STEP - 1

TEACHER ACTIVTY

A. Open AR app
B. Pose this activity question (Predict phase)

i) Predict individually what will be the number of faces (F), vertices (V) and edges (E) of the polyhedron I will show

b) Draw a table in your notebook and fill up with your prediction values.

STUDENT ACTIVTY

Reads & understands the activity question posed.

Suggestion:

Draw a table on the board with the following column headers-

Name of polyhedron	Vertices (V)	Edges (E)	Faces (F)

STEP - 2

TEACHER ACTIVTY

Choose a polyhedron from the set given in Augmented Maths app. Show students image of one polyhedron at a time.

STUDENT ACTIVTY

a) Watches the polyhedron image & predicts V,E,F.

b) Fills up the table in their note-book with their prediction values of V,E,F.

Suggestion:

Do this activity with a familiar polyhedron first and then move to progressively to unfamiliar polyhedrons

i) Cube ->
ii)Triangular pyramid ->
iii) Triangular prism

TEACHER ACTIVTY

A. Now, ask students to pair in small groups (upto 3 students per group)

B. Pose the following question to student groups **(Observe & Verify phase)**:

i) Use the app in your mobiles/tablets.

ii) Observe the polyhedron yourself & check if your predictions of the count of the number of F,E,V for the given polyhedron is correct.

STUDENT ACTIVTY

a) Scan the relevant textbook page. Choose a polyhedron from the set shown.

b) The 3D image of selected ployhedron will popup on-screen. Rotates the polyhedron slowly with fingers or by rotating the marker

c) Selects the Vertices checkbox in the app though you may also select the E & F checkbox.

d) Now taps on all the vertices, one by one. As you tap a vertex, it will get highlighted and a count of vertices tapped will be shown on the screen.

e) You will get a maximum of 2 tries to arrive at the correct answer.

f) Repeat the same set of above steps (b to e) for E & F for the given polyhedron.

g) Compare the final counter reading from AR with their prediction table in the notebook. Underlines their mistakes and notes correct answers in their table

Suggestion:
- Give stepwise instructions to introduce the AR app (refer content of next column).
- Draw students' attention to color highlights and the counters in the app.
- It is preferable to start with vertices as they are the building blocks of the other 2 parameters - E & F.

a) If your classroom is not tech-enabled, either interact with the AR app yourself

or call a pair of students to interact. The interaction can be projected on screen. You can also use it in the lab.
b) Scan the marker for the polyhedron you have chosen. The 3D image will popup on-screen.
c) Rotate the polyhedron slowly with fingers or by rotating the marker.

STEP - 4

Total Estimated Time of Step 4 - 🕐10 mins
Resources Needed - AR app, Notebook

TEACHER ACTIVTY

Repeats Steps 1,2,3 for other 2 polyhedrons

STUDENT ACTIVTY

Repeats Steps 1,2,3 for other 2 polyhedrons

STEP - 5

Total Estimated Time of Step 5 - 🕐 6 mins
Resources Needed - Notebook

TEACHER ACTIVTY

Now, pose this question to student groups **(Observe phase (pair)):**

Look at your table. You have a set of V,F,E values for 3 polyhedrons. Can you find a relationship pattern between V, F and E common to all the polyhedrons?

STUDENT ACTIVTY

Studies the pattern between vertices (V), faces (F) and edges (E) for each polyhedron from the table and finds the relationship between V, F & E

Suggestion:
- If you find students are struggling, ask guiding questions to students like 'Add a column in your table, (V+F) and now see if you can find a general pattern'.

STEP - 6

TEACHER ACTIVTY

Pose this question to students: **Explain phase (whole class activity)** : Share with the class - what relationship did your group find?

STUDENT ACTIVTY

Shares with the class and demonstrates their reasoning

Suggestion:
a) Ask random groups to share & justify the relationship they found.

b) Ask guiding questions if needed

c) Show a test case with AR app (if not already shown by a student group) & conclude by stating Euler's rule: V+F = E+2