MDE 010, Homework #5, Summer 2023 Name _____

Instructions: Record your answers to each of these problems directly on this page. Do the work on a separate page and attach these pages to this one. You should do the work by hand, but you may check your work with a calculator.

1. Simplify the expressions.
   a. What is 25% of 18,925?
   b. What is 3% of 204 + 35% of 14,783?

2. Fill in the following table with the missing fraction, decimal or percentage. Reduce all fractions to lowest terms.

	Fraction	**Decimal**	**Percentage**
a.	½		
b.		.45	
c.	1/20		
d.			10%
e.	2/3		
f.		.125	
g.			40%
h.	¾		
i.		$.\overline{33}$	
j.			66%
k.	1/7		

3. Writing decimals/whole numbers/fractions as percents
   a. Decimals to percents
      i. $0.27 \rightarrow$
      ii. $0.007 \rightarrow$
      iii. $1.73 \rightarrow$
   b. Whole numbers to percents $4 \rightarrow$
   c. Fractions to percents
      i. $\frac{67}{100} \rightarrow$
      ii. $2\frac{1}{5} \rightarrow$
      iii. $\frac{2}{3} \rightarrow$
      iv. $\frac{1}{4} \rightarrow$
      v. $\frac{7}{4} \rightarrow$
      vi. $\frac{5}{7}$

4. Writing percents as fractions or decimals
   a. Percents to decimals
      i. $37\% \rightarrow$
      ii. $155\% \rightarrow$
      iii. $15\frac{1}{3}\% \rightarrow$
      iv. $26.5\% \rightarrow$
      v. $0.5\% \rightarrow$
   b. Percents to fractions
      i. $27\% \rightarrow$
      ii. $125\% \rightarrow$
      v. $15\% \rightarrow$
      vi. $7.5\% \rightarrow$

iii. $\frac{1}{4}\% \rightarrow$ vii. $4\frac{1}{4}\% \rightarrow$

iv. $5\frac{1}{3}\% \rightarrow$

5. Write the percent as a decimal. a) 0.09% b) 109.4%

6. Write the decimal as a percent. a) 0.334 b) 0.024

7. Write the fraction as a percent. a) $\frac{2}{10}$ b) $\frac{5}{8}$ c) $\frac{1}{3}$

8. Write the percent as a fraction. a) $83\frac{1}{3}\%$ b) 4.85%

9. Express 0.00000000000008071 in scientific notation.

10. Simplify and express $\frac{(1.38\times10^{12})(4.5\times10^{-16})}{1.15\times10^{10}}$ in scientific notation.

11. For each of the fractions $\frac{7}{8}, \frac{4}{5}, \frac{7}{9}$,
    a. determine whether the decimal form is terminating or repeating

    b. place in the order smallest to largest.

12. Write the ratio as a fraction. 3 to 2

13. Simplify the ratio $\frac{8\frac{3}{4}}{9\frac{5}{6}}$

14. Determine which product size has the better unit price.

size	price	Unit price in cents/oz.
33 fl oz	\$3.97	
50 fl oz	\$5.78	

15. Solve the ratio for the unknown variable. $\frac{8}{9} = \frac{32}{x}$

16. Using simple interest, Bill borrowed \$10,000 at 9% for ¼ year. Find the interest due.

17. Solve the following proportions.
    a. $\frac{740}{x} = \frac{35}{20}$
    b. $125 : x :: 15 : 10$
    c. $\frac{x}{7} = \frac{8}{200}$
    d. $7 : 30 :: 3 : x$

18. Write the following expressions in scientific notation. You may round all figures to two significant figures.
    a. 0.00640
    b. 130,009
    c. 436,027,791,000

19. Write each of the expressions in standard decimal form (not in scientific notation).
    a. 6.8×10^{-7}
    b. 2.54×10^{10}

20. Simplify the expression and write your final answer in scientific notation. Use two significant figures.
    a. $(5.75 \times 10^{4})^{3}$
    b. $(2.1 \times 10^{-3}) \div (9.8 \times 10^{-5})$

21. Calculate the following problems and write your answers to the indicated number of significant digits. You may use your calculator.
    a. (5 sig fig) $377.008 + 1.25581 + 98.066 =$
    b. (1 sig fig) $2.301 \div 0.07 =$
    c. (2 sig fig) $21.35 \times 4.8 =$

22. Determine the number of significant figures in the following numbers.
    a. 871.0
    b. 0.0913
    c. 0.0000128
    d. 833.009
    e. 20

23. Solve the following problems. State your answer with the correct significant digits.
    a. $65.23 + 2.345 + 0.098 + 23.11 =$
    b. $0.10954 - 0.00321 =$
    c. $0.75 \times 0.020 =$
    d. $2.103 \div 0.03 =$

24. Express the following numbers using standard scientific notation.
    a. 0.00037
    b. 0.00000009
    c. 75,000
    d. 1,400,000

25. Solve the following problems. Write your answer both in scientific notation and in decimal form with the correct significant digits.
    a. $(9.62 \times 10^{3})(4.21 \times 10^{2}) =$
    b. $(6.9 \times 10^{-3})(9.58 \times 10^{1}) =$
    c. $(2.31 \times 10^{2}) \div (8.9 \times 10^{-3}) =$
    d. $(1.7 \times 10^{-3})^{3} =$
    e. $(3.5 \times 10^{-2}) - (5.7 \times 10^{-3}) =$

26. Suppose you have a jar containing 5 green marbles, 7 blue ones, 11 red ones and 2 white marbles. Use this information to answer the following questions.
    a. How many marbles are in the jar?
    b. What is the probability of pulling a blue marble from the jar?
    c. What is the probability of pulling first a blue marble from the jar, and without putting it back, then pulling a white marble from the jar?
    d. What is the probability of selecting either a green or a red marble on the first try?