Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Unit 5: Numbers and Algebra Test Review

1. Place the following numbers in the most specific group

$$-15.5, \frac{2}{3}, 4.387…, 0, \sqrt{9}, 141, 5π, \frac{9}{100}$$



2. Write the numbers from least to greatest

3. Find the mean and median of the data set

4. Tulsa University timed random students on how long it takes them to run a mile. Below is the follow mile times they received.

 12.235 min, 7.431 min, 9.22 min, 21.567 min, 6.89 min, 8.025 min, 9.68 min

a. Find the average time it takes to run a mile. Round your answer to at least 3 decimal places

b. Write your answer from part a in the form $a×10^{k}$ where $1\leq a\leq 10$ and $k ϵ Z$

c. Ms. Campbell believes that the average time it takes to run a mile is 10.67 minutes. Calculate the percent error.

Mrs. G is taking a vacation to Jamaica. The currency conversion is US$1 = JAM$127.80.

5. Mrs. G wants to convert US$750 for spending money. How many Jamaican dollars will she receive?

6. Mrs. G spends JAM$95,000. How many Jamaican dollars does she have left?

7. Before leaving Mrs. G decides to convert her money back into US$. Broker A uses the following conversion: US$1 = JAM$ 126.99 and takes a 2% commission. Broker B uses the following conversion: US$1 = JAM$ 128.22 but does not charge a commission. Which broker should Mrs. G go to?

8. Find the sum of the finite geometric series

 a. 1/5 + 1/10 + 1/20 + 1/40 + 1/80 b. 3 + 6 + 12 + 24 + … + 768

9. Determine if the sequences are arithmetic, geometric, or neither.

 If arithmetic, state the common difference

 If geometric, state the common ratio

 If neither, state why not

 a.) 3, 6, 9, 12,… b.) 3, 5, 9, 11,… c.) 4, 15, 26, 37,…

10. Determine the 13th term in the arithmetic sequence

 5, 13, 21,…

11. Determine the sum of the arithmetic series

 7 + 10 + 13 + … + 82

12. Vasili invest $25,000 in an account earning 5.75% simple interest for 3 years. At what annual interest rate would the same amount of money have to be earning monthly compound interest over 3 years?

13. Allessandro has three options for choosing a bank in which to invest his $3000. Which bank should he choose if we wants to invest his initial amount for 5 years?

Bank A: 2.75% interest compounded monthly

Bank B: 3% interest compounded quarterly

Bank C: 3.25% interest compounded annually

14. William bought an apartment in 1985 for $117000 which appreciated at an annual rate of 5.4%.

a. Find the value of his apartment in 2008.

b. If William had instead invested his $117000 in a bank account earning 7% annual interest compounded monthly, but paid $350 per month in rent, would he have earned more or less money, and by how much?

15. In an arithmetic sequence, u9 = -23 and u25 = 25

a. Find the following information: [4 marks]

* Common Difference:
* First Term:

b. Find S25. [2 marks]

16. Bob is trying to decide whether to invest $40,000 or to purchase a new car which will cost $80,000. Bob can invest the money, $40,000, at a 9% interest compounded monthly.

a. Write down the investment function $I(t)$ which would be used to calculate the value of the investment at any time.

[2 marks]

b. Hence, show that he will earn $3752.30 in interest after the first year. [2 marks]

c. Write down how much money Bob will have in the bank at the end of year 2. [1 mark]

d. How many years will it take for his money to double? [2 marks]

However, Bob has realized that if he buys a new car it will gradually depreciate in value. He has been advised that the rate of depreciation for the car will be 7% per annum.

e. Write down the depreciation function $D(t)$ which would be used to calculate the value of the car at any time.

[2 marks]

f. Hence, calculate the value of the car after one year, to the nearest dollar. [1 mark]

g. When will the value of the car equal $40,000? [4 marks]