

Name Key

HONORS CHEMISTRY QUIZ - MEASUREMENTS AND MATH

1pt each

MULTIPLE CHOICE - Write the letter of the best possible answer to the left of the number.

D 1. When multiplying and dividing with significant figures the answer must have the same significant figures as the number with

- A. the most significant figures
- B. the most decimal places
- C. the least decimal places
- D. the least significant figures

C 2. When adding and subtracting with significant figures the answer must have

- A. the same number of significant figures as the number with the least significant figures
- B. the same number of significant figures as the number with the most significant figures
- C. the same number of decimal places as the number with the least decimal places
- D. the same number of decimal places as the number with the most decimal places

D/A 3. A negative exponent written with a number in scientific notation means

- A. the number is less than one
- B. the number is greater than one
- C. move the decimal to the right for standard notation
- D. the decimal was moved to the left when it was put into standard notation

D 4. The curved surface that is formed when a liquid is poured into a graduated cylinder is called a(n)

- A. hibiscus
- B. concave lid
- C. depression zone
- D. meniscus

B 5. The standard unit for volume is the

- A. Angstrom
- B. liter
- C. kilogram
- D. meter

2pt each

SIGNIFICANT FIGURES: How many significant figures are in each of the measurements below. Circle the significant figures.

- 6. 1.0g 2 10. 0.034007g 5
- 7. 0.002g 1 11. 4903g 4
- 8. 2200g 2 12. 0.06020g 4
- 9. 3.003x 10⁵g 4

3 ea CALCULATIONS: Your answer should contain the correct significant figures and the correct units.

- 1 pt units
1 pt math
1 pt sig figs
13. $(\overbrace{3001}^{4 \text{ sf}} \text{ m}) (\overbrace{0.002}^{1 \text{ sf}} \text{ m}) (\overbrace{4.6 \times 10^1}^{2 \text{ sf}} \text{ m}) = 276 = \underline{300 \text{ m}^3 \text{ or } 3 \times 10^2 \text{ m}^3}$
14. $23,456 \text{ g} + 1.00234 \text{ g} + 20.1 \text{ g} + 0.55 \text{ g} = \underline{23478 \text{ g (nod.p.)}}$
15. $\overbrace{1.56}^{3 \text{ sf}} \text{ m} \div \overbrace{4.00}^{3 \text{ sf}} \text{ s} = \underline{.390 \text{ m/s}}$

2 ea SCIENTIFIC NOTATION: Convert the scientific notation to decimal form and the decimals to scientific notation. Show correct significant figures.

- 1 pt sf
1 pt exp
or
dec move
16. $\overbrace{4.032}^{4 \text{ sf}} \times 10^{-5} = \underline{.00004032}$
17. $\overbrace{501400}^{4 \text{ sf}} = \underline{5.014 \times 10^5}$
18. $\overbrace{0.00034002}^{5 \text{ sf}} = \underline{3.4002 \times 10^{-4}}$
19. $2.36 \times 10^3 = \underline{2360}$

DIMENSIONAL ANALYSIS: Solve the following problems. Use unit analysis if appropriate. Use correct significant figures and units. SHOW ALL WORK and circle your final answer.

$1 \text{ L} = .0353 \text{ ft}^3$
 $1 \text{ g} = .0022 \text{ lb}$

- 8 pts** 20. Convert 0.987 g/mL to lb/ft³.

-1 sf
-1 math
-1 units
-1 conv fact

$$\frac{.987 \text{ g}}{1 \text{ mL}} \times \frac{1 \text{ lb}}{454 \text{ g}} \times \frac{1 \text{ mL}}{1 \text{ cm}^3} \times \frac{16.4 \text{ cm}^3}{1 \text{ in}^3} \times \frac{1728 \text{ in}^3}{1 \text{ ft}^3} = \underline{61.6 \text{ lb/ft}^3}$$

$2.54 \text{ cm} = 1 \text{ in}$

$16.4 \text{ cm}^3 = 1 \text{ in}^3$

$12 \text{ in} = 1 \text{ ft}$

$1728 \text{ in}^3 = 1 \text{ ft}^3$

- 7 pts** 21. The diameter of an atom is 2.95 Angstroms. When 6.5×10^9 atoms are laid side by side, what is the length of the row in inches? (1 A = 1×10^{-8} cm)

-1 sf
-1 math
-1 units
-1 conv fact

Facts: $\frac{2.95 \text{ A}}{1 \text{ atom}}$

$$\frac{6.5 \times 10^9 \text{ atoms}}{1} \times \frac{2.95 \text{ A}}{1 \text{ atom}} \times \frac{1 \times 10^{-8} \text{ cm}}{1 \text{ A}} \times \frac{1 \text{ in}}{2.54 \text{ cm}} = \underline{75 \text{ in}}$$

75.49

- 1 math
- 1 sf
- 1 units
- 1 conv fact

Version A

22. Mrs. Higgins' peanut butter sandwich contains 1200 calories. To burn 150 calories, she needs to walk 1.00 mile. One of Mrs. Higgins' steps is 0.900 meters. How many steps will Mrs. Higgins have to walk to burn the calories from 2 peanut butter sandwiches? (I was hungry!)

A

Facts: $\frac{1 \text{ sand}}{1200 \text{ cal}}$ $\frac{150 \text{ cal}}{1.00 \text{ mi}}$ $\frac{1 \text{ step}}{.900 \text{ m}}$

$$\frac{2 \text{ sand}}{1} \times \frac{1200 \text{ cal}}{1 \text{ sand}} \times \frac{1.00 \text{ mi}}{150 \text{ cal}} \times \frac{1.61 \text{ km}}{1 \text{ mi}} \times \frac{1000 \text{ m}}{1 \text{ km}} \times \frac{1 \text{ step}}{.900 \text{ m}} = 28622$$

28622

= 29000 Steps

or

2.9 x 10⁴ Steps

3. Reading Scales. Record the measurement of each scale. Include units.

-1 sf
-1 units
-1 number
-1 number
"1.5 way off"

23. Thermometer (in Celsius) 35.0 °C

24. Balance 480.50 g

25. Graduated Cylinder 43.0 mL

