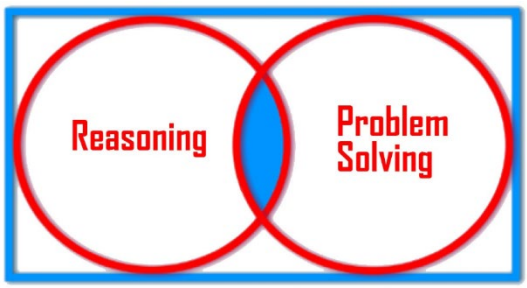
GCSE Foundation (5 – 1)

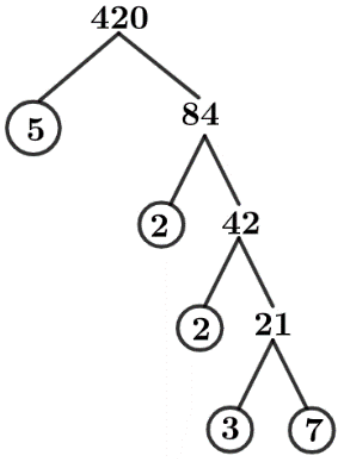


fluidmaths.co.uk

Mathematical Reasoning Questions

(Factors, Multiples and Primes) – Set 1

The marks shown are for guidance purposes only
[Total marks: 26 Marks]

1	Three different prime numbers are multiplied to obtain 585. One of the numbers is 13. Find the other two prime numbers **[2Marks]**
2	When the prime numbers between 20 and 30 are added together, their total will be equal to? a) 58 b) 52 c) 48 d) 42 **[1Mark]**
3	Here is the prime factorisation of 420.  Use the factor tree to find the prime factors of 42^2. Give your answer in index notation. **[2Marks]**

4	Which of the following are factors of the expression $2x^2y$ Choose all the correct answers a) $2x$ b) xy^2 c) $2x^2y^2$ d) $2x^2y$ **[2Marks]**
5	Here is part of the 35 times table $35 \times 1 = 35$ $35 \times 2 = 70$ $35 \times 3 = 105$ $35 \times 4 = 140$ $35 \times 5 = 175$ $35 \times 6 = 210$ Use the information from the times table to complete the following calculations a) 350×0.5 b) $210 \div 0.6$ c) $245 \div 0.35$ **[3Marks]**

6	A prime number is called "Super-Prime" if by doubling it, and then subtracting 1, the results is another prime number. Find the 'Super-Primes' between 1 and 20. **[4Marks]**
7	**An abundant number** is a number for which the sum of its factors not including the number itself is greater than the number. For Example: 18 has factors 1, 2, 3, 6, 9, 18 and 1 + 2 + 3 + 6 + 9 = 21. The amount by which the sum exceeds the number is the **abundance**. Therefore, the number 18 has an abundance of 3. Find the abundance of the number $2^4 \times 3$ **[3Marks]**

8	Find the prime factors of the smallest number which is a multiple of both 7 and 30. **[3Marks]**
9	If $N = 3^2 \times 5^3$ and $M = 2 \times 3^2 \times 5^2$ Answer **True** of **False** to the following statements a) The LCM between M and N less than N b) The HCF between M and N is greater than N c) The LCM between M and N is greater than M d) The HCF between M and N is greater than M **[4Marks]**
10	$\boldsymbol{p}$ and $\boldsymbol{q}$ are single digit prime numbers a) Explain why $\boldsymbol{pq}$ cannot be prime **[1Mark]** b) Use an example to show that $\boldsymbol{p} + \boldsymbol{q}$ could be prime **[1Mark]**