Worksheet: Sets

ICSE · Class 11 · Mathematics · 9 questions · 25 marks

Name: _____ Date: _____ Score: _____ / 25

Q1. Write the set A = {x : x is an integer, x^2 = 9} in roster form, and B = {5, 10, 15, 20, 25} in set-builder form. *[2 marks]*

Q2. Classify each as empty, finite, or infinite: (i) {x : x is a natural number and x+3=2}, (ii) the set of lines through a fixed point in a plane, (iii) {x : x is an even prime number}. *[2 marks]*

Q3. Write {x : x is a real number, -2 <= x < 5} as an interval, and write the interval (0, 10] in set-builder form. *[2 marks]*

Q4. How many subsets and how many proper subsets does a set with 5 elements have? List one subset containing exactly 2 elements as an example. *[3 marks]*

Q5. If A = {1, 2, 3, 4, 5} and B = {4, 5, 6, 7}, find A union B, A intersection B, and state whether A and B are disjoint. *[3 marks]*

Q6. If A = {2, 4, 6, 8, 10} and B = {4, 8, 12}, find A - B and B - A, and explain why they are different sets. *[3 marks]*

Q7. If U = {1,2,...,10}, A = {1,2,3,4,5}, B = {4,5,6,7}, find A' and B', and hence find A' union B'. *[3 marks]*

Q8. If U = {1,2,...,9}, A = {1,3,5,7}, B = {2,3,5,8}, verify De Morgan's second law: (A intersection B)' = A' union B'. *[4 marks]*

Q9. Let A = {2, {3}, 4, {5, 6}}. State, with reasons, whether each is true: (i) 3 in A, (ii) {3} in A, (iii) {3} subset A, (iv) {5,6} subset A. *[3 marks]*