

Diagonal Discovery

Neatly draw convex polygons having 3 to 7 sides at least. Be sure they are at least two inches across. Make a chart including the name of each polygon, the number of sides, the diagonals from one vertex, and total number of diagonals.

For each polygon:

Using one color, draw all the diagonals from one vertex. Count them. Enter that number in the correct place on the chart.

Using a different color, draw all the remaining diagonals. Count them.

Enter the total number of diagonals for each polygon.

Observe the pattern resulting.

Predict the number of diagonal is a dodecagon without drawing them.

Predict the number of diagonals in a 200-gon.

Predict the number of diagonals in an n -gon.

How could this pattern be used in a real-world situation? Describe the situation and justify your conclusion.