2017

# METRIC MANIA

Name Key Period _____

MEASUREMENTS: Include d.o.f., uncertainty and units based on measuring tool.
#5, 6 – do not worry about the uncertainty.

1. .39.27 ±.0005 m (39.27 cm) Length of your stride, back toe → front heel (m)


2. 24.8±.5°C Temperature of room temperature water (degrees C)

3. 32.0 ±.5 mL Volume of mystery liquid (mL)

4. .42 s Time it takes for the balloon to hit the ground (starting at lab desk height) (s)

5. 15.6 $cm^3$ $(2.50 \pm .05\ cm)^3$ Volume of cube ($cm^3$) no ± $(15.625\ cm^3)$

6. 15,600 $mm^3$ $(25.0 \pm .5\ mm)^3$ Volume of cube ($mm^3$) no ± $(15{,}625\ mm^3)$

7. 145.55±.05g Mass of cube (g) Cu

CONVERSIONS: Can be done outside of class. Show work.

$s = \frac{d}{t}$

1. Your stride (m) $.3927 \pm .0005$ m
   - If her step took 1.0 seconds, how far did she travel in 1 hour? 3600 s

$$\frac{.3927\ m}{s} \left| \frac{3600\ s}{} \right. = 1{,}413\ m \rightarrow \boxed{1{,}400\ m}$$

   - How many minutes would it take for her to travel 2 miles?

$$\frac{2\ mi}{} \left| \frac{1609\ m}{1\ mi} \right. = 3{,}218\ m = d \qquad t = \frac{d}{s} \qquad \frac{3{,}218\ m}{23.56\ m/min} \qquad 136.6\ min \rightarrow \boxed{100\ min}$$

$$\frac{.3927\ m}{s} \left| \frac{60\ s}{1\ min} \right. = 23.56\ m/m$$

2. Room Temperature Water (Celsius) $24.8 \pm .5\ ^\circ C$
   - Convert temperature in Celsius to Kelvin.

$$24.8 + 273 = \boxed{298\ K}$$

3. Mystery Liquid Measure (mL) $32.0 \pm .5$ mL = 1 sample
   - How many samples of the mystery liquid would it take to fill a 12 oz can of soda?

$$\frac{12\ oz}{} \left| \frac{29.575\ mL}{1\ oz} \right| \frac{1\ sample}{32.0\ mL} = \boxed{11\ samples}$$

4. Balloon Drop Time (s) .42 s
   - How many times could you drop the ball in a day?

$$\frac{1\ day}{} \left| \frac{24\ hr}{1\ day} \right| \frac{3600\ s}{1\ hr} \left| \frac{1\ drop}{.42\ s} \right. = \boxed{2 \times 10^5\ drops}$$

5. Volume of cube ($cm^3$) $15.6\ cm^3$
   - What is the volume (in $cm^3$) of 4 cubes?

count cubes

$$\frac{4\ cubes}{} \left| \frac{15.6\ cm^3}{1\ cube} \right. = \boxed{62.4\ cm^3}$$

6. Volume of cube ($mm^3$) $15{,}600\ mm^3$
   - What is the volume (in $mm^3$) of 4 cubes?

count cubes

$$\frac{4\ cubes}{} \left| \frac{15{,}600\ mm^3}{1\ cube} \right. = \boxed{62{,}400\ mm^3}$$

7. Mass the cube (g) 145.55 g
   - What is the mass of the cube measured in mg?

$$\frac{145.55\ g}{} \left| \frac{1000\ mg}{1\ g} \right. = \boxed{145550\ mg}$$

   - What is the mass of the cub measured in lbs? (2.2 lbs = 1 kg)

$$\frac{145.55\ g}{} \left| \frac{1\ kg}{1000\ g} \right| \frac{2.2\ lb}{1\ kg} = \boxed{.32021\ lbs}$$