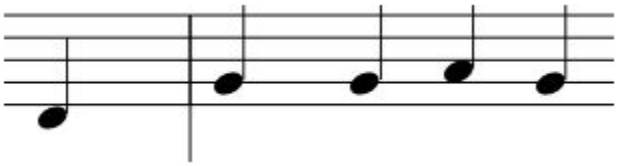
MPM 1DW Name: _____

Unit 7 Problem Set

3 marks each + 3 marks for proper mathematical form /15

1. Determine the length of the side of a cube whose volume is numerically the same as the surface area.

2. The picture shows the first 5 notes of the tune "We wish you a Merry Christmas". How many different melodies can be composed by these 5 notes?



3. Suguru Puzzle: The heavy lines indicate areas, called cages, from one to five squares in size. Fill each cage with unique digits, counting up from 1. So for example a 2-square cage contains the numbers 1 and 2; and a 5-square cage contains the numbers from 1 to 5. Adjacent (touching) squares, even ones that touch diagonally, may never contain the same number.

4				5	
		4			
			2	3	
				5	
		1			

4. The first 9 positive **odd** integers are placed in the following 3 X 3 grid in such a way that the sum of each row, column and diagonal is the same. Four of the numbers are shown and the other five numbers are hidden behind the letters A; B; C; D; and E. Determine the value of A + E.

A	1	B
5	C	13
D	E	3