Project 1

Observing interesting patterns in cricket match

Objective

Comparison of the performance of two teams in a one-day international cricket match.

Project Details

Data of scores can be collected to study various aspects such as

- 1. Performance of both the teams according to run rates per over, wicket rates per over.
- 2. Investigate if run rates are uniform for both the teams.
- 3. Investigate the run rates for various bowling techniques used by bowlers. (Fast, slow, spin bowlers)

Methods

- 1. All the details and the data can be collected while watching the game, listening the commentary and while reading the reports in the newspaper about the match.
- 2. Collected data can be tabulated in the form of grouped data, represented by the histogram, bar graphs, frequency polygon, pie chart etc.

Result

Inferences can be drawn from the above presentation of data about the batting pattern, bowling pattern, etc.

Acknowledgements

T.V. channel / Radio channel, commentators, guide.

Reference

Students should describe all the sources he/she used to collect and compile the data.

Project **2**

Design a crossword puzzle with mathematical terms

Objective

To review mathematics vocabulary, to give the opportunity for creative expression in designing puzzles, to act as a means of motivating the study of a given unit and to give recreation.

Description

Take a square grid (9×9) where a few words are connected horizontally and vertically. First compile a list of the terms. Then decide on the dimensions for the finished puzzle, preferably on squared paper with blocks measuring at least a half–inch on each side. A design may or may not be blocked out before inserting the terms. The words showed be connected but may stand alone if they fit into the pre–determined spaces allowed for the puzzle. [Fig P2 (a)]



Fig P2 (a)

1 A					2 A	N	4 G	L	Е
3 L	0	7 C	U	S			С		
Т		U			6 P		5 D	Ι	Е
Ι		В			0				
Т		Е		8 M	Ι	D	Е	А	10 N
U					N				U
9 D	Ι	А	11 M	Е	Т	Е	13 R		М
Е			Е				А		В
			12 A	R	С		W		Е
14 V	Е	N	N						R

Fig P2 (b)

The puzzle, which is given [Fig P2 (b)] may be used as guideline for framing of puzzles based on

- 1. Mathematical operations.
- 2. Terms based on geometrical shapes.

ACROSS

- 2. Another word for inclination
- 3. The way a path moves
- 5. A cube numbered 1, 2, 3, 4, 5, and 6 on the faces
- 8. Average finding by using statistical data
- 9. The longest chord of a circle
- 12. Part of a circle is called
- 14. In set theory, the name of the diagram is called

DOWN

- 1. Height of a triangle
- 4. Abbreviation of greatest common denominator
- 6. A dot on a piece of paper
- 7. A solid figure has six faces
- 10. Counting objects are called
- 11. Another measure of central tendency
- 13. Information can be used in statistics as

Project 3

A measuring task

Objective

To investigate your local athletics track to see whether it is worked fairly for runners who start on different lines.

Pre-requisite knowledge

- 1. When athletes run around a 400 m track, the competitors in the outside line start ahead of those in an inside line because they have further to run.
- 2. Distance between the starting positions is called a stagger.
- Shape of the track can be considered to be rectangular with a semi circle at each end.

Method

Student uses a measuring tape (non stretchable).

- 1. Measure the length of the two straight parts of the track.
- 2. Measure the distance between two straight parts of the track.
- 3. Explain how these measurements help in finding out the radius 'r' of each semi circle.
- 4. Calculate the distances for the two round parts of the track.
- 5. Distance around the track for runner in the innermost line.
- 6. Now measure the width 'w' of a line. What will be the radius of the next line in terms of 'r' and 'w'.
- 7. Calculate the circumferences for the next line.
- 8. Compare the two distances, the 2 runners in line 1 and line 2. How to make and find the stagger ?
- 9. Investigate to see whether the stagger is the same for each successive line.

Based on all collected and calculated data students will conclude whether it is worked fairly for runners who start on different lines on the athletics tracks.

Project 4

Project in History of Mathematics

The students can choose several topics from history of mathematics, for doing a project. For instance the topic can be about an Indian mathematician or the concept of zero in various ancient civilizations. In what follows we give two illustrative examples.

Example 1 Pythagoras theorem

Objective

Study of various aspects of Pythagoras theorem

Description

Study some or all the following aspects of the theorem:

- 1. Biography of Pythagoras.
- 2. Statement of the theorem.
- Proofs of the theorem that can be given by cutting and pasting paper/ paper folding.
- 4. Everyday illustrations/ applications of the theorem.
- 5. Pythagorean triplets of integers.

Methodology is primarily literature survey/ library work, besides using paper folding techniques.

Results and findings

The student organises the information. They gather it in a systematic way and group it under different chapters of a project report.

Acknowledgements

The students should mention honestly the names of individuals who have helped them.

References

Students should describe all the sources they used to collect and compile the data.

Example 2

History of the number π

Objective

Investigation of various historical aspects of the number π .

Description

- 1. Knowledge about π in various ancient civilizations.
- 2. Approximations for π .
- 3. Circle and π .
- 4. Famous mathematical problems featuring π .

Methodology is primarily study of material on the history of mathematics.

Results and findings are organized under various chapters resulting in a project report.

Acknowledgements are listed by the student to thank the individuals/ institutions for the help he/she received.

References

Students should describe all the sources they used to collect and compile the data.