Fractions

Simple or Vulgar Fraction

A number expressed with numerator and denominator. Say I have 3 of 10 apples then I will express it as 3/10. The total is written below a horizontal or diagonal line, and the number of parts comprising the fraction (numerator) is written above. Such fractions are called vulgar fractions or simple fractions. Eg:[3/4]

Decimal Fraction

Expressing the fraction in decimal values (denominator a power of 10) is called decimal fraction. 1/2 is expressed as 0.5 in decimal fraction. Eg:[0.45773]

Converting a decimal to vulgar fraction:

Step 1: Calculate the total numbers after decimal point.

Step 2: Remove the decimal point from the number.

Step 3: Put 1 under the denominator and annex it with "0" as many as the total in step a.

Step 4: Reduce the fraction to its lowest terms.

Example: Consider 0.44

Step 1: Total number after decimal point is 2

Step 2 and 3: 44/100

Step 4: Reducing it to lowest terms : 44/100 = 22/50 = 11/25

Converting a recurring decimal to vulgar fraction

A decimal with recurring value is called recurring decimal.

E.g: 2/9 will give 0.22222222..... where 2 is recurring number.

Method:

Step 1: Separate the recurring number from the decimal fraction.

Step 2: Annex denominator with "9" as many times as the length of the recurring number.

Step 3: Reduce the fraction to its lowest terms.

Example: Consider 0.2323232323

Step 1: The recurring number is 23

Step 2: 23/99 [the number 23 is of length 2 so we have added two nines]

Step 3: Reducing it to lowest terms : 23/99 [it can not be reduced further].

Mixed Recurring to Fractions:

If N= 0.abcbcbc…. Then N = abc - a / 990 = Repeated & non-repeated digits - Non repeated digits / As many 9's as repeated digits followed by as many zero as non - repeated digits

Eg: 0.25757..... = 257 - 2 / 990 = 255 / 990 = 17 / 60.

Exercise Questions

1. 20.05 + 35.603- …… =43.087

a. 10.263

b. 12.566

c. 15.426

d. 13.286

2. Which of the following fraction is smallest?

a. 23/28

b. 14/15

c. 15/19

d. 21/24

3. 0.585858 is equivalent to the fraction….

a. 58/100

b. 58/99

c. 85/100

d. 85/99

4. The value of $3.2\overline{36}$ is

a. 47/198

b. $3\,{}^{4}/_{198}$

c. 48/98

d. 58/36

5. 0.9*0.007= _____

a. 0.063

b. 0.0063

c.0.63

d. 0.00063

6. 0.0015÷ ? = 0.003

a. 0.05

b. 0.005

c. 0.5

d. 5

7. 0.363*0.522+0.363*0.478 = ?

a.0.522

b. 0.845

c. 0.363

d. 0.985

8. If 7125¸1.25= 5700< the value of 712.5÷12.5 is:

a. 5.7

b. 57

c. 570

d. .57

9. The value of $\frac{34.31*0.473*1.567}{0.0673*23.25*7.57}$ is close to

a. 2.0

b. 1.15

c. 2.05

d. 2.15

10. Evaluate $\frac{(5.68)^2 - (4.32)^2}{5.68 - 4.32}$

a. 8

b. 9

c. 10

d. 12

11. Evaluate $\frac{4.3*4.3*4.3+1}{4.3*4.3-4.3+1}$

a. 14.3

b. 52.3

c. 5.3

d. 42.3

12. If $\sqrt{5} = 2.24$, then the value of $\frac{5\sqrt{5}}{4\sqrt{5}-.96}$ is

a. 14

b. 15.2

c. 13.4

d. 14.5

13. If $5.51*10^{k} = 0.0551$, then the value of k is:

a. –4

b. –3

c. –2

d. –1

14. $\frac{25.25}{}$ is equal to:

2000

a. 1.012526

b. 0.012625

c. 0.12526

d. 0.12625

15. The value of $\frac{(2.502+0.064)^2 - (2.502-0.064)^2}{2.502*0.064}$

a. .25

b. .235

c. 4

d. 3

16. The value of $\frac{4.5*1.8+4.5*8.2}{1.5*4.5+1.5*5.5}$

a. 10

b. 8

c. 5

d. 3

17. The value of $\frac{(.02)^2 + (0.52)^2 + (0.035)^2}{(0.002)^2 + (0.052)^2 + (0.0035)^2}$

a. 100

b. 1000

c. .001

d. .0001

18. Out of 200 donors, ¼ are men and remaining are women. Each male donor donates Rs.3000 per year and each female donor donates ½ of that amount. What is the total yearly collection through donations?

a. Rs.1, 50,000

b. Rs.3, 75,000

c. Rs.1, 40,300

d. Rs.2, 25,000

19. One-fifth of Ramu's expenditure is equal to one-half of his savings. If his monthly income is Rs.6300 how much amount does he save?

a. Rs.1550

b. Rs.1800

c. Rs.2000

d. Rs.2350

20. The width of a rectangular hall is ½ of its length. If the area of the hall is 450 sq.m, what is the difference between its length and breadth?

a. 8m

b. 10m

c. 12m

d. 15m

Answer & Explanations

1. Exp: 20.05 + 35.603- 43.087 = 55.653- 43.087= 12.566

2. Exp: $\frac{23}{28}$ =0.821

$\frac{14}{15}$ = 0.933

$\frac{15}{19}$ = 0.7894

$\frac{21}{24}$ = 0.875

So, $\frac{15}{19}$ = 0.7894 is smallest.

3. Exp: 0.585858= $0.\overline{58}$ = $\frac{58}{99}$

4. Exp: $3.2\overline{36}$ = 3+ $0.2\overline{36}$ = 3+$\frac{236-1}{990}$ = $3\,{}^{47}/_{198}$

5. Exp: 9*7=63

Sum of decimal places= 4

So, 0.9*0.007= 0.0063

6. Exp: Let $\frac{0.0015}{X}$ = 0.003

X= $\frac{0.0015}{0.003}$ = 0.5

0.003

7. Exp: Given Expression= 0.363*(0.522+0.478)= 0.363*1= 0.363

8. Exp: Given $\frac{7125}{1.25} = 5700$

$\frac{712.5}{12.5} = \frac{71.25}{1.25} = \frac{7125*1}{1.25*100} = \frac{5700}{100} = 57$

9. Exp: $\frac{34.31*0.473*1.567}{0.0673*23.25*7.57} = \frac{25.4303}{11.845} = 2.15$

10. Exp. Given Expression = $\frac{a^2-b^2}{a-b} = \frac{(a+b)(a-b)}{a-b} = (a+b)$

$\frac{(5.68)^2 - (4.32)^2}{5.68 - 4.32} = (5.68 + 4.32) = 10$

11. Exp: Given Expression = $\frac{a^3+b^3}{a^2-ab+b^2} = (a+b)$

$= (4.3+1) = 5.3$

12. Exp: $\frac{5\sqrt{5}}{4\sqrt{5}-.96} = \frac{5*2.24}{4*2.24-.96} = \frac{11.2}{8.96-.96} = \frac{11.2}{8} = 14$

13. Exp: $10^{k} = \frac{0.0551}{5.51} = \frac{5.51}{551} = \frac{5.51*10^2}{551*10^2} = \frac{1}{10^2} = 10^{-2}$

14. Exp: $\frac{25.25}{2000} = \frac{2525}{200000} = 0.012625$

15. Exp: $\frac{(2.502+0.064)^2 - (2.502-0.064)^2}{2.502*0.064} = \frac{(a+b)^2 - (a-b)^2}{ab} = \frac{4ab}{ab} = 4$

16. Exp: $\frac{4.5*1.8+4.5*8.2}{1.5*4.5+1.5*5.5} = \frac{4.5\,(1.8+8.2)}{1.5\,(4.5+5.5)} = \frac{4.5*10}{1.5*10} = \frac{45}{15} = 3$

17. Exp: $\frac{(.02)^2 + (0.52)^2 + (0.035)^2}{(0.002)^2 + (0.052)^2 + (0.0035)^2} = \frac{a^2+b^2+c^2}{(a/10)^2+(b/10)^2+(c/10)^2}$,

where a= .02, b= .52, c= .035

$$= \frac{100(a^2+b^2+c^2)}{a^2+b^2+c^2} = 100$$

18. Exp: Number of men donors= 200*1/4 =50

Number of women donors=200-50=150

1 man donor donates = Rs.3000

Therefore, 50 men donor donates = 3000* 50= Rs.1,50,000

1 woman donor donates= 3000*1/2 = Rs.1500

Therefore, 150 women donor donates = 1500* 150= Rs.2,25,000

Hence total amount collected = 1,50,000+ 2,25,000

= Rs.3,75,000

19. Let the saving be Rs. x

Therefore, Expenditure = Rs. (6300-x)

then, $(6300-x)*\frac{1}{5} = x*\frac{1}{2}$

$$\Rightarrow 1260-\frac{x}{5} = \frac{x}{2}$$

$$\Rightarrow 1260=\frac{x}{2}+\frac{x}{5}$$

=> $\frac{7x}{10} = 1260$

x= 1800

20. Exp: Let the length of the hall be x m

Breadth of the hall = $\frac{1x}{2}$ m

Area of the hall = Length * Breadth

$450 = x * \frac{1x}{2}$

$x^2 = 900$

x =30

Difference between the length and breadth of the hall = x - 1x/2 = x/2

$\frac{30}{2}$ = 15m