Lesson Maker Pro

Quadrilateral Evidence Lab

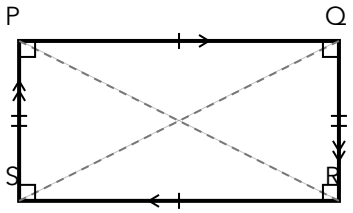
Classify, compare and mark actual figures using their properties.

7.MG.3.b.ii Sort and classify quadrilaterals as parallelograms, rectangles, trapezoids, rhombi, and/or squares based on their properties: congruence of angle measures, side, and diagonal lengths; and

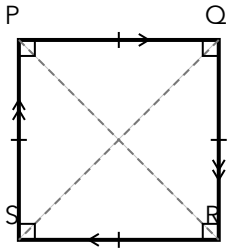
NAME _____ **DATE** _____

Read the figures

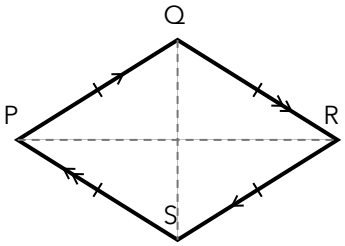
Read the markings and the given properties, not page orientation. A,B have four right angles; B,C have four congruent sides; A–D have two pairs of parallel opposite sides; E has exactly one pair. Matching ticks show congruent sides; arrow marks show parallel sides; small squares show right angles. Here a trapezoid has exactly one pair of parallel sides.



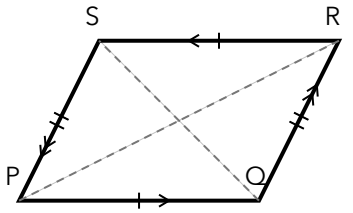
A



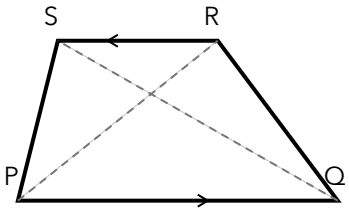
B



C



D



E

Draw a rhombus that is not a square. Explain why it is a parallelogram but not a rectangle. For the diagonal investigation, add both diagonals and mark their relationship.

Explain and construct

Classify every figure using ALL applicable names: quadrilateral, parallelogram, rectangle, rhombus, square, trapezoid. Explain why a square belongs to more than one family.

Figure	All applicable families	Evidence
A	_____	_____
B	_____	_____
C	_____	_____
D	_____	_____
E	_____	_____

The dashed segments join opposite vertices. Complete the table for the particular figures shown. Use a ruler and right-angle tool to investigate, then justify using the stated family properties. A and C are not squares; D has neither congruent nor perpendicular diagonals.

Figure	Diagonals congruent?	Perpendicular?	Bisect each other?
A	_____	_____	_____
B	_____	_____	_____
C	_____	_____	_____
D	_____	_____	_____

Compare a rectangle and rhombus: which diagonal properties do they share, and which distinguish them? Explain how a square satisfies both sets of properties.

Teacher Key

A:quadrilateral,parallelogram,rectangle. B:quadrilateral,parallelogram,rectangle,rhombus,square. C:quadrilateral,parallelogram,rhombus. D:quadrilateral,parallelogram. E:quadrilateral,trapezoid under the stated exclusive convention. Shape names are inclusive within the parallelogram family.

Diagonal table A:congruent yes,perpendicular no,bisect yes. B:yes,yes,yes. C:no,yes,yes. D:no,no,yes. Every parallelogram's diagonals bisect each other; rectangles have congruent diagonals, rhombi perpendicular diagonals; squares satisfy both. A particular drawing alone is not proof for every family member.

Figure A vertices P,Q,R,S; sides PQ,QR,RS,SP. ∠PQR and ∠QRS are examples of angle names. PQ/QR meet perpendicularly at Q. Tick pairs PQ=RS and QR=SP; parallel pairs PQ∥RS and QR∥SP; all four corners are right. A missing mark alone does not establish a false property.

Organizer: square is the rectangle/rhombus overlap; B there,A rectangle-only,C rhombus-only,D in parallelograms outside both,E in quadrilaterals outside parallelograms. Check new drawings, labels and marks. A vertex is a point where sides meet; a segment has two endpoints; an angle is formed by two rays sharing a vertex.

Virginia convention source: VDOE Properties of Quadrilaterals instructional plans, https://www.doe.virginia.gov/home/showpublisheddocument/16276/638036740201330000 .