

How to Conquer Fractions, Decimals & Percentages Vol 2 *Method*

Intelligent Australia Productions

First published in 2006 by Intelligent Australia Productions

© Ron Shaw 2006

ISBN 0-9758492-4-7

IAP 009

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Teachers Notes

About the Series

The 'How to Conquer Fractions, Decimals & Percentages' series was written in response to a pressing need. Most teachers of upper primary school classes would agree that this area of the Maths syllabus, along with Problem Solving, presents the most difficulties for students.

The series consists of four books:

- How to Conquer Fractions, Decimals & Percentages **Vol 1 *Fundamentals***
- How to Conquer Fractions, Decimals & Percentages **Vol 2 *Method***
- How to Conquer Fractions, Decimals & Percentages **Vol 3 *Conversions***
- How to Conquer Fractions, Decimals & Percentages **Vol 4 *Problem Solving***

The books are sequential, beginning with the most basic concepts in Volume 1, progressing through the steps required to work with and manipulate fractions, decimals and percentages, and concluding with examples based on everyday life where students can apply the skills gained from the earlier volumes.

How to Conquer Fractions, Decimals & Percentages Vol 2 *Method*

This book introduces students to the fundamentals of computations involving Fractions, Decimals and Percentages.

Each concept has worked examples to which students can refer as they work through the sheet. The examples are explained in clear, easy-to-understand steps, as are the rules for each operation (+, -, x and ÷).

Worksheets are student and teacher friendly with plenty of room to write answers, lots of working-out space and room for teacher's corrections/comments.

The pages in this book are ideal for testing students' competence in all four arithmetic operations involving Fractions, Decimals and Percentages and provide excellent preparation for entrance into secondary school

Some of what your students will learn:

- *How to cancel fractions (up and down/diagonally)*
- *When a Lowest Common Denominator needs to be found*
- *Converting fractions from mixed numerals to improper fractions*
- *Converting fractions from improper fractions to mixed numerals*
- *How to know where the decimal point goes in the answer*
- *In percentage increases and decreases the original amount is always 100%*
- *Always simplify your answer*

About the Author

Ron Shaw is a highly experienced classroom teacher.

He is the author of some 30+ educational books, many of which are used in schools in several English-speaking nations.

Ron has teaching qualifications from Edith Cowan University (Perth) and is a graduate of the Australian National University (Canberra).

He is a member of the Australian College of Education, the Australian Teaching Council, the Australian Association of Mathematics Teachers and the Mathematical Association of Western Australia.

Fractions

Addition Simple Fractions

Method (where lowest common denominator requires changing just one of the addends)

1. Find lowest common denominator (LCD)
2. Adjust numerator and denominator of the fraction that needs to be changed
3. Add numerators but not denominators
4. Simplify if possible

$$\frac{1}{2} + \frac{3}{4} \rightarrow \frac{2 \times 1}{2 \times 2} + \frac{3}{4} \rightarrow \frac{2}{4} + \frac{3}{4} \rightarrow \frac{5}{4} = 1 \frac{1}{4}$$

Method (where lowest common denominator requires changing both of the addends)

1. Find lowest common denominator (LCD)
2. Adjust numerator and denominator of both fractions
3. Add numerators but not denominators
4. Simplify if possible

$$\frac{2}{3} + \frac{3}{5} \rightarrow \frac{5 \times 2}{5 \times 3} + \frac{3 \times 3}{3 \times 5} \rightarrow \frac{10}{15} + \frac{9}{15} \rightarrow \frac{19}{15} = 1 \frac{4}{15}$$



Working out space
continue over page if
you need more room

1 $\frac{2}{5} + \frac{3}{10}$
=

2 $\frac{1}{6} + \frac{1}{3}$
=

3 $\frac{3}{14} + \frac{5}{7}$
=

4 $\frac{3}{5} + \frac{7}{20}$
=

5 $\frac{2}{9} + \frac{2}{3}$
=

6 $\frac{3}{4} + \frac{1}{12}$
=

7 $\frac{8}{15} + \frac{2}{5}$
=

8 $\frac{7}{12} + \frac{1}{3}$
=

9 $\frac{3}{7} + \frac{3}{14}$
=

10 $\frac{5}{6} + \frac{13}{18}$
=

11 $\frac{7}{8} + \frac{3}{4}$
=

12 $\frac{2}{3} + \frac{7}{9}$
=

13 $\frac{1}{2} + \frac{1}{3}$
=

14 $\frac{2}{5} + \frac{1}{4}$
=

15 $\frac{1}{3} + \frac{3}{5}$
=

16 $\frac{3}{4} + \frac{1}{5}$
=

17 $\frac{2}{3} + \frac{1}{4}$
=

18 $\frac{3}{7} + \frac{1}{2}$
=

19 $\frac{2}{5} + \frac{1}{3}$
=

20 $\frac{5}{6} + \frac{2}{5}$
=

21 $\frac{3}{4} + \frac{2}{3}$
=

22 $\frac{11}{12} + \frac{4}{5}$
=

23 $\frac{7}{9} + \frac{1}{2}$
=

24 $\frac{8}{11} + \frac{1}{3}$
=

25 $\frac{9}{10} + \frac{2}{3}$
=

No. Correct	% Score	Signature or Comment

Fractions**Addition Mixed Numerals****Method** (where lowest common denominator requires changing **just one** of the addends)

1. Convert mixed numerals to improper fractions
2. Find lowest common denominator (LCD)
3. Adjust numerator and denominator of the fraction that needs to be changed
4. Add numerators but not denominators
5. Simplify if possible

$$2\frac{3}{4} + 3\frac{1}{2} \rightarrow \frac{11}{4} + \frac{7}{2} \rightarrow \frac{11}{4} + \frac{2 \times 7}{2 \times 2} \rightarrow \frac{11}{4} + \frac{14}{4} \rightarrow \frac{25}{4} = 6\frac{1}{4}$$

Method (where lowest common denominator requires changing **both** of the addends)

1. Convert mixed numerals to improper fractions.
2. Find lowest common denominator (LCD)
3. Adjust numerator and denominator of both fractions
4. Add numerators but not denominators
5. Simplify if possible

$$4\frac{2}{3} + 3\frac{3}{5} \rightarrow \frac{14}{3} + \frac{18}{5} \rightarrow \frac{5 \times 14}{5 \times 3} + \frac{3 \times 18}{3 \times 5} \rightarrow \frac{70}{15} + \frac{54}{15} \rightarrow \frac{124}{15} = 8\frac{4}{15}$$

Working out
space
continue over
page if you need
more room

1 $3\frac{2}{3} + 1\frac{1}{6}$

=

4 $6\frac{3}{14} + 2\frac{2}{7}$

=

7 $3\frac{1}{6} + 3\frac{5}{12}$

=

10 $6\frac{3}{4} + 4\frac{5}{16}$

=

13 $4\frac{1}{5} + 2\frac{3}{4}$

=

16 $8\frac{3}{7} + 6\frac{2}{5}$

=

19 $7\frac{3}{4} + 5\frac{2}{3}$

=

22 $5\frac{7}{9} + 4\frac{1}{4}$

=

25 $4\frac{4}{5} + 3\frac{2}{3}$

=

2 $2\frac{1}{2} + 5\frac{3}{4}$

=

5 $2\frac{3}{11} + 7\frac{9}{22}$

=

8 $2\frac{2}{5} + 7\frac{11}{15}$

=

11 $8\frac{9}{14} + 4\frac{5}{7}$

=

14 $2\frac{2}{3} + 1\frac{1}{4}$

=

17 $4\frac{2}{9} + 4\frac{2}{7}$

=

20 $2\frac{9}{10} + 9\frac{2}{3}$

=

23 $5\frac{11}{12} + 2\frac{1}{5}$

=

3 $4\frac{2}{20} + 1\frac{3}{5}$

=

6 $5\frac{3}{10} + 3\frac{7}{30}$

=

9 $5\frac{5}{9} + 3\frac{13}{18}$

=

12 $7\frac{11}{18} + 3\frac{5}{6}$

=

15 $7\frac{2}{5} + 9\frac{1}{2}$

=

18 $5\frac{6}{11} + 3\frac{2}{5}$

=

21 $6\frac{4}{5} + 2\frac{3}{7}$

=

24 $6\frac{7}{10} + 1\frac{2}{3}$

=

No. Correct	% Score	Signature or Comment

Fractions**Subtraction Simple Fractions****Method** (where lowest common denominator requires changing just one of the fractions)

1. Find lowest common denominator (LCD)
2. Adjust numerator and denominator of the fraction that needs to be changed
3. Subtract numerators but not denominators
4. Simplify if possible

$$\frac{2}{3} - \frac{1}{6} \rightarrow \frac{2 \times 2}{2 \times 3} - \frac{1}{6} \rightarrow \frac{4}{6} - \frac{1}{6} \rightarrow \frac{3}{6} = \frac{1}{2}$$

Method (where lowest common denominator requires changing both fractions)

1. Find lowest common denominator (LCD)
2. Adjust numerator and denominator of both fractions
3. Subtract numerators but not denominators
4. Simplify if possible

$$\frac{7}{8} - \frac{4}{6} \rightarrow \frac{3 \times 7}{3 \times 8} - \frac{4 \times 4}{4 \times 6} \rightarrow \frac{21}{24} - \frac{16}{24} = \frac{5}{24}$$



Working out space
continue over page if
you need more room

$$\mathbf{1} \quad \frac{3}{5} - \frac{3}{10}$$

=

$$\mathbf{2} \quad \frac{5}{6} - \frac{2}{3}$$

=

$$\mathbf{3} \quad \frac{6}{7} - \frac{3}{14}$$

=

$$\mathbf{4} \quad \frac{7}{8} - \frac{3}{4}$$

=

$$\mathbf{5} \quad \frac{5}{6} - \frac{7}{12}$$

=

$$\mathbf{6} \quad \frac{2}{3} - \frac{5}{9}$$

=

$$\mathbf{7} \quad \frac{7}{10} - \frac{12}{40}$$

=

$$\mathbf{8} \quad \frac{3}{5} - \frac{6}{15}$$

=

$$\mathbf{9} \quad \frac{8}{9} - \frac{2}{3}$$

=

$$\mathbf{10} \quad \frac{7}{11} - \frac{14}{22}$$

=

$$\mathbf{11} \quad \frac{8}{10} - \frac{1}{2}$$

=

$$\mathbf{12} \quad \frac{9}{14} - \frac{2}{7}$$

=

$$\mathbf{13} \quad \frac{8}{12} - \frac{1}{4}$$

=

$$\mathbf{14} \quad \frac{7}{8} - \frac{2}{5}$$

=

$$\mathbf{15} \quad \frac{3}{4} - \frac{5}{9}$$

=

$$\mathbf{16} \quad \frac{5}{8} - \frac{1}{3}$$

=

$$\mathbf{17} \quad \frac{8}{9} - \frac{3}{4}$$

=

$$\mathbf{18} \quad \frac{6}{7} - \frac{3}{5}$$

=

$$\mathbf{19} \quad \frac{9}{10} - \frac{2}{3}$$

=

$$\mathbf{20} \quad \frac{1}{6} - \frac{1}{7}$$

=

$$\mathbf{21} \quad \frac{5}{9} - \frac{1}{4}$$

=

$$\mathbf{22} \quad \frac{4}{5} - \frac{2}{3}$$

=

$$\mathbf{23} \quad \frac{8}{10} - \frac{1}{4}$$

=

$$\mathbf{24} \quad \frac{7}{9} - \frac{4}{10}$$

=

$$\mathbf{25} \quad \frac{1}{6} - \frac{1}{9}$$

=

No. Correct	% Score	Signature or Comment

Fractions

Subtraction Mixed Numerals

Method (where lowest common denominator requires changing **just one** of the fractions)

1. Convert mixed numerals to improper fractions
2. Find lowest common denominator (LCD)
3. Adjust numerator and denominator of the fraction that needs to be changed
4. Subtract numerators but not denominators
5. Simplify if possible

$$5\frac{1}{2} - 3\frac{3}{4} \rightarrow \frac{11}{2} - \frac{15}{4} \rightarrow \frac{2 \times 11}{2 \times 2} - \frac{15}{4} \rightarrow \frac{22}{4} - \frac{15}{4} \rightarrow \frac{7}{4} = 1\frac{3}{4}$$

Method (where lowest common denominator requires changing **both** fractions)

1. Convert mixed numerals to improper fractions
2. Find lowest common denominator (LCD)
3. Adjust numerator and denominator of both fractions
4. Subtract numerators but not denominators
5. Simplify if possible

$$6\frac{1}{2} - 2\frac{2}{5} \rightarrow \frac{13}{2} - \frac{12}{5} \rightarrow \frac{5 \times 13}{5 \times 2} - \frac{2 \times 12}{2 \times 5} \rightarrow \frac{65}{10} - \frac{24}{10} \rightarrow \frac{41}{10} = 4\frac{1}{10}$$



Working out space
continue over page if you need more room

1 $7\frac{2}{7} - 4\frac{3}{14}$ **2** $6\frac{7}{9} - 1\frac{2}{3}$ **3** $4\frac{4}{12} - 2\frac{1}{6}$

=

=

=

4 $5\frac{1}{2} - 3\frac{5}{14}$ **5** $9\frac{4}{5} - 4\frac{9}{10}$ **6** $3\frac{1}{4} - 2\frac{5}{8}$

=

=

=

7 $7\frac{3}{8} - 5\frac{7}{16}$ **8** $5\frac{3}{5} - 1\frac{7}{10}$ **9** $9\frac{11}{21} - 4\frac{2}{7}$

=

=

=

10 $8\frac{9}{14} - 5\frac{3}{7}$ **11** $4\frac{1}{2} - 1\frac{11}{16}$ **12** $5\frac{7}{8} - 2\frac{9}{24}$

=

=

=

13 $8\frac{7}{8} - 4\frac{4}{5}$ **14** $7\frac{2}{3} - 3\frac{1}{2}$ **15** $4\frac{1}{2} - 3\frac{9}{11}$

=

=

=

16 $6\frac{9}{10} - 6\frac{3}{7}$ **17** $5\frac{1}{4} - 2\frac{1}{3}$ **18** $7\frac{4}{7} - 2\frac{3}{5}$

=

=

=

19 $3\frac{5}{8} - 1\frac{2}{3}$ **20** $8\frac{1}{4} - 8\frac{1}{5}$ **21** $9\frac{3}{5} - 3\frac{3}{8}$

=

=

=

22 $7\frac{1}{3} - 1\frac{9}{10}$ **23** $4\frac{2}{3} - 3\frac{9}{10}$ **24** $2\frac{1}{2} - 1\frac{2}{3}$

=

=

=

25 $6\frac{1}{5} - 2\frac{3}{7}$

=

No. Correct	% Score	Signature or Comment

Fractions**Multiplication Simple Fractions**

Working out space
continue over page if
you need more room

Method

1. Where possible cancel diagonally, or up and down, or both
2. Multiply numerators, multiply denominators (simplifying where possible)

$$\frac{8}{9} \times \frac{3}{4} \rightarrow \frac{\overset{2}{\cancel{8}}}{\underset{3}{\cancel{9}}} \times \frac{\overset{1}{\cancel{3}}}{\underset{1}{\cancel{4}}} = \frac{2}{3}$$

$$\mathbf{1} \quad \frac{1}{4} \times \frac{2}{3}$$

=

$$\mathbf{2} \quad \frac{2}{3} \times \frac{3}{4}$$

=

$$\mathbf{3} \quad \frac{2}{5} \times \frac{10}{12}$$

=

$$\mathbf{4} \quad \frac{3}{5} \times \frac{5}{6}$$

=

$$\mathbf{5} \quad \frac{2}{9} \times \frac{3}{5}$$

=

$$\mathbf{6} \quad \frac{1}{3} \times \frac{6}{7}$$

=

$$\mathbf{7} \quad \frac{4}{5} \times \frac{5}{6}$$

=

$$\mathbf{8} \quad \frac{3}{7} \times \frac{14}{15}$$

=

$$\mathbf{9} \quad \frac{4}{9} \times \frac{12}{16}$$

=

$$\mathbf{10} \quad \frac{3}{8} \times \frac{4}{5}$$

=

$$\mathbf{11} \quad \frac{3}{10} \times \frac{5}{8}$$

=

$$\mathbf{12} \quad \frac{11}{12} \times \frac{3}{22}$$

=

$$\mathbf{13} \quad \frac{4}{7} \times \frac{7}{8}$$

=

$$\mathbf{14} \quad \frac{2}{9} \times \frac{3}{16}$$

=

$$\mathbf{15} \quad \frac{5}{8} \times \frac{4}{15}$$

=

$$\mathbf{16} \quad \frac{6}{15} \times \frac{2}{7}$$

=

$$\mathbf{17} \quad \frac{2}{3} \times \frac{5}{12}$$

=

$$\mathbf{18} \quad \frac{4}{9} \times \frac{6}{20}$$

=

$$\mathbf{19} \quad \frac{9}{10} \times \frac{2}{3}$$

=

$$\mathbf{20} \quad \frac{3}{4} \times \frac{8}{9}$$

=

$$\mathbf{21} \quad \frac{3}{14} \times \frac{7}{9}$$

=

$$\mathbf{22} \quad \frac{2}{9} \times \frac{6}{10}$$

=

$$\mathbf{23} \quad \frac{5}{6} \times \frac{3}{5}$$

=

$$\mathbf{24} \quad \frac{3}{5} \times \frac{10}{15}$$

=

$$\mathbf{25} \quad \frac{3}{7} \times \frac{7}{9}$$

=

No. Correct	% Score	Signature or Comment

Fractions**Multiplication Mixed Numerals**

Working out
space
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page if you
need more
room

Method

1. Convert mixed numerals to improper fractions
2. Where possible cancel diagonally, or up and down, or both
3. Multiply numerators, multiply denominators
4. Simplify if possible

$$4 \frac{2}{3} \times 1 \frac{1}{4} \rightarrow \frac{\cancel{14}^7}{3} \times \frac{5}{\cancel{2}^1} \rightarrow \frac{35}{6} = 5 \frac{5}{6}$$

$$\mathbf{1} \quad 1 \frac{7}{8} \times 1 \frac{2}{3}$$

=

$$\mathbf{2} \quad 2 \frac{3}{4} \times 2 \frac{2}{5}$$

=

$$\mathbf{3} \quad 3 \frac{1}{3} \times 1 \frac{1}{5}$$

=

$$\mathbf{4} \quad 2 \frac{5}{8} \times 2 \frac{1}{4}$$

=

$$\mathbf{5} \quad 5 \frac{1}{3} \times 1 \frac{1}{5}$$

=

$$\mathbf{6} \quad 4 \frac{1}{4} \times 1 \frac{3}{5}$$

=

$$\mathbf{7} \quad 5 \frac{4}{5} \times 3 \frac{1}{3}$$

=

$$\mathbf{8} \quad 3 \frac{2}{3} \times 1 \frac{1}{5}$$

=

$$\mathbf{9} \quad 6 \frac{3}{4} \times 1 \frac{1}{9}$$

=

$$\mathbf{10} \quad 1 \frac{2}{9} \times 7 \frac{1}{5}$$

=

$$\mathbf{11} \quad 9 \frac{1}{6} \times 2 \frac{4}{11}$$

=

$$\mathbf{12} \quad 1 \frac{1}{6} \times 5 \frac{1}{7}$$

=

$$\mathbf{13} \quad 2 \frac{2}{3} \times 1 \frac{2}{5}$$

=

$$\mathbf{14} \quad 9 \frac{1}{3} \times 2 \frac{1}{4}$$

=

$$\mathbf{15} \quad 4 \frac{2}{3} \times 1 \frac{1}{2}$$

=

$$\mathbf{16} \quad 3 \frac{2}{5} \times 1 \frac{7}{8}$$

=

$$\mathbf{17} \quad 1 \frac{1}{3} \times 1 \frac{1}{3}$$

=

$$\mathbf{18} \quad 6 \frac{1}{2} \times 1 \frac{1}{5}$$

=

$$\mathbf{19} \quad 4 \frac{4}{9} \times 8 \frac{4}{5}$$

=

$$\mathbf{20} \quad 8 \frac{3}{4} \times 2 \frac{2}{7}$$

=

$$\mathbf{21} \quad 4 \frac{2}{5} \times 1 \frac{1}{2}$$

=

$$\mathbf{22} \quad 6 \frac{2}{5} \times 1 \frac{2}{8}$$

=

$$\mathbf{23} \quad 5 \frac{1}{4} \times 2 \frac{2}{7}$$

=

$$\mathbf{24} \quad 9 \frac{1}{2} \times 1 \frac{1}{3}$$

=

$$\mathbf{25} \quad 4 \frac{1}{2} \times 5 \frac{2}{3}$$

=

No. Correct	% Score	Signature or Comment

Fractions

Division Simple Fractions



Working out space
continue over page if
you need more room

Method

1. Invert 2nd fraction and change sign from ÷ to x
2. Where possible cancel diagonally, or up and down, or both
3. Multiply numerators, multiply denominators
4. Simplify if possible

$$\frac{4}{5} \div \frac{3}{5} \rightarrow \frac{4}{5} \times \frac{5}{3} \rightarrow \frac{4}{\cancel{5}} \times \frac{\cancel{5}^1}{3} \rightarrow \frac{4}{3} = 1 \frac{1}{3}$$

$$\mathbf{1} \quad \frac{3}{4} \div \frac{5}{6} \qquad \mathbf{2} \quad \frac{4}{5} \div \frac{8}{9} \qquad \mathbf{3} \quad \frac{1}{7} \div \frac{5}{14}$$

=

=

=

$$\mathbf{4} \quad \frac{7}{8} \div \frac{21}{24} \qquad \mathbf{5} \quad \frac{2}{11} \div \frac{16}{33} \qquad \mathbf{6} \quad \frac{9}{10} \div \frac{3}{5}$$

=

=

=

$$\mathbf{7} \quad \frac{2}{9} \div \frac{5}{6} \qquad \mathbf{8} \quad \frac{5}{12} \div \frac{8}{15} \qquad \mathbf{9} \quad \frac{4}{11} \div \frac{16}{33}$$

=

=

=

$$\mathbf{10} \quad \frac{6}{7} \div \frac{3}{7} \qquad \mathbf{11} \quad \frac{5}{8} \div \frac{3}{14} \qquad \mathbf{12} \quad \frac{7}{18} \div \frac{2}{9}$$

=

=

=

$$\mathbf{13} \quad \frac{8}{11} \div \frac{7}{44} \qquad \mathbf{14} \quad \frac{3}{5} \div \frac{9}{20} \qquad \mathbf{15} \quad \frac{2}{7} \div \frac{14}{35}$$

=

=

=

$$\mathbf{16} \quad \frac{3}{7} \div \frac{24}{35} \qquad \mathbf{17} \quad \frac{6}{11} \div \frac{5}{22} \qquad \mathbf{18} \quad \frac{8}{9} \div \frac{11}{18}$$

=

=

=

$$\mathbf{19} \quad \frac{16}{21} \div \frac{4}{7} \qquad \mathbf{20} \quad \frac{16}{33} \div \frac{8}{11} \qquad \mathbf{21} \quad \frac{9}{10} \div \frac{3}{5}$$

=

=

=

$$\mathbf{22} \quad \frac{2}{11} \div \frac{3}{55} \qquad \mathbf{23} \quad \frac{24}{35} \div \frac{6}{7} \qquad \mathbf{24} \quad \frac{27}{28} \div \frac{3}{7}$$

=

=

=

$$\mathbf{25} \quad \frac{15}{16} \div \frac{3}{8}$$

=

No. Correct	% Score	Signature or Comment

Fractions**Division Mixed Numerals**

Working
out space
continue over
page if you
need more
room

Method

1. Convert mixed numerals to improper fractions
2. Invert 2nd fraction & change sign from \div to \times
3. Where possible cancel diagonally, or up and down, or both
4. Multiply numerators, multiply denominators
5. Simplify if possible

$$3 \frac{1}{5} \div 2 \frac{2}{3} \rightarrow \frac{16}{5} \div \frac{8}{3} \rightarrow \frac{16}{5} \times \frac{3}{8} \rightarrow \frac{6}{5} = 1 \frac{1}{5}$$

$$1 \quad 2 \frac{1}{4} \div 3 \frac{3}{8}$$

=

$$2 \quad 4 \frac{1}{6} \div 5 \frac{5}{6}$$

=

$$3 \quad 1 \frac{2}{9} \div 5 \frac{1}{3}$$

=

$$4 \quad 7 \frac{7}{8} \div 4 \frac{1}{5}$$

=

$$5 \quad 8 \frac{3}{4} \div 3 \frac{2}{6}$$

=

$$6 \quad 2 \frac{11}{12} \div 5 \frac{5}{6}$$

=

$$7 \quad 4 \frac{1}{2} \div 4 \frac{1}{5}$$

=

$$8 \quad 3 \frac{2}{6} \div 3 \frac{1}{3}$$

=

$$9 \quad 1 \frac{10}{12} \div 3 \frac{2}{3}$$

=

$$10 \quad 8 \frac{1}{4} \div 6 \frac{3}{5}$$

=

$$11 \quad 9 \frac{4}{5} \div 2 \frac{4}{5}$$

=

$$12 \quad 9 \frac{6}{10} \div 6 \frac{6}{7}$$

=

$$13 \quad 2 \frac{5}{8} \div 3 \frac{3}{6}$$

=

$$14 \quad 1 \frac{3}{4} \div 2 \frac{2}{6}$$

=

$$15 \quad 1 \frac{1}{11} \div 4 \frac{4}{5}$$

=

$$16 \quad 3 \frac{1}{2} \div 1 \frac{3}{8}$$

=

$$17 \quad 4 \frac{2}{3} \div 1 \frac{5}{6}$$

=

$$18 \quad 2 \frac{11}{12} \div 1 \frac{1}{6}$$

=

$$19 \quad 7 \frac{7}{8} \div 8 \frac{2}{5}$$

=

$$20 \quad 6 \frac{1}{4} \div 4 \frac{1}{6}$$

=

$$21 \quad 7 \frac{2}{10} \div 5 \frac{1}{7}$$

=

$$22 \quad 5 \frac{1}{3} \div 1 \frac{2}{9}$$

=

$$23 \quad 8 \frac{2}{5} \div 7 \frac{7}{8}$$

=

$$24 \quad 5 \frac{5}{11} \div 4 \frac{2}{7}$$

=

$$25 \quad 4 \frac{1}{6} \div 6 \frac{1}{4}$$

=

No. Correct

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Fractions**Finding a fraction of whole numbers****Method**

1. Change the integer to an improper fraction

2. Multiply this improper fraction by the other fraction, simplifying where possible

*Example 1***Find 1/3 of 18:**

$$\frac{1}{3} \times \frac{18}{1} = 6$$

*Example 2***Find 3/4 of 80:**

$$\frac{3}{4} \times \frac{80}{1} = 60$$

Calculate, then write answers underneath...**1** Find 1/5 of 75**2** Find 1/4 of 92**3** Find 1/3 of 57**4** Find 1/4 of 56**5** Find 1/6 of 84**6** Find 1/7 of 91**7** Find 2/5 of 85**8** Find 3/7 of 98**9** Find 3/4 of 92**10** Find 2/3 of 78**11** Find 3/5 of 70**12** Find 4/7 of 84**13** Find 7/8 of 168**14** Find 4/5 of 155**15** Find 7/9 of 189**16** Find 2/9 of 261**17** Find 3/7 of 217**18** Find 5/8 of 176**19** Find 2/5 of 300**20** Find 8/9 of 198**21** Find 5/6 of 312**22** Find 5/9 of 369**23** Find 2/7 of 497**24** Find 4/5 of 555**25** Find 5/7 of 504

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Fractions**Finding a fraction of decimal quantities****Method**

1. Change the decimal quantity into fraction form, eg $4.2 \rightarrow \frac{4.2}{1}$
2. Multiply the two fractions together, simplifying where possible

*Example***What is $\frac{1}{3}$ of 9.03?**

$$\frac{1}{3} \times \frac{9.03^{\cancel{3.01}}}{1} = 3.01$$

Try these:

- 1** What is $\frac{1}{4}$ of 42.8? **2** What is $\frac{1}{5}$ of 10.5? **3** What is $\frac{1}{3}$ of 63.6?
- 4** What is $\frac{3}{4}$ of 8.04? **5** What is $\frac{2}{3}$ of 9.69? **6** What is $\frac{2}{5}$ of 32.5?
- 7** What is $\frac{2}{7}$ of 30.1? **8** What is $\frac{4}{5}$ of 0.95? **9** What is $\frac{5}{9}$ of 1.08?
- 10** Find $\frac{3}{4}$ of 0.56 **11** Find $\frac{2}{7}$ of 1.26 **12** Find $\frac{8}{9}$ of 0.216
- 13** Find $\frac{5}{6}$ of 5.16 **14** Find $\frac{3}{5}$ of 0.015 **15** Find $\frac{7}{8}$ of 0.016
- 16** Find $\frac{1}{4}$ of 0.012 **17** Find $\frac{2}{3}$ of 0.006 **18** Find $\frac{3}{7}$ of 0.049
- 19** Find $\frac{5}{6}$ of 0.006 **20** Find $\frac{3}{4}$ of 0.016 **21** Find $\frac{5}{8}$ of 0.024
- 22** Find $\frac{4}{7}$ of 0.175 **23** Find $\frac{5}{9}$ of 0.036 **24** Find $\frac{4}{5}$ of 0.905
- 25** Find $\frac{5}{6}$ of 0.042

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Percentages**Finding a percentage of whole numbers****Method**

1. Multiply the quantity by the percentage number divided by 100 (simplifying where possible)

*Example 1***Find 70% of 80:**

$$\frac{\cancel{70} \times \cancel{80}}{\cancel{100}} = 56$$

*Example 2***Find 75% of 60:**

$$\frac{\cancel{75}^3 \times \cancel{60}^{15}}{\cancel{100}^4} = 45$$

Calculate, then write answers underneath...**1** Find 60% of 90**2** Find 30% of 80**3** Find 70% of 70**4** Find 90% of 90**5** Find 20% of 60**6** Find 60% of 30**7** Find 40% of 20**8** Find 90% of 80**9** Find 20% of 20**10** Find 15% of 40**11** Find 25% of 70**12** Find 45% of 90**13** Find 95% of 80**14** Find 5% of 80**15** Find 65% of 50**16** Find 70% of 900**17** Find 60% of 600**18** Find 40% of 200**19** Find 90% of 10**20** Find 80% of 800**21** Find 10% of 10**22** Find 55% of 700**23** Find 15% of 600**24** Find 95% of 900**25** Find 5% of 60

No. Correct

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Percentages**Finding a percentage of decimal quantities**

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Method

1. Multiply the quantity by the percentage number divided by 100 (simplifying where possible)

Example 1
Find 40% of 60.5

$$\frac{\cancel{40}^2 \times \cancel{60.5}^{12.1}}{\cancel{100}^5} = 24.2$$

Example 2
Find 75% of 8.04

$$\frac{\cancel{75}^3 \times \cancel{8.04}^{2.01}}{\cancel{100}^4} = 6.03$$

Calculate, then write answers underneath...

1 Find 30% of 8.5 **2** Find 60% of 6.5 **3** Find 20% of 9.5

4 Find 80% of 12.5 **5** Find 40% of 15.5 **6** Find 70% of 42.4

7 Find 90% of 3.4 **8** Find 10% of 562.5 **9** Find 50% of 491.6

10 Find 60% of 30.4 **11** Find 40% of 90.6 **12** Find 75% of 80.8

13 Find 25% of 308.4 **14** Find 90% of 49.6 **15** Find 5% of 64.4

16 Find 90% of 9.08 **17** Find 20% of 4.44 **18** Find 30% of 8.56

19 Find 80% of 1.85 **20** Find 40% of 4.65 **21** Find 10% of 5.55

22 Find 30% of 0.68 **23** Find 80% of 0.48 **24** Find 10% of 2.04

25 Find 50% of 1.068

No. Correct	% Score	Signature or Comment

Percentages



Increasing a whole number by a given %

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**** Important Note:** The *original* quantity always equals 100%. **

Method

1. Add the percentage increase to 100

2. Multiply the quantity by this number and divide by 100 (simplifying where possible)

Example 1

Increase 20 by 30%.

$$30 + 100 = 130$$

$$\frac{\cancel{130} \times 20}{\cancel{100}} \rightarrow \frac{26}{1} = \mathbf{26}$$

Example 2

Increase 84 by 25%.

$$25 + 100 = 125$$

$$\frac{\cancel{125} \times 84}{\cancel{100}} \rightarrow \frac{105}{1} = \mathbf{105}$$

Example 3

Increase 320 by 40%.

$$40 + 100 = 140$$

$$\frac{\cancel{140} \times 320}{\cancel{100}} \rightarrow \frac{448}{1} = \mathbf{448}$$

Example 4

Increase 560 by 75%.

$$75 + 100 = 175$$

$$\frac{\cancel{175} \times 560}{\cancel{100}} \rightarrow \frac{700}{1} = \mathbf{700}$$

1 Increase 60 by 70%

2 Increase 50 by 80%

3 Increase 40 by 50%

4 Increase 10 by 10%

5 Increase 90 by 10%

6 Increase 70 by 20%

7 Increase 80 by 25%

8 Increase 40 by 35%

9 Increase 20 by 85%

10 Increase 60 by 15%

11 Increase 80 by 65%

12 Increase 20 by 95%

13 Increase 500 by 70%

14 Increase 460 by 20%

15 Increase 640 by 50%

16 Increase 280 by 70%

17 Increase 150 by 90%

18 Increase 880 by 10%

19 Increase 440 by 75%

20 Increase 200 by 65%

21 Increase 380 by 25%

22 Increase 720 by 5%

23 Increase 300 by 65%

24 Increase 60 by 5%

25 Increase 800 by 25%

No. Correct	% Score	Signature or Comment

Percentages

Increasing a mixed numeral by a given %



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**** Important Note:** The *original* quantity always equals 100%. **

Method

1. Add the percentage increase to 100
2. Multiply the mixed numeral (converted to an improper fraction) by this number and divide by 100, simplifying where possible

Example

Increase $3\frac{1}{2}$ by 60%.

$$60 + 100 = 160$$

$$3\frac{1}{2} = \frac{7}{2}$$

$$\frac{7}{2} \times \frac{\cancel{160}^8}{\cancel{100}_5} \rightarrow \frac{28}{5} = 5\frac{3}{5}$$

- | | | |
|---|--|---|
| 1 Increase $5\frac{1}{4}$ by 25% | 2 Increase $8\frac{3}{4}$ by 50% | 3 Increase $2\frac{3}{5}$ by 50% |
| 4 Increase $3\frac{7}{10}$ by 50% | 5 Increase $1\frac{3}{5}$ by 10% | 6 Increase $4\frac{1}{10}$ by 50% |
| 7 Increase $7\frac{1}{2}$ by 40% | 8 Increase $6\frac{1}{3}$ by 25% | 9 Increase $4\frac{2}{5}$ by 10% |
| 10 Increase $1\frac{4}{5}$ by 25% | 11 Increase $7\frac{1}{7}$ by 50% | 12 Increase $5\frac{5}{10}$ by 25% |
| 13 Increase $9\frac{1}{2}$ by 50% | 14 Increase $4\frac{2}{3}$ by 20% | 15 Increase $2\frac{1}{7}$ by 50% |
| 16 Increase $5\frac{3}{10}$ by 80% | 17 Increase $3\frac{2}{5}$ by 20% | 18 Increase $6\frac{1}{2}$ by 10% |
| 19 Increase $3\frac{2}{6}$ by 60% | 20 Increase $1\frac{1}{9}$ by 25% | 21 Increase $2\frac{4}{5}$ by 80% |
| 22 Increase $6\frac{2}{5}$ by 50% | 23 Increase $8\frac{1}{2}$ by 25% | 24 Increase $6\frac{1}{3}$ by 50% |
| 25 Increase $4\frac{8}{10}$ by 25% | | |

No. Correct	% Score	Signature or Comment

Percentages



Decreasing a whole number by a given %

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**** Remember:** The *original* quantity always equals 100%. **

Method

1. Subtract the percentage decrease from 100.
2. Multiply the quantity by this number and divide by 100.
3. Simplify if possible

Example 1

Decrease 70 by 20%.

$$100 - 20 = 80$$

$$\frac{\cancel{70} \times \cancel{80}}{100-} \rightarrow \frac{56}{1} = 56$$

Example 2

Decrease 40 by 25%.

$$100 - 25 = 75$$

$$\frac{\cancel{40} \times \cancel{75}}{100-} \rightarrow \frac{30}{1} = 30$$

Example 3

Decrease 500 by 30%.

$$100 - 30 = 70$$

$$\frac{\cancel{500} \times \cancel{70}}{100-} \rightarrow \frac{350}{1} = 350$$

Example 4

Decrease 600 by 5%.

$$100 - 5 = 95$$

$$\frac{\cancel{600} \times \cancel{95}}{100-} \rightarrow \frac{570}{1} = 570$$

1 Decrease 50 by 20%

2 Decrease 80 by 40%

3 Decrease 60 by 10%

4 Decrease 70 by 70%

5 Decrease 90 by 40%

6 Decrease 40 by 30%

7 Decrease 60 by 15%

8 Decrease 80 by 85%

9 Decrease 20 by 15%

10 Decrease 20 by 45%

11 Decrease 40 by 95%

12 Decrease 60 by 75%

13 Decrease 700 by 70%

14 Decrease 640 by 50%

15 Decrease 900 by 40%

16 Decrease 440 by 10%

17 Decrease 840 by 60%

18 Decrease 960 by 70%

19 Decrease 800 by 95%

20 Decrease 400 by 45%

21 Decrease 360 by 25%

22 Decrease 960 by 75%

23 Decrease 200 by 5%

24 Decrease 320 by 75%

25 Decrease 900 by 35%

No. Correct

% Score

Signature or Comment

Percentages

Decreasing a mixed numeral by a given %



**** Remember:** The *original* quantity always equals 100%. **

Method

1. Subtract the percentage decrease from 100.

2. Multiply the mixed numeral by this number and divide by 100, simplifying where possible

Example

Decrease $4\frac{1}{4}$ by 20%.

$$100 - 20 = 80$$

$$4\frac{1}{4} = \frac{17}{4}$$

$$\frac{17}{4} \times \frac{80}{100} \rightarrow \frac{17}{5} = 3\frac{2}{5}$$

- 1** Decrease $8\frac{1}{2}$ by 25%
- 2** Decrease $5\frac{3}{10}$ by 80%
- 3** Decrease $9\frac{1}{2}$ by 50%
- 4** Decrease $1\frac{4}{5}$ by 25%
- 5** Decrease $1\frac{1}{9}$ by 25%
- 6** Decrease $4\frac{8}{10}$ by 25%
- 7** Decrease $5\frac{5}{10}$ by 25%
- 8** Decrease $6\frac{1}{3}$ by 50%
- 9** Decrease $8\frac{3}{4}$ by 50%
- 10** Decrease $7\frac{1}{7}$ by 50%
- 11** Decrease $6\frac{1}{2}$ by 10%
- 12** Decrease $6\frac{2}{5}$ by 50%
- 13** Decrease $3\frac{2}{6}$ by 60%
- 14** Decrease $5\frac{1}{4}$ by 25%
- 15** Decrease $4\frac{2}{3}$ by 20%
- 16** Decrease $2\frac{1}{7}$ by 50%
- 17** Decrease $7\frac{1}{2}$ by 40%
- 18** Decrease $4\frac{2}{5}$ by 10%
- 19** Decrease $6\frac{1}{3}$ by 25%
- 20** Decrease $1\frac{3}{5}$ by 10%
- 21** Decrease $4\frac{1}{10}$ by 50%
- 22** Decrease $3\frac{7}{10}$ by 50%
- 23** Decrease $3\frac{2}{5}$ by 20%
- 24** Decrease $2\frac{4}{5}$ by 80%
- 25** Decrease $2\frac{3}{5}$ by 50%

No. Correct	% Score	Signature or Comment

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Percentages**Percentages greater than 100**

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**** Remember:** The *original* quantity always equals 100%. **

Method

1. Multiply the quantity by the percentage number divided by 100 (simplifying where possible)

Example 1

How much is 200% of 21?

$$\frac{\cancel{200} \times 21}{\cancel{100}} = 42$$

Example 2

Find 500% of 2½

$$\frac{\cancel{500}}{\cancel{100}} \times \frac{5}{2} \rightarrow \frac{25}{2} = 12\frac{1}{2}$$

Now try these:

1 How much is 300% of 10½? **2** Find 250% of 7 **3** How much is 400% of 6½?

4 How much is 700% of 7½? **5** Find 500% of 18 **6** How much is 150% of 65?

7 How much is 101% of 100? **8** Find 101% of 200 **9** How much is 1 000% of 5?

10 Find 750% of 6 **11** Find 250% of 11 **12** How much is 800% of 8?

13 How much is 1 000% of 1? **14** Find 200% of ½ **15** Find 400% of ¼

16 Find 300% of ⅓ **17** Find 500% of 200 **18** How much is 110% of 90?

19 How much is 101% of 1 000? **20** Find 450% of 1 **21** Find 200% of ⅒

22 Find 1 000% of ⅒ **23** Find 2 000% of 1 **24** How much is 1 000% of 100?

25 How much is 110% of 110?

No. Correct	% Score	Signature or Comment

Decimals

Addition



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**** Important:** Before adding make sure you place the decimal points of each of the addends and the answer exactly underneath one another.

Method

1. Write the first addend.
2. Write all other addends underneath the first, ensuring that the decimal points fall in a straight line exactly underneath the decimal point of the first addend.
3. Don't add just yet.... insert the decimal point of the answer, underneath the decimal points of the addends.
4. Now add, from right to left

Example 1

3.5 + 5.7

$$\begin{array}{r} 3.5 \\ + 5.7 \\ \hline 9.2 \end{array}$$

Example 2

4.2 + 0.075

$$\begin{array}{r} 4.2 \\ + 0.075 \\ \hline 4.275 \end{array}$$

Example 3

125 + 6.725

$$\begin{array}{r} 125.0 \\ + 6.725 \\ \hline 131.725 \end{array}$$

Example 4

6.2 + 1.7 + 8.4

$$\begin{array}{r} 6.2 \\ 1.7 \\ + 8.4 \\ \hline 16.3 \end{array}$$

Example 5

7.8 + 0.059 + 0.37

$$\begin{array}{r} 7.8 \\ 0.059 \\ + 0.37 \\ \hline 8.229 \end{array}$$

Example 6

1 + 572.5 + 23.006 + 6.43

$$\begin{array}{r} 1.0 \\ 572.5 \\ 23.006 \\ + 6.43 \\ \hline 602.936 \end{array}$$

Now try these:

1 7.3 + 8.9 **2** 8.6 + 9.3 **3** 7.4 + 4.5 **4** 9.4 + 6.7 **5** 5.5 + 7.7

6 8.9 + 1.38 **7** 4.4 + 2.99 **8** 5.05 + 6.2 **9** 13 + 8.32 **10** 24 + 0.83

11 2.03 + 23.45 **12** 44.56 + 9.74 **13** 8.5 + 5.5 + 7.9 **14** 9.5 + 5 + 7.6

15 7.8 + 9.9 + 6.4 **16** 7.7 + 12.5 + 0.6 **17** 8 + 0.79 + 0.077 **18** 9 + 7 + 9.05

19 0.008 + 1 + 7.9 **20** 238 + 9 + 0.9 **21** 40.7 + 12 + 0.3 **22** 66.4 + 2 + 0.8

23 2 + 0.23 + 32.09 + 0.7 **24** 0.03 + 1 + 94.6 + 4 **25** 7 + 9.07 + 4 + 0.02

No. Correct	% Score	Signature or Comment



Decimals

Subtraction

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**** Important:** Before subtracting make sure you place the decimal points of each number and the answer exactly underneath one another.

Method

1. Write the bigger number. **2.** Write the number to be subtracted underneath the bigger one, ensuring that the decimal point falls in a straight line exactly underneath the decimal point of the bigger number. **3.** Don't subtract just yet....insert the decimal point of the answer, underneath the decimal points of the two numbers above. **4.** Now subtract, from right to left.

Example 1
9.7 - 6.5

$$\begin{array}{r} 9.7 \\ - 6.5 \\ \hline 3.2 \end{array}$$

Example 2
8.4 - 4.9

$$\begin{array}{r} 8.4 \\ - 4.9 \\ \hline 3.5 \end{array}$$

Example 3
46.8 - 9.7

$$\begin{array}{r} 46.8 \\ - 9.7 \\ \hline 37.1 \end{array}$$

Example 4
48 - 6.4

$$\begin{array}{r} 48.0 \\ - 6.4 \\ \hline 41.6 \end{array}$$

Example 5
590.06 - 12.007

$$\begin{array}{r} 590.06 \\ - 12.007 \\ \hline 578.053 \end{array}$$

Example 6
668.06 - 0.089

$$\begin{array}{r} 668.06 \\ - 0.089 \\ \hline 667.971 \end{array}$$

Now try these:

1 8.5 - 2.3 **2** 9.9 - 4.7 **3** 7.4 - 5.9 **4** 5.0 - 3.9 **5** 7.6 - 6.9

6 10.4 - 4.7 **7** 14.7 - 6.8 **8** 34.8 - 7.9 **9** 63.6 - 0.09 **10** 70.04 - 5.99

11 64.02 - 55.088 **12** 7.1 - 0.034 **13** 8 - 7.999 **14** 50 - 23.93

15 30.24 - 17 **16** 300.2 - 0.7 **17** 100 - 9.99 **18** 42.87 - 3.9

19 6 - 5.01 **20** 30.2 - 29.99 **21** 33.33 - 0.99 **22** 43.85 - 42.9

23 40 - 3.26 **24** 20.76 - 7.95 **25** 43 - 41.99

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Decimals

Multiplication

**** The Rule:** The number of digits following the decimal point in your answer must equal the combined number of digits following the decimal points in the two numbers being multiplied.

Method

1. Ignore –just for now– the decimal points. Also ignore any zeroes at the start of a number. Now multiply the two numbers in the same way you would multiply any two whole numbers.
2. Count the number of digits following the decimal point in each of the original numbers. Sum these.
3. Insert a decimal point in the answer you obtained in step 1, ensuring the number of digits that follow it equals the sum obtained in step 2.

Example 1

$$1.2 \times 0.8$$

$$\begin{array}{r} 12 \\ \times \quad 8 \\ \hline 96 \end{array}$$

$$= 0.96$$

Example 2

$$25 \times 1.25$$

$$\begin{array}{r} 125 \\ \times \quad 25 \\ \hline 625 \\ 2500 \\ \hline 3125 \end{array}$$

$$= 31.25$$

Example 3

$$1\,000 \times 0.34$$

$$\begin{array}{r} 1000 \\ \times \quad 34 \\ \hline 4000 \\ 30000 \\ \hline 34000 \end{array}$$

$$= 340$$

Example 4

$$0.25 \times 2.56$$

$$\begin{array}{r} 256 \\ \times \quad 25 \\ \hline 1280 \\ 5120 \\ \hline 6400 \end{array}$$

$$= 0.64$$

Example 5

$$12.35 \times 0.08$$

$$\begin{array}{r} 1235 \\ \times \quad 8 \\ \hline 9880 \end{array}$$

$$= 0.988$$

Example 6

$$23.66 \times 1.35$$

$$\begin{array}{r} 2366 \\ \times \quad 135 \\ \hline 11830 \\ 70980 \\ 236600 \\ \hline 319410 \end{array}$$

$$= 31.941$$

Now try these:

1 7.5×0.6

2 9.4×0.3

3 0.8×8.3

4 0.3×5.7

5 34×2.85

6 27×3.64

7 5.3×45

8 9.9×51

9 $2\,000 \times 0.49$

10 $3\,000 \times 0.28$

11 0.24×4000

12 $0.33 \times 6\,000$

13 0.45×4.2

14 6.5×9.2

15 56.8×0.5

16 8.5×8.2

17 4.52×0.05

18 56.5×0.02

19 0.01×789.8

20 0.72×77.5

21 54.2×2.5

22 63.5×7.2

23 4.2×0.85

24 9.08×0.2

25 6.5×9.2

No. Correct	% Score	Signature or Comment



Decimals

Division

**** The Rule:** The number of digits following the decimal point in your answer must equal the number of digits following the decimal point in the dividend *minus* the number of digits following the decimal point in the divisor.

Method

1. -If the divisor is a whole number proceed to step 2-

Make the divisor a whole number by shifting the decimal point the required number of places to the right.

Now shift the decimal point of the dividend the same number of places right.

NB Remember, a whole number can be followed by a decimal point, then a zero, eg 62 is 62.0.

2. Directly above the dividend's decimal point (where you write your answer) insert a decimal point.

3. Now carry out the division as you would any other division problem, adding zeroes to the end of the divisor if required.

Example 1
 $1.5 \div 3$

$$\begin{array}{r} 0.5 \\ 3 \overline{) 1.5} \\ \underline{3} \\ 0 \\ 0 \\ 0 \end{array}$$

= 0.5

Example 2
 $45 \div 0.3$
= 450 \div 3

$$\begin{array}{r} 150 \\ 3 \overline{) 450} \\ \underline{3} \\ 15 \\ \underline{15} \\ 0 \\ 0 \end{array}$$

= 150

Example 3
 $2.25 \div 1.5$
= 22.5 \div 15

$$\begin{array}{r} 1.5 \\ 15 \overline{) 22.5} \\ \underline{15} \\ 7 \\ \underline{7} \\ 0 \\ 0 \end{array}$$

= 1.5

Example 4
 $80.8 \div 0.004$
= 80 800 \div 4

$$\begin{array}{r} 20200 \\ 4 \overline{) 80800} \\ \underline{8} \\ 0 \\ \underline{0} \\ 8 \\ \underline{8} \\ 0 \\ 0 \\ 0 \end{array}$$

= 20200

Example 5
 $4.8 \div 40$

$$\begin{array}{r} 0.12 \\ 40 \overline{) 4.8} \\ \underline{40} \\ 80 \\ \underline{80} \\ 0 \end{array}$$

= 0.12

Example 6
 $0.96 \div 80$

$$\begin{array}{r} 0.012 \\ 80 \overline{) 0.96} \\ \underline{0} \\ 96 \\ \underline{96} \\ 0 \end{array}$$

= 0.012

Example 7
 $1.05 \div 70$

$$\begin{array}{r} 0.015 \\ 70 \overline{) 1.05} \\ \underline{70} \\ 350 \\ \underline{350} \\ 0 \end{array}$$

= 0.015

Now try these:

1 $2.4 \div 8$

2 $3.6 \div 4$

3 $9.6 \div 6$

4 $7.2 \div 6$

5 $7.2 \div 0.6$

6 $7.2 \div 60$

7 $13.6 \div 6.8$

8 $31.6 \div 7.9$

9 $63.9 \div 0.09$

10 $82.6 \div 5.9$

11 $604.8 \div 54$

12 $13.6 \div 0.034$

13 $0.158 \div 7.9$

14 $5 \div 0.0025$

15 $8.5 \div 170$

16 $0.034 \div 0.17$

17 $999 \div 0.999$

18 $0.138 \div 6.9$

19 $1180 \div 5.9$

20 $11.6 \div 0.29$

21 $4950 \div 0.99$

22 $0.294 \div 42$

23 $400 \div 0.08$

24 $1.38 \div 6.9$

25 $1.64 \div 0.041$

No. Correct

% Score

Signature or Comment

Decimals**Finding a decimal of whole numbers**

Working out
space
*continue over
page if you need
more room*

**** The Rule:** The number of digits following the decimal point in your answer must equal the number of digits following the decimal point in the decimal number being multiplied.

Method

1. Ignore –just for now- the decimal point. Also ignore –for now- any zeroes at the start of the decimal number.

Now multiply the two numbers in the same way you would multiply any two whole numbers.

2. Count the number of digits following the decimal point in the original decimal number.

3. Insert a decimal point in the answer you obtained in step 1, ensuring the number of digits that follow it equals the number of digits obtained in step 2.

4. Simplify if necessary, as in examples 2-4.

Example 1**Find 0.6 of 2**

$$6 \times 2 = 12$$

$$\underline{1.2}$$

Example 2**Find 0.6 of 20**

$$6 \times 20 = 120$$

$$\rightarrow 12.0$$

$$\underline{12}$$

Example 3**Find 0.25 of 80**

$$25 \times 80 = 2\ 000$$

$$\rightarrow 20.00$$

$$\underline{20}$$

Example 4**Find 0.25 of 800**

$$25 \times 800 = 20\ 000$$

$$\rightarrow 200.0$$

$$\underline{200}$$

Now try these:

1 Find 0.3 of 6**2** Find 0.4 of 12**3** Find 0.9 of 20**4** Find 0.1 of 53**5** Find 0.25 of 4**6** Find 0.25 of 80**7** Find 0.75 of 4**8** Find 0.75 of 40**9** What is 0.65 of 12?**10** What is 0.35 of 4?**11** What is 0.28 of 15?**12** How much is 0.9 of 9?**13** How much is 0.9 of 900?**14** How much is 0.55 of 40?**15** How much is 0.82 of 200?**16** Find 0.99 of 30**17** Find 0.99 of 3**18** Find 0.99 of 3 000**19** Find 0.11 of 11**20** Find 0.12 of 9**21** Find 0.09 of 200**22** What is 0.999 of 20?**23** What is 0.015 of 600?**24** What is 0.229 of 30?**25** How much is 0.186 of 1 000?

No. Correct

% Score

Signature or Comment

Decimals**Finding a decimal of percentage quantities**

Working out
space
*continue over
page if you need
more room*

**** The Rule:** The number of digits following the decimal point in your answer must equal the number of digits following the decimal point in the decimal number being multiplied.

Method

1. Ignore –just for now- the decimal point. Also ignore –for now- any zeroes at the start of the decimal number.

Now multiply this modified decimal number by the percentage number, in the same way you would multiply any two whole numbers.

2. Count the number of digits following the decimal point in the original decimal number.

3. Insert a decimal point in the answer you obtained in step 1, ensuring the number of digits that follow it equals the number of digits obtained in step 2.

4. Simplify if necessary, as in examples 1, 3 and 4.

NB answers must have a % sign after the number.

Example 1**Find 0.6 of 70%**

$$6 \times 70 = 420$$

$$\rightarrow 42.0$$

$$\underline{42\%}$$

Example 2**Find 0.3 of 15%**

$$3 \times 15 = 45$$

$$\rightarrow 4.5$$

$$\underline{4.5\%}$$

Example 3**Find 0.25 of 60%**

$$25 \times 60 = 1\ 500$$

$$\rightarrow 15.00$$

$$\underline{15\%}$$

Example 4**Find 0.75 of 12%**

$$75 \times 12 = 900$$

$$\rightarrow 9.00$$

$$\underline{9\%}$$

Now try these:

- 1** Find 0.7 of 50% **2** Find 0.9 of 90% **3** Find 0.2 of 30% **4** Find 0.8 of 65%
- 5** Find 0.25 of 90% **6** Find 0.75 of 80% **7** Find 0.25 of 30% **8** Find 0.75 of 20%
- 9** What is 0.8 of 55%? **10** What is 0.35 of 60%? **11** What is 0.35 of 40%?
- 12** How much is 0.7 of 70%? **13** How much is 0.1 of 89%?
- 14** How much is 0.85 of 80%? **15** How much is 0.44 of 100%?
- 16** Find 0.25 of 60% **17** Find 0.53 of 10% **18** Find 0.89 of 100%
- 19** Find 0.9 of 100% **20** Find 0.1 of 11% **21** Find 0.09 of 100%
- 22** What is 0.99 of 10%? **23** What is 0.15 of 20%? **24** What is 0.78 of 50%
- 25** How much is 0.49 of 60%?

No. Correct	% Score	Signature or Comment

Answers

page 4	Fractions Addition Simple Fractions							
1 $\frac{7}{10}$	2 $\frac{1}{2}$	3 $\frac{13}{14}$	4 $\frac{19}{20}$	5 $\frac{8}{9}$	6 $\frac{5}{6}$	7 $\frac{14}{15}$	8 $\frac{11}{12}$	9 $\frac{9}{14}$
10 $\frac{1^5}{9}$	11 $\frac{1^5}{8}$	12 $\frac{1^4}{9}$	13 $\frac{5}{6}$	14 $\frac{13}{20}$	15 $\frac{14}{15}$	16 $\frac{19}{20}$	17 $\frac{11}{12}$	18 $\frac{13}{14}$
19 $\frac{11}{15}$	20 $\frac{1^7}{30}$	21 $\frac{1^5}{12}$	22 $\frac{1^{43}}{60}$	23 $\frac{1^5}{18}$	24 $\frac{1^2}{33}$	25 $\frac{1^{17}}{30}$		
page 5	Fractions Addition Mixed Numerals							
1 $4\frac{5}{6}$	2 $8\frac{1}{4}$	3 $5\frac{7}{10}$	4 $8\frac{1}{2}$	5 $9\frac{15}{22}$	6 $8\frac{8}{15}$	7 $6\frac{7}{12}$	8 $10\frac{2}{15}$	9 $9\frac{5}{18}$
10 $11\frac{1}{16}$	11 $13\frac{5}{14}$	12 $11\frac{4}{9}$	13 $6\frac{19}{20}$	14 $3\frac{11}{12}$	15 $16\frac{9}{10}$	16 $14\frac{29}{35}$	17 $8\frac{32}{63}$	18 $8\frac{52}{55}$
19 $13\frac{5}{12}$	20 $12\frac{17}{30}$	21 $9\frac{8}{35}$	22 $10\frac{1}{36}$	23 $8\frac{7}{60}$	24 $8\frac{11}{30}$	25 $8\frac{7}{15}$		
page 6	Fractions Subtraction Simple Fractions							
1 $\frac{3}{10}$	2 $\frac{1}{6}$	3 $\frac{9}{14}$	4 $\frac{1}{8}$	5 $\frac{1}{4}$	6 $\frac{1}{9}$	7 $\frac{2}{5}$	8 $\frac{1}{5}$	9 $\frac{2}{9}$
10 0	11 $\frac{3}{10}$	12 $\frac{5}{14}$	13 $\frac{5}{12}$	14 $\frac{19}{40}$	15 $\frac{7}{36}$	16 $\frac{7}{24}$	17 $\frac{5}{36}$	18 $\frac{9}{35}$
19 $\frac{7}{30}$	20 $\frac{1}{42}$	21 $\frac{11}{36}$	22 $\frac{2}{15}$	23 $\frac{11}{20}$	24 $\frac{17}{45}$	25 $\frac{1}{18}$		
page 7	Fractions Subtraction Mixed Numerals							
1 $3\frac{1}{14}$	2 $5\frac{1}{9}$	3 $2\frac{1}{6}$	4 $2\frac{1}{7}$	5 $4\frac{9}{10}$	6 $\frac{5}{8}$	7 $1\frac{15}{16}$	8 $3\frac{9}{10}$	9 $5\frac{5}{21}$
10 $3\frac{3}{14}$	11 $2\frac{13}{16}$	12 $3\frac{1}{2}$	13 $4\frac{3}{40}$	14 $4\frac{1}{6}$	15 $\frac{15}{22}$	16 $\frac{33}{70}$	17 $2\frac{11}{12}$	18 $4\frac{34}{35}$
19 $1\frac{23}{24}$	20 $\frac{1}{20}$	21 $6\frac{9}{40}$	22 $5\frac{13}{30}$	23 $\frac{23}{30}$	24 $\frac{5}{6}$	25 $3\frac{27}{35}$		
page 8	Fractions Multiplication Simple Fractions							
1 $\frac{1}{6}$	2 $\frac{1}{2}$	3 $\frac{1}{3}$	4 $\frac{1}{2}$	5 $\frac{2}{15}$	6 $\frac{2}{7}$	7 $\frac{2}{3}$	8 $\frac{2}{5}$	9 $\frac{1}{3}$
10 $\frac{3}{10}$	11 $\frac{3}{16}$	12 $\frac{1}{8}$	13 $\frac{1}{2}$	14 $\frac{1}{24}$	15 $\frac{1}{6}$	16 $\frac{4}{35}$	17 $\frac{5}{18}$	18 $\frac{2}{15}$
19 $\frac{3}{5}$	20 $\frac{2}{3}$	21 $\frac{1}{6}$	22 $\frac{2}{15}$	23 $\frac{1}{2}$	24 $\frac{2}{5}$	25 $\frac{1}{3}$		
page 9	Fractions Multiplication Mixed Numerals							
1 $3\frac{1}{8}$	2 $6\frac{3}{5}$	3 4	4 $5\frac{29}{32}$	5 $6\frac{2}{5}$	6 $6\frac{4}{5}$	7 $19\frac{1}{3}$	8 $4\frac{2}{5}$	9 $7\frac{1}{2}$
10 $8\frac{4}{5}$	11 $21\frac{2}{3}$	12 6	13 $3\frac{11}{15}$	14 21	15 7	16 $6\frac{3}{8}$	17 $1\frac{7}{9}$	18 $7\frac{4}{5}$
19 $39\frac{1}{9}$	20 20	21 $6\frac{3}{5}$	22 8	23 12	24 $12\frac{2}{3}$	25 $25\frac{1}{2}$		
page 10	Fractions Division Simple Fractions							
1 $\frac{9}{10}$	2 $\frac{9}{10}$	3 $\frac{2}{5}$	4 1	5 $\frac{3}{8}$	6 $1\frac{1}{2}$	7 $\frac{4}{15}$	8 $\frac{25}{32}$	9 $\frac{3}{4}$
10 2	11 $2\frac{11}{12}$	12 $1\frac{3}{4}$	13 $4\frac{4}{7}$	14 $1\frac{1}{3}$	15 $\frac{5}{7}$	16 $\frac{5}{8}$	17 $2\frac{2}{5}$	18 $1\frac{5}{11}$
19 $1\frac{1}{3}$	20 $\frac{2}{3}$	21 $1\frac{1}{2}$	22 $3\frac{1}{3}$	23 $\frac{4}{5}$	24 $2\frac{1}{4}$	25 $2\frac{1}{2}$		
page 11	Fractions Division Mixed Numerals							
1 $\frac{2}{3}$	2 $\frac{5}{7}$	3 $\frac{11}{48}$	4 $1\frac{7}{8}$	5 $2\frac{5}{8}$	6 $\frac{1}{2}$	7 $1\frac{1}{14}$	8 1	9 $\frac{1}{2}$
10 $1\frac{1}{4}$	11 $3\frac{1}{2}$	12 $1\frac{2}{5}$	13 $\frac{3}{4}$	14 $\frac{3}{4}$	15 $\frac{5}{22}$	16 $2\frac{6}{11}$	17 $2\frac{6}{11}$	18 $2\frac{1}{2}$
19 $\frac{15}{16}$	20 $1\frac{1}{2}$	21 $1\frac{2}{5}$	22 $4\frac{4}{11}$	23 $1\frac{1}{15}$	24 $1\frac{3}{11}$	25 $\frac{2}{3}$		

Continued

Answers *continued*

page 12		Fractions Finding a fraction of whole numbers																
1	15	2	23	3	19	4	14	5	14	6	13	7	34	8	42	9	69	
10	52	11	42	12	48	13	147	14	124	15	147	16	58	17	93	18	110	
19	120	20	176	21	260	22	205	23	142	24	444	25	360					
page 13		Fractions Finding a fraction of decimal quantities																
1	10.7	2	2.1	3	21.2	4	6.03	5	6.46	6	13	7	8.6	8	0.76	9	0.6	
10	0.42	11	0.36	12	0.192	13	4.3	14	0.009	15	0.014	16	0.003	17	0.004	18	0.021	
19	0.005	20	0.012	21	0.015	22	0.1	23	0.02	24	0.724	25	0.035					
page 14		Percentages Finding a percentage of whole numbers																
1	54	2	24	3	49	4	81	5	12	6	18	7	8	8	72	9	4	
10	6	11	17.5	12	40.5	13	76	14	4	15	32.5	16	630	17	360	18	80	
19	9	20	640	21	1	22	385	23	90	24	855	25	3					
page 15		Percentages Finding a percentage of decimal quantities																
1	25.5	2	3.9	3	1.9	4	10	5	6.2	6	29.68	7	3.06	8	56.25	9	245.8	
10	18.24	11	36.24	12	60.6	13	77.1	14	44.64	15	3.22	16	8.172	17	0.888	18	2.568	
19	1.48	20	1.86	21	0.555	22	0.204	23	0.384	24	0.204	25	0.534					
page 16		Percentages Increasing a whole number by a given %																
1	102	2	90	3	60	4	11	5	99	6	84	7	100	8	54	9	37	
10	69	11	132	12	39	13	850	14	552	15	960	16	476	17	285	18	968	
19	770	20	330	21	475	22	756	23	495	24	63	25	1000					
page 17		Percentages Increasing a mixed numeral by a given %																
1	$6\frac{9}{16}$	2	$13\frac{1}{8}$	3	$3\frac{9}{10}$	4	$5\frac{11}{20}$	5	$1\frac{19}{25}$	6	$6\frac{3}{20}$	7	$10\frac{1}{2}$	8	$7\frac{11}{12}$	9	$4\frac{21}{25}$	
10	$2\frac{1}{4}$	11	$10\frac{5}{7}$	12	$6\frac{7}{8}$	13	$14\frac{1}{4}$	14	$5\frac{3}{5}$	15	$3\frac{3}{14}$	16	$9\frac{27}{50}$	17	$4\frac{2}{25}$	18	$7\frac{3}{20}$	
19	$5\frac{1}{3}$	20	$1\frac{7}{18}$	21	$5\frac{1}{25}$	22	$9\frac{3}{5}$	23	$10\frac{5}{8}$	24	$9\frac{1}{2}$	25	6					
page 18		Percentages Decreasing a whole number by a given %																
1	40	2	48	3	54	4	21	5	54	6	28	7	51	8	12	9	17	
10	11	11	2	12	15	13	210	14	320	15	540	16	396	17	336	18	288	
19	40	20	220	21	270	22	240	23	190	24	80	25	585					
page 19		Percentages Decreasing a mixed numeral by a given %																
1	$6\frac{3}{8}$	2	$1\frac{3}{50}$	3	$4\frac{3}{4}$	4	$1\frac{7}{20}$	5	$\frac{5}{6}$	6	$3\frac{3}{5}$	7	$4\frac{1}{8}$	8	$3\frac{1}{6}$	9	$4\frac{3}{8}$	
10	$3\frac{4}{7}$	11	$5\frac{17}{20}$	12	$3\frac{1}{5}$	13	$1\frac{1}{3}$	14	$3\frac{15}{16}$	15	$3\frac{11}{15}$	16	$1\frac{1}{14}$	17	$4\frac{1}{2}$	18	$3\frac{24}{25}$	
19	$4\frac{3}{4}$	20	$1\frac{11}{25}$	21	$2\frac{1}{20}$	22	$1\frac{17}{20}$	23	$2\frac{18}{25}$	24	$\frac{14}{25}$	25	$1\frac{3}{10}$					

continued

Answers

page 20	Percentages Percentages greater than 100							
1 $31\frac{1}{2}$	2 $17\frac{1}{2}$	326	4 $52\frac{1}{2}$	590	6 $97\frac{1}{2}$	7101	8202	950
1045	11 $27\frac{1}{2}$	1264	1310	141	151	161	171000	1899
191010	20 $4\frac{1}{2}$	21 $\frac{1}{5}$	221	2320	241000	25121		
page 21	Decimals Addition							
116.2	217.9	311.9	416.1	513.2	610.28	77.39	811.25	921.32
1024.83	1125.48	1254.3	1321.9	1422.1	1524.1	1620.8	178.867	1825.05
198.908	20247.9	2153	2269.2	2335.02	2499.63	2520.09		
page 22	Decimals Subtraction							
16.2	25.2	31.5	41.1	50.7	65.7	77.9	826.9	963.51
1064.05	118.932	127.066	130.001	1426.07	1513.24	16299.5	1790.01	1838.97
190.99	200.21	2132.34	220.95	2336.74	2412.81	251.01		
page 23	Decimals Multiplication							
14.5	22.82	36.64	41.71	596.9	698.28	7238.5	8504.9	9980
10840	11960	121980	131.89	1459.8	1528.4	1669.7	170.226	181.13
197.898	2055.8	21135.5	22457.2	233.57	241.816	2559.8		
page 24	Decimals Division							
10.3	20.9	31.6	41.2	512	60.12	72	84	9710
1014	1111.2	12400	130.02	142000	150.05	160.2	171000	180.02
19200	2040	215000	220.007	235000	240.2	2540		
page 25	Decimals Finding a decimal of whole numbers							
11.8	24.8	318	45.3	51	620	73	830	97.8
101.4	114.2	128.1	13810	1422	15164	1629.7	172.97	182970
191.21	201.08	2118	2219.98	239	246.87	25186		
page 26	Decimals Finding a decimal of percentage quantities							
135%	281%	36%	452%	522.5%	660%	77.5%	815%	944%
1021%	1114%	1249%	138.9%	1468%	1544%	1615%	175.3%	1889%
1990%	201.1%	219%	229.9%	233%	2439%	2529.4%		