# Worksheet: Relations and Functions

Kerala State Board · Class 11 · Mathematics · 9 questions · 25 marks

| Name: _____ | Date: _____ | Score: _____ / 25 |
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**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]*