

1. What is x in the proportion $\frac{4}{12} = \frac{x}{10}$?
 A) 3 B) 4 C) $\frac{10}{3}$ D) $\frac{12}{5}$ E) $\frac{20}{3}$
2. What is x in the ratio $\frac{28}{x} = \frac{24}{30}$?
 A) 15 B) 21 C) 30 D) 35 E) 36
3. In a school of 400 students, if there are 250 girls, then ratio of number of boys to the number of girls is equal to ...
 A) $\frac{3}{5}$ B) $\frac{5}{3}$ C) $\frac{3}{8}$ D) $\frac{5}{8}$ E) $\frac{8}{5}$
4. In a classroom, the number of girls is $\frac{1}{7}$ of the number of students. What is the ratio between the number of girls and the number of boys?
 A) $\frac{1}{6}$ B) $\frac{1}{4}$ C) $\frac{2}{5}$ D) $\frac{1}{5}$ E) $\frac{5}{6}$
5. Find the fourth proportional to 9, 15 and 12?
 A) 20 B) 25 C) 30 D) 40 E) 45
6. Two numbers in the ratio 5:2 have a difference 30. Then the sum of them is ...
 A) 70 B) 60 C) 50 D) 40 E) 30
7. The numerator of a fraction is 3 less than the denominator. If 1 is subtracted from each, the resulting fraction is $\frac{1}{2}$. Find the original fraction.
 A) $\frac{3}{6}$ B) $\frac{4}{7}$ C) $\frac{5}{8}$ D) $\frac{6}{7}$ E) $\frac{7}{9}$
8. If $\frac{a}{b} = \frac{2}{3}$, then find $\frac{2a+3b}{a+2b}$.
 A) $\frac{12}{3}$ B) $\frac{13}{8}$ C) $\frac{8}{5}$ D) $\frac{8}{13}$ E) 1
9. Arithmetic mean of two numbers is 19. If one of them is 29, then the other is
 A) 9 B) 10 C) 11 D) 12 E) 13
10. Arithmetic mean of three numbers is 7. What is their sum?
 A) 7 B) 14 C) 21 D) 28 E) 35
11. What is the geometric mean of 4 and 16?
 A) 2 B) 4 C) 8 D) 10 E) 12
12. What is the geometric mean of $\sqrt{7} - \sqrt{3}$ and $\sqrt{7} + \sqrt{3}$?
 A) 1 B) 2 C) 4 D) $\sqrt{7}$ E) $\sqrt{3}$
13. Product of two numbers is 4. Geometric mean of these numbers is ...
 A) 1 B) 2 C) 3 D) 4 E) 5
14. Find the geometric mean of $\sqrt[3]{\sqrt{11} - \sqrt{3}}$ and $\sqrt[3]{\sqrt{11} + \sqrt{3}}$.
 A) $\sqrt{2}$ B) $\sqrt{3}$ C) $\sqrt{8}$ D) $\sqrt{11}$
15. If $\frac{a+b}{b} + \frac{a+b}{a} = 4$, then $a-b$ is
 A) -2 B) -1 C) 0 D) 1 E) 2
16. If $\frac{x}{3} = \frac{y}{6} = \frac{z}{6}$ and $x - 2y + 3z = 12$, then x is
 A) 2 B) 3 C) 4 D) 5 E) 6
17. If $\frac{a}{b} = \frac{3}{5}$, $\frac{b}{3} = \frac{c}{4}$ and $b+c-a = 78$, then find the value of a .
 A) 45 B) 36 C) 30 D) 27 E) 18
18. If x, y and z are negative real numbers such that $\frac{2}{xy} = \frac{3}{4yz} = \frac{4}{5xz}$, then
 A) $x > y > z$ B) $z > x > y$
 C) $z > y > x$ D) $y > x > z$
 E) $y > z > x$
19. If $8^{a-b} = 32^{a+b}$, then find the value of $\frac{2b-a}{7b+a} = ?$
 A) 2 B) 4 C) 6 D) 8 E) 16
20. If a train travels 130 km in 5 hours, then the train travels in $7\frac{1}{2}$ hours.
 A) 180 km B) 195 km C) 25 km
 D) 225 km E) 240 km

21. In a 116 g mixture, the materials A , B and C are used with a ratio $\frac{A}{4} = \frac{B}{3}$ and $\frac{B}{C} = \frac{2}{5}$. How many grams of the material A is used in the mixture?
- A) 24 B) 30 C) 32 D) 44 E) 60
22. If 18 men can produce 35 toys in 5 days, then find the number of toys that can be produced by 10 men in 9 days.
- A) 15 B) 18 C) 30 D) 35 E) 36
23. The numbers x, y, z are directly proportional by the numbers 2,3,4. If $x^2 + 2y^2 - z^2 = 6$, then find z .
- A) 2 B) 3 C) 4 D) 5 E) 6
24. 504 marble is divided among 4 brothers inversely proportional with their ages. They are 3,4,5, and 6 years old. Find the number of the youngest brother's marble.
- A) 60 B) 84 C) 140 D) 168 E) 205
25. The number x varies directly by the number $(x - 2)$ and inversely by the number $(y - 1)^2$. If $y=3$ for $x=3$, then find the value of x , for $y = -1$.
- A) 1 B) 2 C) 3 D) 4 E) 6
26. \$ 2200 is distributed among three brothers of ages 8, 12 and 15. The amount of money they received is inversely proportional with their ages. Find the money that the small brother received.
- A) 1000 B) 900 C) 800 D) 600 E) 400