New Practice Questions For Chapter 1

1. Convert 95.7 km^3 to nm^3.

2. Convert 72.7 cm^3 to mm^3.

3. Convert 97.6 cm^3 to mm^3.

4. Convert 8.25 picoseconds to microseconds:

5. Convert 1.24 nanoseconds to milliseconds:

6. Convert 7.18 microseconds to nanoseconds:

7. The temperature of a sample was observed to increase by 69 Kelvins. What is the value of this change in °F?

8. The temperature of a sample was observed to increase by 1.7 °F. What is the value of this change in Kelvins?

9. Report the <u>average</u> of the following numbers with the appropriate number of significant figures: 91, 84, 34, 72, 46

10. Report the <u>average</u> of the following numbers with the appropriate number of significant figures: 95, 55, 31, 72, 38

11. Report the result for $(97.7 \times 0.03719) + 74.19$ with the appropriate number of significant figures.

12. Report the result for $(92.5 \times 0.01041) + 73.31$ with the appropriate number of significant figures.

13. Report the result for $(42.9 \times 0.07963) + 46.35$ with the appropriate number of significant figures.

14. Report the result of the following calculation with the appropriate number of significant figures:
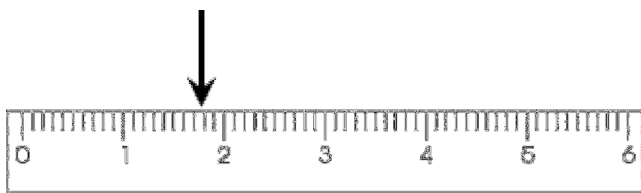
(33.97 - 49.6) / 4.94

15. Report the result of the following calculation with the appropriate number of significant figures:

(57.030 - 88.82) / 14.19

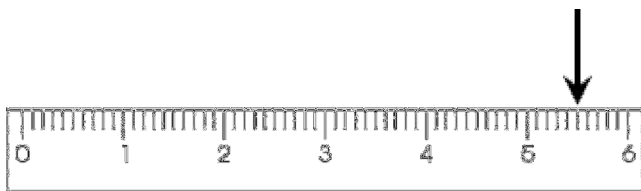16. Report the result of the following calculation with the appropriate number of significant figures:
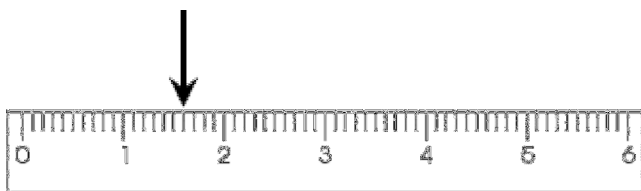
(43.7 - 35.1) / 75.10

17.

Report, to the correct number of significant figures, the measurement indicated by the arrow.

18.

Report, to the correct number of significant figures, the measurement indicated by the arrow.

19.

Report, to the correct number of significant figures, the measurement indicated by the arrow.

20. Report the result of the following calculation with the appropriate number of significant figures:

(86.340 + 99.99) / 22.6

21. Report the result of the following calculation with the appropriate number of significant figures:

(93.9 + 87.0) / 36

22. Report the result of the following calculation with the appropriate number of significant figures:

(95.4800 + 28.1200) / 21.51

23. Report the result of the following calculation with the appropriate number of significant figures:

(10.01 - 64.0000) / 71.50

24. Report the result of the following calculation with the appropriate number of significant figures:

(72.79 - 51.23) / 14.4

25. Report the result of the following calculation with the appropriate number of significant figures:

(79.08 - 50.330) / 96

26. Label the data sets below as 'accurate' or 'not accurate' and 'precise' or 'not precise' by answering yes or no in each instance. Don't necessarily follow your intiuition about what "looks" or "feels" precise or accurate. Follow the functional definitions given in the lectures. Examine the numbers for their "claim", given their decimal places and their implicitly allowed uncertainties.

Measurements	True value	Accurate	Precise
8.4, 8.5, 7.9	3.292		
13.22, 13.26, 13.21	13.23		
0.953, 0.955, 0.955	0.952		

27. Label the data sets below as 'accurate' or 'not accurate' and 'precise' or 'not precise' by answering yes or no in each instance. Don't necessarily follow your intiuition about what "looks" or "feels" precise or accurate. Follow the functional definitions given in the lectures. Examine the numbers for their "claim", given their decimal places and their implicitly allowed uncertainties.

Measurements	True value	Accurate	Precise
44.36, 44.41, 44.42	44.39		
0.1, 0.3, 0.2	0.381		
6.623, 6.621, 6.621	6.679		

28. Label the data sets below as 'accurate' or 'not accurate' and 'precise' or 'not precise' by answering yes or no in each instance. Don't necessarily follow your intiuition about what "looks" or "feels" precise or accurate. Follow the functional definitions given in the lectures. Examine the numbers for their "claim", given their decimal places and their implicitly allowed uncertainties.

Measurements	True value	Accurate	Precise
11.86, 11.80, 11.85	12.31		
6.469, 6.464, 6.463	6.466		
0.3, 0.0, 0.0	0.120		

(Somewhat) Newer questions on Ch. 1
Answer Section

1. 9.57×10^{37}
2. 7.27×10^{4}
3. 9.76×10^{4}
4. 8.25×10^{-6}
5. 1.24×10^{-6}
6. 7.18×10^{3}
7. 124
8. 0.94
9. 65.4
10. 58.2
11. 77.82
12. 74.27
13. 49.77
14. –3.16
15. –2.240
16. 0.11
17. 1.78 ∓ 0.02 ∓ 0.02 means that your reading just needs to be within ∓ 0.02 of answer key's number
18. 5.52 ∓ 0.02
19. 1.60 ∓ 0.02 typo fixed: was 1.6 ∓ 0.02
20. $(86.340 + 99.99) = 186.33$ (keep track of decimal places)
    $186.33/22.6 = 8.24$ (keep track of significant figures)   typo fixed: was 8.25
21. $(93.9 + 87.0) = 180.9$ (keep track of decimal places)
    $180.9/36 = 5.0$ (keep track of significant figures)   typo fixed: was 5.1
22. $(95.4800 + 28.1200) = 123.6000$ (keep track of decimal places)
    $123.6000/21.51 = 5.746$ (keep track of significant figures)
23. $(10.01 - 64.0000) = -53.99$ (keep track of decimal places)
    $-53.99/71.50 = -0.7551$ (keep track of significant figures)
24. $(72.79 - 51.23) = 21.56$ (keep track of decimal places)
    $21.56/14.4 = 1.50$ (keep track of significant figures)
25. $(79.08 - 50.330) = 28.75$ (keep track of decimal places)
    $28.75/96 = 0.30$ (keep track of significant figures)

26.

Measurements	True value	Accurate	Precise
8.4, 8.5, 7.9	3.292	No	No
13.22, 13.26, 13.21	13.23	Yes	Yes
0.953, 0.955, 0.955	0.952	Yes	Yes

Accurate: True value falls between the maximum and minimum values obtained when the last reported (presumably significant and uncertain) digit of the measurement is incremented or decremented by up to a value of 9. For example:
10.9 is "accurate" if the true value is 11.2 (in the range 10.9-0.9 to 10.9+0.9)
32.55 is "not accurate" if the true value is 32.75 (out of the range 32.55-0.09 to 32.55+0.09)

Precise: The last reported (presumably significant and uncertain) digit of the measurement is at the same decimal place as that of the true value.
10.9 is "precise" if the true value is 11.2
32.55 is "precise" if the true value is 32.75
32.6 is "not precise" if the true value is 32.75
6.781 is "not precise" if the true value is 6.78303

27.

Measurements	True value	Accurate	Precise
44.36, 44.41, 44.42	44.39	Yes	Yes
0.1, 0.3, 0.2	0.381	Yes	No
6.623, 6.621, 6.621	6.679	No	Yes

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11.86, 11.80, 11.85	12.31	No	Yes
6.469, 6.464, 6.463	6.466	Yes	Yes
0.3, 0.0, 0.0	0.120	Yes	No

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