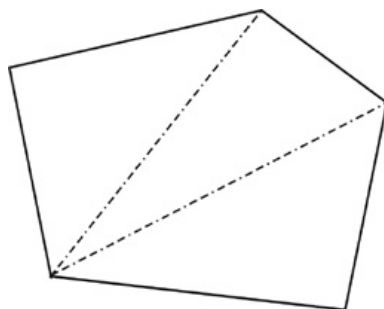


# Sides and diagonals

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This task is about looking at patterns in polygons and writing rules to describe them.

In any polygon the number of diagonals coming from one corner can be worked out by subtracting three from the number of sides.



So this polygon, with five sides, has two diagonals from any one corner.

a) i) How many diagonals from one corner would a shape with 57 sides have? \_\_\_\_\_

ii) How many diagonals from one corner would a shape with  $k$  sides have? \_\_\_\_\_

If a shape had 100 diagonals from each corner, how many sides would it have?

iii) \_\_\_\_\_

How many triangles are formed altogether by the two diagonals in the figure above?

b) i) \_\_\_\_\_

ii) How many triangles would a shape with 49 sides have? \_\_\_\_\_

iii) How many triangles would a shape with  $q$  sides have? \_\_\_\_\_

Find a rule connecting the number of diagonals with the number of triangles formed.

c) \_\_\_\_\_