

GEOMETRY: QUADRILATERALS

02 JUNE 2014



Lesson Description

In this lesson we:

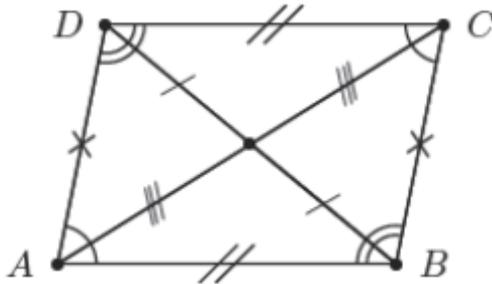
- Look at definitions of different types of Quadrilaterals
- Work through questions based on special quadrilaterals



Summary

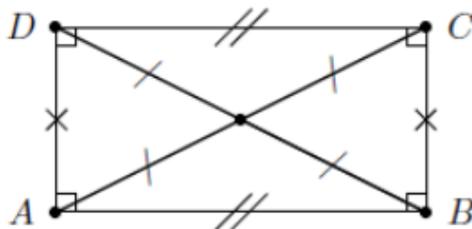
Properties of a Parallelogram

- Both pairs of opposite sides parallel.
- Both pairs of opposite sides are equal in length.
- Both pairs of opposite angles are equal.
- Both diagonals bisect each other.



Properties of a Rectangle

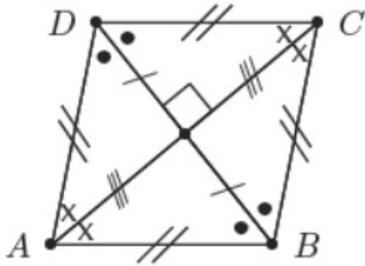
- A parallelogram that has all four angles equal to 90.
- Both pairs of opposite sides are parallel.
- Both pairs of opposite sides are equal in length.
- The diagonals bisect each other.
- The diagonals are equal in length.



Properties of a Rhombus

- A rhombus is a parallelogram that has all four sides equal in length.
- Both pairs of opposite sides are parallel.
- All sides are equal in length.
- Both pairs of opposite angles are equal.

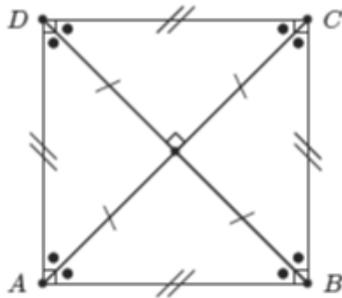
- The diagonals bisect each other at 90.
- The diagonals of a rhombus bisect both pairs of opposite angles.



Properties of a Square

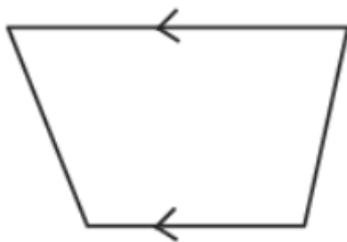
It has all the properties of a rhombus and these special properties:

- All interior angles are equal to 90.
- The diagonals are equal in length.
- The diagonals bisect both pairs of interior opposite angles (i.e. all are 45).



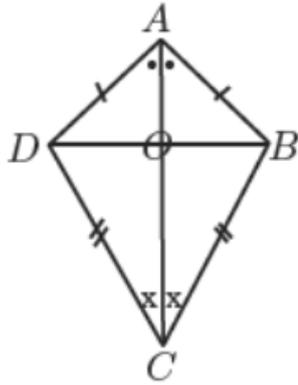
Properties of a Trapezium

- A trapezium is a quadrilateral with one pair of opposite sides parallel.



Properties of a Kite

- Is a quadrilateral with two pairs of adjacent sides equal.
- One pair of opposite angles are equal (the angles are between unequal sides).
- The diagonal between equal sides bisects the other diagonal.
- The diagonal between equal sides bisects the interior angles.
- The diagonals intersect at 90.



Test Yourself

Question 1

True or false, if false give a reason for your answer: All trapeziums are parallelograms

Question 2

True or false, if false give a reason for your answer: All squares are rectangles

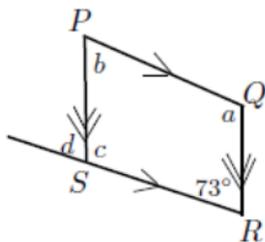
Question 3

True or false, if false give a reason for your answer: All squares are kites

Question 4

True or false, if false give a reason for your answer: All rectangles are congruent

Question 5



The values of: a,b,c and d respectively are:

- A 73;73;107;107
- B 107;73;107;73
- C 73;107;73;107
- D 107;107;73;73

Question 6

True or false, if false give a reason for your answer: The diagonals of a parallelogram are axes of symmetry

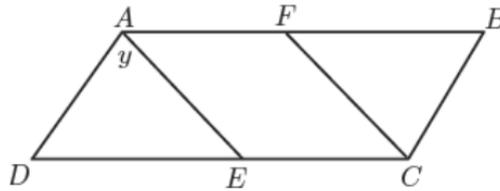


Improve your Skills

Question 1

Given parallelogram ABCD with AE and FC, AE bisects angle A and FC bisects angle C:

- Write all interior angles in terms of y .
- Prove that AFCE is a parallelogram.



Question 2

$\triangle PQR$ and $\triangle PSR$ are equilateral triangles. Prove that PQRS is a rhombus.

