CLASS 11 MATHS EXTRA QUESTIONS

Class 11 Maths Chapter 2 Relations and Functions – Extra Questions with Answers

Extra practice questions for Class 11 Maths Chapter 2 (Relations and Functions), beyond the textbook. These Class 11 Maths Chapter 2 important questions are handy for last-minute exam practice.

Contents

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Very Short Answer Questions (1 mark)

Q1. If A has 3 elements and B has 4 elements, how many elements does A × B have?
Ans: 12.

Q2. Is every relation a function? Why or why not?
Ans: No, because a relation may map one domain element to more than one range element, which is not allowed for a function.

Q3. Find the value of the signum function at x = –5.
Ans: –1.

Q4. What is f(x) = |x| called?
Ans: The modulus (absolute value) function.

Q5. If $f(x) = x^2$ and g(x) = x+1, find (f+g)(2).
Ans: f(2)+g(2) = 4+3 = 7.

Short Answer Questions (2–3 marks)

Q6. Let A = {1, 2} and B = {3, 4}. Write A × B and state its number of elements.
Ans: A × B = {(1,3), (1,4), (2,3), (2,4)}; it has 4 elements.

Q7. Explain, with reasoning, why the relation R = {(1,2), (1,3), (2,4)} is not a function.
Ans: R is not a function because the domain element 1 is mapped to two different range values (2 and 3), violating the rule that each domain element must map to exactly one output for a relation to be a function.

Q8. If f(x) = 2x + 3 and $g(x) = x^2$, find (fg)(x) and (f/g)(2).
Ans: $(fg)(x) = f(x)\times g(x) = (2x+3)(x^2) = 2x^3+3x^2$. $(f/g)(2) = f(2)/g(2) = (2(2)+3)/(2^2) = 7/4$.

Higher-Order Thinking / Application Questions

Q9. A function f: R → R is defined as f(x) = [x] (the greatest integer function). Find f(2.9), f(–2.1), and explain why the second answer might seem counterintuitive.
Ans: f(2.9) = 2 (greatest integer ≤ 2.9). f(–2.1) = –3, not –2, because –3 is the greatest integer that is still less than or equal to –2.1 (since –2 is greater than –2.1, it doesn't qualify) — this can seem counterintuitive since we might expect "rounding toward zero," but the greatest integer function always rounds down toward negative infinity.

Q10. A taxi company charges a fare function f(x) = 50 + 12x for x kilometres, but only for whole-number distances (domain restricted to non-negative integers). Explain why this restricted f is still a valid function, and find the range if the maximum distance offered is 20 km.
Ans: This is still a valid function because for every valid input x (0 to 20, integers), there is exactly one output fare, satisfying the function definition, even though the domain is restricted rather than being all real numbers. The range: minimum fare f(0) = 50, maximum fare f(20) = 50+240 = 290, so the range is {50, 62, 74, ..., 290} (all values of 50+12x for integer x from 0 to 20).

Class 11 Maths Chapter 2 – Solutions and Notes

For complete step-by-step answers and a quick summary, check the Class 11 Maths Chapter 2 Solutions and Class 11 Maths Chapter 2 Revision Notes.

See also: Chapter 2