Unit 5 – Percent, Ratio & Rate

Grade 8 Mathematics
Exam Review

1. Write 9% as a decimal.

2. Write 76% as a decimal.

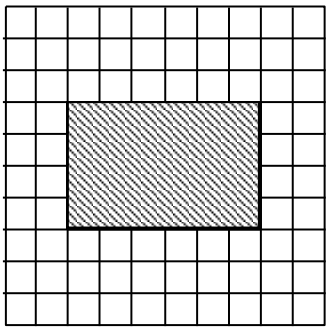
3. Write $\frac{4}{5}$ as a percent.

4. Write $\frac{6}{25}$ as a percent.

5. Write 0.72 as a percent.

6. Write 0.38 as a percent.

7. The hundred chart represents 100%. What fraction of the chart is shaded?
Write the fraction as a percent.



8. In the small country of Varia, a bill becomes law only if $\frac{13}{25}$ of the senators approve it. Write this fraction as a percent.

9. Write 78% as a decimal.

10. Write 175% as a decimal.

11. Write 989% as a decimal.

12. Write 0.14% as a decimal.

13. Write 88.4% as a decimal.

14. Write this fraction as a percent.
$\frac{659}{100}$

15. Find 0.4% of 190.

16. Find 274% of 70.

17. Thomas walked his dog for 37 minutes today, 4 more minutes than yesterday.
Write as a percent his walking time today compared to his walking time yesterday.
Round your answer to the nearest percent.

18. The price of a book increased from $1.90 to $8.10. What is the percent increase in price?

19. The number of members in the Math Club is increased from 114 to 268.
Find the increase as a percent.

20. The price of a jacket is decreased from $174 to $105. Find the decrease in price as a percent.
Round to the nearest tenth if necessary.

21. Find the percent increase from 330 to 480. Round to the nearest tenth if necessary.

22. Find the percent decrease from 400 to 300. Round to the nearest tenth if necessary.

23. Find the decrease in price as a percent. Round to the nearest percent.
Regular price: $135
Sale price: $83.00

24. Write the profit on this item as a percent. Round to the nearest percent.
Unit cost: $113.40
Selling price: $192.20

25. The original price of an item is $2445. It is on sale for $1765.
Find the decrease in price as a percent. Round to the nearest percent.

26. In a survey, 410 students, or 50% of the students surveyed, said they would likely attend university after high school. How many students were surveyed?

27. There are 751 people under the age 20 in Pierce City. This represents 12% of the total population.
What is the total population?

28. Find the change in altitude if a weather balloon moves from 180 m to 108 m.
Round to the nearest tenth if necessary.
Describe the change as a percent increase or decrease.

29. At the beginning of 2005, the town of Richmond had 900 residents.
The rate of population growth after that was estimated to be 0.6% per year.
Estimate the population of Richmond at the beginning of 2007.

30. Calculate the sale price of this item before taxes.
30% off a bike for $397.95

31. The sales taxes of a province are 8%. How much tax do you pay on a $59.10 purchase?

32. The sales taxes are 14%. Find the tax paid for a pair of running shoes that costs $115.

33. In a store that sells sporting equipment, all items are offered a discount of 20%.
Find the discount of a pair of roller blades that regularly sells for $50.

34. The sales taxes are 14%. Find the total cost of a video game with a list price of $73.

35. A tennis racquet costs $90.00 with sales taxes of 9%.
What is the total cost of the racquet?

36. The regular price of a watch is $24.99. It is on sale at a discount of 35%.
Find the sale price of the watch.

37. During a 20% off sale, the sale price of a pair of jeans was $58.99.
What was the regular price of the pair of jeans?

38. In Store A, a book that regularly sells for $24.99 is on sale at 15% off.
In Store B, the same book regularly sells for $27.99 and is on sale at 25% off.
Which store sells the book for the lower sale price? Explain.

39. Write the part-to-whole ratio 12:13 as a fraction.

40. Write the part-to-whole ratio 7:16 as a percent.

41. A bag contains 4 red balls, 6 blue balls, and 3 yellow balls.
What is the ratio of blue to non-blue balls?

42. What is the ratio of triangles to circles?

43. A student has 3 red counters and 10 blue counters on her desk.
What is the ratio of red counters to blue counters?

44. Sally has 7 red cubes and 2 blue cubes on her desk.
What is the ratio of red cubes to blue cubes?

45. Jason has 2 pink stickers and 13 blue stickers in his sticker book.
Write the ratio of pink stickers to total number of stickers.

46. The ratio of boys to girls in a class is 5 to 6.
What is the ratio of boys to students in the class?

47. Bob sold 11 adult tickets, 26 students tickets, and 4 child tickets for the school concert.
What is the ratio of student tickets to total number of tickets?

48. Mark earned $48. He spent $6 and saved the remaining money.
What is the ratio of amount spent to amount saved?

49. Write the ratio 35:7 in simplest form.

50. Write the ratio 21 cm : 12 cm in simplest form.

51. The ratios □:16 and 5:2 are equivalent. Find the missing number.

52. Which two ratios are equivalent?
14:16, 15:30, 35:40, 21:23

53. Write the ratio 15:25:20 in simplest form.

54. Jake picked 108 apples and noticed that 14 of them were bad.
What is the ratio, in simplest form, of good apples to apples picked?

55. In a sports centre, there are 88 lockers for men and 77 lockers for women.
Write the ratio of men's lockers to women's lockers in simplest form.

56. In a recipe for a fruit drink, the ratio of fruit juice to water is 6:5.
If the total volume of juice and water in the drink is 220 mL, what is the volume of juice required?

57. Write the ratio 4:28 with first term 1.

58. Write the ratio 15:5 with second term 1.

59. Write the part-to-part ratio 11:13 as a part-to-whole ratio.

60. Write the part-to-whole ratio 3:7 as a part-to-part ratio.

61. The ratio of concentrate to water is listed for each punch below.
Punch A: 1:6
Punch B: 2:9
Punch C: 1:3
Punch D: 5:12
Which ratio gives the strongest punch?

62. The ratio of distance travelled to amount of gas used is listed for 4 cars.
Car A: 1:5
Car B: 1:6
Car C: 1:7
Car D: 1:9
Which ratio means the longest distance travelled with the same amount of gas?

63. Order these ratios from least to greatest.
5:8, 5:9, 7:11, 6:9

64. Order these ratios from least to greatest.
1:3, 1:6, 2:15, 3:10

65. A model is made of a car. The car is 3 m long and the model is 4 cm long.
What is the ratio of the length of the car to the length of the model?

66. Find the value of the variable.
$8:7 = p:56$

67. Find the value of the variable.
$6:a = 24:32$

68. Find the value of the variable.
$99:135 = 11:m$

69. Find the value of the variable.
$33:f = 12:20$

70. Find the value of the variable.
$18:12 = 30:w$

71. Greg uses an overhead projector to enlarge a rectangular drawing to a width of 300 mm.
The original drawing is 60 mm wide by 80 mm high.
What is the height of the projected image?

72. An astronaut who weighs 78 kg on Earth weighs only 13 kg on the Moon.
How much would a person who weighs 15 kg on the Moon weigh on Earth?

73. The scale for a model of a gorilla is 1:40. The gorilla is 184 cm tall.
What is the height of the gorilla in the model?

74. The scale on a map is 1:800 000. Two cities are 12 cm apart on the map.
What is the actual distance between these 2 cities?

75. Two towns that are 32 km apart are 8 cm apart on a map.
What is the scale of the map?

76. School guidelines require a minimum of 2 adults for every 25 students going on a school trip.
How many adults are required for a school trip with 51 students?

77. Find the values of n and p if $13:3 = 26:n = p:9$.

78. You want to produce a scale drawing of your meeting room, which is 21 m by 18 m.
If you use a scale of 1:150, what will be the dimensions of your scale drawing?

79. A model of a mountain is built on a scale of 1:50 000.
What is the height of a 4540-m high mountain be in the model?

80. Laura types 240 words in 3 min. What is her unit rate of typing?

81. Victor's model car covers 250 m in 5 min. What is the average speed of his car?

82. A car travels 152 km in 4 h. How far will it travel in 1 h?

83. A cruise ship travels a distance of 222 km in 6 h. What is the average speed of the ship?

84. At an average speed of 34 km/h, how far will a car travel in 8 h?

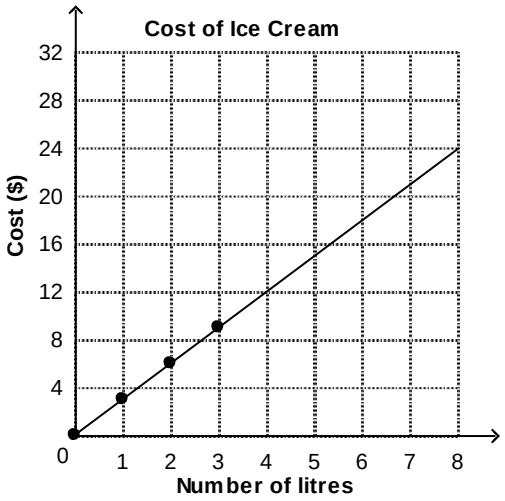
85. At the market, 5 cans of soup cost $4.75. What is the cost of 1 can of soup?

86. A vehicle uses 60 L of gas for travelling a distance of 500 km.
Calculate the rate of gas consumption of the vehicle in L/100 km.

87. Caitlin planned for a vacation and checked for exchange rates.
She noted that $1 Can was worth 0.66 euro. How many euros would she get for $30 Can?

88. Sean saves $25 in 5 weeks. At this rate, how long will it take him to save $55?

89. In a store, ice cream is sold by the litre. Use the graph to find the cost of 2 L ice cream.



90. Write a unit rate for this statement.
472 km travelled in 8 h

91. Write a unit rate for this statement. Round to the nearest hundredth if necessary.
503 km travelled in 8 h

92. At an average speed of 47 km/h, how far can you travel in 7 h?

93. The price of gas is \$0.84 per litre. Find the cost of 7 litres of gas.

94. A 25-L container of water costs \$18.75. What is the cost per litre?

95. You pay \$2.80 for 7 bagels. Find the unit cost for these bagels.

96. A soccer player scored 32 goals in 75 games.
Write the player's scoring rate as a unit rate. Round your answer to 3 decimal places.

97. Population density is the number of people per square kilometre.
What is the population density of a city that has 140 000 people in 1150 km^2?

98. A dozen apples cost \$2.35. How much will 8 apples cost?

99. Tomatoes cost \$2.80 for 2 kg. How many kilograms of apples can you buy with \$7.00?

Unit 5 - Answer Key

1. 0.09

2. 0.76

3. 80%

4. 24%

5. 72%

6. 38%

7. $\frac{6}{25}$; 24%

8. 52%

9. 0.78

10. 1.75

11. 9.89

12. 0.0014

13. 0.884

14. 659%

15. 0.76

16. 191.8

17. 112%

18. 326%

19. 135%

20. 39.7%

21. 45.5%

22. 25%

23. 39%

24. 69%

25. 28%

26. 820 students

27. 6258 people

28. 40%; decrease

29. about 911 residents

30. $278.57

31. $4.73

32. $16.10

33. $10

34. $83.22

35. $98.10

36. $16.24

37. $73.74

38. Store B; Store A's sale price is $21.24 and Store B's sale price is $20.99.

39. $\frac{12}{13}$

40. 43.75%

41. 6:7

42. 5:7

43. 3:10

44. 7:2

45. 2:15

46. 5 to 11

47. 26:41

48. 1:7

49. 5:1

50. 7:4

51. 40

52. 14:16, 35:40

53. 3:5:4

54. 47:54

55. 8:7

56. 120 mL

57. 1:7

58. 3:1

59. 11:24

60. 3:4

61. 5:12

62. 1:5

63. 5:9, 7:11, 5:8, 6:9

64. 2:15, 1:6, 3:10, 1:3

65. 75:1

66. 64

67. 8

68. 15

69. 55

70. 20

71. 400 mm

72. 90 kg

73. 46 mm

74. 96 km

75. 1:400 000

76. 5 adults

77. 6, 39

78. 14 cm by 12 cm

79. 9.08 cm

80. 80 wpm

81. 50 m/min

82. 38 km

83. 37 km/h

84. 272 km

85. 95¢

86. 12 L/100 km

87. 19.80 euros

88. 11 weeks

89. $6.00

90. 59 km/h

91. 62.88 km/h

92. 329 km

93. $5.88

94. $0.75/L

95. $0.40 per bagel

96. 0.427 goals per game

97. 122 people/km^2

98. $1.57

99. 5 kg