Significant Figures and Simple Conversions Worksheet (Key)

1. How many significant figures are in each measured quantity?

(a) ~~0.000~~1125 m

4 sigfigs

(b) ~~0~~.1125 s

4 sigfigs

(c) 1.12500 × ~~10^4~~ m

6 sigfigs

(d) 11205 m

4 or 5 sigfigs

2. For each measured quantity, underline the zeros that are significant and draw an "X" through the zeros that are not.

(a) ~~0.00~~5050 m

sandwiched, following non-zero

(b) ~~0.000000000~~60 s

following non-zero

(c) 220,103 kg

(d) ~~0.00~~108 in.

sandwiched

✳ 3. How many significant figures are in each measured quantity?

(a) 13001 kg

5 sig figs

(b) 13111 kg

5 sig figs

(c) 1.30 × ~~10^4~~ kg

3 sigfigs

(d) ~~0.000~~13 kg

2 sig figs

✳ 4. For each measured quantity, underline the zeros that are significant and draw an "X" through the zeros that are not.

(a) ~~0.000~~10320 s

sandwiched, following nonzero

(b) 1,322,600,324 kg

(c) ~~0.000~~1240 in.

following non-zero

(d) ~~0.~~2061 m

sandwiched

5. Perform each calculation to the correct number of significant figures.

3sf (2sf) 4sf (2sf)
(a) 1.01 × 0.12 × 53.51 ÷ 96 all mult./div

0.067556638

0.068

3dec (1dec.) 2dec
(b) 0.987 + 125.1 - 1.22 all add/subt.

124.867

124.9

P
E
MD
AS

3dec (2dec.)
(c) 6.78 × 5.903 × (5.489-5.01) both

6.78 × 5.903 × 0.479

3sf 4sf (2sf)

= 19.1707009 → 19

P
E
MD
AS

(2sf) 3sf
(d) 19.667- (5.4 × 0.916) both

19.667 - 4.9464

3dec. 1 dec.

= 14.7206 → 14.7

* (e) 0.765 - 3.449 - 5.98 add/sub.

3dec. 3dec (2dec.)

-8.664 → -8.66

Conversions — *CROSS OUT UNITS*

1. Perform each conversion

* a. 3.55(kg) to (grams)

$$\frac{3.55\text{kg} \mid 1000\text{g}}{\mid 1\text{kg}} = 3{,}550 \text{ grams}$$

4sf

b. 8944(in.) to (meters)

$$\frac{8.944\text{ in.} \mid 1\text{ meter}}{\mid 39.37\text{ in.}} = 0.22717805 \rightarrow 0.2272 \text{ meters}$$

3sf

c. 22.5(in.) to(centimeters)

$$\frac{22.5\ \text{in.}}{1\ \text{in.}} \left| \frac{2.54\ \text{cm}}{} \right. = 57.15 \rightarrow \boxed{57.2\ \text{cm}}$$

3sf

* d. 0.0187(L) to(milliliters)

$$\frac{0.0187\ \text{L}}{1\ \text{L}} \left| \frac{1000\ \text{mL}}{} \right. = \boxed{18.7\ \text{mL}}$$

4sf mg → g → kg

e. 4598(mg) to(kilograms)

$$\frac{4598\ \text{mg}}{1000\ \text{mg}} \left| \frac{1\ \text{g}}{1000\ \text{g}} \right| \frac{1\ \text{kg}}{} = \boxed{0.004598\ \text{kg}}$$

3sf ft. → in. → m

f. 126(ft.) to(meters)

$$\frac{126\ \text{ft.}}{1\ \text{ft.}} \left| \frac{12\ \text{in.}}{39.37\ \text{in.}} \right| \frac{1\ \text{m}}{} = 38.4048768 \rightarrow \boxed{38.4\ \text{m}}$$

3sf yd. → m → km

g. 825(yd) to(kilometers)

$$\frac{825\ \text{yd.}}{1.094\ \text{yd}} \left| \frac{1\ \text{m}}{1000\ \text{m}} \right| \frac{1\ \text{km}}{} = 0.75411335 \rightarrow \boxed{0.754\ \text{km}}$$

2 conversions:
mi → km AND hr → day

2. The speed limit on many U.S highways is 65 mi./hr. Convert this speed into km/day.

$$\frac{65\ \text{mi}}{1\ \text{hr}} \left| \frac{1\ \text{km}}{0.6214\ \text{mi}} \right| \frac{24\ \text{hr}}{1\ \text{day}} = 2,510.46025\ \text{km/day}$$

$$= \boxed{2,500\ \text{km/day}}$$

3. A prescription medication requires 7.55 mg per kg of body weight. Convert this quantity to the number of grams required per pound of body weight and determine the correct dose (in g) for a 175-lb patient.

mg/g

$$\frac{7.55\ \text{mg}}{1\ \text{kg}} \left| \frac{1\ \text{g}}{1000\ \text{mg}} \right| \frac{1\ \text{kg}}{2.2051\ \text{lbs}} \left| \frac{175\ \text{lb}}{} \right. = 0.5992063492$$

$$= \boxed{0.599\ \text{g}}$$

3 sf

4. A house has an area of 215 m^2. What is its area in km^2? What about cm^2?

$$\frac{215\ m^2}{} \left| \frac{1\ \text{Km}^{①}}{1000\ m} \right| \frac{1\ \text{Km}^{②}}{1000\ m} = \boxed{0.0215\ \text{Km}^2}$$

$$\frac{215\ m^2}{} \left| \frac{100\ cm^{①}}{1\ m} \right| \frac{100\ cm^{②}}{1\ m} = \boxed{2,150,000\ cm^2}$$