

Significant Figures Worksheet Class 11 Physics

Name: _____ I _____ Date: _____

Section A — Identify Significant Figures

1. State the number of significant figures in each:

(a) 0.00450 (b) 3.020×10^5 (c) 700.0 (d) 0.000708 (e) 6.00×10^{-3} (f) 5002

2. Which of the following have exactly three significant figures?

0.00340 3.40×10^2 304 0.0304 340.0

3. Write one example each of a number having:

(a) 1 significant figure (b) 2 significant figures (c) 4 significant figures (d) 5 significant figures

Section B — Rounding Off

4. Round each number to three significant figures:

- (a) 47.386
- (b) 0.006784
- (c) 999.6
- (d) 12.049
- (e) 5.995

5. Round the following to two significant figures:

- (a) 0.004967
- (b) 735.8
- (c) 9.049
- (d) 0.0996

6. Express each quantity in scientific notation with the stated number of significant figures:

- (a) 0.0005608 — 3 s.f.
- (b) 48,730 — 4 s.f.
- (c) 0.009995 — 3 s.f.
- (d) 602,400 — 3 s.f.

Section C — Calculations Using Significant-Figure Rules

7. Evaluate and express the answer with the correct number of significant figures:

- (a) 12.5×3.42
- (b) 0.0045×2.31
- (c) $48.6 \div 2.4$
- (d) $7.250 \div 0.25$

8. Perform the following additions/subtractions and report the answer correctly:

- (a) $12.35 + 4.6 + 0.789$
- (b) $105.72 - 8.4$
- (c) $0.0567 + 0.004 + 0.12$
- (d) $18.00 - 3.276$

9. Calculate, following the appropriate significant-figure rule:

- (a) $(4.52 \times 2.1) + 3.15$
- (b) $(15.6 - 2.34) \times 4.2$
- (c) $25.0 \div (3.2 + 1.84)$

Section D — Conceptual Questions

10. Why does 0.0050 contain two significant figures whereas 0.050 also contains two significant figures?
11. A student claims that 3000 always has four significant figures. Is the statement correct? Explain.
12. Why are zeros between two non-zero digits always significant? Give two examples.
13. Explain why the result of a measurement calculation cannot generally have more precision than the measurements used.
14. A length is recorded as 2.0 m by one student and 2.00 m by another. Are the two measurements equivalent in numerical value? What is different about their precision?

Section E — Error Analysis & Measurement

15. The measured length of a rod is 12.46 cm and its measured breadth is 2.3 cm. Calculate its area, reporting the answer correctly.
16. A rectangular sheet has dimensions 25.0 cm $\times$ 12.5 cm. Find its area with the correct number of significant figures.
17. A student measures the radius of a sphere as 2.50 cm. Calculate its volume using $V = \frac{4}{3}\pi r^3$
Take $\pi = 3.14$.
18. The mass of a substance is 15.20 g and its volume is 4.0 cm³. Calculate its density with appropriate significant figures.

Section F — Challenge Questions

19. A quantity is calculated as

$$Q = \frac{(6.25)(0.0400)}{2.5}$$

Determine Q with the correct number of significant figures.

20. Evaluate:

$$(12.0 + 0.56) \times 3.254 \div \frac{(12.0 + 0.56) \times 3.25}{4.0}$$

and report the final answer according to significant-figure rules.

21. A student obtains the answer 4.700 cm from measurements in which the least precise measurement has only two significant figures. Identify the problem with the answer and write the result correctly.
22. Which is more precise: 5.0 kg or 5.00 kg? By what factor does the number of significant figures change the stated precision?
23. A calculator gives the result of a calculation as 0.003846271. The input measurements contain 3, 4, and 5 significant figures. What should be reported as the final answer? Explain your choice.

24. Assertion–Reason

Assertion: The number 0.004050 has four significant figures.

Reason: Zeros between non-zero digits and trailing zeros after a decimal point are significant.

Choose:

- (A) Both Assertion and Reason are true, and Reason correctly explains Assertion.
- (B) Both are true, but Reason does not correctly explain Assertion.
- (C) Assertion is true, Reason is false.
- (D) Assertion is false, Reason is true.

25. Error Spotting:

A student calculates

$$2.35 \times 4.2 = 9.870235 \times 4.2 = 9.870$$

and writes the final answer as 9.870. Identify the mistake and give the correct answer with justification.