

Solutions 1
Decimals, Fractions, Percentage & Standard Form.

Decimals

1. $8.1 - 4.85 = 3.25$
2. $43 - 22.4 = 20.6$
3. $5.7 + 15.6 = 21.3$
4. $31.4 - 9.03 = 22.37$

Fractions

5. $6 + \frac{25}{30} + \frac{18}{30} = 6 + \frac{43}{30} = 7\frac{13}{30}$
6. $3 + \frac{6}{15} - \frac{10}{15} = 3 - \frac{4}{15} = 2\frac{11}{15}$
7. $\frac{11}{A^1} \times \frac{A^1}{3} = \frac{11}{3} = 3\frac{2}{3}$
8. $\frac{11}{2} \div \frac{11}{3} = \frac{11^1}{2} \times \frac{3}{11^1} = \frac{3}{2} = 1\frac{1}{2}$
9. $\frac{3}{8} \times \left(\frac{5}{3} - \frac{4}{7}\right) = \frac{3}{8} \times \left(\frac{35}{21} - \frac{12}{21}\right) = \frac{3^1}{8} \times \frac{23}{21^1} = \frac{23}{56}$
10. $\frac{3}{7} \times \left(\frac{11}{6} + \frac{3}{4}\right) = \frac{3}{7} \times \left(\frac{22}{12} + \frac{9}{12}\right)$
 $= \frac{3^1}{7} \times \frac{31}{12^1} = \frac{31}{28} = 1\frac{3}{28}$

Various

11. $23 + 36 \times \frac{3}{4} = 23 + \frac{36^9}{1} \times \frac{3}{A^1} = 23 + 27 = 50$
12. 10% is £85 $\times 3 = \text{£ } 255$
1% = £8.50 $\times 2 = \text{£ } 17$
32% is $\text{£ } 272$
13. $\frac{1}{8}$ of 544 is 68, so $\frac{3}{8}$ is $68 \times 3 = 204$

Using Percentages

1. $4500 \times 1.009^3 = 4622.59678... \text{ 4620 (3 sf)}$
2. $7000 \times 0.86^4 = 3829.0571... \text{ 3830 (nst 10)}$
3. House: $\text{£ } 70\,000 \times 1.07^3 = \text{£ } 85\,753.01$
Contents: $\text{£ } 45\,000 \times 0.91^3 = \text{£ } 33\,910.70$
Total value: = **£ 119 663.71**
4. Factory: $\text{£ } 435\,000 \times 1.053^2 = \text{£ } 482\,331.92$
Plant & Mcy: $\text{£ } 156\,000 \times 0.915^2 = \text{£ } 130\,607.10$
Total value: = **£ 612 939.02**
5. $66\frac{2}{3}\% = \frac{2}{3}$ So, $\frac{2}{3}$ off means you pay $\frac{1}{3}$
They pay $\frac{1}{3}$ of $\text{£ } 16.50 = \text{£ } 5.50$

6. Percentage Increase = $\frac{1.4}{54.9} \times 100 = 2.55\%$
Price in 2000 = $56.3 \times 1.0255^4 = 62.3$ p per litre

Reversing the change

7. Ex-VAT Price $\times 1.175 = \text{£}695$
Ex-VAT Price = $\text{£}695 \div 1.175 = \text{£ } 591.49$
8. Stock $\times 0.4 = 50$ (60% sold = 40% left)
Stock = $50 \div 0.4 = 125$
9. Original Price $\times 0.4 = \text{£ } 4640$
Original Price = $\text{£ } 4640 \div 0.4 = \text{£ } 11\,600$
10. Original Price $\times 0.875 = \text{£ } 14\,875$
Original Price = $\text{£ } 14\,875 \div 0.875 = \text{£ } 17\,000$

Standard Form

1. $8 \times 4.80 \times 10^8 = 3.84 \times 10^9$
2. $7.1 \times 10^7 \div 300 = 2.4 \times 10^5$
3. Time = Distance \div Speed
Time = $2.3 \times 10^8 \div 3.0 \times 10^5$
Time = 766.67 sec = 13 minutes.
4. Distance = circumference = $2\pi r$
Distance = $2\pi \times 0.6 \times 10^7$
Speed = Distance \div Time
Time = $88 \times 24 = 2112$ hours
Speed = $2\pi \times 0.6 \times 10^7 \div 2112$
Speed = 17 849.95... = 18 000 kph (2 sf)
5. $1.8 \times 10^3 \times 9.11 \times 10^{-31} = 1.6398 \times 10^{-27}$
= 1.6×10^{-27} kg (2 sf)
6. $5 \times 10^6 \times 9.46 \times 10^{12}$ km
= 4.73×10^{19} km
7. 1 year (not leap year) = $365 \times 24 \times 60 \times 60$
= 31536000 seconds
Profit = $\text{£ } 3.2 \times 10^9 \div 31536000 = \text{£}101.47133... \text{...}$
= $\text{£ } 101$ per second.
8. No. of days = $26(J) + 31(J) + 31(A) + 20(S)$
= 108
 $2.925 \times 10^7 \div 108 = 270\,833.333$
= 270 833 visitors per day
9. $5.97 \times 10^{24} \div 2.2 \times 10^{30} \times 100$
= 0.0002713..... %
= 2.71×10^{-4} % (3 sf)