Worksheet: Relations and Functions

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

Name: _____ Date: _____ Score: _____ / 25

Q1. If A = {1, 2} and B = {a, b, c}, find A x B and state n(A x B). *[2 marks]*

Q2. Let A = {1,2,3,4,5}. Define R = {(x,y) : y = x+2, x,y in A}. Write R in roster form and state its domain and range. *[2 marks]*

Q3. Is {(1,4),(2,4),(3,4),(4,4)} a function? Is {(4,1),(4,2),(5,3)} a function? Justify each. *[2 marks]*

Q4. If A x B has 12 elements and A = {1,2,3,4}, find n(B) and give one possible set B. *[3 marks]*

Q5. Let A = {2,3,4,5,6}. Define R on A by R = {(a,b) : a,b in A, a+b=8}. Write R in roster form, and find its domain and range. *[3 marks]*

Q6. State the domain and range of (i) f(x) = |x-3|, (ii) f(x) = 1/(x-2), (iii) f(x) = [x] (greatest integer function). *[3 marks]*

Q7. State the domain and range of f(x) = 3^x and g(x) = log_3(x), and identify one point each graph must pass through. *[3 marks]*

Q8. Let f(x) = x^2 - 1 and g(x) = x + 1, both defined on R. Find (f+g)(x), (f-g)(x), (fg)(x), and (f/g)(x), stating any domain restriction. *[4 marks]*

Q9. R is a relation on Z defined by R = {(a,b) : a,b in Z, a-b is divisible by 3}. Is (5,2) in R? Is (5,1) in R? Find one more pair with first element 5. *[3 marks]*