A. SIGNIFICANT FIGURES

Usually, the digits in a number, <u>not counting noughts at the beginning</u>, are SIGNIFICANT FIGURES (SIG.FIGS.)

e.g. <u>568</u> has 3 significant figures

<u>39572</u> has 5 significant figures

0.00<u>81</u> has 2 significant figures

<u>14.50</u> has 4 significant figures

0.<u>900</u> has 3 significant figures

Noughts at the end of a whole number are sometimes significant, sometimes not

e.g. 94000 may have 2, 3, 4 or 5 sig. figs.

B. CORRECTING TO SIGNIFICANT FIGURES

e.g. Write 2.543 correct to 2 sig.figs.

<u>2</u> . <u>5</u> (2 sig.figs.)

e.g. Correct 0.039815 to 3 sig.figs.

0.0<u>398</u> (3 sig.figs.)

Remember to fill up to the point with noughts if necessary.

e.g. Express £7290 correct to 1 sig.fig.

£<u>7</u>000 (1 sig.fig.)

**VERY IMPORTANT — 'Five or more'

Always look carefully at the <u>NEXT</u> digit after the one to which you are correcting. If this is <u>5 or more</u>, the <u>LAST DIGIT OF YOUR ANSWER GOES UP BY ONE</u>.

e.g. Write 36.3<u>5</u>8 to 3 sig.figs.

36.<u>4</u> (3 sig.figs)

e.g. Express 19<u>7</u>6 metres to 2 sig.figs.

<u>20</u>00 metres (2 sig.figs)

e.g. Write 0.009<u>2</u>43797 correct to 4 sig.figs.

0.009<u>244</u>

a. How many significant figures has each of these numbers?

1) 625   3) 17328   5) 8   7) 0.01800   9) 0.0004

2) 0.44   4) 0.330   6) 4.775   8) 90   10) 500

b. Write these numbers correct to 2 significant figures.

1) 5.43   5) 0.0611   9) 0.456   13) 49670

2) 1722   6) 1.865   10) 293   14) 0.0823

3) 0.9815   7) 65387   11) 7684   15) 93.9

4) 474   8) 688   12) 1.175

c. Write these numbers correct to 1 significant figure.

1) 2324   5) 27   9) 640000   13) 557

2) 71   6) 0.0925   10) 32.28   14) 0.0029

3) 646   7) 2983   11) 0.185   15) 9915

4) 0.052   8) 7.65   12) 477

d. Calculate these

1) 12 x 16 correct to 1 sig. fig.

2) 2.45 x 7 correct to 3 sig. figs.

3) 500 ÷ 12 correct to 2 sig. figs.

4) 6973 + 5588 correct to 3 sig. figs.

5) 0.264 ÷ 0.6 correct to 1 sig. fig.

6) 1124 − 666 correct to 2 sig. figs.

7) 9.42 x 6.3 correct to 4 sig figs.

8) 56.3 + 48.7 + 9.2 correct to 2 sig. figs.

9) 0.067 x 0.37 correct to 3 sig. figs.

10) 26^2 correct to 1 sig. fig.

e. Express correct to 1 sig. fig.

1) the number of days in a year

2) the number of letters in the alphabet

3) the number of minutes in a week

4) the number of players in a cricket, hockey or soccer team

5) the number of hours from midday on Friday to midday on Saturday

6) the number of pages in this book (not counting the covers)

7) the number of weeks in a year

8) the sum of all the whole numbers from 1 to 12 inclusive

9) the telephone number (last five figures only) of the printer of this book, as shown inside the front cover

10) this year's date

A ESTIMATION TO ONE SIG.FIG.

An estimation to 1 sig.fig. is the roughest possible answer to a problem.

e.g.   Estimate to 1 sig.fig. the value of

$$\frac{5.94 \times 6.38}{72.7}$$

*1)   Reduce all numbers to 2 sig.fig.

$$\frac{5.9 \times 6.4}{73}$$

*2)   Work out each part to 2 sig.figs.

$$\frac{37.76}{73} = \frac{38}{73}$$

*3)   Work out answer to 2 sig.figs.

0.52

*4)   Give answer to 1 sig.fig.

$$\frac{5.94 \times 6.38}{72.7} = 0.5 \ (1 \ \text{sig.fig.})$$

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e.g. (2)   Find the value of $\dfrac{749 \times 823}{86 \times 219}$ to 1 sig.fig.

$$\frac{750 \times 820}{90 \times 220}$$

$$\frac{615000}{19800}$$

$$\frac{620000}{20000}$$

$$= 31$$

$$\frac{749 \times 823}{86 \times 219} = 30 \ (1 \ \text{sig.fig.})$$

a   Estimate each of these to 1 significant figure

1)   199 × 299
2)   62.3 × 60
3)   49.7 × 4.04
4)   31.6 ÷ 8
5)   0.923 × 0.321
6)   727 + 846 + 970 + 649
7)   987 − 293
8)   2.67 ÷ 30.3
9)   74729 + 88217
10) 16.875 × 3.025

b   Estimate each of these to 1 significant figure

1)   48.3 × 66
2)   8.95 × 1.125 × 7.5
3)   5371 ÷ 896
4)   68.375 × 7.27
5)   75.9 ÷ 187.1
6)   8773 + 7249 + 627
7) $(6.985)^2$
8)   3.44 × 0.303
9)   6.924 ÷ 99
10) 3.125 × 36.47 × 8.11

c   Estimate each of these to 1 sig. fig.

1) $\dfrac{797 \times 496}{1334}$

2) $\dfrac{5.36 \times 10.75}{72.9}$

3) $\dfrac{272}{0.8 \times 5.6}$

4) $\dfrac{7.59 \div 3.245}{0.598}$

5) $\dfrac{3036 \times 414}{496 \times 357}$

6) $\dfrac{188.4 \div 5.615}{677}$

7) $\dfrac{948 \times 403}{128 \times 29}$

8) $\dfrac{32.7 \div 11.4}{1.76 \div 0.2}$

9) $\dfrac{6666 \times 2222}{7777}$

10) $\dfrac{0.28}{2.37 \div 59.9}$