CALCULATIONS USING SIGNIFICANT FIGURES

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When multiplying and dividing, limit and round to the least number of significant figures in any of the factors.

Example 1: 23.0 cm x 432 cm x 19 cm = 188,784 cm^3

The answer is expressed as 190,000 cm^3 since 19 cm has only two significant figures.

When adding and subtracting, limit and round your answer to the least number of decimal places in any of the numbers that make up your answer.

Example 2: 123.25 mL + 46.0 mL + 86.257 mL = 255.507 mL

The answer is expressed as 255.5 mL since 46.0 mL has only one decimal place.

Perform the following operations expressing the answer in the correct number of significant figures.

1. 1.35 m x 2.467 m = $3.33 m^2$
2. 1.035 m^2 ÷ 42 m = 25m
3. 12.01 mL + 35.2 mL + 6 mL = 53mL
4. 55.46 g − 28.9 g = 26.6g
5. .021 cm x 3.2 cm x 100.1 cm = $6.7 cm^3$
6. 0.15 cm + 1.15 cm + 2.051 cm = 3.35cm
7. 150 L^3 ÷ 4 L = $37.5 L^2$ = $40 L^2$
8. 505 kg − 450.25 kg = 55kg
9. 1.252 mm x 0.115 mm x 0.012 mm = $0.0017 mm^3$
10. 1.278 x 10^3 m^2 ÷ 1.4267 x 10^2 m = 8.958m

Significant Figures

Determine the number of significant figures in each of the following:

4 a. 6.751 m
3 b. 0.0157 kg
4 c. 28.00 L
2 d. 2500 m
4 e. 0.07002 dm
4 f. 30.07 mL
1 g. 3×10^{34} g
2 h. 0.0067 mg
3 i. 0.0200 cm
3 j. 2.60×10^{8} m
4 k. 54.52
4 l. 0.1209 mL
5 m. 2.6900 kg
4 n. 43.07 m
3 0.106 km

Express each answer using the correct number of significant figures.

Final answer

Add (least decimal places)

a. 16.5 cm + 8 cm + 4.37 cm = $28.84_{cm} = 29$ cm
b. 13.25 g + 10.00 g + 9.6 g = $32.85_{g} = 32.9$ g
c. 4.5 cm + 375 mm + 25.9 dm = $405.4_{dm} = 405$ dm

Subtract

a. 23.27 km - 12.058 km = $11.212_{km} = 23.27$ km
b. 13.57 g - 6.3 g = $7.27_{g} = 7.3$ g
c. 5.805 L - 385.2 mL = $-379.395_{mL} = -379.4$ mL

Multiply (least sig figs)

a. 2.6 cm X 3.78 cm = $9.828\ cm^2 = 9.8\ cm^2$
b. 6.50 m X 0.37 m = $2.405\ m^2 = 2.4\ m^2$
c. 1.4 m X 8 m X 75.85 m = $849.52\ m^3 = 800\ m^2$

Divide

a. 35 cm^2 / 0.62 cm = $56.4516\ cm = 56$ cm
b. 0.75 g / 0.003 cm^3 = $0.00225\ g/cm^3 = 0.002\ g/cm^3$
c. 6.50 m / 9.2 m = $0.7065 = 0.71$

Rank these numbers from smallest to largest using numbers 1 through 8.

6 a. 5.3×10^{4} 53,000
7 b. 57×10^{3} 57,000
3 c. 4.9×10^{-2} 0.049
5 d. 6230 6,230
2 e. 0.0057 0.0057
1 f. 5.1×10^{-3} 0.0051
4 g. 0.0072×10^{2} 0.72
8 h. 2×10^{6} 2,000,000

Change these numbers into scientific notation or write as a regular number. Watch out for significant figures.

a. 68902 6.8902×10^{4}
b. 0.754 7.54×10^{-1}
c. 248.0 2.480×10^{2}
d. 3000 3×10^{3}
e. 540.0 5.40×10^{2}
f. 77900.34 7.790034×10^{4}
g. 0.000385 3.85×10^{-4}
h. 4.5×10^{3} 4500
i. 8.30×10^{2} 830
j. 9.080×10^{2} 908.0