

Topic: Sums and Averages

November 3, 2021

Construct auxiliaries - lines, shapes, sequence to bridge the knowns and the unknowns

1 Sum of Angles for different shapes

Q 1. Sum of interior and exterior angles of a triangle, rectangle, pentagon, hexagon; any polygon. (hint: construct parallel lines to find the answer for a triangle. Then construct triangles for other polygons.)

2 Arithmetic Sequence

Q 1. Find the sum of 1, 2, 3, 4, \dots , 10. Find the sum from 1 to 100? (Hint: construct an inverse sequence.)

3 Averages

Q 1. The average of three variables

$$A = \frac{x + y + z}{3}$$
$$3A = \text{sum} = x + y + z$$
$$x = 3A - y - z$$