PhyzJob: Prelims Patchwork

Significant Figures • SI Prefix Translations • Ratios

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I. SIGNIFICANT FIGURES AND ORDER OF MAGNITUDE

a. In the gray space to the left of each "CALCULATOR" value, write the number of significant figures the value possesses.
b. To the right of each value, rewrite the value to two significant figures indicated (but without using scientific notation).
c. Then rewrite the rounded value in scientific notation. Use proper written notation (commas, "×10," etc.).
d. In the last column, write the nearest order of magnitude or power of ten of the number.

	CALCULATOR	2 SIG FIGS	2 SIG FIGS - SCI NOT	POWER OF TEN
9	673804.592	670,000	6.7×10^{5}	10^{6} or just +6
9	2.73804590	2.7	2.7×10^{0}	0
3	748	750	7.5×10^{2}	+3
3	0.00125	0.0013	1.3×10^{-3}	–3
1	0.000003	can't be done: number has only one sig fig	can't be done: number has only one sig fig	–6
7	4.230291 06	4,200,000	4.2×10^{6}	+6
6	326.352 -03	0.33	3.3×10^{-1}	–1
9	600024538	600,000,000	6.0×10^{8}	+9

II. SI PREFIXES

Complete the table below.

VALUE	ENGINEERING	SI PREFIX
0.0005928 m	592.8×10^{-6} m	592.8 µm
864,000 s	864×10^{3} s	864 ks
0.000 000 096 T	96×10^{-9} T	96 nT
0.385 K	385×10^{-3} K	385 mK
75,300,000,000,000 J	75.3×10^{12} J	75.3 TJ
0.000 000 000 349 5 W	349.5×10^{-12} W	349.5 pW
0.000 000 000 000 000 000 16 C	160×10^{-21} C	160 zC
400,000,000,000 A	400×10^{9} A	400 GA

III. RATIOS

1. The air temperature drops by 35 Celsius degrees for a 5 kilometer increase in elevation.
a. What is the meaning of 35/5 in this context?

The number of Celsius degrees by which the temperature drops in each kilometer. (In atmospheric science, this is called the lapse rate.)

b. What is the meaning of 5/35 in this context?

The number of kilometers of increased elevation in which the temperature drops by one Celsius degree.

2. A motor provides 1,150,000 joules of energy in 30 seconds.
a. What is the meaning of 1,150,000/30 in this context?

The number of joules of energy the motor provides in each second.

b. What is the meaning of 30/1,150,000 in this context?

The number of seconds it takes for the motor to provide a joule of energy.

3. A 5-kilogram object has a weight on earth of approximately 50 newtons.
a. What is the meaning of 50/5 in this context?

The number of newtons in each kilogram.

b. What is the meaning of 5/50 in this context?

The number of kilograms in each newton.