

## Ratio: Skill 5 - 25B

**Equivalent Ratios and Proportions**

Answer to test question.

Are the ratios equivalent?

4:1 and 8:2

First, express each ratio as a fraction.

$$4:1 = \frac{4}{1} \quad 8:2 = \frac{8}{2}$$

Multiply the numerator and denominator by the same number.

$$\frac{4 \times 2}{1 \times 2} = \frac{8}{2}$$

$\frac{4}{1}$  and  $\frac{8}{2}$  are equivalent ratios.

Ratios can form a proportion.  
Two equivalent ratios form a proportion.

Example:

$$\frac{1}{2} = \frac{2}{4}$$

Are these ratios proportional?

The answer is "yes" because the two ratios are equivalent.

**Why are the ratios equivalent?**

When you multiply the numerator and the denominator of a ratio by the same number the result is an equivalent ratio.

Remember, two equivalent ratios form a proportion.

**Find Equivalent Ratios**

Step 1	Step 2	Example
<p>Find a ratio equivalent to 2:3</p> <p>First, express the ratio as a fraction.</p> <p>The ratio 2:3 expressed as a fraction is <math>\frac{2}{3}</math>.</p>	<p>Multiply or divide the numerator and the denominator by the same number. (use any number except 0 or 1)</p> $\frac{2}{3} = \frac{2 \times 4}{3 \times 4} = \frac{8}{12}$ <p><math>\frac{8}{12} = \frac{2}{3}</math>, so 8:12 is equivalent to 2:3</p>	<p>Divide to find an equivalent ratio.</p> <p>Find an equivalent ratio for 9:12</p> $\frac{9}{12} = \frac{9 \div 3}{12 \div 3} = \frac{3}{4}$ <p>3:4 is equivalent to 9:12</p>

**Example:** Find 2 ratios that are equivalent to 2:5

First, write the ratio 2:5 as a fraction.

Find a ratio equivalent to $\frac{2}{5}$ .	$\frac{2}{5} = \frac{2 \times 2}{5 \times 2} = \frac{4}{10}$	4:10 is equivalent to 2:5
Find another ratio equivalent to $\frac{2}{5}$ .	$\frac{2}{5} = \frac{2 \times 3}{5 \times 3} = \frac{6}{15}$	6:15 is equivalent to 2:5

## Ratio: Skill 5 - 25B

**Equivalent Ratios and Proportions****Directions:** Write 2 equivalent ratios for each problem.

1. 2:6
2. 3:2
3. 1 to 3
4.  $\frac{4}{5}$
5. 5:3
6. 3:8
7. 5 to 10
8.  $\frac{5}{6}$

**Example:** Write a ratio that is equivalent to 32:56

First, write the ratio as a fraction.

Find a ratio equivalent to  $\frac{32}{56}$ .

$$\frac{32 \div 8}{56 \div 8} = \frac{4}{7}$$

32:56 is equivalent to 4:7

**Directions:** Use division to write an equivalent ratio for each.

9. 8:4
10. 9:12
11. 15 to 10
12.  $\frac{18}{30}$
13. 24:16
14. 12:6
15. 25 to 40
16.  $\frac{36}{42}$

## Ratio: Skill 5 - 25B

**Equivalent Ratios and Proportions****Directions:** Are the ratio equivalent? Write yes or no

17. 3 to 9 and 6 to 18

18. 2:4 and 4:8

19. 5 to 1 and 50 to 10

20. 3:7 and 6:15

21.  $\frac{3}{8}$  and  $\frac{9}{24}$

22. 8 to 2 and 24 to 6

23. 9:1 and 20:9

24. 3:1 and 21:7

25. 8 to 12 and 24 to 36

26. 6 to 7 and 18 to 19

27. 10 to 1 and 100 to 10

28. 11:5 and 55:25

29. 15:20 and 30:40

30. 8:20 and 15:40

31.  $\frac{1}{2}$  and  $\frac{5}{10}$

32.  $\frac{5}{8}$  and  $\frac{10}{50}$

33.  $\frac{9}{10}$  and  $\frac{45}{50}$

34. 3 to 4 and 18 to 24

35. 2 to 7 and 16 to 42

36. 2 to 8 and 2 to 15

37. 6:3 and 12:9

38. 6:7 and 3:4

39. 8:3 and 16:9

40. 5:1 and 10:1

41. 3 to 2 and 27 to 6

42. 6 to 5 and 42 to 35

43. 1 to 9 and 5 to 40

44. 4 to 3 and 12 to 6

45.  $\frac{3}{2}$  and  $\frac{9}{6}$

46.  $\frac{7}{2}$  and  $\frac{28}{7}$

47.  $\frac{4}{3}$  and  $\frac{12}{7}$

48.  $\frac{6}{5}$  and  $\frac{24}{35}$

Answer Key Skill 25B Grade 5

1. 2:6, 4:12, 3:18

2. 3:2, 6:4, 9:6

3. 1:3, 2:6, 3:9

4.  $\frac{4}{5}$ ,  $\frac{8}{10}$ ,  $\frac{12}{15}$

5. 5:3, 10:6, 15:9

6. 3:8, 6:16, 9:24

7. 5:10, 10:20, 15:30

8.  $\frac{5}{6}$ ,  $\frac{10}{12}$ ,  $\frac{15}{18}$

These have more than one answer. 9, 12, 13, 14, 16

9. 4:2

10. 3:4

11. 3:2

12. 6:10

13. 3:2

14. 2:1

15. 5:10

16. 6:7

17. yes

18. yes

19. yes

20. no

21. yes

22. yes

23. no

24. yes

25. yes

26. no

27. yes

28. yes

29. yes

30. no

31. yes

32. no

33. yes

34. yes

35. no

36. no

37. no

38. no

39. no

40. no

41. no

42. yes

43. no

44. no

45. yes

46. no

47. no

48. no