

Simplification-Exercise Questions updated on Dec 2024

1. If $a * b = \frac{a+b}{ab}$, find the value of $5 * (5 * -2)$:

ab

- a. -3
- b. -10
- c. -1.66
- d. 3/5

2. If $(a - b)$ is 9 more than $(c + d)$ and $(a + b)$ is 3 less than $(c - d)$, then $(a - c)$ is:

- a. 6
- b. 2
- c. 3
- d. None of these

3. The value of $1 + [1/(8 \times 2)] + [1/(8 \times 2^2)] + [1/(8 \times 2^3)]$ is :

- a. 71/64
- b. 1/16
- c. 1/4
- d. None of these

4. If $\frac{a}{2} = \frac{b}{3} = \frac{c}{5}$, then the value of $\frac{a+b+c}{c}$ is :

- a. $1/\sqrt{5}$
- b. $\sqrt{2}$
- c. 2
- d. 5

5. When simplified, the product $(1 - 1/2)(1 - 1/3)(1 - 1/4).....(1 - 1/n)$ gives:

- a. 1/n
- b. 2/n

c. $2(n - 1)/n$

d. $2/n(n + 1)$

6. The value of $(x - y)^3 + (y - z)^3 + (z - x)^3$ is equal to :

$$12(x - y)(y - z)(z - x)$$

a. 0

b. $1/12$

c. 1

d. $\frac{1}{4}$

7. The value of $99 \frac{95}{99} \times 99$ is:

99

a. 9989

b. 9896

c. 9890

d. 9809

8. $(12)^3 + (6)^3 = 18$

$$(12)^2 + 6^2 = ?$$

a. 6

b. 18

c. 72

d. None of these

9. If $a * b = 2a - 3b + ab$, then $5 * 7 + 7 * 5$ is equal to:

a. 33

b. 36

c. 34

d. 38

10. If $x = a/(a - 1)$ and $1/(a - 1)$, then:

- a. x is equal to y
- b. x is equal to y only if $a < 1$
- c. x is greater than y
- d. x is greater than y only if $a < 1$
- e. y is greater than x only if $a < 1$

11. If a, b, c are integers; $a^2 + b^2 = 45$ and $b^2 + c^2 = 40$, then the values of a, b and c respectively are :

- a. 2, 6, 3
- b. 3, 2, 6
- c. 5, 4, 3
- d. None of these

12. A girl was asked to multiply a certain number by 43. She multiplied it by 34 and got his answer less than the correct one by 1206. Find the number to be multiplied.

- a. 130
- b. 132
- c. 134
- d. 136

13. In a garden, there are 12 rows and 14 columns of mango trees. The distance between two trees is 2 metres and a distance of one metre is left from all sides of the boundary of the garden. The length of the garden is

- a. 20m
- b. 22m
- c. 24m
- d. 26m

14. In a group of donkeys and pigs, the numbers of legs are 16 more than twice the number of heads. The number of donkeys is

- a. 6
- b. 8

- c. 11
- d. 13

15. The value of 40 coins of 10 p and 20 p is Rs. 5.50. The number of 20 p coins is

- a. 15
- b. 25
- c. 30
- d. 35

16. An enterprising businessman earns an income of Re 1 on the first day of his business. On every subsequent day, he earns an income which is just double of that made on the previous day. On the 20th day of business, he earns an income of:

- a. Rs 2^{19}
- b. Rs 2^{20}
- c. Rs 20^2
- d. Rs 20

17. In an examination, a student scores 4 marks for every correct answer and loses 1 mark for every wrong answer. If he attempts all 90 questions and secures 140 marks, the number of questions he attempts correctly, is:

- a. 35
- b. 40
- c. 42
- d. 46

18. Anitha had 80 currency notes in all, some of which are of Rs 95 denomination and the remaining of Rs. 45 denominations. The total amount of all these currency notes was Rs. 4000. How much amount (in Rs) did she have in the denomination of Rs 45?

- a. 3500
- b. 72
- c. 2000
- d. None of these

19. How many $\frac{1}{8}$ s are there in $37\frac{1}{2}$?

- a. 300
- b. 400
- c. 500
- d. Can't be determined

20. How many pieces of 0.85 metres can be cut from a rod 42.5 metres long?

- a. 30
- b. 40
- c. 60
- d. None of these

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Answer & Explanations

1. Exp: $(5 \times -2) = \frac{5 \times (-2)}{3} = \frac{-10}{3}$

$$5 + \frac{-10}{3}$$

So, $5 \times (5 \times -2) = 5 \times \frac{-10}{3} = \frac{5 \times (-10)}{3} = \frac{-50}{3} \times \frac{3}{5} = -10.$

$$5 + \frac{-10}{3}$$

2. Exp: $(a - b) - (c + d) = 9$ and $(c - d) - (a + b) = 3$

$$\Rightarrow (a - c) - (b + d) = 9 \text{ and } (c - a) - (b + d) = 3$$

$$\Rightarrow (b + d) = (a - c) - 9 \text{ and } (b + d) = (c - a) - 3$$

$$\Rightarrow (a - c) - 9 = (c - a) - 3 \Rightarrow 2(a - c) = 6 \Rightarrow (a - c) = 3$$

3. Exp: $\frac{8 \times 2^3 + 2^2 + 2 + 1}{8 \times 2^3} = \frac{64 + 4 + 2 + 1}{64} = \frac{71}{64}.$

$$\frac{8 \times 2^3}{8 \times 2^3} \quad \frac{64}{64}$$

4. Exp: $\frac{a}{2} = \frac{b}{3} = \frac{c}{5} = k$ (say). Then, $a = 2k$, $b = 3k$, $c = 5k.$

$$\frac{2}{2} \quad \frac{3}{3} \quad \frac{5}{5}$$

$$\frac{a + b + c}{c} = \frac{2k + 3k + 5k}{5k} = \frac{10k}{5k} = 2.$$

$$\frac{c}{5k} \quad \frac{5k}{5k} \quad \frac{5k}{5k}$$

5. Exp: $\frac{1}{2} \times \frac{2}{3} \times \frac{3}{4} \times \dots \times \frac{(n-1)}{n} = \frac{1}{n}$

6. Exp: Since $(x - y) + (y - z) + (z - x) = 0$, so $(x - y)^3 + (y - z)^3 + (z - x)^3$

$$= 3(x - y)(y - z)(z - x).$$

$$\frac{3(x - y)(y - z)(z - x)}{12(x - y)(y - z)(z - x)} = \frac{1}{4}.$$

$$12(x - y)(y - z)(z - x)$$

7. Exp: $(100 - 4/99) \times 99 = 9900 - 4 = 9896$.

8. Exp: Let $(12)^3 + (6)^3 = 18x$. Then,

$$(12)^2 + 6^2 = ?$$

$$\underline{12^3 + 6^3} = 12^2 + 6^2 - x \Rightarrow 12^2 + 6^2 - 12 * 6 = 12^2 * 6^2 - x \Rightarrow x = 12 * 6 = 72.$$

$$12 + 6$$

9. Exp: $5 * 7 + 7 * 5 = (2 * 5 - 5 * 7 + 5 * 7) + (2 * 7 - 5 * 5 + 7 * 5)$
 $= (10 + 14 - 25 + 35) = 34$.

10. Exp: $x = a/(a - 1) = 1 + 1/(a - 1) = 1 + y$. Therefore, $x > y$

11. Exp: $a^2 + b^2 = 45$... (1) and $b^2 + c^2 = 40$

Subtracting, we get: $a^2 - c^2 = 5 \Rightarrow (a + c)(a - c) = 5$.

$(a + c) = 5$ and $(a - c) = 1$.

Solving we get: $a = 3, c = 2$. Putting $c = 2$ in (ii), we get $b = 6$.

12. Exp: Let the required number be x . Then,

$$43x - 34x = 1206 \text{ or } 9x = 1206 \text{ or } x = 134.$$

Required number = 134.

13. Exp: Each row contains 14 plants.

Leaving 2 corner plants, 12 plants in between have (12×2) metres & 1 metre on each side is left.

$$\text{Length} = (24 + 2) \text{ m} = 26 \text{ m}.$$

14. Exp: Let the number of donkeys be x and the number of pigs be y . Then,

$$4x + 2y = 2(x + y) = 16 \text{ or } 2x + (2x + 2y) = (2x + 2y) + 16$$

or $2x = 16$ or $x = 8$.

15. Exp: Let the number of 20 paise coins be x .

Then, number of 10 paise coins = $(40 - x)$.

$$10(40 - x) + 20x = 550 \text{ or } 10x = 150 \text{ or } x = 15.$$

16. Exp: 2nd day he earns = $2 = 2^{(2-1)}$

3rd day he earns = $2^{(3-1)}$

On 20th day he earns $2^{(20-1)} = 2^{19}$ rupees

17. Exp: Let the number of correct answers be x .

Number of incorrect answers = $(90 - x)$.

$$4x - (90 - x) = 140 \text{ or } 5x = 230 \text{ or } x = 46.$$

18. Exp: Let the number of 45-rupee notes = x

Then, the number of 95-rupee notes = $(80 - x)$

$$45x + 95(80 - x) = 4000 \text{ or } x + 2(80 - x) = 95 \text{ or } x = 72.$$

19. Exp: Required number = $\frac{75}{2} = \frac{75}{2} \times \frac{8}{1} = 300$.

$(\frac{1}{8})$

20. Exp: Number of pieces = $\frac{42.5}{0.85} = \frac{42.50}{0.85} = \frac{4250}{85} = 50$.

0.85 0.85 85