 miles in 7 hours **8.** _____

Find each unit price and decide which is a better buy.

19. Treated lumber: \$3.79 for an 8-foot board or \$6.18 for a 12-foot board. **19.** _____

20. 50 aspirin tablets for \$3.79 or 100 aspirin tablets for \$5.85. **20.** _____

Name: **Date:**
Instructor: **Section:**

Additional Exercises 6.2

Write each sentence as a proportion.

1. 3 eggs is to 6 cups of flour as 12 eggs is to 24 cups of flour. 1. _____
2. 0.5 meters is to 5 kilometers as 3 meters is to 30 kilometers. 2. _____
3. $\frac{1}{3}$ page is to 20 minutes as 1 page is to 60 minutes. 3. _____

Determine whether each proportion is a true proportion.

4. $\frac{15}{9}=\frac{5}{3}$ 4. _____

5. $\frac{7}{8}=\frac{42}{56}$ 5. _____

6. $\frac{3}{4}=\frac{12}{16}$ 6. _____

7. $\frac{7}{32}=\frac{1}{4}$ 7. _____

8. $\frac{4}{5}=\frac{28}{35}$ 8. _____

9. $\frac{\frac{1}{2}}{3}=\frac{1.5}{9}$ 9. _____

Additional Exercises 6.2 (cont.)

For each proportion, find the unknown number x.

10. $\frac{18}{30} = \frac{x}{15}$ **10.** _____

11. $\frac{5}{x} = \frac{7.5}{9}$ **11.** _____

12. $\frac{x}{30} = \frac{15}{25}$ **12.** _____

13. $\frac{16}{8} = \frac{6}{x}$ **13.** _____

14. $\frac{\frac{1}{2}}{\frac{1}{5}} = \frac{20}{x}$ **14.** _____

15. $\frac{5}{\frac{1}{6}} = \frac{\frac{6}{8}}{x}$ **15.** _____

16. $\frac{x}{20} = \frac{15}{25}$ **16.** _____

17. $\frac{1.5}{2.5} = \frac{x}{15}$ **17.** _____

18. $\frac{x}{16} = \frac{6}{4.8}$ **18.** _____

19. $\frac{x}{9} = \frac{1.2}{1.8}$ **19.** _____

20. $\frac{\frac{1}{5}}{8} = \frac{x}{15}$ **20.** _____

Name: **Date:**
Instructor: **Section:**

Additional Exercises 6.3

Solve.

Amanda's car averages 588 miles on a 21 gallon tank of gas.

1. How far can she drive on 6 gallons of gas? 1. _____

2. How many gallons of gas would she use on a 975 mile trip? Round to the nearest tenth. 2. _____

An 80-pound bag of ready to use concrete mix fills 8 cubic feet.

3. Joe needs 280 cubic feet of concrete, how many bags does he need? 3. _____

4. If Sue buys 10 bags, how many cubic feet will that fill? 4. _____

A animal shelter allows 150 square feet of yards space per dog.

5. Find the minimum yard space for 5 dogs. 5. _____

6. They plan to fence a rectangular area that is 30 by 10. Find the maximum number of dogs the new yard can accommodate. 6. _____

On a road map, 1 inch corresponds to 30 miles.

7. Find the distance represented by a line segment $2\frac{1}{4}$ inches long. 7. _____

8. If two cities are 150 miles apart, find the measurement on the map. 8. _____

Local sales tax is \$6.25 for every \$100 purchase.

9. If sales tax on a sofa is \$18.75, what was the purchase price of the sofa? 9. _____

10. Find the sales tax on a refrigerator priced at \$550. (Round to the nearest cent.) 10. _____

Additional Exercises 6.3 (cont.)

11. A survey revealed that 4 out of 5 people prefer vanilla ice cream to chocolate. In a class of 35, how many students are likely to prefer chocolate ice cream?

11. _____

12. Another survey indicated that 3 out of 5 people prefer water over iced tea. If 12 people in a room prefer water, how many people would most likely choose iced tea?

12. _____

13. If a family drinks 2 gallons of milk every 3 days, how many gallons of milk do they drink in a month (30 days)?

13. _____

12. If Cate, the family dog, eats 2 cups of dried dog food each day, how many cups are eaten each week?

14. _____

15. If Hilda can word process and spell check 5 pages in 30 minutes, how long will it take her to finish her research paper which is 25 pages long?

15. _____

16. If a recipe calls for $2\frac{1}{2}$ cups of sugar for 2 dozen cookies, how much sugar is needed to make 6 dozen cookies?

16. _____

17. If $\frac{1}{2}$ inch represents 60 miles on a road map, what is the distance represented by $3\frac{1}{2}$ inches?

17. _____

18. A mix uses two eggs to make 12 pancakes. How many eggs are needed to make 36 pancakes?

18. _____

19. You burn about 200 calories while jogging for 45 minutes. How long would you have to jog to burn 600 calories?

19. _____

20. Judy reads 8 pages in 15 minutes. How many pages can she read in an hour?

20. _____

6.4 Percents, Decimals, and Fractions

Write a Percent to represent the situation

1. If there are 100 people in a room, and 95 of them love cats, what percent of the people in the room loves cats?
2. If 5 out of 100 cats have fleas, what percent of cats have fleas?
3. 49 people take a bus to a party. The party has a total of 100 guests. What percent of the guests took a bus?
4. Angela takes a math test and gets 66 questions correct. If there are 100 questions on the test, what percent did she earn?

Convert the following fractions into percents

5. $\frac{7}{8}$
6. $\frac{1}{2}$
7. $\frac{11}{2}$
8. $\frac{4}{25}$

Convert the following decimals into percents

9. 0.49
10. 1.06
11. 0.001
12. 0.38
13. 2
14. 0.05

Convert the following percents into fractions

15. 48%
16. 250%
17. 41%
18. 0.3%

6.5 Solving Percent Problems with Equations

Solve

19. What is 14% of 500?
20. 16% of what number is 32?
21. What percent of 325 is 65?
22. 80 is 80% of what number?
23. What number is 4% of 50?
24. 80 is what percent of 250?
25. What is 78% of 50?
26. What is 16% of 32?
27. 33 is what percent of 60?
28. What is 21% of 82?
29. 12 is what percent of 2?
30. What is 63% of 0?
31. 5.3 is 53% of what?
32. What is 120% of 15?
33. 30 is what percent of 15?
34. What is 5% of 200

6.7 Application of Percent

Solve

35. A woman counts 6 black cats at a shelter. If this is 1.5% of the total number of cats, how many cats are in the shelter?

36. A good person spent $600 on pet supplies. She spent $66 on catnip . What Percent was spent on catnip?

37. 85% of students in the class love math. If there are 20 students in the class, how many love math?

38. Chops the cat is a fat cat who eats too much. One day she eats 7lbs of food. If she weighs 35lbs, what percent of her body weight did she eat

39. 6% of students in an auditorium do not like cheese. If there are 9 students who do not like cheese, how many people are in the auditorium?

40. 96% of all first-year students consider majoring in math. If there were 2500 first-year students, how many considered majoring in math?

41. Autumn score 80 on a math test. She is so distraught that for her next test, she studies hard and scores a 96. What is the percent increase?

42. Kathy scores a 95 on her factoring test. Being filled with arrogance, she doesn't study for her next test and scores 57. What is the percent decrease?

6.8 Application of Percent: Sales tax, Commission, and Discount

Solve

43. Keith is buying a new bed for his dog. The bed costs $75 and the sales tax is 5%. How much is the tax on this item? How much is the total cost of the item.

44. Ray is buying a new lawn mower that costs $3000. The sales tax is 6%. How much is the tax on this item? How much is the total cost of the item.

45. Katie is advertises a gift basket that costs $20. If the sales tax is 6.5%. How much will the tax on this item be? How much will the items cost in total.

46. Angela is buying a new set of juggling clubs. They cost $35 apiece and the sales tax is 4%. If she wants to buy 6 clubs, how much will she spend, including tax?

47. Lee is selling a new car for $9,000 and earns 5% commission. How much did he earn?

48. Jeff buys a jewel encrusted cat-collar for $545. If the saleslady makes 2% commission, how much did she earn?

49. Steve finds a great deal on a jet-airplane. The airplane costs $85. The salesman earns 6% commission. How much did he earn?

50. Nick wants to buy a load of bulk coffee for $376. Rob, the salesman, earns 25% commission. How much does Rob earn from this transaction?

51. Adam wants to buy new beeper for $20. He receives a 15% discount for being an educator. How much will the beeper costs after the discount?

52. Vanessa wants to buy a new solid gold hat that costs $8,000 (to match her solid-gold shoes). Because she is buying them on Black Friday, she receives a 35% discount. How much will this hat end up costing her?

53. Justin wants to take a cruise to Uganda, costing $1,200. Because he booked in advance, he can expect a discount of 20%. How much will this trip cost him?

54. Dianna wants to buy a suit of armor that normally costs $3,628. Because she is a frequent buyer of armor, she receives a discount of 25%. How much will this suit of armor cost her?

6.9 Application of Percent: Interest

Solve

55. Iris receives an inheritance of 50,000 and decides to invest it. She places it in a bank account that receives 4% interest for 3 years. How much interest will she earn? How much money will be in the account at the end of the 3 years?

56. Carol invests $300 in an account that receives 2% interest for 7 years. How much interest will she earn? How much money will be in the account?

57. Renee wants to invest for his retirement. He invests $90 in an account that receives 2% interest for 20 years. How much interest will he earn? How much money will be in the account?

58. Oscar deposits $950 in an account earning 5% interest for 10 years. How much interest will she earn? How much money will be in the account?

Chapter 6

6.1

1. $\frac{6}{17}$
2. $\frac{1}{3}$
3. $\frac{2}{3}$
4. $\frac{7}{20}$
5. $\frac{2}{3}$
6. $\frac{1}{2}$
7. $\frac{4}{1}$
8. $\frac{7}{3}$
9. $\frac{39}{43}$
10. $\frac{17}{24}$
11. $\frac{1}{5}$
12. $\frac{3}{4}$
13. $\frac{2}{7}$
14. $\frac{3}{14}$
15. $\frac{5}{9}$
16. $\frac{5}{14}$
17. 13 calories/ounce
18. 62 miles/hour
19. $3.79
20. 100 aspirin

6.2

1. $\frac{3}{6}=\frac{12}{24}$
2. $\frac{0.5}{5}=\frac{3}{30}$
3. $\frac{\frac{1}{3}}{20}=\frac{1}{60}$
4. yes
5. no
6. yes
7. no
8. yes
9. yes
10. 9
11. 6
12. 18
13. 3
14. 2
15. $\frac{1}{40}$
16. 12
17. 9
18. 20
19. 6
20. $\frac{3}{8}$

Answers

6.3

1. 168 miles
2. 34.8 gallons
3. 35 bags
4. 80 cu ft
5. 750 sq ft
6. 2 dogs
7. 67.5 miles
8. 5 in
9. $300
10. $34.38
11. 7 people
12. 8 people
13. 20 gallons
14. 14 cups
15. 150 minutes
16. $7\frac{1}{2}$ cups
17. 420 miles
18. 6 eggs
19. 135 minutes
20. 32 pages

MAT0012c Pre-Algebra

Chapter 6.4 – 6.9

KEY

1. 95%
2. 5%
3. 49%
4. 66%
5. 87.5%
6. 50%
7. 550%
8. 16%
9. 49%
10. 106%
11. 0.1%
12. 38%
13. 200%
14. 5%
15. $\frac{12}{25}$
16. $\frac{5}{2}$
17. $\frac{41}{100}$
18. $\frac{3}{1000}$
19. 70

20. 200
21. 20%
22. 100
23. 2
24. 32%
25. 39
26. 5.12
27. 55%
28. 17.22
29. 600%
30. 0
31. 10
32. 18
33. 200%
34. 10

35. 400 *cats*
36. 11%
37. 17 *students*
38. 20%
39. 150 *students*
40. 2400 *students*
41. 20%
42. 40%

43. \$3.75/\$78.75
44. \$180/\$3180
45. \$130/\$2130
46. \$218.40
47. \$450
48. \$109
49. \$2.70
50. \$96
51. \$17
52. \$5200
53. \$960
54. \$2721

55. \$6000/\$56,000
56. \$42/\$3420
57. \$360/\$450
58. \$475/\$1425