Ratios

For questions in the Quantitative Comparison format ("Quantity A" and "Quantity B" given), the answer choices are always as follows:

(A) Quantity A is greater.
(B) Quantity B is greater.
(C) The two quantities are equal.
(D) The relationship cannot be determined from the information given.

For questions followed by a numeric entry box ☐, you are to enter your own answer in the box. For questions followed by fraction-style numeric entry boxes ☐/☐, you are to enter your answer in the form of a fraction. You are not required to reduce fractions. For example, if the answer is 1/4, you may enter 25/100 or any equivalent fraction.

All numbers used are real numbers. All figures are assumed to lie in a plane unless otherwise indicated. Geometric figures are not necessarily drawn to scale. You should assume, however, that lines that appear to be straight are actually straight, points on a line are in the order shown, and all geometric objects are in the relative positions shown. Coordinate systems, such as *xy*-planes and number lines, as well as graphical data presentations such as bar charts, circle graphs, and line graphs, *are* drawn to scale. A symbol that appears more than once in a question has the same meaning throughout the question.

1.

The ratio of men to women in a senior citizen garden club is 5 to 4.

Quantity A	**Quantity B**
The smallest possible number of members in the garden club	20

2.

In a certain children's class, there is a 2 to 3 ratio of boys to girls. The ratio of students from the north side of town to students from the south side of town is 4 to 3, and no student is from anywhere else.

Quantity A	**Quantity B**
The smallest possible number of students in the class	35

3. A pantry holds x cans of beans, twice as many cans of soup, and half as many cans of tomato paste as there are cans of beans. If there are no other cans in the pantry, which of the following could be the total number of cans in the pantry?

Indicate <u>two</u> such numbers.

- ☐ 6
- ☐ 7
- ☐ 36
- ☐ 45
- ☐ 63

4. If there are 20 birds and 6 dogs in a park, which of the following represents the ratio of dogs to birds in the park?

(A) 3 : 13
(B) 3 : 10
(C) 10 : 3
(D) 13 : 3
(E) 1 : 26

5. Of the 24 children in a classroom, 12 are boys. Which of the following is the ratio of boys to girls in the classroom?

(A) 1 : 1
(B) 1 : 2
(C) 2 : 1
(D) 1 : 3
(E) 3 : 1

6. If there are 24 white marbles and 36 blue marbles in a bag, what is the ratio of blue to white marbles?

Give your answer as a fraction.

$$\frac{\square}{\square}$$

7. If there are 7 whole bananas, 14 whole strawberries, and no other fruit in a basket, what is the ratio of strawberries to the total pieces of fruit in the basket?

Give your answer as a fraction.

$$\frac{\square}{\square}$$

8. The ratio of cheese to sauce for a single pizza is 1 cup to 1/2 cup. If Bob used 15 cups of sauce to make a number of pizzas, how many cups of cheese did he use on those pizzas?

 cups

9. Laura established a new flower garden, planting 4 tulip plants to every 1 rose plant, and no other plants. If she planted a total of 50 plants in the garden, how many of those plants were tulips?

 tulip plants

10. The ratio of oranges to peaches to strawberries in a basket containing no other kinds of fruit is 2 : 3 : 4. If there are 8 oranges in the basket, a total of how many pieces of fruit are in the basket?

(A) 16
(B) 32
(C) 36
(D) 48
(E) 72

11. A certain automotive dealer sells only cars and trucks, and the ratio of cars to trucks on the lot is 1 to 3. If there are currently 51 trucks for sale, how many cars does the dealer have for sale?

(A) 17
(B) 34
(C) 68
(D) 153
(E) 204

12. Last season, Arjun's tennis record was 3 matches won for every 2 he lost. If he played 30 matches last season, how many did he win?

(A) 10
(B) 12
(C) 18
(D) 20
(E) 50

13. A steel manufacturer combines 98 ounces of iron with 2 ounces of carbon to make one sheet of steel. How many ounces of iron were used to manufacture 1/2 of a sheet of steel?

(A) 1
(B) 49
(C) 50
(D) 198
(E) 200

14. Maria uses a recipe for 36 cupcakes that requires 8 cups of flour, 12 cups of milk, and 4 cups of sugar. How many cups of milk would Maria require for a batch of 9 cupcakes?

(A) 2
(B) 3

(C) 4
(D) 6
(E) 8

15. In a certain orchestra, each musician plays only one instrument and the ratio of musicians who play either the violin or the viola to musicians who play neither instrument is 5 to 9. If 7 members of the orchestra play the viola and four times as many play the violin, how many play neither?

(A) 14
(B) 28
(C) 35
(D) 63
(E) 72

16. The ratio of 0.4 to 5 equals which of the following ratios?

(A) 4 to 55
(B) 5 to 4
(C) 2 to 25
(D) 4 to 5
(E) 4 to 45

17. At an animal shelter, the ratio of cats to dogs is 4 to 7. If there are 27 more dogs than cats, how many cats are at the shelter?

(A) 12
(B) 16
(C) 24
(D) 28
(E) 36

18. On a wildlife preserve, the ratio of giraffes to zebras is 37 : 43. If there are 300 more zebras than giraffes, how many giraffes are on the wildlife preserve?

(A) 1,550
(B) 1,850
(C) 2,150
(D) 2,450
(E) 2,750

19. On a youth soccer team, the ratio of boys to girls is 6 to 7. If there are 2 more girls than boys on the team, how many boys are on the team?

(A) 12
(B) 18
(C) 24
(D) 30
(E) 36

20. At a certain company, the ratio of male to female employees is 3 to 4. If there are 5 more female employees than male employees, how many male employees does the company have?

(A) 12
(B) 15

(C) 18
(D) 21
(E) 24

21. On Monday, a class has 8 girls and 20 boys. On Tuesday, a certain number of girls joined the class just as twice that number of boys left the class, changing the ratio of girls to boys to 7 to 4. How many boys left the class on Tuesday?

(A) 5
(B) 6
(C) 11
(D) 12
(E) 18

22. If a dak is a unit of length and 14 daks = 1 jin, how many squares with a side length of 2 daks can fit in a square with a side length of 2 jin?

(A) 14
(B) 28
(C) 49
(D) 144
(E) 196

23.

In a group of adults, the ratio of women to men is 5 to 6, while the ratio of left-handed people to right-handed people is 7 to 9. Everyone is either left- or right-handed; no one is both.

Quantity A	**Quantity B**
The number of women in the group	The number of left-handed people in the group

24.

Party Cranberry is 3 parts cranberry juice and 1 part seltzer. Fancy Lemonade is 1 part lemon juice and 2 parts seltzer. One glass of Party Cranberry is mixed with an equally sized glass of Fancy Lemonade.

Quantity A	**Quantity B**
The fraction of the resulting mix that is cranberry juice	The fraction of the resulting mix that is seltzer

25.

The ratio of 16 to g is equal to the ratio of g to 49.

Quantity A	**Quantity B**
g	28

26. In a parking lot, 1/3 of the vehicles are black and 1/5 of the remainder are white. How many vehicles could be parked on the lot?

(A) 8
(B) 12
(C) 20
(D) 30
(E) 35

27. Three friends divided a bag of chocolates so that David received a fifth the number of chocolates that Fouad did, and Stina received 80 percent of the total number of chocolates. What is the ratio of the number of chocolates Stina received to the number that David received?

(A) 4 : 3
(B) 8 : 5
(C) 8 : 1
(D) 24 : 1
(E) 80 : 1

28. A new sport is played with teams made up of 2 forwards, 3 guards, and 1 goalie. There are 23 players available to play forward, 21 other players available to play guard, and 9 other players available to play goalie. If the maximum possible number of complete teams are formed, how many of the available players will <u>not</u> be on a team?

(A) 7
(B) 9
(C) 11
(D) 13
(E) 15

29. Oil, vinegar, and water are mixed in a 3 to 2 to 1 ratio to make salad dressing. If Larry has 8 cups of oil, 7 cups of vinegar, and access to any amount of water, what is the maximum number of cups of salad dressing he can make with the ingredients he has available, if fractional cup measurements are possible?

(A) 12
(B) 13
(C) 14
(D) 15
(E) 16

30. With y dollars, 5 oranges can be bought. If all oranges cost the same, how many dollars do 25 oranges cost, in terms of y?

(A) $y/5$
(B) y
(C) $y + 5$
(D) $5y$
(E) $25y$

31. A certain drawer contains only black and white socks. If the ratio of black socks to white socks is 3 : 4 and there are 15 black socks in the drawer, how many socks total are in the drawer?

(A) 15
(B) 20
(C) 30
(D) 35
(E) 45

32.

A tree grows taller at a constant rate. The ratio of its growth in feet to the time spent growing in years is $4 : x$.

Quantity A	**Quantity B**
The number of feet the tree grows taller in 10 years	40

33. Ten robots painted 3 identical houses in 5 hours, working at a constant rate. How many hours would it take 20 identical robots to paint 12 such houses, working at the same constant rate?

(A) 2.5
(B) 5
(C) 10
(D) 15
(E) 20

34. Dick takes twice as long as Jane to run any given distance. Starting at the same moment, Dick and Jane run towards each other from opposite ends of the schoolyard, a total distance of x, at their respective constant rates until they meet.

Quantity A	**Quantity B**
The fraction of the total distance x that is covered by Jane	$\frac{2}{3}x$

35. One robot can pack a box in 15 minutes. Working together at the same constant rate, how many boxes can 16 robots pack in 1 hour?

(A) 4
(B) 16
(C) 24
(D) 64
(E) 256

36. A woman spent $\frac{5}{8}$ of her weekly salary on rent, and $\frac{1}{3}$ of the remainder on food, leaving $40 available for other expenses. What is the woman's weekly salary?

(A) $160
(B) $192
(C) $216
(D) $240
(E) $256

37. A mixture contains nothing but water and acetone in a ratio of 1 : 2. After 200 mL of water is added to the mixture, the ratio of water to acetone is 2 : 3.

Quantity A	**Quantity B**
The original volume of the mixture	1,800 mL

38. In a certain rectangle, the ratio of length to width of a rectangle is 3 : 2 and the area is 150 square centimeters. What is the perimeter of the rectangle, in centimeters?

(A) 10
(B) 15
(C) 25
(D) 40
(E) 50

39. At a certain college, the ratio of students to professors is 8 : 1 and the ratio of students to administrators is 5 : 2. No person is in more than one category (for instance, there are no administrators who are also students).

Quantity A	**Quantity B**
The fractional ratio of professors to administrators	$\frac{5}{8}$

40. Mary prepared x pounds of pasta for the y people expected to attend a banquet. If only z of these y people actually attend, such that $z < y$, how many pounds of pasta will be left over if Mary serves the originally intended portion to each of the guests in attendance?

(A) $\frac{x(y-z)}{y}$
(B) $\frac{zx}{y}$
(C) $\frac{x-z}{y}$
(D) $\frac{x(z-y)}{y}$
(E) $\frac{x(y+z)}{y}$

41. Sara purchased a number of wrenches and hammers from a hardware store, such that the ratio of wrenches to hammers purchased was 5 : 4 and she purchased 10 more wrenches than hammers.

Quantity A	**Quantity B**
The number of hammers Sara purchased from the hardware store	50

42. A family drove from home to a vacation destination 100 miles away, driving the first half of the distance at a constant speed of 50 miles per hour and the second half of the distance at a constant speed of 20 miles per hour. Returning home by the same route, they traveled at a constant speed of 30 miles per hour for the whole trip.

Quantity A	**Quantity B**
The number of hours it took to drive from home to the vacation destination	The number of hours it took to drive from the vacation destination back home

43. A hose is filling a large bucket with water at a constant rate of 3 gallons per minute. The bucket is losing water through a leak at a constant rate of 1 gallon per minute. If the bucket can hold a total volume of 8 gallons, how many minutes are required to fill the bucket to capacity, starting from empty?

(A) 2
(B) 3
(C) 4
(D) 5
(E) 6

44. If Dan can make 10 widgets every 15 seconds, how many widgets can Dan make in 1 hour, working at this constant rate?

(A) 40
(B) 240
(C) 600
(D) 2,400
(E) 4,000

45. In a certain country, 8 rubels are worth 1 schilling, and 5 schillings are worth 1 lemuw. In this country, 6 lemuws are equivalent in value to how many rubels?

(A) 20/3
(B) 30
(C) 40
(D) 48
(E) 240

46. The ratio of Kim's time to paint a house to Jane's time to paint a house is 3 : 5. If Kim and Jane work together at their respective constant rates, they can paint a house in 10 hours.

Quantity A	**Quantity B**
The number of hours it takes Kim to paint the house alone	16

47. Team A and Team B are raising money for a charity event. The ratio of money collected by Team A to money collected by team B is 5 : 6. The ratio of the number of students on Team A to the number of students on Team B is 2 : 3. What is the ratio of money collected per student on team A to money collected per student on team B?

(A) 4 : 5
(B) 5 : 4
(C) 5 : 6
(D) 5 : 9
(E) 9 : 5

48. Ketchup, soy sauce, and mayonnaise are mixed together in a ratio of 3 : 2 : 5 to make Mr. Anderson's special sauce. If Mr. Anderson prepared 25 ounces of special sauce for his upcoming barbeque, how many ounces of soy sauce did he use?

(A) 2.5
(B) 5
(C) 7.5
(D) 10

(E) 12.5

49. Saul ran from point A to point B and then back again by the same route in 63 minutes. It took Saul $\frac{3}{4}$ as much time to run from point A to point B as it took him to run from point B to point A.

Quantity A	**Quantity B**
The number of minutes Saul's point A to point B run took	30

50. Jarod needs 2/3 of an ounce of vinegar for every 2 cups of sushi rice that he prepares. To prepare 7 cups of sushi rice in the same proportion, how many ounces of vinegar does Jarod need?

(A) 3/2
(B) 4/3
(C) 7/3
(D) 7/2
(E) 14/3

51 Joe drove from Springfield to Shelbyville at x miles per hour. He then drove from Shelbyville to Bakersfield at $(1.5)x$ miles per hour. If the distance between Springfield and Shelbyville is twice the distance between Shelbyville and Bakersfield, what was Joe's average speed for the entire trip?

(A) $\frac{9}{8}x$
(B) $\frac{6}{5}x$
(C) $\frac{5}{4}x$
(D) $\frac{7}{4}x$
(E) $\frac{9}{4}x$

52. The total cost of 3 bananas, 2 apples, and 1 mango is \$3.50. The total cost of 3 bananas, 2 apples, and 1 papaya is \$4.20. The ratio of the cost of a mango to the cost of a papaya is 3 : 5.

Quantity A	**Quantity B**
The cost of a papaya	\$2.00

53. In a certain town, $\frac{2}{5}$ of the total population is employed. Among the unemployed population, the ratio of males to females is 5 : 7. If there are 40,000 employed people in the town, how many females are unemployed?

(A) 16,000
(B) 25,000
(C) 35,000

(D) 65,000
(E) 75,000

54.

Quantity A	**Quantity B**
The ratio of $2\frac{11}{12}$ to $1\frac{3}{4}$	$\frac{5}{3}$

55. On a certain map of the United States, 3/5 of an inch represents a distance of 400 miles. If Oklahoma City and Detroit are separated on the map by approximately 3/2 of an inch, what is the approximate distance between them in miles?

(A) 240
(B) 360
(C) 600
(D) 800
(E) 1,000

56. A machine can manufacture 20 cans per hour, and exactly 10 such cans fit into every box. Maria packs cans in boxes at a constant rate of 3 boxes per hour. If the machine ran for 2 hours and was then turned off before Maria started packing the cans in boxes, how many minutes would it take Maria to pack all the cans that the machine had made?

(A) 40
(B) 45
(C) 80
(D) 160
(E) 800

57. At Company X, a person's pay is increased by the same dollar amount every year that he or she works for Company X. Since Joe started with Company X, he has seen 10 such raises, and the ratio of his pay now to his pay when he started is 5 : 2. What is the ratio of Joe's yearly pay increase to his starting pay?

(A) 1/4
(B) 3/20
(C) 5/3
(D) 4/1
(E) 20/3

58. If Beth has 1/4 more money than Ari, and each person has an integer number of dollars, which of the following could be the combined value of Beth and Ari's money?

Indicate all such values.

☐ $12
☐ $54
☐ $72
☐ $200

59. If salesperson A sold 35% more motorcycles than salesperson B, which of the following could be the total

number of motorcycles sold by both salespeople?

Indicate all such total numbers of motorcycles.

☐ 47
☐ 70
☐ 135
☐ 235

60. A zoo has twice as many zebras as lions and four times as many monkeys as zebras. Which of the following could be the total number of zebras, lions, and monkeys at the zoo?

Indicate all such totals.

☐ 14
☐ 22
☐ 28
☐ 55
☐ 121

61. In Nation Z, 10 terble coins equal 1 galok. In Nation Y, 6 barbar coins equal 1 murb. If a galok is worth 40% more than a murb, what is the ratio of the value of 1 terble coin to the value of 1 barbar coin?

(A) $\frac{3}{5}$
(B) $\frac{11}{13}$
(C) $\frac{3}{7}$
(D) $\frac{21}{23}$
(E) $\frac{21}{25}$

62. Autolot has a 2 : 1 ratio of blue cars to red cars and a 6 : 1 ratio of red cars to orange cars on the lot. What could be the total number of blue, red and orange cars on the lot?

(A) 38
(B) 39
(C) 40
(D) 41
(E) 42

63. Originally, 70% of the clients at Bob's Dating Bistro were male. After z of the female clients left, the service still had 74 clients. Which of the following could be the value of z?

Indicate all such values.

☐ 4
☐ 6
☐ 12
☐ 16
☐ 18

64. Beaker B has a volume of b, which is twice the volume c of Beaker C. The volume of Beaker C is one third the volume g of Beaker G.

Quantity A	**Quantity B**
$\frac{b+c}{g}$	1

Ratios answer key

1 B
2 C
3 II and V only
4 B
5 A
6 3/2 or any equivalent fraction
7 2/3 or any equivalent fraction
8 30 cups
9 40 tulip plants
10 C
11 A
12 C
13 B
14 B
15 D
16 C
17 E
18 B
19 A
20 B
21 D
22 E
23 A
24 B
25 D
26 D
27 D
28 C
29 E
30 D
31 D
32 D
33 C
34 C
35 D
36 A
37 C
38 E
39 B
40 A
41 B
42 A
43 C
44 D
45 E
46 C
47 B
48 B
49 B
50 C
51 A
52 B
53 C
54 C
55 E
56 C
57 B
58 II and III only
59 I and V only
60 II, IV and V only
61 E
62 A
63 II and IV only
64 C