

Operations with Significant Digits & Scientific Notation

1. State the number of significant digits in each measurement:

- (a) 2804 m (c) 0.0029 m (e) 4.6×10^5 m
(b) 2.84 m (d) 0.003068 m (f) 4.06×10^5 m

2. State the number of significant digits in each measurement:

- (a) 75 m (c) 0.007 060 kg (e) 1.008×10^5 m
(b) 75.00 cm (d) 1.87×10^6 m (f) 1.20×10^{-4} m

3. Add: $6.201 \text{ cm} + 7.4 \text{ cm} + 0.68 \text{ cm} + 12.0 \text{ cm}$

4. Add: $28.662 \text{ m} + 32.34 \text{ m} + 17.5 \text{ m}$

5. Add: $26.38 \text{ kg} + 14.531 \text{ kg} + 30.8 \text{ kg}$

6. The sides of a rectangular plot of land are measured. The lengths are found to be 132.68 m, 48.3 m, 132.736 m, and 48.37 m. What is the perimeter of the plot of land as can best be determined with these measurements

7. Subtract: $10.8 \text{ g} - 8.264 \text{ g}$

8. Subtract: $44.12 \text{ ml} - 28.82 \text{ ml}$

9. A tank has a mass of 3.64 kg when empty and a mass of 51.8 kg when filled to a certain level with water. What is the mass of the water in the tank?

10. Multiply:

- (a) $1.31 \text{ cm} \times 2.3 \text{ cm}$
(b) $6.87 \text{ cm} \times 2.2 \text{ cm}$
(c) $3.2145 \text{ km} \times 4.23 \text{ km}$

11. Divide:

- (a) $20.2 \text{ cm} \div 7.41 \text{ cm}$
(b) $3.1416 \text{ cm} \div 12.4 \text{ cm}$
(c) $64.39 \text{ m} \div 13.6 \text{ m}$

12. Measurements of a rectangular floor show the length is 15.72 m and the width is 4.40 m. Calculate the area of the floor to the best possible value using these measurements.

13. Add: $12.3 \text{ kg} + 21.3 \text{ g} + 13.5 \text{ g} + 9.04 \text{ g}$

14. Re-express each of the following calculations in scientific notation, perform the calculation and express the answer in scientific notation.

a) 60×80

d) $12 \times 5\,000$

g) $15\,400 \div 220$

b) 180×20

e) $480 \div 60$

h) $3\,060\,000 \div 6,000$

c) $2\,000 \times 170$

f) $18\,000 \div 200$

i) $2\,040 \div 80.00$

15. Perform each of the following calculations and express the answer in scientific notation with the proper number of significant digits.

a) $(4.3 \times 10^2) \times (2.0 \times 10^3)$

f) $(6.25 \times 10^8) \div (2.1 \times 10^{-3})$

b) $(8.6 \times 10^4) \div (4.30 \times 10^2)$

g) $\frac{(4.60 \times 10^8) \times (6.0 \times 10^4)}{(2.3 \times 10^6) \times (3.00 \times 10^2)}$

c) $(9.060 \times 10^{-3}) \times (3.00 \times 10^7)$

h) $\frac{4,060 \times 8.4 \times 10^{-2}}{203}$

d) $(9.060 \times 10^{-3}) \div (3.02 \times 10^7)$

i) $\frac{0.008 \times 4,306.2}{4 \times 10^{-7}}$

e) $(4.12 \times 10^8) \times (2.06 \times 10^{-3})$

16. Be careful with these!

a) $\frac{43.57}{1.6} + \frac{454.2}{5.6}$

c)

b) $\frac{(627 - 4.2)(18.7)}{1234 - 65}$

c) $\{22^{-1} + (-18.4)^{-1}\}^{-1}$