

Physical Science
Mid-Term Review: Measurement

Name: _____ Block: ___

You will need your conversion factors and centimeter ruler to complete this review!

- 1) What is 7632 meters expressed in kilometers?
- 2) How many pounds are in 3975 grams?
- 3) How long is a standard football field (100 yards) in meters?
- 4) Men's shirt sizes are based on the circumference of men's necks measured in inches. Size 17 means the neckband measure 17 inches. What is the metric size (in centimeters) corresponding to size 17?
- 5) Trouser sizes are based on waist and inseam (leg length) measurements in inches. What is the metric size (in centimeters) corresponding to a 34 waist and 32 length?
- 6) The traditional marathon race is 26 miles. How many kilometers is this?
- 7) A swimmer swims 70 lengths of a pool each day. The pool is 25 m long. What distance does she swim each day
 - (a) in meters
 - (b) in miles?
- 8) If gasoline costs about \$2.50 per gallon, calculate the price in cents per liter.
- 9) The national speed limit on most interstates is 65 mph. What is this speed limit in kilometers per hour?
- 10) A chest of drawers measures 5.0 ft high, 2.0 feet wide, and 16 in deep.
 - a) What is the volume (in in³) of the chest?
 - b) What are the dimensions in centimeters?
 - c) What is the volume (in cm³) of the chest?
 - d) What would be the dimensions of the chest (in cm) if you drew a 1/15th scale model of the chest?
- 11) Do the following temperature conversions:
 - a) 149° F to degrees Celsius
 - b) 0° F to degrees Celsius

12) Fill in the missing pieces of the table below:

Mega	
	1000
	1/10
centi	
	1/1000
	1/1000000

13) Convert the following:

- a) 13.2 m to kilometers
- b) 3.1 g to milligrams
- c) 12.0 cm to meters
- d) 541.0 ml to liters
- e) 0.04 kg to grams
- f) 6.7 m to millimeters
- g) 895 cm³ to milliliters
- h) 0.76 liter to milliliters

14) Convert the following:

- a) 22.0 kg to pounds
- b) 322.0 km to miles
- c) 17.3 cm to inches
- d) 4.2 lb to grams
- e) 3.00 liters to quarts
- f) 10.0 m to inches
- g) 145.0 lb to kilograms
- h) 7.5 qt to liters

15) Convert the following:

- a) 0.06 km to centimeters
- b) 75 mm to centimeters
- c) 4330 mg to kilograms

16) More!

- a) 35 cm³ to milliliters
- b) 2.00 lb sugar to grams sugar
- c) 2.00 qt milk to milliliters
- d) ¼ lb liverwurst to grams liverwurst
- e) 3.00 yards to millimeters
- f) 17 meters to feet

17) What is the basic SI unit of time?

18) What is the basic SI unit of mass?

19) What is the basic SI unit of length?

20) What is the name given to 1/1000 second?

21) What is the name given to 1000 liters?

22) How many small cubes of 1 cm on a side fit along the side of a big cube 1 m on a side?

23) How many rows of small cubes fit along the bottom of the big cube?

24) How many cubic centimeters equal one cubic meter?

25) You are standing beside a high brick wall. It's 60 bricks high by 80 bricks wide. Each brick is approximately 2x4x8 inches, with the 2 inch side vertical, and the 8 inch side is on the front of the wall.

a) What is the area of the front of the wall in square feet?

b) What is the volume of the wall in cubic feet?

26) Plot the data in the table below on a separate piece of graph paper. Place the mass values on the y-axis and the volume values on the x-axis. Draw a best-fit line and calculate its slope. What does the slope tell you about the relationship between the mass of sulfur and its volume?

Mass of sulfur (grams)	Volume of sulfur (cm ³)
23.5	11.4
60.8	29.2
115	55.5
168	81.1

27) Choose the term that best completes the second relationship:

a) mass::kilograms money:: _____

- 1) hot 2) dollars 3) coins 4) spending

b) temperature::thermometer volume: _____

- 1) meter stick 2) graduated cylinder 3) balance 4) scale

c) foot::inch meter:: _____

- 1) millimeter 2) liter 3) kilometer 4) kilogram

28) Match the volume with each item:

- | | |
|----------------------|-----------------------|
| a) an orange | 1) 30 m^3 |
| b) a basketball | 2) 200 cm^3 |
| c) a van | 3) 20 L |
| d) an aspirin tablet | 4) 200 mm^3 |

29) List these units in order from largest to smallest:

- a) 1 mL b) 1 cL c) 1L d) 1kL

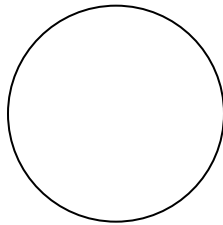
30) Match the approximate mass with each item:

- | | |
|-------------|-----------|
| a) a peanut | 1) 400 cg |
| b) a pear | 2) 50 mg |
| c) a stamp | 3) 60 kg |
| d) a person | 4) 150 g |

31) If the tolerance of a dimension on a machine part is listed as $2.54 \text{ cm} \pm 0.03 \text{ cm}$, which dimension does not meet specified tolerance?

- a) 2.54 cm b) 2.56 cm c) 2.58 cm d) 2.51 cm

32) Measure the diameter of the circle below in centimeters:



33) How many significant figures are there in your measurement of the circle above?

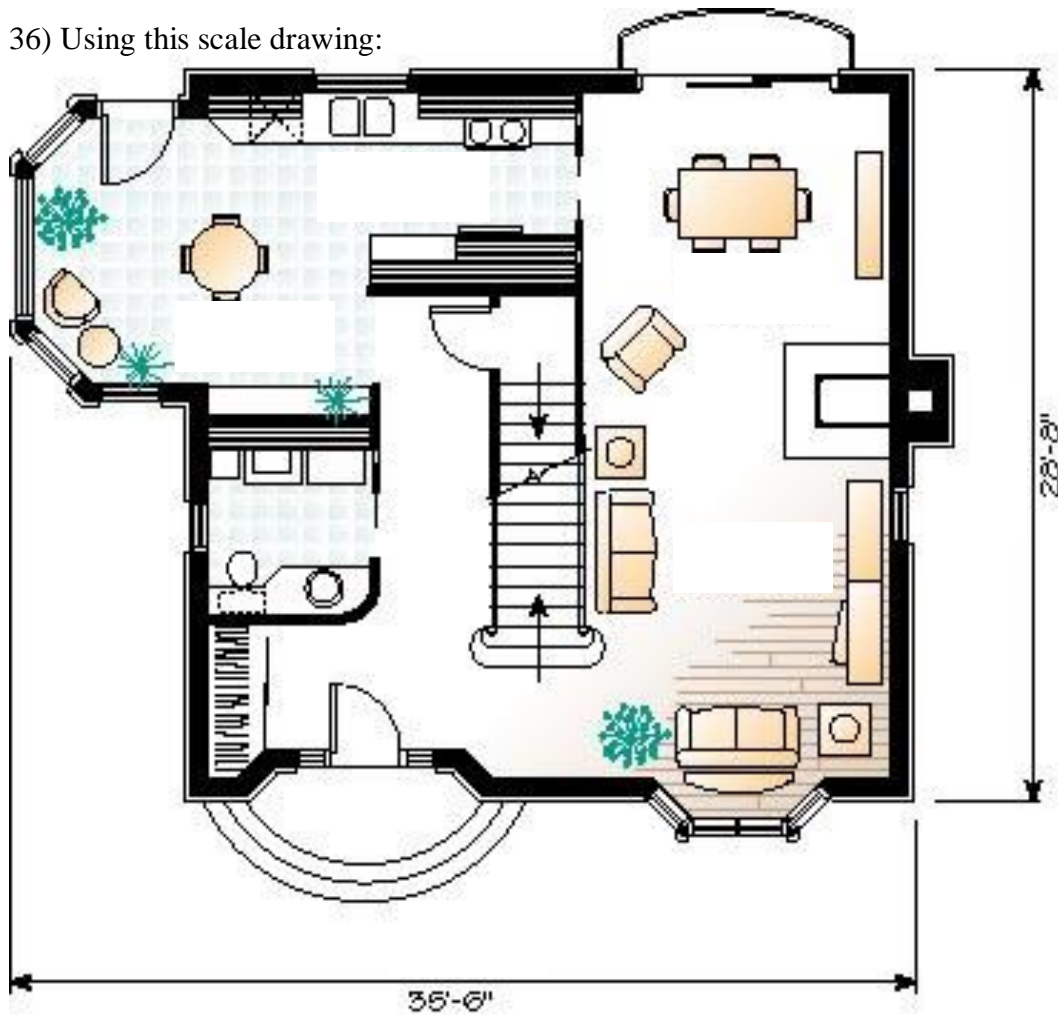
34) How many significant digits would there be if you measured it in millimeters instead?

35) In a physics class, the students recently conducted an experiment to determine “g” – the acceleration due to gravity. On earth, “g” is approximately 9.81 m/sec^2 (or 981 cm/sec^2 .) Here is a listing of the data that the students obtained by doing this experiment:

Student	“g” (cm/sec²)	Student	“g” (cm/sec²)
A	550	F	657
B	623	G	783
C	700	H	450
D	713	I	1200
E	811	J	890

- What was the average of all of these data?
- Compared to the average, calculate the percent difference for each student’s data.
- If the students were being scrutinized by a board of scientists, which students would need to redo their experiment? Why?

36) Using this scale drawing:



- What does one centimeter on the drawing correspond to in real life in feet?
- What is the scale factor of the drawing in ratio form (1:_____)?
- What is the approximate floor area of the living room in square feet?
- Ignoring windows, and assuming 8 foot high ceilings, about how much wallpaper would you need to paper the inside walls of the bathroom?
- What would the height and width of a 1/16 scale drawing be in centimeters?