Contents

Chapter 1 — Primes, Factors and Multiples

1. A **factor** of a number divides the number exactly.

2. A **multiple** of a number is exactly divisible by the number.

3. **Highest Common Factor (HCF)** of two or more numbers is a unique number which is

   (i) a common factor of each of the numbers,

   (ii) the greatest among the common factors of these numbers.

   ## Example

   > Consider the numbers 12 and 16.
   > Factors of 12 are 1, 2, 3, 4, 6 and 12.
   > Factors of 16 are 1, 2, 4, 8 and 16.
   > The common factors are 1, 2 and 4. Out of these, 4 is the greatest common factor.
   > HCF of 12 and 16 is 4.

4. **Lowest common Multiple (LCM)** of two or more numbers is a unique number which is

   (i) a common multiple of each of the numbers,

   (ii) the smallest among all the common multiples of these numbers.

18. Telephone poles are placed at equal distances of 220 m along a road and heaps of stones are placed at equal distances of 300 m along the same road. The first heap is at the foot of the first pole. How far will the next heap that lies at the foot of a pole?

19. A secondary school holds badminton competitions regularly for its students in normal and express stream. The competitions for the students in the normal stream are held at an interval of 32 days while the competitions for the students in the express stream are held at an interval of 36 days. Given that the school holds both badminton competitions together on a certain day, find the number of days for both badminton competitions to be held together next.

20. Traffic lights at 3 different road crossings turn red after 20, 25 and 30 seconds respectively. If they all turn red at 8 pm, when will they next turn red at the same times?

(f) $2 - \{2 - [2 - (2 - 2 - 2)^2]\}$ **(g)** $18 + [1 + (15 - 2) \times 4]$

(h) $118 - \{121 - (11 \times 11) - (-4) - [3 + (-7)]\}$

(i) $121 \div \{17 - [15 - 3(7 - 4)]\}$

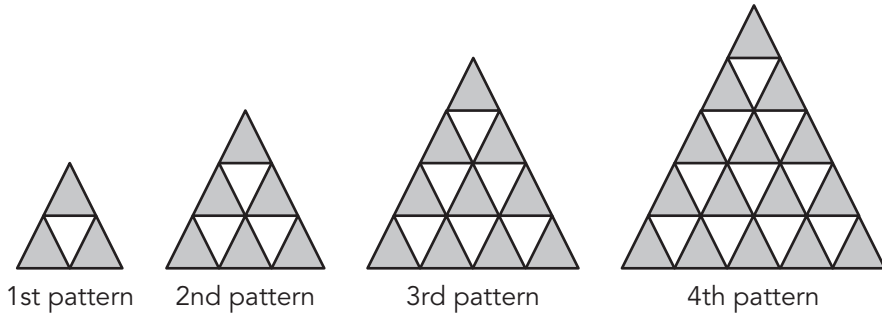**(j)** $15 - (-3)^2 + (4 - 4) \div 3[5 + (-3) \times (-6)]$

11. Consider the number pattern below:

5, 11, 17, 23, 29, 35, 41, …

(a) Write down the 10th term of the pattern.

(b) Write down the nth term of the pattern.

12. Study the sequence of shaded and unshaded triangles in the diagram below.

1st pattern   2nd pattern   3rd pattern   4th pattern

(a) The information from the pattern sequence is tabulated below. Find the values of x and y.

Pattern (n)						
Total number of triangles (T)						

(b) Write down the expression in terms of n, for the total number of triangles in the nth pattern.

(c) Hence, find the number of triangles when $n = 25$.

(d) Find the value of n when the pattern in made up of 400 triangles.