

The QUEST for Quadrilaterals

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This exercise is to be used at the beginning of the quadrilateral unit. The students need have no prior knowledge of the quadrilaterals. They are divided into groups of 4 students.

Each group is given

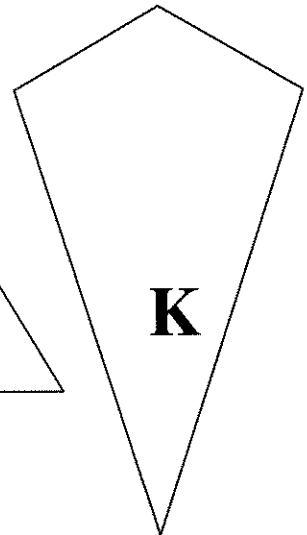
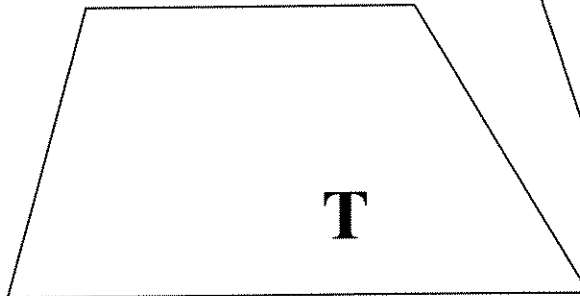
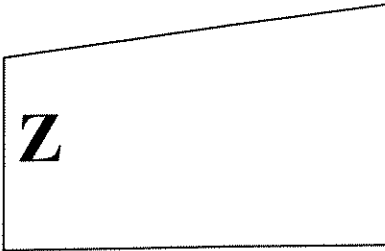
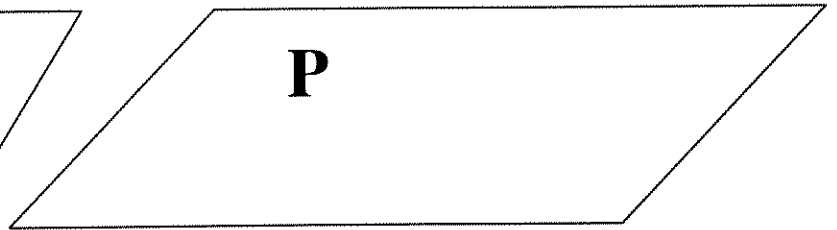
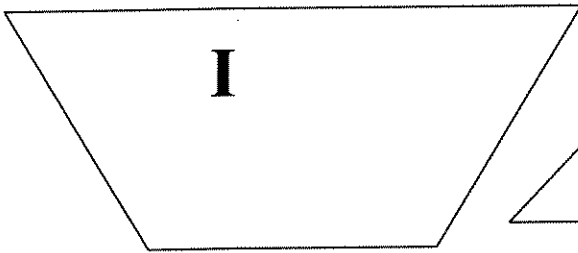
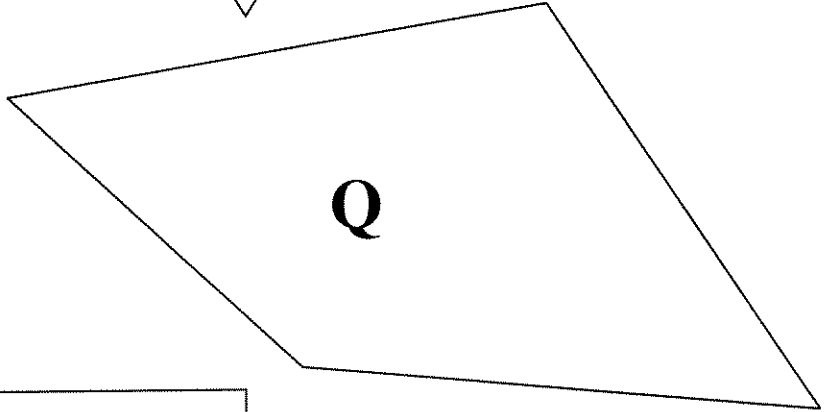
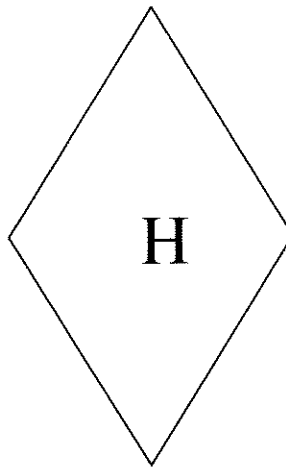
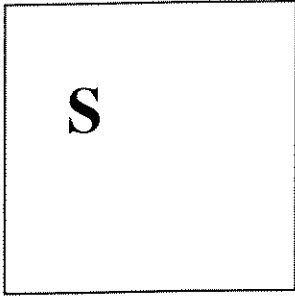
- 1 sheet graph paper
- 1 definition sheet or their text
- 1 sheet each of 9 different colors of construction paper.
- 4 copies of the worksheet.

The groups are instructed to cut one of each shape for each member of the group. Some instructions on how to make parallel sides using graph paper is helpful. They should very carefully follow all of the directions on the page. They should not make the figures too small, sides should be at least 7 cm.

These quadrilaterals will be used in several ways during the unit:

- As an exercise at the beginning of class. “Hold up all the quadrilaterals with congruent diagonals.” “Hold up all quadrilaterals with opposite angles congruent.”
- To conjecture about theorems for the unit.
- To create a Venn Diagram on quadrilaterals.
- To answer questions on the totally true false quiz.
- On their homework and on the exam.
- As characters in a flatland story or play.
- Make a design or mobile out of them at the end of the unit.

Sample Shapes
(In case there is not time to make them.)



CLASSIFYING QUADRILATERALS

1. Use the graph paper and your straightedge to cut out one of the shapes you are assigned. Make sure the sides of the shape are greater than 15 units on the graph paper.
2. Once you have checked to make certain your shape is correct, cut one for each member of the class using the appropriate color. It is very important that the sides of each figure be straight. Draw with a straightedge and cut carefully.

- ▭ Green General convex **Q**uadrilateral
- ▭ Purple **T**rapezoid (Not right nor Isosceles)
- ▭ White **I**sosceles Trapezoid
- ▭ Orange **K**ite
- ▭ Yellow **P**arallelogram
- ▭ Rose **RH**ombus
- ▭ Red **R**ectangle
- ▭ Blue **S**quare
- ▭ Maroon Right Trape**Z**oid

After cutting, measure the sides (in cm.)

Measure the angles (in degrees.)

Draw the diagonals on the back of each quadrilateral

Properties of Quadrilaterals

	Definition	Opposite Sides \cong //	Angles	Diagonals Bisect \angle s	Diagonals \perp \cong	Reflect symmetry	Rotate symmetry
Q	4 sides						
T	1 pr //						
I	1 pr // 2 legs \cong						
K							
P							
H							
R							
S							
Z							

Geometry Notes

Line segment → Shortest path between two points (straight).

Angle → Union of two line segments with common endpoint called a vertex.

Right Angle → A 90-degree angle; an angle that is equal in measure to an angle formed by perfectly horizontal and vertical line segments.

Perpendicular → Two line segments are perpendicular when they meet at a right angle.

Parallel → Two line segments are parallel if the lines containing them do not intersect.

Triangle → A 3-sided (straight sides), closed, 2-dimensional shape.

Isosceles Triangle → A triangle with at least two sides that are of equal length.

Equilateral Triangle → A triangle with all three sides of equal length.

Scalene Triangle → A triangle with all three sides of different length.

Right Triangle → A triangle with one right angle (90° .)

Acute Triangle → A triangle with three acute angles (all $< 90^\circ$.)

Obtuse Angle → A triangle with one obtuse angle ($> 90^\circ$.)

Quadrilateral → A 4-sided (straight sides), closed, 2-dimensional shape.

Square → A quadrilateral with four congruent sides and four right angles.

Rectangle → A quadrilateral with four right angles.

Parallelogram → A quadrilateral with two pairs of parallel sides.

Kite → A quadrilateral with two non-overlapping pairs of adjacent congruent sides.

Rhombus → A quadrilateral with four congruent sides.

Trapezoid → A quadrilateral with exactly one pair of parallel sides.

Isosceles Trapezoid → A trapezoid whose non-parallel sides are congruent.

Right Trapezoid → A trapezoid with two right angles.

Totally true-false Name: _____
QUAD QUIZ Pd: _____

Mark each T (true) or L (false)

- ___ 1. All squares are rhombuses.
- ___ 2. The diagonals of a parallelogram bisect each other.
- ___ 3. All trapezoids are quadrilaterals.
- ___ 4. The diagonals of a parallelogram are congruent.
- ___ 5. Opposite angles of a parallelogram are congruent.
- ___ 6. Consecutive angles of a rhombus are supplementary.
- ___ 7. A trapezoid may have exactly one right angle.
- ___ 8. A square is parallelogram.
- ___ 9. The diagonals of a rectangle are congruent.
- ___ 10. The opposite angles of a trapezoid are congruent.
- ___ 11. A parallelogram with one right angle is a rectangle
- ___ 12. An isosceles trapezoid may have a right angle.
- ___ 13. The median of trapezoid is parallel to the legs.
- ___ 14. A rhombus is a square.
- ___ 15. A square is a rectangle
- ___ 16. The diagonals of a rhombus are perpendicular
- ___ 17. A quadrilateral with congruent diagonals is always a square.
- ___ 18. The diagonals of an isosceles trapezoid bisect each other.
- ___ 19. All rectangles are squares.
- ___ 20. Adjacent sides of a square are congruent.
- ___ 21. Diagonals of a rhombus are congruent.
- ___ 22. If the diagonals are congruent and perpendicular, then the quadrilateral must be a square.
- ___ 23. The diagonals of a square divide it into two right isosceles triangles.
- ___ 24. Opposite sides of a rectangle are perpendicular.
- ___ 25. All quadrilaterals are one of these: parallelograms, rectangles, rhombuses, trapezoids, squares, or kites.