

Name

Key

68

HONORS CHEMISTRY QUIZ B - MEASUREMENTS AND MATH

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

- 1pt
1. A negative exponent written with a number in scientific notation means
- D/A
- 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
2. 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
- B 3. The standard unit for volume is the
- A. Angstrom
 - B. liter
 - C. kilogram
 - D. meter
- C 4. 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 5. 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

2pt
SIGNIFICANT FIGURES: How many significant figures are in each of the measurements below. Circle the significant figures.

6. 0.03020g 4 10. 0.034007g 5
7. 3004g 4 11. 0.0005g 1
8. 22000g 2 12. 3.0g 2
9. 3.00x 10⁻³g 3

3 ea

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

-1 units
-1 math
-1 sf

13. $(3001 \text{ m}) (0.004 \text{ m}) (4.6 \times 10^1 \text{ m}) = \overset{1 \text{ sf}}{552} = \underline{600 \text{ m}^3 \text{ or } 6 \times 10^2 \text{ m}^3}$
14. $24,456 \text{ g} + 1.00234 \text{ g} + 20.1 \text{ g} + 0.55 \text{ g} = \underline{24478 \text{ g (no d.p.)}}$
15. $\overset{3 \text{ sf}}{2.56 \text{ m}} \div \overset{3 \text{ sf}}{4.00 \text{ s}} = \underline{.640 \text{ m/s}}$

2 ea

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

-1 sf
-1 exp
or
dec
move

16. $\overset{4 \text{ sf}}{4.032} \times 10^5 = \underline{403200}$
17. $\overset{4 \text{ sf}}{50140} = \underline{5.014 \times 10^4}$
18. $0.0034002 = \underline{3.4002 \times 10^{-3}}$
19. $\overset{3 \text{ sf}}{2.36} \times 10^{-3} = \underline{.00236}$

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.**

8 pts

20. Convert 0.687 g/mL to lb/ft^3 .

$$\frac{.687 \text{ g}}{1 \text{ mL}} \times \frac{1 \text{ lb}}{454 \text{ g}} \times \frac{1 \text{ mL}}{1 \text{ cm}^3} \times \frac{16.4 \text{ cm}^3}{1 \text{ in}^3} \times \frac{1728 \text{ in}^3}{1 \text{ ft}^3} = \overset{42.88}{\underline{42.9 \text{ lb/ft}^3}}$$

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

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

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

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

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

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21. The diameter of an atom is 1.95 Angstroms. When 5.5×10^9 atoms are laid side by side, what is the length of the row in inches? ($1 \text{ A} = 1 \times 10^{-8} \text{ cm}$)

Facts: $\frac{1.95 \text{ A}}{1 \text{ atom}}$

$$\frac{5.5 \times 10^9 \text{ atoms}}{1} \times \frac{1.95 \text{ A}}{1 \text{ atom}} \times \frac{1 \times 10^{-8} \text{ cm}}{1 \text{ A}} \times \frac{1 \text{ in}}{2.54 \text{ cm}} = \overset{42.224}{\underline{42 \text{ in}}}$$

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

- 1 math
- 1 of
- 1 units
- 1 conv fact

B version

22. Mrs. Higgins' peanut butter sandwich contains 1100 calories. To burn 140 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!)

Facts: $\frac{1 \text{ sand}}{1100 \text{ cal}}$ $\frac{140 \text{ cal}}{1.00 \text{ mi}}$ $\frac{1 \text{ step}}{.900 \text{ m}}$

$$\frac{2 \text{ sand} | 1100 \text{ cal} | 1.00 \text{ mi} | 1.61 \text{ km} | 1000 \text{ m} | 1 \text{ step}}{1 | 1 \text{ sand} | 140 \text{ cal} | 1 \text{ mi} | 1 \text{ km} | .900 \text{ m}} = 28111 = \textcircled{28000 \text{ steps}} \text{ or } \textcircled{2.8 \times 10^4 \text{ steps}}$$

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

- 1 of
- 1 unit
- 1 number way off

23. Thermometer 37.0°C

24. Balance 298.00 g

25. Graduated Cylinder 43.0 mL

