

# Final

Make sure to show your work, including all intermediary steps.

1.  $8 + 15 + 164 + 3,849$

$$\begin{array}{r} \overset{1}{3}\overset{2}{8}\overset{3}{4}9 \\ 164 \\ 15 \\ 8 \\ + \hline 4036 \end{array}$$

A: 4,036

2.  $55,347 + 6,810 + 354 + 87 + 9$

$$\begin{array}{r} \overset{1}{5}\overset{2}{5}\overset{3}{3}\overset{4}{4}7 \\ 6810 \\ 354 \\ 87 \\ 9 \\ + \hline 62607 \end{array}$$

A: 62,607

3.  $5,431 - 683 - 254 - 31 - 4$

$$\begin{array}{r}
 5431 \\
 - 683 \\
 \hline
 4748 \\
 - 254 \\
 \hline
 4494 \\
 - 31 \\
 \hline
 4463 \\
 - 4 \\
 \hline
 4459
 \end{array}$$

A: 4,459

4. 6845 - 597 - 328 - 48 - 12

$$\begin{array}{r}
 6845 \\
 - 597 \\
 \hline
 5868 \\
 - 328 \\
 \hline
 5540 \\
 - 48 \\
 \hline
 5492 \\
 - 12 \\
 \hline
 5480
 \end{array}$$

A: 5,480

5. 351 x 415

$$\begin{array}{r}
 351 \\
 \times 415 \\
 \hline
 1755 \\
 3510 \\
 140400 \\
 \hline
 145665
 \end{array}$$

A: 145,665

6.  $6,234 \times 75$

$$\begin{array}{r}
 6234 \\
 \times 75 \\
 \hline
 31170 \\
 436380 \\
 \hline
 467550
 \end{array}$$

A: 467,550

7.  $2325 \div 31$

$$\begin{array}{r}
 0075 \\
 31 \overline{) 2825} \\
 \underline{-217} \phantom{0} \\
 155 \\
 \underline{-155} \\
 0
 \end{array}$$

A: 75

8.  $12870 \div 198$

$$\begin{array}{r}
 00065 \\
 198 \overline{) 12870} \\
 \underline{-1188} \phantom{0} \\
 990 \\
 \underline{-990} \\
 0
 \end{array}$$

A: 65

9. What fraction is depicted in the following graph:  
Unknown?

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Unknown?

11. Reduce to its lowest terms:  
 $\frac{6}{117}$

$$\frac{6}{117} \div \frac{3}{39} = \frac{2}{39} \quad A: \frac{2}{39}$$

12. Reduce to its lowest terms:  
 $\frac{65}{415}$

$$\frac{65}{415} \div 5 = \frac{13}{83} \quad A: \frac{13}{83}$$

13. Raise to a higher term to match the given denominator:  
 $\frac{3}{4} = \frac{x}{68}$

$$\frac{3}{4} = \frac{x}{68} \quad x = 51 \quad A: \frac{51}{68}$$

$$\frac{68}{4} = 17 \quad 17 \cdot 3 = 51$$

14. Raise to a higher term to match the given denominator:  
 $\frac{7}{8} = \frac{x}{456}$

$$\frac{7}{8} = \frac{x}{456} \quad x = 399 \quad A: \frac{399}{456}$$

$$\frac{456}{8} = 57 \quad 57 \times 7 = 399$$

15. Find the lowest common denominator:  
 $\frac{1}{5}$  and  $\frac{6}{103}$

$$\frac{1}{5} \text{ and } \frac{6}{103} \rightarrow \frac{103}{515} \text{ and } \frac{30}{515}$$

$$\text{LCD}(5, 103) = 515$$

16. Find the lowest common denominator:  
 $\frac{3}{7}$  and  $\frac{2}{251}$

$$\frac{3}{7} \text{ and } \frac{2}{251} \rightarrow \frac{753}{1757} \text{ and } \frac{14}{1757}$$

$$\text{LCD}(7, 251) = 1757$$

17.  $\frac{1}{3} + \frac{15}{24} =$

$$\frac{1}{3} + \frac{15}{24} \rightarrow \frac{8}{24} + \frac{15}{24} = \frac{8+15}{24} = \frac{23}{24}$$

$$\text{LCD}(3, 24) = 24$$

$$\begin{array}{r} 15 \\ + 8 \\ \hline 23 \end{array}$$

A:  $\frac{23}{24}$

18.  $\frac{2}{7} + \frac{35}{87} =$

$$\frac{2}{7} + \frac{35}{87} = \frac{174}{609} + \frac{245}{609} = \frac{174+245}{609} = \frac{419}{609}$$

$$\text{LCD}(7, 87) = 609$$

$$\begin{array}{r} 245 \\ + 174 \\ \hline 419 \end{array}$$

19.  $\frac{8}{9} - \frac{10}{115} =$

$$\frac{8}{9} - \frac{10}{115} = \frac{8}{9} - \frac{2}{23} = \frac{184}{207} - \frac{18}{207} = \frac{184-18}{207} = \frac{166}{207}$$

$$\text{LCD}(9, 23) = 207$$

$$\begin{array}{r} 184 \\ - 18 \\ \hline 166 \end{array}$$

$$A: \frac{166}{207}$$

20.  $\frac{45}{117} - \frac{1}{3} =$

$$\frac{45}{117} - \frac{1}{3} = \frac{15}{39} - \frac{1}{3} = \frac{15}{39} - \frac{13}{39} = \frac{15-13}{39} = \frac{2}{39}$$

$$\text{LCD}(3, 39) = 39$$

$$A: \frac{2}{39}$$

21.  $\frac{3}{5} \times \frac{4}{8} =$

$$\frac{3}{5} \times \frac{4}{8} = \frac{3 \times 4}{5 \times 8} = \frac{12 \div 4}{40 \div 4} = \frac{3}{10}$$

$$A: \frac{3}{10}$$

22.  $121/350 \times 29/31 =$

$$\frac{121}{350} \times \frac{29}{31} = \frac{121 \times 29}{350 \times 31} = \frac{3509}{10850}$$

$$\begin{array}{r} 121 \\ \times 29 \\ \hline 1089 \\ + 2420 \\ \hline 3509 \end{array} \quad \begin{array}{r} 350 \\ \times 31 \\ \hline 350 \\ 10500 \\ \hline 10850 \end{array}$$

$$A: \frac{3,509}{10,850}$$

23.  $7/8 \div 1/4 =$

$$\frac{7}{8} \div \frac{1}{4} \rightarrow \frac{7}{8} \times \frac{4}{1} = \frac{7 \times 4}{8} = \frac{28 \div 4}{8 \div 4} = \frac{7}{2} \quad A: \frac{7}{2}$$

24.  $9/11 \div 2/113 =$

$$\frac{9}{11} \div \frac{2}{113} \rightarrow \frac{9}{11} \times \frac{113}{2} = \frac{9 \times 113}{11 \times 2} = \frac{1017}{22}$$

$$\begin{array}{r} 113 \\ \times 9 \\ \hline 1017 \end{array} \quad \begin{array}{r} 11 \\ \times 2 \\ \hline 22 \end{array}$$

$$A: \frac{1,017}{22}$$

25.  $1.2 + 3.5 =$



$$\begin{array}{r} 1.2 \\ + 3.5 \\ \hline 4.7 \end{array} \quad A: 4.7$$

26.  $5.87 + 6.391 =$

$$\begin{array}{r} 5.870 \\ + 6.391 \\ \hline 12.261 \end{array} \quad A: 12.261$$

27.  $7.29 - 6.11 =$

$$\begin{array}{r} 7.29 \\ - 6.11 \\ \hline 1.18 \end{array} \quad A: 1.18$$

28.  $964.21 - 156.374 =$


$$\begin{array}{r} 964.210 \\ - 156.374 \\ \hline 807.836 \end{array} \quad A: 807.836$$

29.  $35.1 \times 6.81 =$

$$\begin{array}{r}
 43 \\
 35.1 \quad (1) \\
 \times 6.81 \quad (2) \\
 \hline
 1351 \\
 28080 \\
 + 210600 \\
 \hline
 239031
 \end{array}$$

A: 239.031

30.  $97.11368 \times 45.312 =$

$97.11368$  (1)  $5+3=8$   
 $\times \quad 45.312$  (2)  
 $\hline$   
 $19422736$   
 $97113680$   
 $2913410400$   
 $48556840000$   
 $+388454720000$   
 $\hline$   
 $440041506816$   


**A: 4,400.41506816**

31.  $96.154 \div 3.12 =$  (You only need to calculate the answer to five positions after the decimal point.)

$$\begin{array}{r}
 30.81858 \\
 3.12 \overline{) 96.1540000} \\
 \underline{- 93 \ 60} \downarrow \\
 2 \ 55 \ 4 \downarrow \\
 \underline{- 2 \ 99 \ 6} \downarrow \\
 58 \ 0 \downarrow \\
 \underline{- 31 \ 2} \downarrow \\
 26 \ 80 \downarrow \\
 \underline{- 24 \ 96} \downarrow \\
 18 \ 40 \downarrow \\
 \underline{- 15 \ 60} \downarrow \\
 28 \ 80 \downarrow \\
 \underline{- 24 \ 96} \downarrow \\
 304
 \end{array}$$

$$\begin{array}{r}
 3.12 \\
 \times 30 \\
 \hline
 9360
 \end{array}$$

$$\begin{array}{r}
 3.12 \\
 \times 8 \\
 \hline
 24.96
 \end{array}$$

A: 30.81858

32.  $53.215 \div 5.2534 =$  (You only need to calculate the answer to five positions after the decimal point.)

$$\begin{array}{r}
 10.12963 \\
 5.2534 \overline{) 53815000000} \\
 \underline{- 52534} \phantom{00000} \downarrow \downarrow \\
 68100 \phantom{00000} \downarrow \\
 \underline{- 52534} \phantom{00000} \downarrow \\
 155660 \phantom{00000} \downarrow \\
 \underline{- 105068} \phantom{00000} \downarrow \\
 505930 \phantom{00000} \downarrow \\
 \underline{- 472806} \phantom{00000} \downarrow \\
 331240 \phantom{00000} \downarrow \\
 \underline{- 315204} \phantom{00000} \downarrow \\
 160360 \phantom{00000} \downarrow \\
 \underline{- 157602} \\
 2758
 \end{array}$$

A: 10.12963

33. 10% of 30 =

$$\begin{array}{l}
 \text{is } \% \text{ of } 100 \\
 30 \text{ of } 100
 \end{array}
 \rightarrow \frac{30 \times 10}{100} = \frac{300}{100} = \frac{3}{1} = 3 \quad A: 3$$

34. 23% of 450 =

$$450 \text{ is } 23\% \text{ of } 100 \rightarrow \frac{450 \times 23}{100} = \frac{10350}{100} = 103.50$$

$$\begin{array}{r} 450 \\ \times 23 \\ \hline 1350 \\ + 9000 \\ \hline 10350 \end{array}$$

A: 103.5

35. 15 is what percent of 320? (Round to two positions after the decimal point)

$$\begin{array}{l} 15 \\ \text{is } \% \\ \text{of } 100 \\ 320 \end{array} \rightarrow \frac{15 \times 100}{320} = \frac{1500 \div 20}{320 \div 20} = \frac{75}{16} = 4.68$$

$$\begin{array}{r} 04.68 \\ 16 \overline{) 75.00} \\ \underline{-64} \phantom{00} \downarrow \\ 11 \phantom{00} \downarrow \\ \underline{-96} \phantom{00} \downarrow \\ 14 \phantom{00} \downarrow \\ \underline{-128} \\ 12 \end{array}$$

A: 4.68%

36. 21 is what percent of 561? (Round to two positions after the decimal point)

$$\begin{array}{l} 21 \\ \text{is \%} \\ \text{of } 100 \end{array} \rightarrow \frac{21 \times 100}{561} = \frac{2100}{561} \div 3 = \frac{700}{187} = 3.74$$

561

$$\begin{array}{r} 003.74 \\ 187 \overline{) 700.00} \\ \underline{-561} \phantom{00} \downarrow \\ 1390 \phantom{0} \downarrow \\ \underline{-1309} \phantom{0} \downarrow \\ 810 \phantom{0} \downarrow \\ \underline{-748} \\ 62 \end{array}$$

A: 3.74%

37. 30 is 15% or what number?

$$\begin{array}{l} 30 \\ \text{is \%} \\ \text{of } 100 \end{array} \begin{array}{l} 15 \\ \\ \end{array} \rightarrow \frac{30 \times 100}{15} = \frac{3000}{15} = \frac{200}{1} = 200$$

38. 324.8 is 28 percent of what number?

$$324.8 \text{ is } \frac{28}{100} \% \rightarrow \frac{324.8 \times 100}{28} = \frac{32480 \div 28}{28 \div 28} = \frac{1160}{1}$$

A: 1160

39.  $104 - 3 \times 8 + 15 \div 3 =$

$$x = 104 - 3 \times 8 + 15 \div 3$$

$$x = 104 - 24 + 5$$

$$x = 80 + 5$$

$$x = 85$$

A: 85

40.  $(165 + 23) - 2 \times 18 + 63 \div 9 =$



$$x = (165 + 23) - 2 \times 18 + 63 \div 9$$

$$x = (188) - 2 \times 18 + 63 \div 9$$

$$x = 188 - 36 + 7$$

$$x = 152 + 7$$

$$x = 159$$

A: 159