

5. Consider the value **59,723.5146**. Write this value with the number of significant figures indicated.

a. One.

b. Four.

c. Twelve.

ACCEPTABLE "PAPER AND PENCIL" USE / CORRECT LABORATORY USE

6. a. How many significant figures are acceptable in "paper and pencil" exercises?

b. Select the correct answer.

i. $100 \text{ m} / 14 \text{ s} = \underline{\quad} 7.1 \text{ m/s}$ or $\underline{\quad} 7.142857143 \text{ m/s}$

ii. $3 \text{ kg} \cdot 6 \text{ m/s} = \underline{\quad} 20 \text{ kg}\cdot\text{m/s}$ or $\underline{\quad} 18 \text{ kg}\cdot\text{m/s}$

iii. $13.4 \text{ m/s} \cdot 27.8 \text{ s} = \underline{\quad} 372.52 \text{ m}$ or $\underline{\quad} 373 \text{ m}$

c. Solve these problems, showing acceptable "paper and pencil" use of significant figures.

i. $180 \text{ C} / 27 \text{ s}$

ii. $2.3 \text{ cm} \cdot 5.7 \text{ cm}$

7. When making calculations in laboratory work, it is important to use the correct number of significant figures to express measured and calculated results.

a. Select the correct answer.

i. $10.30 \text{ cm} / 4.2571 \text{ s} = \underline{\quad} 2.42 \text{ cm/s}$ or $\underline{\quad} 2.419 \text{ cm/s}$ or $\underline{\quad} 2.4195 \text{ cm/s}$

ii. $0.24 \text{ A} \cdot 3.56 \text{ V} = \underline{\quad} 0.9 \text{ W}$ or $\underline{\quad} 0.85 \text{ W}$ or $\underline{\quad} 0.854 \text{ W}$ or $\underline{\quad} 0.8544 \text{ W}$

Note:

b. Solve these problems, showing correct "laboratory" use of significant figures.

i. $2.6 \text{ N} \cdot 0.4352 \text{ m}$

ii. $8.7 \text{ N} / 0.23 \text{ m}$

COUNTING NUMBERS (EXACT VALUES)

8. Lab groups are given a supply of eight marbles and asked to determine the average mass of a marble. One group measures the mass of all eight marbles at once and divides that number by eight. The students within the group are divided as to how to express their answer. The total mass of the marbles is 167.83 g.

a. Sheila suggests they record their result as 20.97875 g. What was her reasoning?

b. Alicia suggests they record their result as 20.979 g. What was her reasoning?

c. Justin suggests they record their result as 20 g. What was his reasoning?

d. Billy suggests they record their result as 20.98 g. What was his reasoning?

e. Who is correct and why?