CHALLENGING FRACTION & DECIMAL QUESTIONS

CANSU OLCE

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

1. $2-5\div\frac{5}{3}=?$

2. $\frac{2}{5}\div\frac{8}{15}-\frac{3}{4}+2=?$

3. $\frac{3-\frac{1}{3}}{2}-\frac{2}{3-\frac{1}{3}}=?$

4. $\frac{2}{\frac{3}{4}}-\frac{\frac{2}{3}}{4}=?$

5. $\frac{1}{2-\frac{1}{3}}+\frac{1}{5}\div\frac{1}{2}=?$

6. $2-4^{-1}+6^{-1}\div3^{-2}=?$

7. $1+\frac{2}{1+\frac{1+\frac{1}{3}}{3}}=?$

8. $\left(\frac{3}{5}-\frac{1}{9}+\frac{2}{7}\right)-\left(\frac{1}{2}-\frac{1}{9}+\frac{5}{7}\right)=?$

9. $\left(\frac{\frac{3}{2}-1}{2}-\frac{2}{1-\frac{3}{2}}\right)\div\frac{3}{4}=?$

10. $\frac{2}{\frac{3}{2}}-\frac{1}{5}\div\left(2-\frac{1}{3}\right)^{-1}=?$

11. $4+\frac{4}{1+\frac{2}{x-2}}=6$

Find x.

12. $\frac{3a+1}{15+a}$ is a proper fraction.
Find the maximum integer value for a.

13. $A=\frac{5}{4}+\frac{6}{5}+\frac{7}{6}$

Find $\frac{1}{4}+\frac{1}{5}+\frac{1}{6}$ in terms of A.

14. $A=-\frac{3}{4}-\frac{4}{5}-\frac{5}{6}$

Find $-\frac{1}{4}+\frac{9}{5}+\frac{11}{6}$ in terms of A.

15. $$2+\frac{1+\frac{\frac{3}{5}-1}{5}}{1-\frac{\frac{2}{5}}{5}}=?$$

16. $(0.472+0.528)\times(0.4+0.6)=?$

17. $$\frac{2.4-0.24}{0.432}=?$$

18. $(24.2-11.32)\div\left(6.19+\frac{1}{4}\right)=?$

19. $$\frac{0.005}{0.4}\div\frac{0.0125}{0.025}=?$$

20. $$\frac{5}{0.25}+\frac{2}{1.25}-\frac{0.3}{0.5}=?$$

21. $$\frac{\frac{0.1}{0.05}+3}{0.46+\frac{0.02}{0.5}}=?$$

22. $$\frac{0.002+0.01x}{0.008}=4$$
Find x.

23. $A = 1.3333\ldots$
$B = 0.121212\ldots$
Find $\frac{A}{B}$.

24. $a = 0.\overline{6}$
$b = 0.\overline{3}$
Find $\frac{a+b}{a-b}$.

25. $$\frac{A}{1.3\overline{5}}=45$$
Find a.

26. $$\frac{25}{x}=2.\overline{27}$$
Find x.

27. $a = 2.\overline{2}$
$b = 3.\overline{3}$
$c = 4.\overline{1}$
Find $2a+b-c$.

28. $1.\text{a} + 0.0\text{a} + 0.00\text{a} + 0.000\text{a} + \cdots = \frac{5}{3}$

Find a.

29. $2.\overline{54} - 1.\overline{3} = ?$

30. Zara spends 2/5 of her money and then 3/4 of what was left for. If she spends $34 in total. How much money was left at the end?

31. If 2/7 of a number is 120, what is 3/5 of that number?

32. When 2/15 of a piece of wire is cut, its midpoint shifts 1.5cm. What is the length of the original wire?

33. 2/5 of a water tank is filled by water. When 18L water is added, 5/8 of the tank is filled. What is the capacity of the tank?

34. $\frac{1}{6} - \frac{1}{13}\left[2 + \frac{1}{3}\left(1 - \frac{1}{2}\right)\right] = ?$

35. $1 - \dfrac{1 - \dfrac{1+\frac{1}{2}}{3}}{1 + \dfrac{1}{1-\frac{1}{2}}} \div \frac{1}{12} = ?$

36. a, b and c are positive integers.

$$a + \frac{1}{b + \frac{1}{c}} = \frac{16}{7}$$

Find a+b+c.

37. $1 + \dfrac{12}{1 + \dfrac{12}{1 + \frac{12}{\vdots}}} = ?$

38. $1 + \dfrac{1 + \dfrac{1 + \frac{\vdots}{3}}{3}}{3} = ?$

39. $1 + \dfrac{2 - \dfrac{1 + \dfrac{2 - \frac{\vdots}{3}}{3}}{3}}{3} = ?$

40. $3 + \dfrac{7 + \dfrac{7 + \frac{\vdots}{x}}{x}}{x} = 10$

Find x.

ANSWER KEY

1. -1
2. 2
3. 7/12
4. 5/2
5. 1
6. 13/4
7. 31/13
8. -1/2
9. 17/3
10. 1
11. 4
12. 6
13. A-3
14. 1-A
15. 3
16. 1
17. 5
18. 2
19. 0.025
20. 21
21. 10
22. 3
23. 11
24. 3
25. 61
26. 11
27. 32/9
28. 4
29. 40/33
30. 6
31. 252
32. 22.5
33. 80
34. 0
35. -1
36. 7
37. 4
38. 3/2
39. 3/2
40. 2