Sets

A set is a collection of objects (letters, numbers or symbols etc.) which is defined EITHER by listing all the objects OR by giving a rule that allows a decision to be made as to whether or not an object belongs in that set.

∪ is the symbol for the union of sets. ∩ is the symbol for the intersection of sets.

1. Look at the sets below. Can you answer the questions that follow?

\[ A = \{2, 4, 6, 8, 10\} \quad B = \{\text{all odd numbers}\} \quad C = \{\text{factors of 15}\} \quad D = \{\text{multiples of 4}\} \quad E = \{\text{prime numbers less than 20}\} \]

a) Find \( A \cup D \) ...........................................................

b) Find \( B \cup D \) ...........................................................

c) Find \( C \cap E \) ...........................................................

d) Complete the following sentence: \( C \) is a ................................................ of \( B \).

e) Complete the following sentence: \( B \) and \( D \) are ................................................ sets.

2. Given below are sets of different types of numbers. Can you work out the answers to the questions about these sets? Look up pages 82–83 of your Oxford Student’s Mathematics Dictionary for more information on the types of numbers.

\[ P = \{\text{real numbers}\} \quad Q = \{\text{irrational numbers}\} \quad R = \{\text{integers}\} \quad S = \{\text{negative numbers}\} \quad T = \{\text{rational numbers}\} \quad V = \{\text{positive numbers}\} \]

a) Which two pairs of sets are disjoint? ...........................................................

b) \( R \) is a proper subset of which two other sets? ...........................................................

c) \( P \) is the union of which two sets ? ...........................................................

d) Is the statement \( S \cap V = P \) true or false? ...........................................................