

Significance



Name: _____

Student ID: _____

Date: _____

“It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so.”

— Mark Twain

1. The four rules of significant figures are...

(fill in the blank with either “significant” or “NOT significant”)

- a) All non-zero digits are _____ .
- b) A zero is _____ when it is between two non-zero digits.
- c) A zero is _____ before (left side) the first nonzero digit.
- d) A zero is _____ at the end (right) of a number ...
unless there is a decimal point!

2. Write the number of significant figures for each measured value below.

- | | | | |
|--|-------|---|-------|
| a) 62.34 yrs | _____ | b) 14.062 s | _____ |
| c) 12,001 in | _____ | d) 12,000 lbs | _____ |
| e) 12,010 m | _____ | f) 12,000. cm | _____ |
| g) 12,000.1 hr | _____ | h) 12,000.0 ft | _____ |
| i) 9.206 cm | _____ | j) 9.200 in | _____ |
| k) 0.092 mi | _____ | l) 0.09206 | _____ |
| m) 0.09200 s | _____ | n) 7 ft | _____ |
| o) 7.2 ft | _____ | p) 7 marbles | _____ |
| q) $55 \frac{\text{miles}}{\text{hr}}$ | _____ | r) $12 \frac{\text{inches}}{\text{foot}}$ | _____ |

3. Write each of the following measurements in scientific notation.

a) 62.34 yrs

b) 12,001 ft

c) 12,000 lbs

d) 12,000. oz

e) 7 inches

f) 0.092 kcal

g) 0.09200 mi

h) 0.007409 km

i) 40 °C

j) 7.2 ft

k) $55 \frac{\text{miles}}{\text{hr}}$

4. Round off each number below to 4 sig figs and express it in 4 significant figures.

a) 74.814

b) 0.192631

c) 204.036

d) 23.72709

e) 12,010

f) 0.979962

g) 12,000.1

h) 259999.2

5. Complete each calculation below. Write your answer with the correct number of significant figures. After you completed your calculation write the number of sig figs of the answer.

Answer

Sig Figs

A) Multiply 2.4 by 3.77

B) Multiply 1.7×10^5 by 3.77×10^{-5}

C) Divide 2.500×10^3 by 5.000×10^3

D) Add 205.36 and 157 and 72.5

E) Subtract 11.9986 from 12.0097

F) Add 0.0002736 to 0.940

G)
$$\frac{(2.53 \times 10^4) \cdot (7,500)}{6.325 \times 10^7}$$

H)
$$\frac{(.08297) \cdot (4.50 \times 10^{-4})}{5.9287 \times 10^7}$$

6. A block of wood measures 6.23 cm in height, 5.0 cm in width, and 2.402 cm in length. What is the volume of the block?

7. Three apples weigh 127.87 g, 99.0 g and 134.13 g. What is the average weight of those three apples?

8. A water tank has 2,979.4 L of water. The next day the water volume is measured to be 3,050.4 L. How much water was added to that tank between the two measurements?