## Chapter 8 Test – Form B Name \_\_\_\_\_ Additional Applications of Algebraic Modeling \_\_\_\_\_\_

Show all work on another sheet and hand it in with this test. You may round all decimal number answers to the nearest tenth.

1. If you were buying grass seed to put on your lawn, would you need to calculate the area or perimeter of the lawn?

2. The lengths of the sides of a non-right triangle are 17 inches, 9 inches, and 12 inches. Find the area of the triangle. (Round to the nearest tenth.)

Use this diagram to answer problems 3-5.



3. Find the total perimeter of the rooms in the diagram.

4. Find the total area of the rooms in the diagram.

5. If carpet costs \$2.75 per square foot, how much will it cost to carpet these rooms?



7. Is a triangle with sides 4.5, 6, and 7.5 centimeters long a right triangle?

8. Which of these letters: G, R, T, Z, exhibits reflection symmetry about a vertical line through its center?

9. Which of these letters: F, H, K, M, exhibits reflection symmetry around both a horizontal and a vertical line through its center?

10. Which of these letters: C, H, J, R, exhibits 180° rotational symmetry about its center point?

11. An architect is making a  $\frac{1}{24}$  th scale drawing of a house. The highest point on the house is 10 feet 6 inches high. How high, in inches, would this point be on the drawing?

12. A  $\frac{1}{32}$  *nd* scale model of a truck is 4.0 inches long. How long, in feet and inches, is the actual truck?

13. If the sides of an equilateral triangle are 42 inches long and the triangle is redrawn so that the sides are 5.25 inches long, what scale factor was used?

14. A rectangle is 35 inches long and 15 inches wide. If it were redrawn using a scale factor of  $\frac{1}{4}$ , what would its new dimensions be?

15. You wish to draw a "golden" rectangle with a shortest side of 9 cm. What should the length of the longest side be?

16. If a "golden box" (where  $\frac{w}{h} = \frac{l}{w} \approx 1.62$ ) has a height of 6 cm, what would its length and width be?

17. If 5 and 8 are two consecutive numbers in the Fibonacci Sequence, what is the next number?

18. What is the decimal value of the ratio of the fourth Fibonacci Sequence number to the third such number have?

19. What frequency is one octave above a frequency of 220 Hz?

20. If a piece of music is written in  $\frac{3}{4}$  time, how many eighth notes would be required to write one measure of this music?

21. A measure of music is to be written in  $\frac{3}{4}$  time. Two quarter-notes have already been written. How many 16<sup>th</sup> notes would be required to finish this measure of music?

22. A variable voltage in a circuit is given by the formula:  $V = t^2 - 20t + 40$ . At what time after the circuit begins to function will the voltage be 8V?

23. A city has a population of 22,550 and is growing at a rate of 0.2% per year. Predict its population in 15 years.

24. Use the quadratic formula to find the solutions (rounded to tenths place) of the following equation:  $x^2 - 5x - 8 = 0$ .

25. An object is shot upward from a height of 80 ft with an initial velocity of 64 ft/sec. Its height (*h*) above ground in feet after *t* seconds is given by the formula  $h = -16t^2 + 64t + 80$ . At what times will it be 128 ft above the ground?