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WORKSHEET

Section A: Case Study-Based Questions

Question 1: Trigonometry

A group of students visited a historical fort situated on a hill. To estimate the height of the fort, they stood at a point on the ground and measured the angle of elevation of the top of the fort as 45°. After moving 40 metres closer to the fort, the angle of elevation became 60°.

Based on the above information, answer the following questions:

a) Draw a suitable diagram representing the situation.

b) If the distance between the two observation points is 40 m, find the distance of the nearer observation point from the foot of the fort.

c) Calculate the height of the fort.

d) Explain how trigonometry helps in finding inaccessible heights in real life.

Question 2: Triangles – Similarity in Architecture

An architect designed a triangular glass panel in the shape of triangle ABC. A support beam DE was installed parallel to side BC, where D lies on AB and E lies on AC. The measurements are as follows:

AD = 8 cm

DB = 4 cm

AE = 10 cm

Based on the given information, answer the following:

a) State the criterion by which triangles ADE and ABC are similar.

b) Find the length of AC.

c) Calculate the ratio of the areas of triangles ADE and ABC.

d) Explain one practical application of similar triangles in engineering or architecture.

Section B: Project-Based/Creativity Questions

Question 3: Trigonometry Project – Measuring the Height of an Object

Conduct a small survey to determine the height of a tall object near your home or school (such as a tree, building, or tower).

Your project should include:

Name of the object selected.

Measurement of the distance from the object.

Measurement of the angle of elevation using a protractor or mobile application.

Calculation of the height using trigonometric ratios.

A neat labelled diagram.

A brief report (100–150 words) explaining your methodology, observations, and conclusion.

Question 4: Triangles Project – Similarity Around Us

Observe your surroundings and identify two similar triangular shapes (for example, road signs, roof structures, decorative patterns, or shadows of objects).

Prepare a project report containing:

Photographs or sketches of the selected objects.

Identification of corresponding sides and angles.

Verification of the similarity criterion used.

Calculation of the ratio of corresponding sides.

One real-life application of similar triangles.

A creative presentation of your findings using charts, drawings, or digital tools.