

CHALLENGING RATIO & PROPORTION QUESTIONS

CANSU OLCE

A STAR MATHS (www.astarmaths.com.au)

1. $\frac{x}{2} = \frac{y}{5} = \frac{z}{7}$
 $3x - 2y + z = 6$
 $x + y = ?$

2. $\frac{a}{3} = 2b = \frac{c}{4}$
 $a + b + c = 75$
 $b = ?$

3. $3x = 5y = 6z$
 $x + y + 2z = 520$
 $x = ?$

4. $\frac{a+b}{4} = \frac{a^2 - b^2}{8} = \frac{16}{a-b}$
 $a = ?$

5. $\frac{x}{y} = \frac{3}{5}$
 $\frac{y}{z} = \frac{4}{3}$
 $\frac{2x+y}{x+2z} = ?$

6. $x + \frac{3}{y} = 5$
 $y + \frac{3}{x} = 2$
 $\frac{x+y}{2y-x} = ?$

7. $\frac{a}{b} = \frac{c}{d} = \frac{e}{f} = \frac{3}{2}$
 $\frac{a^2}{d^2} \times \frac{f}{e} \times \frac{c^2}{b^2} = ?$

8. $3x = 5y = az = 12$
 $\frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 1$
 $a = ?$

9. $\frac{a}{5} = \frac{b}{4} = 2c$
 $a + 2b - c = 100$
 $a = ?$

10. $a, b, c \in \mathbb{R}^+$
 $4a = 5b = 3c$
 $\max(a + b + c) = ?$

11. $ax = by = cz = 20$

$$\frac{1}{a} + \frac{1}{b} + \frac{1}{c} = \frac{1}{5}$$

$$x + y + z = ?$$

12. $\frac{a}{b} = \frac{c}{d}$

$$adb - b^2c + 2a - 6 = 0$$

$$a = ?$$

13. $\frac{3a}{a+b} = \frac{1}{2}$

$$\frac{b}{b+c} = \frac{2}{3}$$

$$a : b : c = ?$$

14. $a, b, c \in \mathbb{R}^+$

$$\frac{a}{2} = \frac{b}{3} = \frac{c}{5}$$

$$a^2 + b^2 - c^2 = -48$$

$$b + c = ?$$

15. $a, b, c \in \mathbb{R}^+$

$$\frac{a}{4} = \frac{b}{3} = \frac{c}{6}$$

$$\sqrt{a^2 + b^2} = 10$$

$$c = ?$$

16. $\frac{a}{-2} = \frac{b}{3} = \frac{c}{4}$

$$\frac{c+a}{a+b} = ?$$

17. A car can go $(x+120)$ km in 6 hours and $(2x-80)$ km in 8 hours. Find x .

18. 3 workers finish a job in 12 hours. How long does it take a worker to finish the same job?

19. 9 workers finish a job in 12 days if they work for 8 hours every day. How long would it take to finish the same job if 12 workers work for 6 hours every day?

20. The ratio of ages of two siblings is 2:3. The ratio will be 3:4 two year later. Find the age of the old sibling?

21. The radius of the front and back wheel of a tractor is $\frac{3}{5}$. When the tractor moves 120π , the front wheel turns 16 times more than the back wheel. Find the radius of the back wheel.

22. A master makes 20 shoes in 5 days. An apprentice makes 12 shoes in 8 days. How many shoes would a master and an apprentice make if they work together for 40 days?

ANSWER KEY

1. 14

2. 5

3. 200

4. 17

5. $\frac{222}{21}$

6. -7

7. $\frac{27}{8}$

8. 4

9. 40

10. -47

11. 4

12. 3

13. 2:10:5

14. 16

15. 12

16. 2

17. 360

18. 36

19. 12

20. 6

21. $\frac{5}{2}$

22. 220