MDE 010, Homework #1, 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. Consider the following set:

$$\left\{9, -0.25, \frac{\sqrt{2}}{\pi}, -1, |-23|, -\sqrt{\frac{81}{16}}, 301.001000100001\ldots, \frac{39}{13}, \frac{47}{5}, \sqrt{\pi e}, (-4)^2\right\}$$

   Using correct set notation, give the elements that also belong to each of the following sets. [Hint: You may want to simplify some expressions first.]
   a. The Natural Numbers
   b. The Rational Numbers
   c. The Irrational Numbers
   d. Integers

2. For the numbers in the set $\left\{\frac{55}{7}, -11, 4, \sqrt{64}, -6.75, 14000, \sqrt{19}, \pi^2, \frac{0}{3}, 0.\overline{69}, \frac{16}{8}\right\}$, which numbers are:
   a. Real Numbers
   b. Irrational Numbers
   c. Rational Numbers
   d. Integers
   e. Natural Numbers
   f. Are any numbers in the list not real? If not, give an example a number that is not real.

3. Round the following numbers to the indicated digit.
   a. 12,456 (thousands)
   b. 45,723 (hundreds)
   c. 24.8901 (ones)
   d. 0.06 (tenths)
   e. 0.888 (hundredths)
   f. 0.68943 (thousandths)
   g. 95.8 (tens)

4. Write $265{,}089$ in words and then in expanded notation.

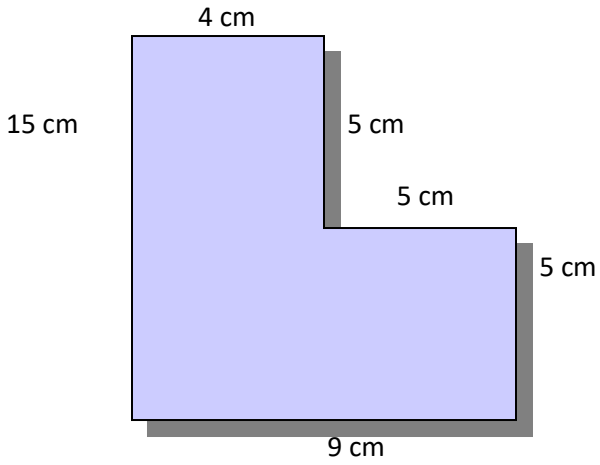
5. Write *six billion two hundred fifty-four million five hundred forty thousand one* in standard notation.

8. Round 8459
   a) to the nearest 10s
   b) to the nearest 100s
   c) to the nearest 1000s

6. Add $23 + 19 + 7 + 21 + 4$

7. Add $12{,}070 + 2{,}954 + 3{,}400$

8. Find the perimeter of:



9. Subtract $6246 - 1879$

10. Simplify $12 - 6 - 4$

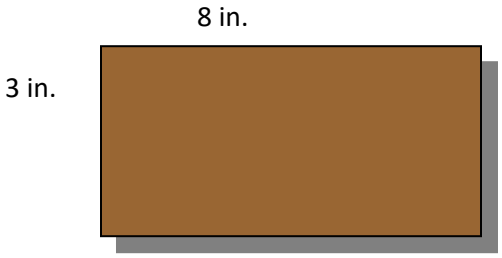
11. Insert < or > between the following pairs of numbers to make a true statement
    a) 12 ____ 8
    b) 210 ____ 189
    c) 4 _____ 14

12. Estimate to the nearest 10s $872 + 35 + 3 + 59 + 84$

13. Multiply $(37)(2)$

14. Multiply $(2344)(306)$

15. Find the area of:



16. Divide $3642 \div 5$

17. Divide $532 \div 19$

18. State the order of operations

19. Evaluate 5^4

20. Simplify $4^2 \div (10 - 9 + 1)^3 \times 3 - 5$

21. Simplify $2^3 \times 2^8 \div 2^9$

22. Simplify $4^3 + 9 \times 12 - (4 + 3 \times 17)$

23. Simplify $[9 \times (6 - 4) \div 8] + [7 \times (8 - 3)]$

24. Simplify $(80 \div 16) \times [(20 - 56 \div 8) + (8 \times 8 - 5 \times 5)]$