Polygon Angles and Arithmetic Sequences

Practice Worksheet (Edexcel IGCSE 4MA1 June 2024 1H Style)

I Do

A polygon has n sides, where n > 5.

The interior angles of the polygon form an arithmetic sequence.

The smallest angle of the polygon is 84°.

The common difference of the sequence is 4°.

Work out the sum of the interior angles of the polygon.

Show clear algebraic working.

Watch the walkthrough

We Do

A polygon has n sides, where $n > 6$.

The interior angles of the polygon form an arithmetic sequence.

The smallest angle of the polygon is 100°.

The common difference of the sequence is 4°.

Work out the sum of the interior angles of the polygon.

Show clear algebraic working.

You Do

A polygon has n sides, where $n > 7$.

The interior angles of the polygon form an arithmetic sequence.

The smallest angle of the polygon is 110°.

The common difference of the sequence is 4°.

Work out the sum of the interior angles of the polygon.

Show clear algebraic working.

Challenge 1

A polygon has n sides, where $n > 9$.

The interior angles of the polygon form an arithmetic sequence.

The smallest angle of the polygon is 128°.

The common difference of the sequence is 2°.

Work out the sum of the interior angles of the polygon.

Show clear algebraic working.

Challenge 2

A polygon has n sides, where $n > 12$.

The interior angles of the polygon form an arithmetic sequence.

The smallest angle of the polygon is 135°.

The common difference of the sequence is 2°.

Work out the sum of the interior angles of the polygon.

Show clear algebraic working.

Worked Answers

I Do

Set $n/2 \times [168 + 4(n - 1)] = 180(n - 2)$.

The solution satisfying $n > 5$ is $n = 45$.

The sum is $180 \times 43 = 7740°$.

We Do

Set $n/2 \times [200 + 4(n - 1)] = 180(n - 2)$.

The solution satisfying $n > 6$ is $n = 36$.

The sum is $180 \times 34 = 6120°$.

You Do

Set $n/2 \times [220 + 4(n - 1)] = 180(n - 2)$.

The solution satisfying $n > 7$ is $n = 30$.

The sum is $180 \times 28 = 5040°$.

Challenge 1

Set $n/2 \times [256 + 2(n - 1)] = 180(n - 2)$.

The solution satisfying $n > 9$ is $n = 45$.

The sum is $180 \times 43 = 7740°$.

Challenge 2

Set $n/2 \times [270 + 2(n - 1)] = 180(n - 2)$.

The solution satisfying $n > 12$ is $n = 36$.

The sum is $180 \times 34 = 6120°$.