

Mental 8 Topics

①

Pick 8 questions from different areas and set a time of 8 minutes.

Addition & Subtraction

$$4876 + 3789$$

$$\begin{array}{r} 4876 \\ + 3789 \\ \hline 8665 \end{array}$$

$$4629 - 3987$$

$$\begin{array}{r} 34\overset{3}{8}29 \\ - 3987 \\ \hline 642 \end{array}$$

$$4.6 - 2.89$$

$$\begin{array}{r} 34\overset{5}{0} \\ - 2.89 \\ \hline 1.71 \end{array}$$

Multiplication and Division

$$489 \times 78$$

$$\begin{array}{r} 489 \\ \times 78 \\ \hline 3912 \\ 34230 \\ \hline 38142 \end{array}$$

$$1016 \div 8$$

$$\begin{array}{r} 127 \\ \hline 1016 \end{array}$$

$$2897 \div 15$$

$$\begin{array}{r} 193 \text{ r } 2 \\ \hline 15 \overline{) 2897} \\ \underline{-1500} \quad (100 \times 15) \\ 1397 \\ \underline{-750} \quad (50 \times 15) \\ 647 \\ \underline{-450} \quad (30 \times 15) \\ 197 \\ \underline{-150} \quad (10 \times 15) \\ 47 \\ \underline{-45} \quad (3 \times 15) \\ 2 \end{array}$$

Key facts:

	$\times 15$
1	15
10	150
5	75
100	1500
50	750

Multiply / Divide by 10, 100, 1000

$$4.68 \div 100 = 0.0468$$

$$37.804 \times 1000 = 37,804$$

Fractions

$$\frac{2}{3} + \frac{13}{15}$$

① Find a common denominator

$$\frac{2 \times 5}{3 \times 5} \quad \frac{10}{15}$$

② Add numerators

$$\frac{10}{15} + \frac{13}{15} = \frac{23}{15} = \frac{8}{15}$$

②

$$\frac{17}{20} - \frac{3}{5}$$

① Find common denominator

$$\frac{3 \times 4}{5 \times 4} = \frac{12}{20}$$

② Subtract numerators

$$\frac{17}{20} - \frac{12}{20} = \frac{5}{20}$$

③ Simplify

$$\frac{5 \div 5}{20 \div 5} = \frac{1}{3}$$

$$\frac{4}{7} \times \frac{3}{5}$$

① Multiply numerators

$$4 \times 3 = 12$$

② Multiply denominators

$$7 \times 5 = 35$$

$$\frac{12}{35}$$

$$\frac{3}{8} \div \frac{4}{5}$$

① Flip the second fraction to turn the calculation to multiplication and follow the above steps,

$$\frac{3 \times 5}{8 \times 4} = \frac{15}{32}$$

② Simplify if needed.

$$4 \div \frac{3}{5}$$

① Change the whole number into a fraction.

$$\frac{4}{1}$$

② Flip the 'whole number' fraction and turn the calculation into a multiplication.

$$\frac{1}{4} \times \frac{3}{5} = \frac{3}{20}$$

Percentages

15% of 480

$$\begin{array}{r} 10\% = 48 \\ 5\% = 24 \\ \hline 72 \end{array}$$

36% of 480

$$\begin{array}{r} 10\% = 48 \\ \times 3 \\ \hline 30\% = 144 \end{array}$$

$$\begin{array}{r} 144 \\ + 28.8 \\ \hline 172.8 \end{array}$$

$$\begin{array}{r} 1\% = 4.8 \\ \times 6 \\ \hline 6\% = 28.8 \end{array}$$

Algebra

$$2 \times 8 - 3$$

Remember your order of operations (unless there are brackets) $\div \times + -$

$$16 - 3 = 13$$

$$4 + 8 \times 6$$

$$6 \times 8 = 48$$
$$48 + 4 = 52$$

Negative Numbers

$$-2 + 4 = 2$$

$$-2 - 6 = -8$$

$$-4 + 6 = 2$$

Roman Numerals

$$M = 1000 \quad D = 500 \quad C = 100$$

$$L = 50 \quad X = 10 \quad V = 5 \quad I = 1$$

$$MMDC LXIV \quad 2664$$

$$MCDXLIII \quad 1443$$

