Bal Bharati PUBLIC SCHOOL
Neelbad, Bhopal
An Institution of Child Education Society (Regd.)

CLASS-XII A (2025-26)

HOLIDAY HOMEWORK

Sr. No.	SUBJECT	ASSIGNMENTS
1.	**ENGLISH**	Literature (Flamingo & Vistas) a) Flamingo – The Last Lesson ● Write a short paragraph (120–150 words) on: *"Why is language important to cultural identity? Relate it to the story."* b) Vistas – The Third Level ● Do you think escapism is a solution to modern problems? Express your opinion in about 100–120 words Writing Skills a) Article Writing: ● Write an article on *"Mental Health Among Teenagers in the Digital Age"* (150–200 words). b) Report Writing: ● Write a report on a cultural event held at your school, to be published in the school magazine (120–150 words).

2.	**PHYSICS**	**(A) Write the following activities in thin activity file** **<u>Section - A</u>** 1.To assemble a household circuit comprising three bulbs, three (on/off) switches, a fuse and a power source. 2. To assemble the components of a given electrical circuit. 3. To draw the diagram of a given open circuit comprising at least a battery, resistor/rheostat, key, ammeter and voltmeter. Mark the components that are not connected in proper order and correct the circuit and also the circuit diagram. **<u>Section- B</u>** 1.To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab. 2.To observe diffraction of light due to a thin slit. 3.To obtain a lens combination with the specified focal length by using two lenses from the given set of lenses. **<u>(B) Prepare Investigatory project</u>** 1. Prepare Investigatory Project.and compile it according to the prescribed format • Cover page • Certificate • Acknowledgment • Index • Introduction • Content (including pictures/graphs/tables/survey report etc.) • Case Study • Bibliography Investigatory project will be provided in pdf format with the name of students.

3.	**CHEMISTRY**	**(1) Prepare an Investigatory Project on any one topic and compile it according to the prescribed format.** • Cover page • Certificate • Acknowledgment • Index • Introduction • Content (including pictures/graphs/tables/survey report etc.) • Case Study • Bibliography ● Study of the presence of oxalate ions in guava fruit at different stages of ripening. ● Study of quantity of casein present in different samples of milk. ● Preparation of soybean milk and its comparison with natural milk with respect to curd formation, the effect of temperature, etc. ● Study of the effect of Potassium Bisulphate as a food preservative under various conditions (temperature, concentration, time, etc.). ● Study of digestion of starch by salivary amylase and effect of pH and temperature on it. ● Comparative study of the rate of fermentation of the following materials: wheat flour, gram flour, potato juice, carrot juice, etc. ● Extraction of essential oils present in Saunf (aniseed), Ajwain (carum), and Illaichi (cardamom). ● Study of common food adulterants in fat, oil, butter, sugar, turmeric powder, chili powder and pepper. **2) Write down answers of the following reasoning questions based on Unit-1 Solutions:** 1.Explain why on addition of 1 mol of NaCl to 1 liter of water, the boiling point of water increases, while addition of 1 mol of methyl alcohol to one liter of water decreases its boiling point. 2.Why are aquatic species more comfortable in cold water in comparison to warm water? 3.How does sprinkling of salt help in clearing the snow covered roads in hilly areas? Explain the phenomenon involved in the process.

4.	**HINDI**	**1.अपने प्रिय समाचारपत्र या पत्रिका के बारे में 300 शब्दों की एक टिप्पणी लिखिए उसमें उसकी खूबियों और खामियों को स्पष्ट कीजिए। यह भी बताइए कि आप वह समाचारपत्र या पत्रिका कब से पढ़ रहे/रही हैं? क्या आप रोज़ अखबार पढ़ते/पढ़ती हैं? क्या आप पूरा अखबार/पत्रिका पढ़ते/पढ़ती हैं? क्या आपको लगता है कि आपका पसंदीदा अखबार/पत्रिका आपको सूचना, शिक्षा और मनोरंजन देता है?** **2. दिए गए तीन विषयों में से किसी एक विषय पर संवादों की सहायता से संक्षिप्त स्क्रिप्ट लिखिए-** **क) नदियों में प्रदूषण** **ख) नल से लगातार बहता हुआ पानी** **ग) स्कूली बच्चों पर बस्ते का बोझ** **प्रश्न-3. आपके आसपास किसी ऐसी चीज पर एक लेख लिखें जो आपको किसी वजह से वर्णनीय प्रतीत होती हो। वह कोई चाय की दुकान हो सकती है, कोई सैलून हो सकता है, कोई खोमचे वाला हो सकता है या किसी खास दिन पर लगने वाला हाट- बाजार हो सकता है। विषय का सही अंदाजा देने वाला शीर्षक अवश्य दें तथा चित्र चिपकाएँ।** **प्रश्न-4. आप अखबार के मुख्य पृष्ठ पर कौन-से छह समाचार शीर्षक /सुर्खियां (हेडलाइन) देखना चाहेंगे। उन्हें लिखिए तथा समाचार पत्र का नाम देते हुए मुख्यपृष्ठ (फ्रंट पेज) तैयार कीजिए।** **प्रश्न-5. परियोजना कार्य**
5.	**BIOLOGY**	**1. Prepare Investigatory Project based on Unit Genetics.and compile it according to the prescribed format** • Cover page • Certificate • Acknowledgment • Index • Introduction • Content (including pictures/graphs/tables/survey report etc.) • Case Study • Bibliography **2. Write Practical Activities in Practical File.** **3. Prepare Unit 1 & 2**

6.	**PHYSICAL EDUCATION**	1. As the Sports Captain of your school, you are involved in the selection of students for participating in District /Region/Zone matches subsequently. List out the criteria you will employ for selection of Individual Games/Sports Team Games/Sports. 2. Visit a nearby stadium and talk to women athletes. Collect data of 5 such athletes in their teens. Are they facing any problem related to their health, diet etc? Discuss about it in the class. 3. Talk to few people doing yoga at park, ask them the asanas, kriya and pranayam they do in their yoga routine and make a list of it. 4. Prepare practical record files according to prescribed syllabus. 5. Classify the names as type of nouns (eg. Parvatasana - mountain: Object; Ushtraasana Camel: animal)

7.	**INFORMATION PRACTICES**	Ch-1 Python Pandas-1 Q1. Write Python code to create a Series object Temp1 that stores temperatures of seven days in it. Take any random seven temperatures. Q2. Write Python code to create a Series object Temp2 storing temperatures of seven days of week. Its indexes should be ‘Sunday'. Monday'. ‘Saturday’. Q3. A series object (say T1) stores the average temperature recorded on each day of a month. Write code to display the temperatures recorded on: (i) First 7 days (ii) Last 7 days. Q4. Series objects Temp1, Temp2, Temp3, Temp4 store the temperatures of days of week1, week2, week3, weeken4 respectively. Write a script to (a) Print the average temperature per week (b) Print average temperature of entire month. Q5. Write a program that stores the sales of 5 fast moving items of a store for each month in 12 Series objects, i.e., S1 Series object stores sales of these 5 items in 1st month, S2 stores sales of these 5 items in 2nd month, and so on. The program should display the summary sales report like this: Total Yearly Sales, item-cerise (should display stem of items’ sales over the months) Maximum sales of item made: <name of item that was sold the maximum in whole year> Maximum sales for individual items Maximum sales of item 1 made: <month in which that item sold the maximum> Maximum sales of item 2 made: <month in which that item sold the maximum>

		Maximum sales of item 3 made: <month in which that item sold the maximum> Maximum sales of item 4 made: <month in which that item sold the maximum> Maximum sales of item 5 made: <month in which that item sold the maximum> Q6. Three Series objects store the marks of 10 students in three terms. Roll numbers of students from the index of these Series objects. The Three Series objects have the same indexes. Calculate the total weighted marks obtained by students as per following formula: Final marks = 25%. Term 1 + 25% Term 2 + 50% Term 3 Store the Final marks of students in another Series object. Q7. Write code to print all the information about a Series object. Q8. Write a program to create three different Series objects from the three columns of a DataFrame df. Q9. Write a program to create three different Series objects from the three rows of a DataFrame df. Q10. Write a program to create a Series object from an ndarray that stores characters from ‘a’ to ‘g’. Q11. Write a program to create a Series object that stores the table of number 5. Q12. Write a program to create a Dataframe that stores two columns, which store the Series objects of the previous two questions (10 and 11). Q13. Write a program to create a Dataframe storing salesmen details (name, zone, sales) of five salesmen.

		Q14. Four dictionaries store the details of four employees-of-the-month as (empno, name). Write a program to create a dataframe from these. Q15. A list stores three dictionaries each storing details, (old price, new price, change). Write a program to create a dataframe from it.

8.	**DATA SCIENCE**	**Ch-1 Data Governance** Answer the questions below in no less than 100 words. 1. What are some of the aspects covered by data governance? 2. Write a short note on the California Consumer Privacy Act. 3. Write a short note on the General Data Protection Regulation. **Higher Order Thinking Skills(HOTS)** **Answer the questions below in no less than 200 words.** 1. In 2019, Canva, which is a famous website used for design, suffered a data breach that impacted more than 100 million users. The breach caused data such as email addresses and passwords to be leaked. Considering this situation, discuss how the website can prevent further leaks based on ethical guidelines. 2. Write a short note on how children are at higher risk of being manipulated on the internet. Applied Project Discuss how data governance and data best practices are followed at your school. **Applied Project** Discuss how data governance and data best practices are followed at your school. **Ch-2 Exploratory Data Analysis** Answer the questions below in no less than 100 words. 1. What are some of the differences between univariate and multivariate analysis? Give some examples. 2. What are the ways to handle missing data? 3. What are some of the methods for univariate analysis? 4. What are the steps for cleaning raw data? **Higher Order Thinking Skills(HOTS)** Answer the questions below in no less than 200 words. 1. What problems can outliers cause?

		2. Why should irrelevant observations be removed from the data? 3. How can we use unsupervised learning for EDA? **Applied Project** Using the iris dataset provided in R Studio, perform a univariate analysis by creating scatter plots of sepal length, sepal width, petal length, and petal width.
9.	**MATHEMATICS**	1. Perform the following activities in your math activity copy. (a) Verify whether given relation is an Equivalence relation. (b) To demonstrate one one but not into function, one one and onto function, neither one one not onto function. 2. Draw graphs for inverse trigonometric functions and make table for their principal value branch. 3. Revise inverse trigonometric functions, matrices and determinants.

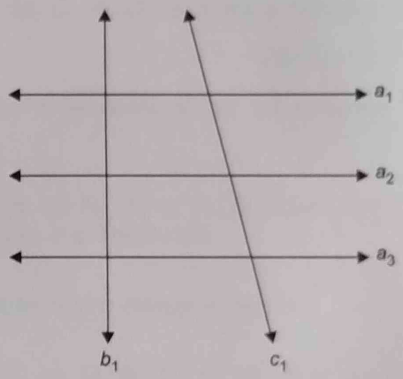
Activity 1.2 Equivalence Relation

Objective

To verify that the relation R in the set L of all lines in a plane, defined by R = {(*a*, *b*) : *a* ∥ *b and a*, *b* ∈ *L*} is an equivalence relation.

Method of Construction

Take the drawing board. Place it on the table and fix a white paper sheet on it. With scale and pencil draw some parallel lines and name them a_1, a_2 and a_3. Draw a line perpendicular to given drawn lines and name it b_1. Draw a line c_1 inclined to the given drawn lines. See figure.



Demonstration, Observation and Conclusion

1. **R is reflexive relation:** Since every line is parallel to itself as $a_1 \parallel a_1$, $a_2 \parallel a_2$ and $a_3 \parallel a_3$ etc. Therefore, the relation R is reflexive.
2. **Relation R is symmetric:**
   (*a*) By construction, we know that $a_1 \parallel a_2$ and $a_2 \parallel a_1$
   $\Rightarrow$ $(a_1, a_2) \in R$ and $(a_2, a_1) \in R$
   $\Rightarrow$ Relation R is symmetric.
   (*b*) Also by construction, we know that $a_1 \parallel a_3$ and $a_3 \parallel a_1$
   $\therefore$ $(a_1, a_3) \in R$ and $(a_3, a_1) \in R$
   $\Rightarrow$ Relation R is symmetric.
3. **Relation R is transitive:** a_1, a_2 and a_3 are three lines.
   By construction – $a_1 \parallel a_2$ and $a_2 \parallel a_3$, then $a_1 \parallel a_3$.
   Hence $(a_1, a_2) \in R$ and $(a_2, a_3) \in R$
   $\Rightarrow$ $(a_1, a_2) \in R$
   $\therefore$ Relation R is transitive.

We have verified that the relation R = {(*a*, *b*) : *a* ∥ *b* and *a*, *b* ∈ L} is reflexive, symmetric and transitive. Hence, relation R is an equivalence relation.

Application

This activity is useful (*i*) in understanding the concept of an equivalence relation. (*ii*) to check whether a given relation is an equivalence relation or not.

Activity 1.3 Not One-One but Onto Function

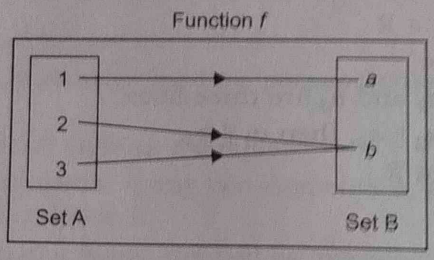
Objective

To demonstrate a function which is not one-one but is onto.

Method of Construction

Material Required
- A drawing board
- A white paper sheet
- Board pins, pencil and scale

1. Take a drawing board and place it on the table. Now fix a white paper sheet on this drawing board with the help of board pins.
2. Take two sets A = {1, 2, 3} and B = {*a*, *b*}.
3. Now draw two rectangles one represents set A and other represents set B as shown in figure.
4. Join the point 1 of set A to the point *a* of set B.
   Join the point 2 of set A to the point *b* of set B.
   Join the point 3 of set A to the point *b* of set B.



Demonstration, Observation and Conclusion

1. The image of the element 1 of set A in set B is *a*.
   The image of the element 2 of set A in set B is *b*.
   The image of the element 3 of set A in set B is *b*.
   Hence, each element of set A has only one image in set B. So, figure represents a function.
2. The elements 2 and 3 of set A has the same image *b* in the set B. Therefore, the given function is no one-one.
3. The element *a* of set B has a pre-image 1 of set A.
4. The element *b* of set B has two pre-images 2 and 3 of set A.
5. Therefore, each element of set B has a pre-image in set A.

So, the given function is onto. Hence, a function $f : A \to B$, where A = {1, 2, 3} and B = {*a*, *b*} defined as $f = \{(1, a), (2, b), (3, b)\}$ is not one-one but onto.

Application

This activity can be used to demonstrate the concept of one-one and onto function.

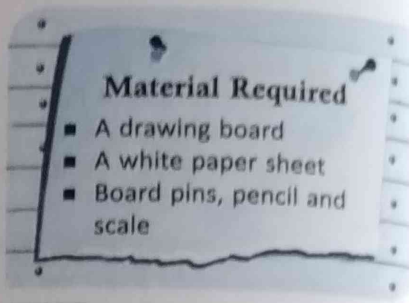
Activity 1.4 One-One but Not Onto Function

Objective

To demonstrate a function which is one-one but not onto.

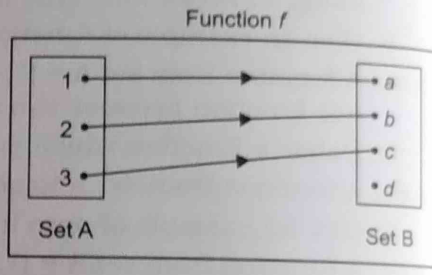
Method of Construction

1. Take the drawing board and place it on a table and fix the white paper sheet on it with the help of board pins.
2. Take two sets A = {1, 2, 3} and B = {a, b, c, d}.
3. Take three points on the left hand side of the white paper sheet and name them as 1, 2, 3. It represents set A. Take 4 points on right hand side on the white paper sheet and name them as a, b, c and d. It represents set B. (see figure)
4. Join the point 1 of the set A to point a of the set B, point 2 of the set A to point b of the set B and point 3 of the set A to point c of the set B.



Demonstration, Observation and Conclusion

1. The image of the element 1 of the set A is element a of the set B.
   The image of the element 2 of the set A is element b of the set B.
   The image of the element 3 of the set A is element c of the set B.
   This demonstrate that each element of set A has only one image in set B. Hence, we conclude that the function f is one-one.
2. Element a of the set B has pre-image element 1 of the set A.
   Element b of the set B has pre-image element 2 of the set A.
   Element c of the set B has pre-image element 3 of the set A.
   And element d of the set B has no pre-image in the set A.
   This demonstrates that all the elements but one element of the set B has pre-image in set A. So, we conclude that the function is not onto.
   Hence,the function from set A = {1, 2, 3} to set B = {a, b, c, d} defined as {(1, a), (2, b), (3, c)} is one-one but not onto.



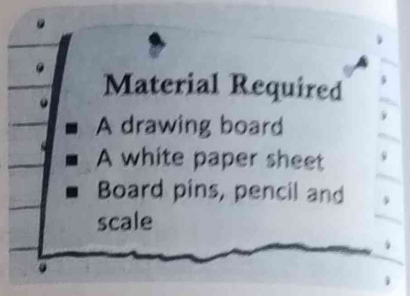
Application

This activity can be used to verify whether a given function is one-one but not onto or not.

Suggested Activity 2 Neither One-One Nor Onto Function

Objective

To demonstrate a function which is neither one-one nor onto.

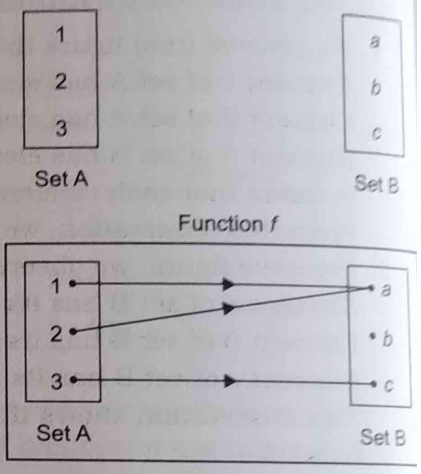


Method of Construction

1. Take two sets A = {1, 2, 3} and B = {*a*, *b*, *c*}. These sets A and B has been represented by points in the figure.
2. Again take set A as three points on left-hand side and name as *a*, *b*, *c* and take set B as three points on right-hand side and name them as *a*, *b*, *c*.
3. Join the point named as 1 of set A to the point named as *a* of set B.
   Join the point named as 2 of set A to the point named as *a* of set B.
   Join the point named as 3 of set A to the point named as *c* of set B.

Demonstration, Observation and Conclusion

1. The above construction demonstrates that:
   Element 1 of the set A has element *a* of the set B as its image.
   Element 2 of the set A has element *a* of the set B as its image.
   Element 3 of the set A has element *c* of the set B as its image.
   So, the two elements 1 and 2 of set A has the same image *a* in the set B.
   Hence, the function is not one-one.
2. Element *a* of the set B has two pre-images 1 and 2 in the set A
   Element *c* of the set B has a pre-image 2 in the set A.
   Element *b* of the set B has no pre-image in set A. Hence, the function is not onto.



From the above construction and demonstration we conclude that the function from set A = {1, 2, 3} to set B = {*a*, *b*, *c*} defined as {(1, *a*), (2, *a*), (3, *c*)} is neither one-one nor onto.

Application

This activity can be used to verify whether the given function is neither one-one nor onto or not.

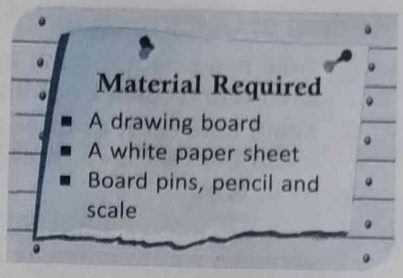
Suggested Activity 1 One-One and Onto Function

Objective

To demonstrate a function which is one-one and onto.

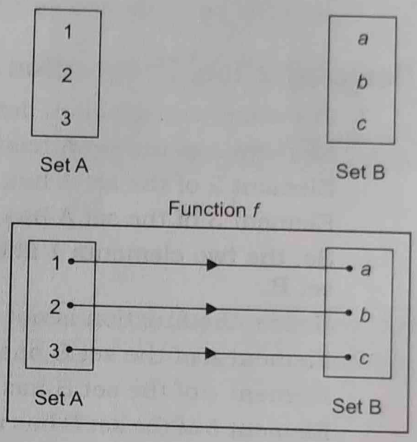
Method of Construction

1. Take two functions A = {1, 2, 3} and B = {a, b, c} as shown in figure.
2. Take three points on left hand side of the white paper sheet and name them as 1, 2, 3. It represents set A.
3. Take three points on the right hand side of the white paper sheet and name them as a, b, c. It represents set B.
4. Join point 1 of set A to point a of set B, point 2 of set A to point b of set B and join point 3 of set A to point c of set B.



Demonstration, Observation and Conclusion

1. We observe from figure that:
   Element 1 of set A has element a of set B as its image.
   Element 2 of set A has element b of set B as its image.
   Element 3 of set A has element c of set B as its image.
   It shows that each element of set A has one image in set B.
   From this observation, we conclude that the function is one-one.
2. From the figure, we observe that:
   Element a of set B has its pre-image 1 in set A.
   Element b of set B has its pre-image 2 in set A.
   Element c of set B has its pre-image 3 in set A.
   This observation shows that each element of set B has a pre-image in set A.



From the above demonstration and observation we conclude that the function is onto.
Hence, the function from set A = {1, 2, 3} to set B = {a, b, c} defined as {(1, a), (2, b), (3, c)} is one-one and onto.

Application

This activity can be used to verify whether a given function is one-one and onto or not.