Arithematic Progressions Ex 19.7 Q13

We know that sum of interior angles of a polygon with n sides is given by,

$a_n = 180°(n-2)$

Sum of interior angles of a polygon with 3 sides is given by,

$a_3 = 180°(3-2) = 180°$.....(i)

Sum of interior angles of a polygon with 7 sides is given by,

$a_4 = 180°(4-2) = 360°$.....(ii)

Sum of interior angles of a polygon with 5 sides is given by,

$a_5 = 180°(5-2) = 540°$.....(iii)

From eq" (i), eq" (ii) and eq" (iii) we get,

$a_4 = 360° = 180° + 180° = a_3 + 180° = a_3 + d$

$a_5 = 540° = 180° + 360° = a_3 + 2d$

Hence the sums of the interior angles of polygons with 3, 4, 5, 6,... sides form an arithmetic progression.

Sum of interior angles of 21 sided polygon

$= 180°(21-2)$

$= 3420°$

Arithematic Progressions Ex 19.7 Q14

20 potatoes are placed in a line at intervals of 4 meters.

$\therefore n = 20$ and $d = 4$

The first potato 24 meters from the starting point.

$a_1 = 24$

$a_2 = a_1 + d = 24 + 8 = 32$

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$a_n = a_1 + (n-1)d$

$a_{20} = 24 + 19 \times 4 = 24 + 76 = 100$

$$S = \frac{20}{2}[a_1 + a_{20}] = 10[24 + 100] = 1240$$

As contestant is required to bring the potatos back to the starting point.

The distanced contestant would run

$= 1240 + 1240$

$= 2480$ m.

Arithematic Progressions Ex 19.7 Q15(i)

A man accepts a position with an initial salary of Rs.5200 per month.

$a_1 = 5200$

Man will receive an automatic increase of Rs.320.

$d = 320$

We need to find his salary for the n^{th} month is given by,

$a_n = a_1 + (n-1)d$

$a_{10} = 5200 + 9 \times 320 = 8080$

The salary of that man for tenth month is Rs.8080.

********** END **********