

RELATIONS & FUNCTIONS

ANSWERS

IN CHAPTER EXERCISE-1

1. $x = 2$ & $y = 1$
2. 9
3. F, T, T
4. $A \times A \times A = \{(1,1,1), (1,1,-1), (1,-1,1), (-1,1,1), (-1,-1,1), (-1,1,-1), (1,-1,-1), (-1,-1,-1)\}$
5. $A = \{a, b\}, B = \{x, y\}$
6. To Verify
7. Number of subsets of $A \times B = 2^{n(A \times B)} = 2^4 = 16$.

$P(A \times B)$

$$= \left\{ \begin{aligned} &\{(1,3)\}, \{(1,4)\}, \{(2,3)\}, \{(2,4)\}, \{(1,3), (1,4)\}, \{(1,3), (2,3)\}, \\ &\{(1,3), (2,4)\}, \{(1,4), (2,3)\}, \{(2,3), (2,4)\}, \\ &\{(1,4), (2,3), (2,4)\}, \{(1,3), (2,3), (2,4)\}, \{(1,3), (1,4), (2,4)\}, \\ &\{(1,3), (1,4), (2,3)\}, \{(1,3), (1,4), (2,3), (2,4)\} \end{aligned} \right\}$$

8. $A = \{x, y, z\}, B = \{1, 2\}$
9. $A = \{-1, 0, 1\}$. The remaining elements are $(-1, -1), (-1, 1), (0, -1), (0, 0), (1, -1), (1, 0), (1, 1)$.
10. Range of $R = \{3, 6, 9, 12\}$
Codomain of $R = \{1, 2, 3, \dots, 14\}$
11. $R = \{(1, 6), (2, 7), (3, 8)\}$, Domain of $R = \{1, 2, 3\}$
Range of $R = \{6, 7, 8\}$, Codomain of $R =$ The set of natural numbers N
12. $R = \{(1, 4), (1, 6), (2, 9), (3, 4), (3, 6), (5, 4), (5, 6)\}$
13. Domain of $R = \{5, 6, 7\}$, Range of $R = \{3, 4, 5\}$
14. (i) R in roster form is as given below:
 $R = \{(1, 1), (1, 2), (1, 3), (1, 4), (1, 6), (2, 2), (2, 4), (3, 6), (4, 4), (6, 6)\}$
(ii) Domain of $R = \{1, 2, 3, 4, 6\}$
(iii) Range of $R = \{1, 2, 3, 4, 6\}$
15. Domain = $\{0, 1, 2, 3, 4, 5\}$, Range = $\{5, 6, 7, 8, 9, 10\}$
16. $R = \{(2, 8), (3, 27), (5, 125), (7, 343)\}$
17. 64
18. Domain of $R =$ The set of all integers Z
Range of $R =$ The set of all integers Z

IN CHAPTER EXERCISE-2

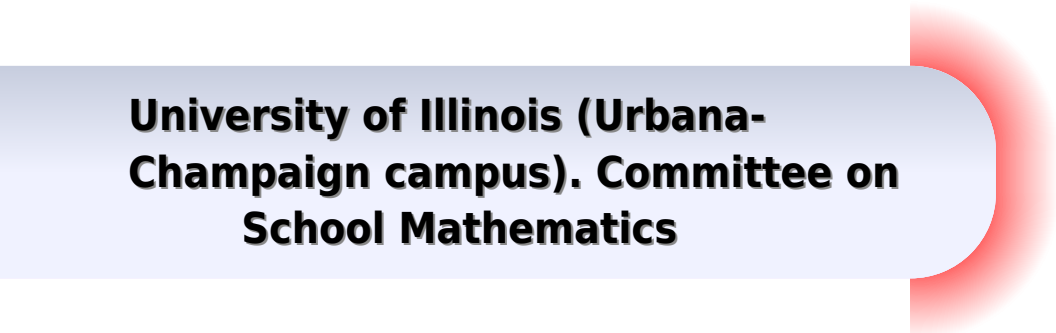
Refer solutions

IN CHAPTER EXERCISE-3

35. Function, Function, Not a Function.
36. $f(0) = -5, f(7) = 9, f(-3) = -11$
37. (i) Domain = $x \in R$, Range = $(-\infty, 0]$
(ii) Domain = $x \in [-3, 3]$, range = $[0, 3]$
38. (i) $t(0) = 32$ degree Fahrenheit
(ii) $t(28) = 82.4$ degree Fahrenheit
(iii) $t(-10) = 14$ degree Fahrenheit
(iv) $C = 100$ degree Celsius.
39. (i) Range = $(-\infty, 2)$
(ii) Range = $[2, \infty)$
(iii) Range = R
40. To Prove
41. 2.1
42. Domain of f is $x \in R - \{6, 2\}$.
43. Domain of f is $x \in [1, \infty)$, Range of f is $[0, \infty)$
44. $f(x) = |x - 1|$ is defined for all $x \in R$. Hence domain set of f is $x \in R$.
Also $|x - 1| \geq 0 \Rightarrow f(x) \geq 0$.
Hence range set of f is $[0, \infty)$.
45. $[0, 1)$.
46. $(f+g)(x) = 3x - 2, x \in R$
 $(f-g)(x) = -x + 4, x \in R$
 $\left(\frac{f}{g}\right)(x) = \frac{x+1}{2x-3}, x \in R - \left\{\frac{3}{2}\right\}$
47. $a = 2, b = -1$
48. $R = \{(a, b) : a, b \in N \text{ \& } a = b^2\}$
Hence a and b related to each other if a is square of b .
(i) False
(ii) False
(iii) False
49. $f = \{(1, 5), (2, 9), (3, 1), (4, 5), (2, 11)\}$
(i) f is a relation from A to B .
(ii) f is not a function from A to B .
50. Not a function.
51. $f(n) = \{3, 5, 11, 13\}$

Relations And Functions Answers

**University of Illinois (Urbana-
Champaign campus). Committee on
School Mathematics**



Relations And Functions Answers:

Relations and Functions within and around Language David Lockwood, Michael Cummings, Peter Fries, William Spruiell, 2005-05-01 Currently there is a movement in linguistics towards careful use of corpora in linguistic and text analysis which has involved both written and spoken corpora and those which combine spoken and written text Most text analyses address written texts often literary works but detailed discussion of the language of a single oral text from multiple perspectives has rarely been published This book is among the first to integrate the analysis of the language of spoken and written texts It describes language as a network of functional relations involving a context which is also a network of functional relations The essays in Part One present several perspectives on the theory of language as functional relations those in Part Two discuss a single oral text using a variety of functional perspectives All of the essays are by linguists interested in oral and written texts who have achieved international recognition in their fields Illustrated in this book are cognitive social construction social praxis and anthropological approaches to the description of text **Relations and functions** University of Illinois at Urbana-Champaign. Committee on School Mathematics, 1960 *High School Mathematics: Relations and functions 1960* University of Illinois (Urbana-Champaign campus). Committee on School Mathematics, 1960 A Tight, Practical Integration of Relations and Functions Harold Boley, 1999-09-29 As in other fields in computer science certain objects of study can be synthesized from different basic elements in different ways and with different resulting stabilities In subfields such as artificial intelligence computational logic and programming languages various relational and functional ingredients and techniques have been tried for the synthesis of declarative programs This text considers the notions of relations as found in logic programming or in relational databases and of functions as found in functional programming or in equational languages We study a declarative integration which is tight because it takes place right at the level of these notions and which is still practical because it preserves the advantages of the widely used relational and functional languages PROLOG and LISP The resulting relational and functional language RELFUN is used here for exemplifying all integration principles **Class 12th Mathematics Chapter-Wise Worksheet**, 2019-12-18 This book is as per the guidelines syllabus and marking scheme issued by CBSE for Class X The salient features of this workbook are The questions in the this book have been so designed that complete syllabus is covered This book help students to identify their weak areas and improve them Additional it will help students gain confidence The questions in the book are of varying difficulty level and will help students evaluate their reasoning analysis and understanding of the subject matter *Class 12th Mathematics Worksheet Chapter-wise With Solutions*, 2019-12-18 This is the best practice book of class 12th mathematics Students can score 90 after practicing this book If students have any query they can immediately email at aakashsingh12111 gmail com **Problem Solving with Computers** Greg W. Scragg, 1997 An introduction to computer science focusing on the methods of problem solving rather than on the hardware or software tools employed as aids for

problem solving Coverage includes algorithms hypermedia and telecomputing Includes definitions and exercises throughout chapters and uses feminine p

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Engineering Mathematics by Example Robert Sobot,2025-05-08 This textbook is a complete self sufficient self study tutorial type source of mathematical problems It serves as a primary source for practicing and developing mathematical skills and techniques that will be essential in future studies and engineering practice Rigor and mathematical formalism is drastically reduced while the main focus is on developing practical skills and techniques for solving mathematical problems given in forms typically found in engineering and science These practical techniques are split into three separate books the topics of algebra complex algebra and linear algebra Vol I calculus of single and multiple argument functions Vol II continues and discrete Convolution and Fourier integrals sums of typical functions used in signal processing and Laplace transform examples Vol III

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