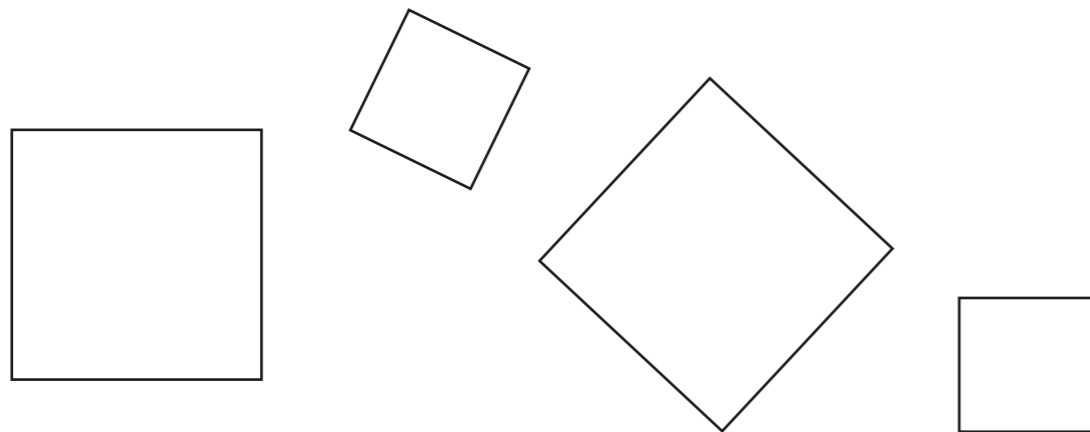


# Understand and use the properties of diagonals of quadrilaterals

1 Here are four squares.



- Join opposite corners of each square.
- What do you notice about where the diagonal lines intersect?

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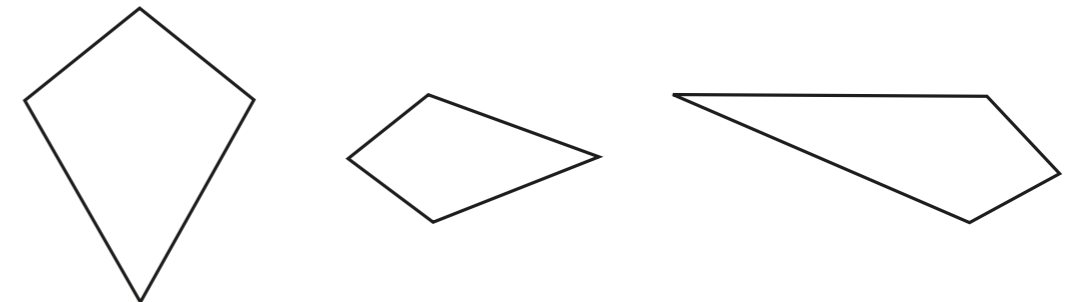


2 Show that the diagonals of a rectangle do not meet at right angles.

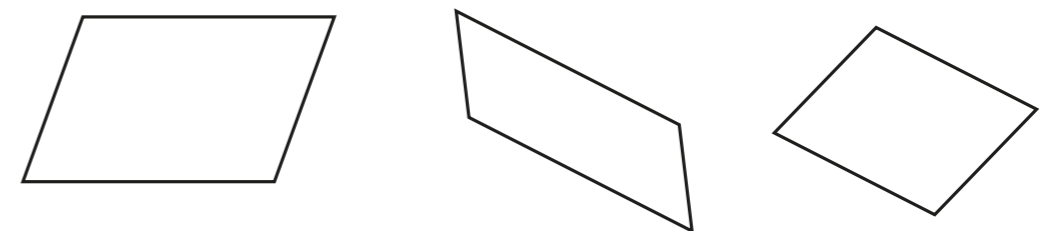


3 Do the diagonals of each shape intersect at right angles?  
Here are some shapes to test.

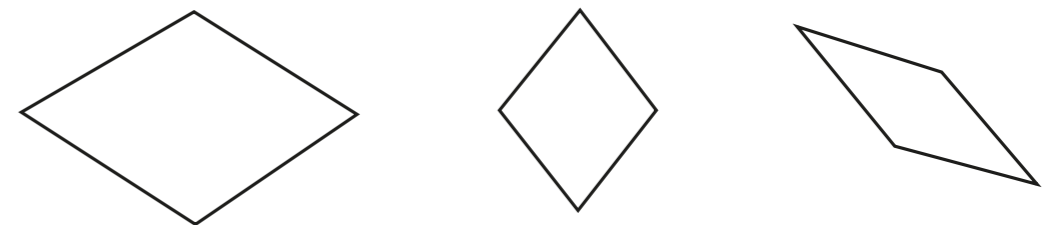
kites



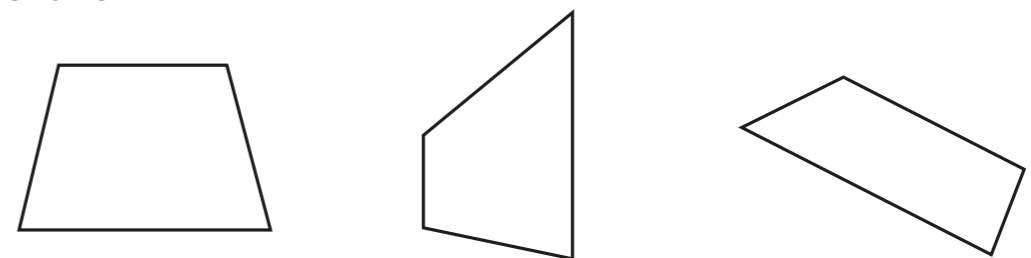
parallelograms



rhombuses



trapeziums

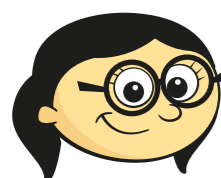
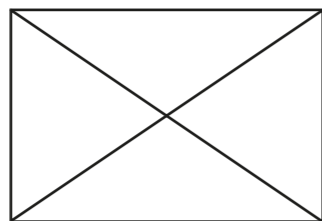
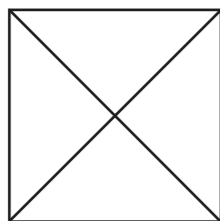


Complete the table.

Shape	Diagonals intersect at 90° Yes or No
kite	
parallelogram	
rhombus	
trapezium	



- 4 Annie draws the diagonals of a square.  
Jack draws the diagonals of a rectangle.



The diagonals divide the shape into four equal parts.

Annie

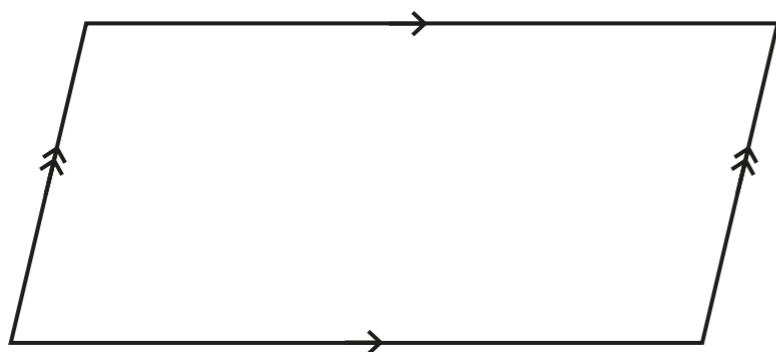
This is the same for rectangles too.



Jack

Prove that Jack is correct.

- 5 Do the diagonals of a parallelogram bisect the angles? \_\_\_\_\_



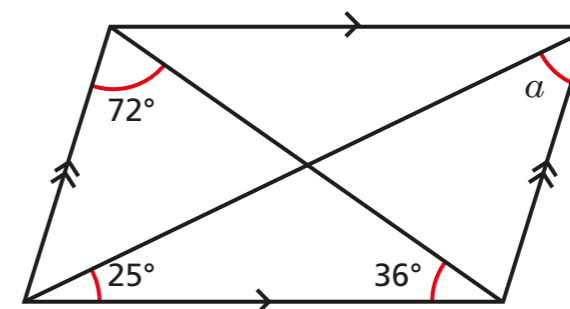
Explain your answer.

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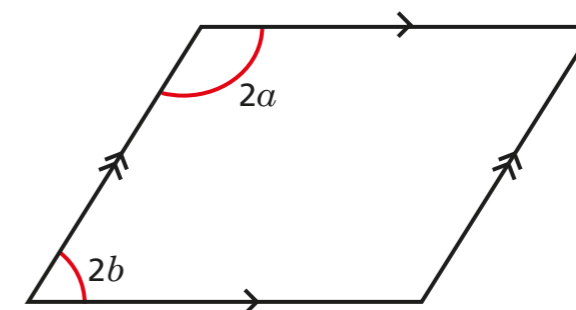
- 6 Find the size of angle  $\alpha$ .



Show all your workings.

$$\alpha = \boxed{\phantom{000}}^\circ$$

- 7 Prove that the diagonals of a rhombus intersect at right angles.  
You can assume that a diagonal bisects each angle.



Show all your workings.