

MATH CONTENT TOPICS: Q.2.a, Q.2.e, Q.3.a, Q.3.b, Q.3.c, Q.6.c
MATH PRACTICES: MP.1.a, MP.1.b, MP.1.d, MP.1.e, MP.2.c, MP.3.a, MP.4.a

1 Review the Skill

A **ratio** compares two numbers. The second or bottom number of a ratio does not necessarily represent a whole. A ratio with a denominator of 1 is known as a **unit rate**. When two ratios are written as equal, the equation is a **proportion**.

You may write a ratio as a fraction, using the word *to*, or with a colon (:). In all cases, remember to reduce a ratio to its simplest terms.

2 Refine the Skill

By refining the skill of solving ratios and proportions, you will improve your study and test-taking abilities, especially as they relate to the GED® Mathematical Reasoning Test. Study the table below. Then answer the questions that follow.

The number of students who play a given instrument in the school band is shown below.

BAND MEMBERS AND THEIR INSTRUMENTS

Instrument	Number of students
Flute	8
Percussion	5
Saxophone	4
Clarinet	12
Trumpet	5
Trombone	4
Tuba	2

a Write the proportion $\frac{3}{4} = \frac{x}{8}$ and then solve for x to solve the first problem.

b Problem 2 is a multi-step problem. Before you can write a ratio, you first need to find the number of girls who play clarinet. Next, subtract the number of boys from the total number of clarinet players.

c Remember that when you write a proportion to solve a problem, the terms in both ratios must be written in the same order.

TEST-TAKING TIPS

Include labels in your ratios to ensure you are writing numbers in the correct order. After you have written your ratio, read it in words. Check to ensure that it matches the stated problem.

1. The ratio of girls to total number of students in the band is 3 to 4. At that ratio, how many girls would you expect to play flute?

- A. 5
- B. 6
- C. 7
- D. 8

2. There are four male clarinet players. What is the ratio of male clarinet players to female clarinet players?

- A. 8:4
- B. 8:12
- C. 4:12
- D. 1:2

3 Master the Skill

DIRECTIONS: Read each question, and choose the **best** answer.

3. On a swimming skills test, Olive performed 12 skills correctly. She performed 4 skills incorrectly. What is the ratio of incorrect skills to total skills?
- A. $\frac{1}{4}$
B. $\frac{1}{2}$
C. $\frac{2}{1}$
D. $\frac{4}{1}$
4. Joe's basketball team won 38 games and lost 4 games this season. What is the ratio of games lost to games won?
- A. 38:4
B. 4:38
C. 19:2
D. 2:19
5. A box of soup contains 8 cans. If the box costs \$16, what is the unit rate?
- A. \$0.50 per can
B. \$1 per can
C. \$2 per can
D. \$4 per can
6. A scale drawing of a living room has a scale of 1 in. : 3 feet. If one wall is 4 in. long on the drawing, how long is the actual wall?
- A. 4 feet
B. 7 feet
C. 12 in.
D. 12 feet
7. Annie drove 96 miles on Monday and 60 miles on Tuesday. What is the ratio of miles she drove on Monday to miles she drove on Tuesday?
- A. $\frac{2}{1}$
B. $\frac{5}{8}$
C. $\frac{8}{5}$
D. $1\frac{3}{5}$

DIRECTIONS: Read each question, and choose the **best** answer.

8. A pancake recipe that serves 30 people calls for 12 eggs. Marti wants to make enough to serve only 10 people. What is the ratio of eggs to servings for the reduced recipe?
- A. 2 to 5
B. 1 to 3
C. 5 to 2
D. 5 to 6
9. The ratio of wins to losses for the Wildcats rugby team was 8:3. If the team won 24 games, how many games did they lose?
- A. 8
B. 9
C. 19
D. 64
10. There are 30 full-time and 12 part-time employees at the tire plant. What is the ratio of full-time to part-time workers?
- A. 2:1
B. 4:1
C. 5:2
D. 7:2
11. A map scale states that 2 in. equal 150 miles. If two cities are 6 in. apart on a map, how many miles separate them?
- A. 300
B. 450
C. 600
D. 900
12. There are 460 students in an elementary school. Of the students, $\frac{4}{5}$ ride the bus to school. How many students use a different method of transportation?
- A. 92
B. 115
C. 368
D. 575

3 Master the Skill

★ **Spotlighted Item: DRAG-AND-DROP**

UNIT 1

DIRECTIONS: Read each question. Then use the drag-and-drop options to complete each proportion and answer.

13. For each \$5 given to a charity by an individual, the Bay Company will give \$15 to that same charity. If individual contributions total \$275, how many dollars will the Bay Company contribute?

$$\frac{\$5}{\$ \square} = \frac{\$ \square}{\$ \square} = \$ \square$$

- x 15 91 125 275 825

14. In a school, the ratio of students to teachers is 14 to 1. If there are 406 students, how many teachers work at the school?

$$\frac{14}{\square} = \frac{\square}{\square} = \square$$

- x 1 28 29 203 406

DIRECTIONS: Read each question, and choose the best answer.

15. A person can burn about 110 calories by walking one mile. How many calories will a person burn by walking $4\frac{1}{2}$ miles?
- A. 440
B. 495
C. 550
D. 615
16. Stuck in traffic, Trevor drove 48 miles in 3 h. What was the unit rate of his speed?
- A. 16 miles per h
B. 45 miles per h
C. 48 miles per h
D. 144 miles per h
17. In a 30-person office, 16 people drive to work and the rest walk or ride their bicycles. What is the ratio of people who drive to people who do not drive?
- A. 7:8
B. 8:7
C. 8:15
D. 15:7

18. Thirty people were surveyed about their type of work. Two of every five people work in a field related to education. How many of the people surveyed work in education?
- A. 5
B. 8
C. 12
D. 15
19. A recipe for a dessert sauce calls for 2 teaspoons of chocolate sauce and 3 teaspoons of caramel sauce. If Mary made 20 total teaspoons of dessert sauce, how many teaspoons of caramel did she use?
- A. 11
B. 12
C. 13
D. 14
20. The ratio of cars to parking spots at a local business is 2:3. If there are 24 cars, how many parking spots are there?
- A. 16
B. 32
C. 36
D. 48

DIRECTIONS: Read each question, and choose the **best** answer.

21. In a recent softball game, Allison threw 84 strikes out of 105 pitches. The remaining pitches were balls. What was Allison's ratio of strikes to balls?

- A. 4:1
- B. 5:1
- C. 5:2
- D. 6:1

22. The ratio of lifeguards to swimmers at a pool is 1:22. If there are 176 swimmers in the pool, how many lifeguards are there?

- A. 6
- B. 8
- C. 88
- D. 154

DIRECTIONS: Examine the information and table, read each question, and choose the **best** answer.

The table shows the number of miles Leila drove each week on a full tank of gas.

LEILA'S WEEKLY MILEAGE

Week 1	420 miles
Week 2	414 miles
Week 3	389 miles
Week 4	421 miles
Week 5	396 miles

23. If Leila's gas tank holds 18 gallons of gasoline, how many miles per gallon did her car get during Week 2?

- A. 22
- B. 23
- C. 46
- D. 28

24. What is the ratio of the number of miles Leila drove during Week 1 to the total number of miles she drove over the 5 weeks?

- A. 1:4
- B. 7:9
- C. 7:34
- D. 99:508

DIRECTIONS: Read each question, and choose the **best** answer.

25. The ratio of cats to people in a town is 3 to 8. How many people live in the town if there are 387 registered cats?

- A. 129
- B. 1,032
- C. 1,161
- D. 3,096

26. Ayla bought an 8-pound turkey for \$24. How much would she spend for a 12-pound turkey?

- A. \$3
- B. \$16
- C. \$28
- D. \$36

DIRECTIONS: Examine the table, read each question, and choose the **best** answer.

BOOKSMART PUBLISHING

Position	Openings	Applicants
Graphic designer	5	25
Art researcher	3	27
Staff writer	4	48
Editor	2	12

27. Which position shows a ratio of 12 applicants to 1 opening?

- A. Graphic designer
- B. Art researcher
- C. Staff writer
- D. Editor

28. Due to an increase in workload, Booksmart recently announced plans to hire two project managers. The ratio of openings to applicants was 1:7. How many more applicants for the project manager position were there than applicants for the editor position?

- A. 2
- B. 13
- C. 15
- D. 26