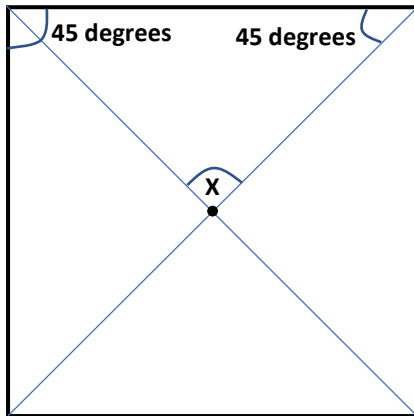# Diagonally Square

Squares

The angle of the intersection of the diagonals of a square will always be equal to 90 degrees and here's why:

The square has equal sides and it has equal angles, each 90 degrees. The centre of the square is in exactly the middle so both the diagonals will bisect each other there. Now, because of the square being a regular quadrilateral, the diagonals will bisect the right angle in half, leaving us with two 45 degree angles in one corner. Here's a diagram:


The black dot is the centre of the square and the blue lines are the diagonals of the square. There are four isosceles triangles formed, each with angles of 45, 45 and X. So, the sum of the angles in a triangle is always 180 degrees, this means the value of X is 90 as $180 - (45 + 45) = 90$. This is the order of the steps:

Rectangles

Rectangles are irregular quadrilaterals with two pairs of parallel sides and angles. But, squares are a special type of rectangle but they exist within the same category:
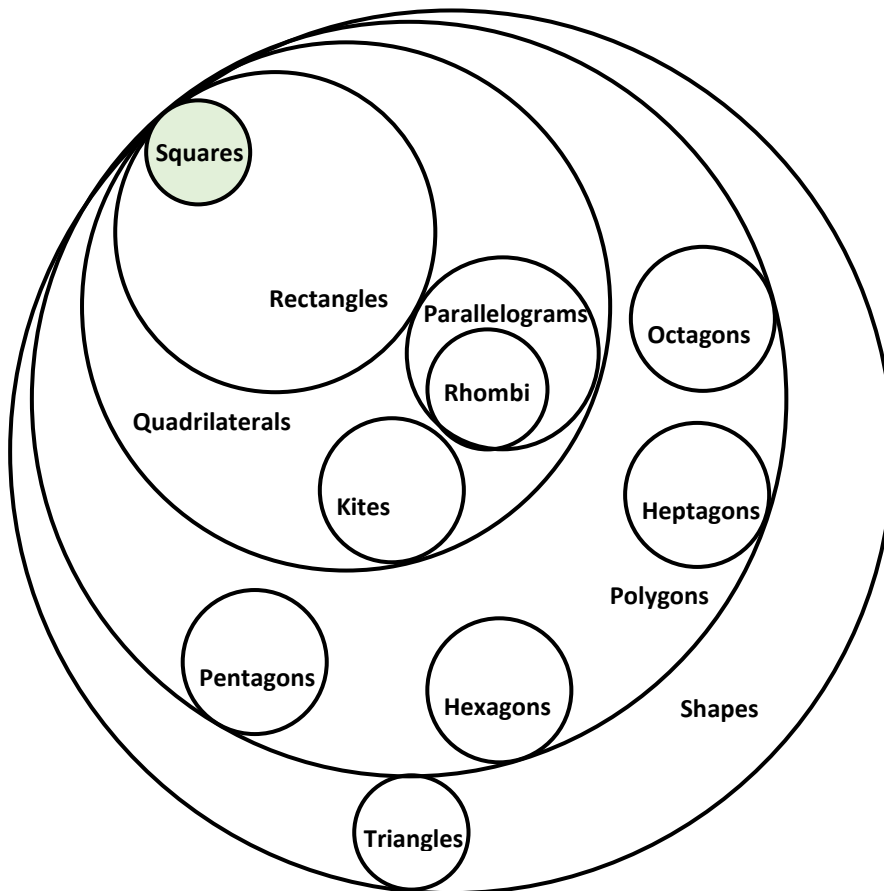
But, the rectangles aren't regular . This means that the angle around the centre will not be 90 degrees. Take this example:

You can clearly see above that the angle is obtuse and it isn't a right angle.

Conclusion

So, squares are a special kind of regular rectangle with a central angle of 90 degrees. Rectangles are irregular (excluding squares) and sometimes do not have central angles of 90 degrees due to the difference in side lengths. Here is a table of rectangles and their angles and underneath a graph:

Dimensions	Area (cm square)	Angle around centre (degrees)
1x2	2	53
1x4	4	151
1x6	6	158
1x8	8	165

Angles Around The Centre Of Four Rectangles In Comparison With Their Area