



Number

Integers, decimals and symbols

- 1 a 200.1 b 2.001 c 2.3 d 87
 2 a 140.94 b 1.4094 c 290 d 4.86
 3 -0.5, 0, 0.012, 0.12, 12
 4 a $\frac{5}{0.5} = 10$ b $1\frac{5}{9} > \frac{4}{3}$ c $-3 < -1$
 5 a 5 c -15 e -4
 b -8 d 6

Addition, subtraction, multiplication and division

- 1 a 1561 c 69.93
 b 3047 d 23.923
 2 a 2819 c 8.185
 b 287 d 5.401
 3 a 29798 b 29.26 c 40.768
 4 a 46 b 343 c 35.4

Using fractions

- 1 a $\frac{16}{5} = 3\frac{1}{5}$ c $\frac{5}{8}, \frac{3}{4}, \frac{9}{10}, 1\frac{1}{5}, \frac{16}{5}$
 b $1\frac{1}{5} = \frac{6}{5}$ d $4\frac{2}{5}$ e $2\frac{23}{40}$
 2 $\frac{15}{45}, \frac{4}{12}, \frac{16}{48}$
 3 a $7\frac{1}{3}$ b $3\frac{1}{2}$
 4 $\frac{13}{60}$

Different types of number

- 1 a 16 b 5 c 16
 2 $2 \times 2 \times 3 \times 5 \times 5$
 3 every 144 days
 4 a $2^2 \times 3^3 \times 7$ b 36

Listing strategies

- 1 12 2 180

The order of operations in calculations

- 1 a 18 b 13 c 25
 2 a 10 b 23 c ± 5

Indices

- 1 a 7^{10} b 3^{-6} c 5^{20}
 2 a 5^7 c $2^{10} \times 5^{-3}$
 b 6^{-3} d $7^{10} \times 11^{-1}$
 3 a 1 c 16 e 18
 b 10 d $\frac{1}{5}$ (or 0.2)
 4 $x = 1$

Surds

- 1 a $\sqrt{6}$ b 5 c 18 d 20
 2 $a = 2$
 3 a $3\sqrt{5}$ b $6\sqrt{2}$
 4 a $\frac{16}{3\sqrt{2}} = \frac{16\sqrt{2}}{3\sqrt{2}\sqrt{2}} = \frac{16\sqrt{2}}{3 \times 2} = \frac{8\sqrt{2}}{3}$ b $8 - 2\sqrt{7}$
 5 a -4 b $7 + 4\sqrt{3}$ c $5 + 3\sqrt{3}$

Standard form

- 1 a 0.005 b 565 000
 2 a 2.5×10^4 c 5×10^2
 b 1.25×10^{-3} d 1.4×10^{-2}
 3 a 9×10^{-4} c 2×10^2
 b 2.4×10^3 d 8.04×10^4
 4 a 1.33×10^{10} pounds
 b 26 600 000 people
 5 a 1.55×10^4 c 5×10^2
 b 655 000 d 4×10^3

Converting between fractions and decimals

- 1 a 0.43 b 0.375 c 0.55
 2 a $\frac{4}{5}$ b $\frac{9}{20}$ c $\frac{73}{125}$
 3 a $\frac{7}{9}$ b $\frac{2}{45}$ c $\frac{21}{22}$
 4 a $\frac{14}{27}$ b $\frac{19}{25}$
 5 Let $x = 0.77777777\dots$
 $10x = 7.77777777\dots$
 $10x - x = 7$
 $9x = 7$
 $x = \frac{7}{9}$
 Therefore, $0.777777\dots + \frac{2}{9} = \frac{7}{9} + \frac{2}{9} = 1$
 6 $-0.9, \frac{7}{10}, \frac{4}{5}, 0.85, \frac{7}{8}$

Converting between fractions and percentages

- 1 a $\frac{1}{4}$ b $\frac{17}{20}$ c $\frac{17}{25}$
 2 maths: 81.25%
 Charlie did better at maths.
 3 a 30% b 16% c 42.9%

Fractions and percentages as operators

- 1 a £480 b £4.50 c 156 kg
 2 School A: 336, School B: 455

Standard measurement units

- 1 a 9700g b 0.85 litres c 205 000cm
 2 8.64×10^4 seconds
 3 £81.60