LQ "How can we set up and solve word based questions by listing numbers systemically?"

<u>**Task 1**</u> – (Grade 3/4 GCSE Task) Can I list systemically? Do I know my 'special numbers'?

Complete the columns below in a systematic way (if you don't know them use your initiative and get a book!)

The 1st 10 square numbers are....	The 1st 5 cube numbers are........	The 1st 15 prime numbers are.....	The 1st 8 multiples of 6 are....	The factors of 8 are.....

<u>**Task 2**</u> –(Grade 4 GCSE Questions) - Set up your answer to each question below by systemically listing the numbers required to solve them:

(Q1) Bob takes a £1 coin to the shop. He is given 3 coins in his change when he buys some sweets. What is the maximum amount he could have spent on the sweets?

(Q2) Sue also spends £1 in the shop on sweets. In her change she has 4 **different** coins. What is minimum amount she could have spent on the sweets?

(Q3) Fred buys a bar of chocolate in the shop using a £2 coin. He is given 4 coins in his change. Find the difference between the maximum and minimum price the bar of chocolate.

<u>**Task 3**</u> –(Grade 4/5 GCSE Questions)   By listing suitable values, solve the problems below:

(Q1) Show that the sum of the 4th prime number and the 5th cube number is greater than 130.

(Q2) Show that the difference between the 5th square number and the 2nd cube number is a prime number.
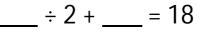
(Q3) Find the product of the first 5 multiples of 2.

<u>**Task 4 -**</u> (Grade 5/6 GCSE Questions)

(Q1) John says that when the 3rd cube number is divided by any of the factors of 9 will it will always be an integer. (a) Show that he is right and (b) Show when the same number is divided by 6 the answer is less than 5.

(Q2) Sue says that if she has 4 **different** coins in her pocket they can never sum to a prime value. Show that she is wrong and state the 4 coins she can use. (The coins are UK sterling!)

(Q3) Place 1 square number and 1 multiple of 5 in the gaps below to make the calculation true (Be careful! BIDMAS):

$$\underline{\quad} \div 2 + \underline{\quad} = 18$$

(Q4) Is the following statement true? "The product of the first 3 prime numbers is also a prime number". Explain clearly why you have chosen your answer of true or false.
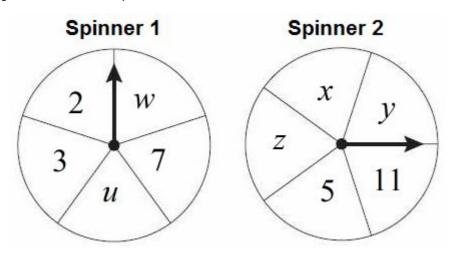
(Q5) Jane has a bag with 23 tiles in. Each tile has a different letter from the alphabet. She takes a tile at random. If it's a vowel she scores 10 points. If the tile is not a vowel she scores 5 points. She takes **all** of the tiles out of the bag.

   (a) Complete the sentence: "*If the tile chosen wasn't a vowel it must be a* _____."

   (b) What is the minimum score Jane could get if she picked all 23 tiles out of the bag?

(Q1) Jim is playing a game with the two spinners shown below.

Both of the spinners are spun and the product of the two results is recorded. **SOME** of the outcomes are shown below

Spinner 1/Spinner2	x		11		z
w		wy			
7					
			$11u$		
3				15	
					$2z$

(a) Complete the table.

(b) Explain why none of the products can be prime numbers.

(c) Given that the value of z is 8, shade the box that has a square number in it.

(Q2) Fred buys some sweets from the shop and hands over 4 different coins to pay for them. He is handed back two identical coins in his change. He was told the sweets cost £1.71.

(a) What were the two identical coins he was handed back? You *must show your workings*.

(b) Can you prove this is a unique answer?

(Q3) (a) Show that the sum of the prime numbers less than 20 is palindromic number. (Google the word!)

(b) Find a multiple of 8 that could be added to the answer in part (a) to find a cube number.

(c) Explain why a cube number can't be a prime number.

WWW_____

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