For questions 1- 3, complete the sentence.

(1) A factor of a number is………..

(2) A prime number is a number that……..

(3) The first 10 prime numbers are……..

(4) Draw a 'prime factor tree' for the number 12.

(5) Express the following as a product of their prime factors using index notation where suitable:

(a) 8

(b) 10

(c) 15

(d) 16

(e) 25

(f) 36

(g) 26

(h) 17

(i) 36

(j) 120

(k) 81

(l) 500

(m) 74

(n) 160

(o) 200

(6) Using your answer to question (5) part (j) for the number 120, write down the product of prime factors of each number below. Use index notation in your answer:

(a) 240

(b) 120²

(c) 1200

(7) Which number can be expressed by the following product of prime factors?

(a) $2^2 \times 7$

(b) $2^4 \times 3 \times 5$

(c) $2 \times 3^2 \times 7$

(8) Explain why each of the following product of prime factors examples are wrong:

(a) $18 = 2 \times 9$

(b) $64 = 2^3 \times 8$

(9) Find the HCF of 36 and 120 using the product of prime factors for each number.

(10) The number N as a product of its prime factors is $N = 2^3 \times 7^8 \times 17$. Without using a calculator:

(a) Explain why $14N = 2^4 \times 7^9 \times 17$

(b) Find $24N$ as a product of its primes.

(c) Find $\frac{N}{8}$ as a product of its primes.