A Significant Review -- KEY

Let's start off with scientific notation…

1a) 54,670,000,000 → 5.467×10^{10} (decimal was moved left, so positive exponent)
1b) -5526.7 → -5.5267×10^{3} (decimal was moved left, so positive exponent)
1c) 0.03289 → 3.289×10^{-2} (decimal was moved right, so negative exponent)
1d) 100.00 → 1.0000×10^{2} (decimal was moved left, so positive exponent)
1e) -0.000093740 → -9.3740×10^{-5} (decimal was moved right, so negative exponent)
1f) 9999.606 → 9.999606×10^{3} (decimal was moved left, so positive exponent)
1g) 2800 → 2.8×10^{3} (decimal was moved left, so positive exponent)
1h) -0.00000005883 → -5.883×10^{-8} (decimal was moved right, so negative exponent)
1i) 0.00008 → 8×10^{-5} (decimal was moved right, so negative exponent)
1j) 0.11250 → 1.1250×10^{-1} (decimal was moved right, so negative exponent)

How many significant figures in a number:

2a) 6200 →**2**
2b) 1.032 →**4**
2c) 420. →**3**
2d) 3.750×10^{-6} →**4**
2e) 0.0006000 →**4**
2f) 1×10^{4} →**1**
2g) 35000000 →**2**
2h) 23.4400 →**6**
2i) 100.0003 →**7**
2J) 100. →**3**

Significant figures in calculations

3a) $160 \times 0.3490 \times 23.1 = 1289.904$ 160 = **2** s.f., 0.3490 = **4** s.f., 23.1 = **3** s.f., so answer can only have 2 s.f.→ **1300 or 1.3×10^{3}**

3b)
$$\begin{array}{r|l} 2.3806 & \\ +0.01 & \\ \hline 2.3906 & \end{array}$$
→ **2.39**

3c) $\dfrac{0.2689}{0.000159} = 1691.19497$ 0.2689 = 4 s.f., 0.000159 = 3 s.f., answer has 3 s.f. → **1690** or **1.69×10^{3}**

3b)
$$\begin{array}{r|l} 113 & \\ -2 & \\ \hline 93 & \end{array}$$
→ **9**

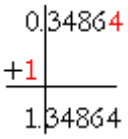
3e) $1500. \div 25 = 60$ 1500. = 4 s.f., 25 = 2 s.f., answer has 2 s.f. → **60.** or **6.0×10^{1}**

3f) $3.65 \times 10^{-3} \times 9.822 \times 10^{4} = 360.693$ 3.65×10^{-3} = 3 s.f., 9.822×10^{4} = 4 s.f., answer has 3 s.f. → **361**

3g) $\dfrac{2.21100 \times 10^{2}}{32.1 \times 0.002000} = 3443.92523$ 2.21100×10^{2} = 6 s.f., 32.1 = 3 s.f., 0.002000 = 4 s.f., answer = 3 s.f. → **3440**

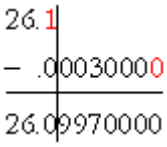
OR **3.44×10^{3}**

3h)



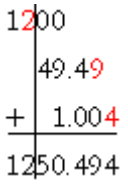
→ **1** (this is the answer)

3i)



→ **26.1** (you are subtracting a very small number from a large number; it doesn't make a difference here)

3j)



12|50.494 = 1.2|50494x10^3 → **1.3x10^3** (again, put into scientific notation THEN round off)

3k) $33.3 \times 3.0 = 99.9$ 33.3 = 3 s.f., 3.0 = 2 s.f., answer = 2 s.f. 99.9 rounds to 100, but MUST have 2 s.f. → **1.0x10^2**