Class 11 Mathematics · Chapter 2: Relations and Functions

Worksheet · 20 marks · about 40 minutes · based on NCERT

Name _____ Class and section _____ Date _____

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1. The number of relations from A to B is 4096. If n(A) = 4, then n(B) is [1]

(a) 3 (b) 8
(c) 4 (d) 1024

2. If A = {1, 2} and B = {2, 3}, then (A × B) ∩ (B × A) is [1]

(a) ϕ (b) {(1, 2), (2, 1)}
(c) {(2, 3), (3, 2)} (d) {(2, 2)}

3. The rule f(x) = x + k for −4 ≤ x ≤ 1 and f(x) = 3x − 1 for 1 ≤ x ≤ 6 defines a function on [−4, 6] only when k equals [1]

(a) 2 (b) 0
(c) 1 (d) −1

4. If n(A × B) = 15 and n(A) = 5, then n(B) is [1]

(a) 10 (b) 3
(c) 20 (d) 75

5. The number of relations on a set A having 3 elements is [1]

(a) 9 (b) 512
(c) 64 (d) 8

6. Let A = {0, 1}. List the ordered triplets in A × A × A that have exactly two entries equal to 1. [2]

7. A relation R on N is R = {(x, y) : x + 2y = 10, x, y ∈ N}. Explain why (0, 5) ∉ R, and show that every element of the domain of R has exactly one image. [2]

8. f : R → R is a constant function with f(3) = −2. Find f(−7) + f(0) and the range of f. [2]

9. Let f(x) = √(x + 2) and g(x) = x^2 − 1. Find the domain of f + g and of $\frac{f}{g}$, and find $(\frac{f}{g})(2)$. [3]

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10. $A \times B = \{(x, 1), (x, 3), (y, 1), (y, 3)\}$ and $A \times C = \{(x, 3), (x, 5), (y, 3), (y, 5)\}$. Find A, B and C, and hence write $A \times (B \cap C)$. Check that it equals $(A \times B) \cap (A \times C)$. [3]

11. Let $A = \{1, 2\}$ and $B = \{3, 5\}$. (i) Write every function from A to B in roster form. (ii) Find the number of relations from A to B that are not functions from A to B. (iii) Find the number of relations from A to B whose domain is A. [3]

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