Simplification

Solution

1. Answer: (B)

$? = \frac{6}{35} \times \frac{55}{48} \times \frac{7}{4} + \frac{1}{8} - \frac{5}{32}$

$? = \frac{5}{16}$

2. Answer: (D)

$3^{?} \times \frac{729}{243} = \frac{3^5 \times 81 \times 27}{243}$

$3^{?} = \frac{3^5 \times 3^4 \times 3^3}{3^6}$

$3^{?} = 3^{5+4+3-6} = 3^6$

$? = 6$

3. Answer: (B)

$? = \frac{255 \times 272 \times 153}{102 \times 204 \times 85} = 6$

4. Answer: (D)

$(25)^{?} = \frac{625}{125} \times \frac{3125}{25}$

$(25)^{?} = 5 \times 125$

$(25)^{?} = 625 \Rightarrow (25)^2$

$? = 2$

5. Answer: (A)

$\frac{55}{100} \times 320 + \frac{30}{100} \times 1080 = 20 \times ?$

$176 + 324 = 20 \times ?$

$? = \frac{500}{20} = 25$

6. Answer: (E)

$\sqrt{? + 108 + 119} = 14 + 6 + \frac{2}{3} + \frac{1}{3}$

$\sqrt{? + 227} = 21$

$? + 227 = 441$

$? = 214$

7. Answer: (C)

$? = (19 \times 108 \times 60)/(18 \times 15)$

$= 19 \times (108/18) \times (60/15)$

$= 19 \times 6 \times 4 = 456$

8. Answer: (E)

$? = (19 \times 144 \times 292)/(18 \times 73)$

$= 19 \times (144/18) \times (292/73)$

$= 19 \times 8 \times 4 = 608$

9. Answer: (A)

$? = 625^{(0.02 + 0.73)} = 625^{0.75} = 625^{3/4}$

Since, $625^{1/4} = 5, ? = 5^3 = 125$

10. Answer: (E)

$? = 21^2 + 22^2 + 24^2$

$= 441 + 484 + 576$

$= 1501$

11. Answer: (A)

$? = 72 \times (10/3) - \sqrt{676}$

$= 24 \times 10 - 26$

$= 240 - 26 = 214$

12. Answer: (D)

$? = (180/6) + 12 \times 9 - (300/5) + 42$

$= 30 + 108 - 60 + 42$

$= 120$

13. Answer: (A)

$(12/15) \times (40/100) \times 1800 = ? \times 480$

$(12/15) \times (10 \times 4/100) \times (15 \times 120) = ? \times 4 \times 120$

$? = (12 \times 10 \times 4 \times 120)/(4 \times 120 \times 100)$

$? = (12 \times 10)/100 = 1.20$

14. Answer: (A)

$(?)^2 \times 3 = 49 \times 57 - 41 \times 18 - 1380$

$(?)^2 \times 3 = 2793 - 738 - 1380 = 675$

$(?)^2 = 225$

$? = 15$

15. Answer: (C)

Squaring both sides:

$9^2 \times 27 + 3^3 \times 7 + ? = 59^2 = 3481$

$? = 3481 - 9^2 \times 27 - 3^3 \times 7$

$? = 3481 - 2187 - 189 = 1105$

16. Answer: (C)

$(0.4^3)^{123} \div (0.4^2)^{47} \times (0.4^1)^{34} \times (0.4^1)^{29} = (0.4^1)^{?}$

$(0.4)^{(3 \times 123 - 2 \times 47 + 1 \times 34 + 1 \times 29)} = (0.4^1)^{?}$

So,

$? = (3 \times 123 - 2 \times 47 + 1 \times 34 + 1 \times 29)/1 = 338$

17. Answer: (A)

$(65 \times 71 + 20 \times 400)/100 = ? + 241$

$? = 12615/100 - 241 = -114.85$

18. Answer: (D)

$? = (880/8) - 4 \times 14 + \sqrt{324}$

$= 110 - 56 + 18$

$= 72$

19. Answer: (C)

$(?)2 + ? = 13^2 + 22^2 + 2715 - 12^3$

= 169 + 484 + 2715 – 1728 = 1640
By substituting the given options, we have ? = 40

20. Answer: (E)
$21^3 = 9261$, $34^3 = 39304$, $32^2 = 1024$, $25^2 = 625$
$(2 + ?)^3 = (9261)^{1/3} + \sqrt[3]{39304} + \sqrt{1024} + 113 + 25^2 + 2550$
$(2 + ?)^3 = 21 + 34 + 32 + 113 + 625 + 2550 = 3375$
Now, $15^3 = 3375$
So, $(2 + ?) = 15$ or $? = 13$