

# EQUIVALENT RATIOS

NAME: \_\_\_\_\_

Div: \_\_\_\_\_

DATE: \_\_\_\_\_

\* Ratios are equivalent if they are multiples or factors of the same ratio.

E.g.  $\frac{35}{42} = \frac{5}{6}$

$\div 7$

E.g.  $\frac{5}{3} = \frac{x}{12} \Rightarrow \frac{5 \times 12}{3} = x$

$x = 20$

DIVISIBILITY RULES!

Do Q.# 1-37 (ODD)

## Practice

Write an equivalent ratio.

- |          |                   |                    |
|----------|-------------------|--------------------|
| 1. 6:5   | 2. 12:1           | 3. 1:5             |
| 4. 25:40 | 5. $\frac{2}{8}$  | 6. $\frac{18}{10}$ |
| 7. 9:6   | 8. $\frac{16}{2}$ | 9. $\frac{4}{7}$   |

State whether the ratios in each pair are equivalent.

- |                                 |                                  |
|---------------------------------|----------------------------------|
| 10. $\frac{2}{3}, \frac{4}{6}$  | 11. $\frac{4}{5}, \frac{8}{10}$  |
| 12. $\frac{5}{15}, \frac{1}{4}$ | 13. $\frac{6}{15}, \frac{8}{10}$ |
| 14. 9:5, 18:15                  | 15. 5:10, 6:12                   |
| 16. 8:6, 4:3                    | 17. 16:12, 12:9                  |

Solve for x.

- |   |                                 |
|---|---------------------------------|
| 18. $\frac{x}{15} = \frac{3}{5} \Rightarrow \frac{45}{5} = 9$ | 19. $\frac{5}{1} = \frac{x}{3}$ |
| 20. $\frac{3}{x} = \frac{18}{24}$                             | 21. $\frac{4}{3} = \frac{8}{x}$ |
| 22. $x:2 = 10:5$  | 23. $6:x = 10:25$               |
| 24. $8:x = 6:3$   | 25. $5:3 = 45:x$                |

Solve for x.

- |   |                                      |
|---|--------------------------------------|
| 26. $2.5:x = 2:7$                       | 27. $10:6.5 = x:2.6$                 |
| 28. $\frac{4.9}{1.75} = \frac{3.36}{x}$ | 29. $\frac{x}{12.5} = \frac{0.8}{4}$ |

## Problems and Applications

30. Neptune orbits the sun 3 times in the time it takes Pluto to orbit the sun twice.
- How many orbits does Neptune complete while Pluto orbits 8 times?
  - How many orbits does Pluto complete while Neptune orbits 15 times?
31. The Sam Kee Building in Vancouver is the narrowest commercial building in the world. The ratio of the building's length to its width is 50:3. The building is 30 m long. How wide is it?

32. A camera costs \$175. You and a friend share the cost in the ratio 2:3. What is your share?

33. To make liquid skim milk from powder, you use powder and water in the ratio 1:3, by volume. How much powder and how much water do you need to make 1 L of liquid skim milk? Give your answers in millilitres.

34. To make an environmentally-safe furniture polish, you can combine lemon oil and mineral oil in the ratio 3:200, by volume. How much lemon oil do you need to make 10.15 L of polish?

35. The dimensions of a rectangle are in the ratio 5:3. If the longer side is 18 cm, what is the shorter side?

36. Two squares have side lengths in the ratio 3:2.

- What is the ratio of the areas of the squares?
- If the smaller square has an area of 24 cm<sup>2</sup>, what is the area of the larger square?

37. Two squares have areas in the ratio 49:25.

- What is the ratio of the side lengths of the squares?
- If the larger square has a side length of 17.5 m, what is the side length of the smaller square?

38. Bronze is an alloy that contains the metals copper and tin in the ratio 23:2, by mass.

- What mass of each metal is present in 100 g of the alloy?
- How many grams of copper are there for 100 g of tin?
- How many grams of tin are there for 100 g of copper? Write your answer to the nearest tenth of a gram.

39. Work with a partner to try to make 2 equivalent ratios from 4 different prime numbers. Describe and explain your findings.

# Secret Code

Solve any proportion below and find your answer in the code at the bottom of the page. Each time you see the answer in the code, write the letter in that proportion ABOVE it.

KEEP WORKING UNTIL YOU HAVE DECODED THE LIMERICK.

- |    |                          |     |                          |     |                          |     |                          |
|----|--------------------------|-----|--------------------------|-----|--------------------------|-----|--------------------------|
| 1. | 1 : 2 = F : 6            | 6.  | 3 : 10 = 6 : U           | 11. | 3 : 1 = M : 10           | 16. | 3 : 8 = 30 : H           |
|    | F = <input type="text"/> |     | U = <input type="text"/> |     | M = <input type="text"/> |     | H = <input type="text"/> |
| 2. | 2 : 3 = L : 12           | 7.  | 9 : 2 = 18 : I           | 12. | 7 : 2 = R : 12           | 17. | 8 : 9 = 40 : T           |
|    | L = <input type="text"/> |     | I = <input type="text"/> |     | R = <input type="text"/> |     | T = <input type="text"/> |
| 3. | 5 : 7 = S : 14           | 8.  | 5 : 4 = 20 : W           | 13. | 12 : 7 = O : 14          | 18. | 7 : 4 = A : 16           |
|    | S = <input type="text"/> |     | W = <input type="text"/> |     | O = <input type="text"/> |     | A = <input type="text"/> |
| 4. | 5 : 2 = V : 6            | 9.  | 2 : 5 = 10 : B           | 14. | 4 : 25 = 8 : C           | 19. | 5 : 11 = 10 : E          |
|    | V = <input type="text"/> |     | B = <input type="text"/> |     | C = <input type="text"/> |     | E = <input type="text"/> |
| 5. | 4 : 3 = Y : 9            | 10. | 3 : 7 = 6 : G            | 15. | 6 : 5 = D : 15           | 20. | 10 : 7 = 50 : N          |
|    | Y = <input type="text"/> |     | G = <input type="text"/> |     | D = <input type="text"/> |     | N = <input type="text"/> |

TITLE: THE WHOLE TOOTH AND NOTHING BUT THE TOOTH

- |             |          |                        |                    |                       |                |                |
|-------------|----------|------------------------|--------------------|-----------------------|----------------|----------------|
| 24-35-22    | 18-28-12 | 30-12                  | 22-8-18-22-42-8-12 | 14-42-28-35-35-12     |                |                |
| 80-28-18    | 28-35    | 28-50-50-4-18-22-35-45 | 15-22-42-12        | 20-35-50-28-35-35-12. |                |                |
| 10-80-22    | 10-28-45 | 18-24-16-35            | 4-35               | 28                    | 50-80-28-4-42  |                |
| 16-80-22-35 | 80-22-42 | 3-28-8-10-22           | 45-22-22-45-80     | 16-22-42-22           | 45-80-22-42-22 |                |
| 28-35-18    | 25-4-45  | 80-22-42-10-22-8-3     | 42-4-14-80-45      | 4-35                  | 45-80-22       | 3-28-35-35-12. |