# Measurement Review – Ch. 3

***ALL ANSWERS MUST INCLUDE THE PROPER UNITS AND NUMBER OF SIG FIGS***

CALCULATE PERCENT ERROR FOR THE FOLLOWING VALUES:

1. Marisa determined the melting point of a substance to be 24.5°C. Find the percent error of her measurement if the actual melting point is 31.2°C.
2. The molar mass of butane is 58.14 g/mol. Using his lab data, Tyrone calculated the molar mass of butane as 44.2 g/mol. Find the percent error of his measurement.

DETERMINE THE NUMBER OF SIGNIFICANT FIGURES IN THE FOLLOWING NUMBERS:

3. 320,000 mm
4. 0.0400 g
5. 5,000 km
6. 68,050 μL

CONVERT THE FOLLOWING NUMBERS INTO OR OUT OF SCIENTIFIC NOTATION:

7. 0.000506 mL
8. 42,000,000,000 pm
9. $5.00 \times 10^{-3}$ km
10. $8.200 \times 10^{2}$ m

CALCULATE AND EXPRESS ANSWERS IN THE CORRECT UNITS AND # OF SIG FIGS.

11. (0.00600 m) ÷ (0.030 s) =
12. (167.55 g) – (87.3 g) =
13. (50.75 mL) + (155 mL) =
14. (5,200 cm) (0.07 cm) =
15. (12.5 g) ÷ (6.0 g/cm$^3$) =
16. (370 mg) + (1200 mg) =

SOLVE THE FOLLOWING DENSITY PROBLEMS:

17. Limestone has a density of 2.72 g/cm$^3$. What is the mass of 24.9 cm$^3$ of limestone?
18. Helium has a density of 0.017 g/L. What is the volume of a weather balloon that contains 38 g of helium?
19. A 0.750-cm$^3$ sample of platinum has a density of 21.4 g/cm$^3$. What is its mass?

PERFORM THE FOLLOWING SI UNIT CONVERSIONS (watch sig figs!):

20. 177 mL = ___ L
21. 56 m = ___ cm
22. 0.093 kg = ___ mg
23. 54,400 μm = ____ dm

USE THE FACTOR-LABEL METHOD TO SOLVE THE FOLLOWING PROBLEMS:

24. George walks 1.5 km to school. If each step he takes is equal to 2.25 ft, how many steps does he take?
25. Susanna is 5.50 ft tall. What is her height in centimeters?
26. A can of Diet Pepsi® contains 355 mL of soda. How many cans would have to be opened in order to fill a 1.0-m$^3$ tank?
27. How many milliliters are in a 20.0-oz. bottle of soda? (There are 32 oz. in 1 quart.)
28. An ant is about 4.0 mm long. How many ants does it take to span 2.0 feet?
29. One serving of Jello® instant pudding requires 28.0 g of mix. If each box contains 107 g of mix, how many boxes are required to serve 15 people?
30. How many pounds does 1.0 quart of motor oil weigh if the density of motor oil is 0.80 g/mL?

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## ANSWER KEY

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1. 21% *or* 21.5%
2. 23.9% *or* 24.0%
3. 2
4. 3
5. 1
6. 4
7. $5.06 \times 10^{-4}$ mL
8. $4.2 \times 10^{10}$ pm
9. 0.00500 km
10. 820.0 m
11. 0.20 m/s
12. 80.3 g
13. 206 mL
14. 400 $cm^2$
15. 2.1 $cm^3$
16. 1600 mg
17. 67.7 g
18. 2,200 L
19. 16.1 g
20. 0.177 L
21. 5,600 cm
22. 93,000 mg
23. 0.544 dm
24. 2,200 steps
25. 168 cm
26. 2800 cans
27. 591 mL
28. 15 ants
29. 3.93 boxes
30. 1.7 lbs