6.2

Name (print first and last) _____ **Per**_____ **Date:** 12/22 due 12/24

6.2 Polygons: Quadrilateral definitions and Properties **Geometry Regents 2013-2014 Ms. Lomac**

SLO: I can identify, define, and list properties of various quadrilaterals.

(1) ☐ On the "6.2 Polygon Quadrilateral Definitions and Properties" chart,

☐ (a) choose a color and mark the properties in column 2 on the shape in column 1

☐ (b) choose a different color and mark the properties in column 3 on the shape in column 1

(2) ☐ Use the definitions and properties from #1 to fill in the blanks below.

A shape with two pairs of parallel sides is a _____

A shape with exactly one pair of parallel sides is a _____

The two shapes that have 4 equal sides are _____ and _____

Any shape with 4 sides is a _____

A shape with congruent base angles is a _____

A shape with 1 pair of congruent opposite angles is a _____

If I only know that a shape has 4 right angles, then I can only say that it is a _____

If I only know that a shape has 4 congruent sides, then I can only say that it is a _____

From the last two statements, a square must be a _____ and a _____

A shape with two pairs of parallel sides could be a _____, _____,

_____, _____, or a _____

(3) ☐ Use the definitions on the "6.2 Polygon Quadrilateral Definitions and Properties" chart to help you with your job at the kite factory. You work for a kite factory and are responsible for providing foolproof directions for workers choosing and assembling the rods that support the kites. Kites at the company are manufactured in the following shapes: Kite, Parallelogram, Rectangle, Rhombus, Square, and Isosceles Trapezoid. Your boss has offered you a bonus if you can find a way to make non-Isosceles Trapezoid kites as well. Paper versions of the rods available at the kite factory have been provided for you. Experiment with different combinations of two rods. Rods can intersect at any dot along the rod. You will have extra rods left over. Keep clear records of the information needed for each shape.

Your directions must include:

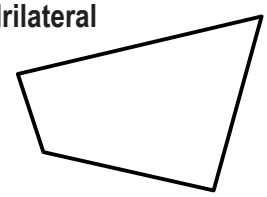
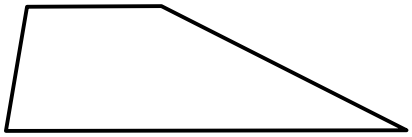
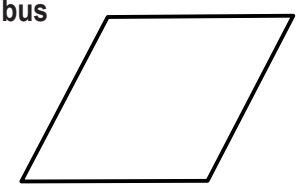
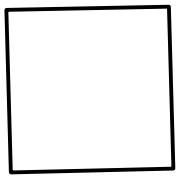
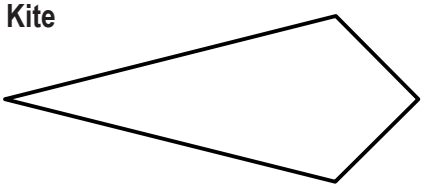
(a) ☐ the shape name

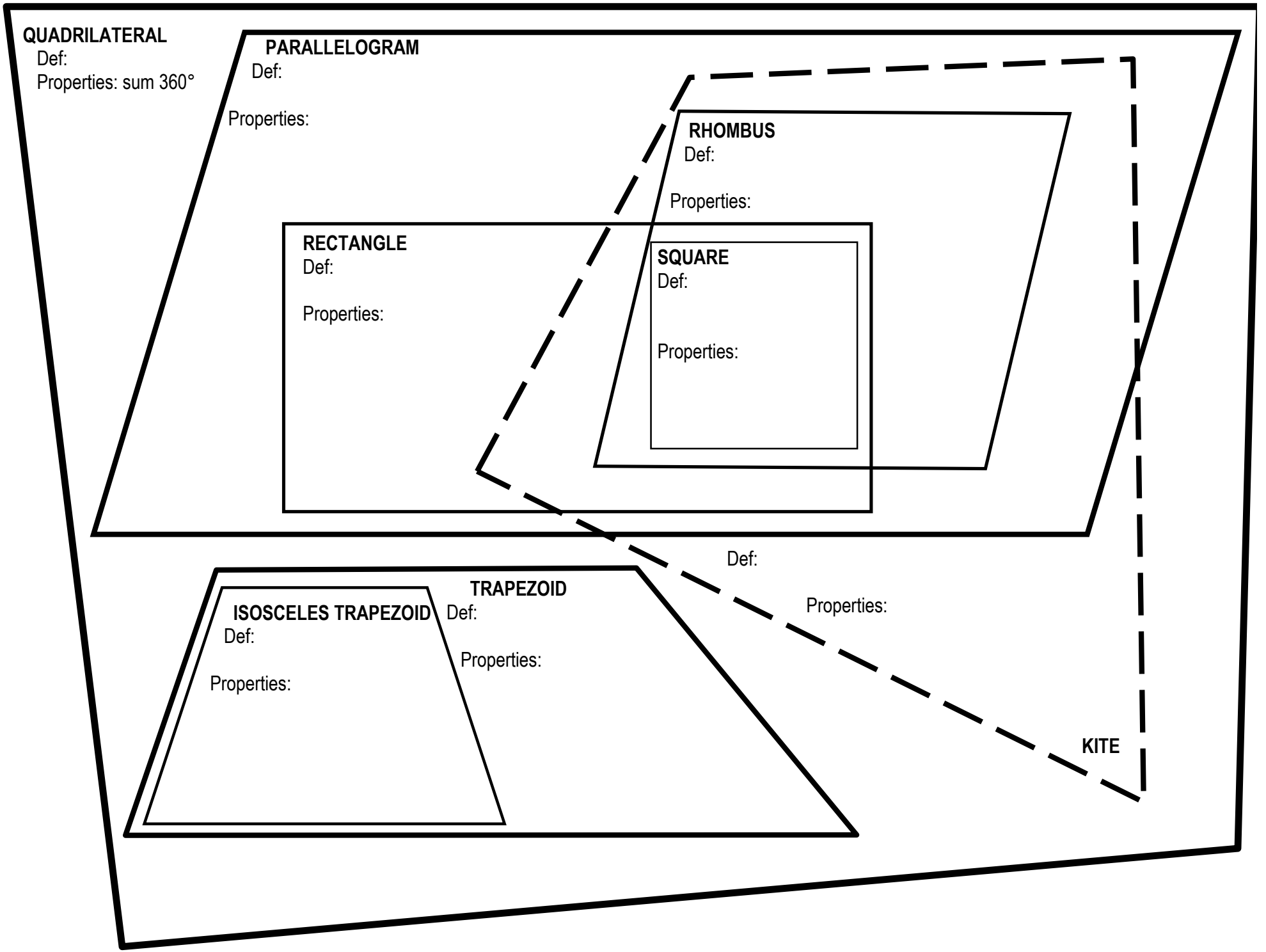
(b) ☐ an illustration of the kites with intersecting rods (you can just tape down the paper rods and connect the 4 corners of the shape with a ruler)

(c) ☐ a description of the rods used and how they intersect that includes:

- ☐ The lengths of the two supporting rods (diagonals) with respect to one another. (Are they the same length? Different? Does it matter what length they are?)
- ☐ The location where the two supporting rods (diagonals) intersect. (Is either rod bisected? Does it matter where they intersect?)
- ☐ The angles at which the two supporting rods (diagonals) intersect. (Are they perpendicular? Does it matter what angle is formed when they intersect?)
- ☐ The relationship between each diagonal and the angles of the kite shape. (Does the diagonal bisect any angles?)

6.2 Polygon Quadrilateral Definitions and Properties

1 Shape Name & Diagram	2 Definition	3 General Properties	4 Diagonal Properties
Quadrilateral 	4 sided polygon	Interior angle sum = 360	
Trapezoid 	quadrilateral with exactly 1 pair of parallel sides	2 pairs of same side interior angles that are supplementary	
Isosceles Trapezoid 	quadrilateral with exactly 1 pair of parallel sides & congruent non-parallel sides	2 pairs of same side interior angles that are supplementary, pairs of base angles are congruent	
Parallelogram 	Quadrilateral with opposite sides parallel	Opposite sides are equal, opposite angles are equal, 4 pairs of same side interior angles that are supplementary	
Rhombus 	Quadrilateral with 4 congruent sides	Is a parallelogram (see parallelogram properties)	
Rectangle 	Quadrilateral with 4 right angles	Is a parallelogram (see parallelogram properties)	
Square 	Quadrilateral with 4 congruent sides and 4 right angles	Is a parallelogram (see parallelogram properties)	
Kite 	Quadrilateral with 2 pairs of consecutive congruent sides	1 pair of opposite angles are congruent	


QUADRILATERAL
Def:
Properties: sum 360°
PARALLELOGRAM
Def:
Properties:
RHOMBUS
Def:
Properties:
RECTANGLE
Def:
Properties:
SQUARE
Def:
Properties:
Def:
Properties:
TRAPEZOID
Def:
Properties:
ISOSCELES TRAPEZOID
Def:
Properties:
KITE

6.2 Exit Ticket Name_____Per_____

☐ I got this!
☐ I can with a bit of help
☐ I will, given lots of help
☐ I can't
☐ I won't bother to
☐ I refuse to

Identify the most appropriate quadrilateral for each description and write its name in the blank..

(1) _____My diagonals are congruent and intersect at right angles.

(2) _____I have 2 pairs of congruent sides, but no pairs of parallel sides.

(3) _____My base angles are congruent and my diagonals are congruent.

(4) _____My diagonals bisect each other and they are perpendicular. Sometimes I have right angles, but I don't have to.

(5) _____ I have 4 sides.

6.2 Exit Ticket Name_____Per_____

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☐ I can with a bit of help
☐ I will, given lots of help
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6.2 Exit Ticket Name_____Per_____

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Identify the most appropriate quadrilateral for each description and write its name in the blank..

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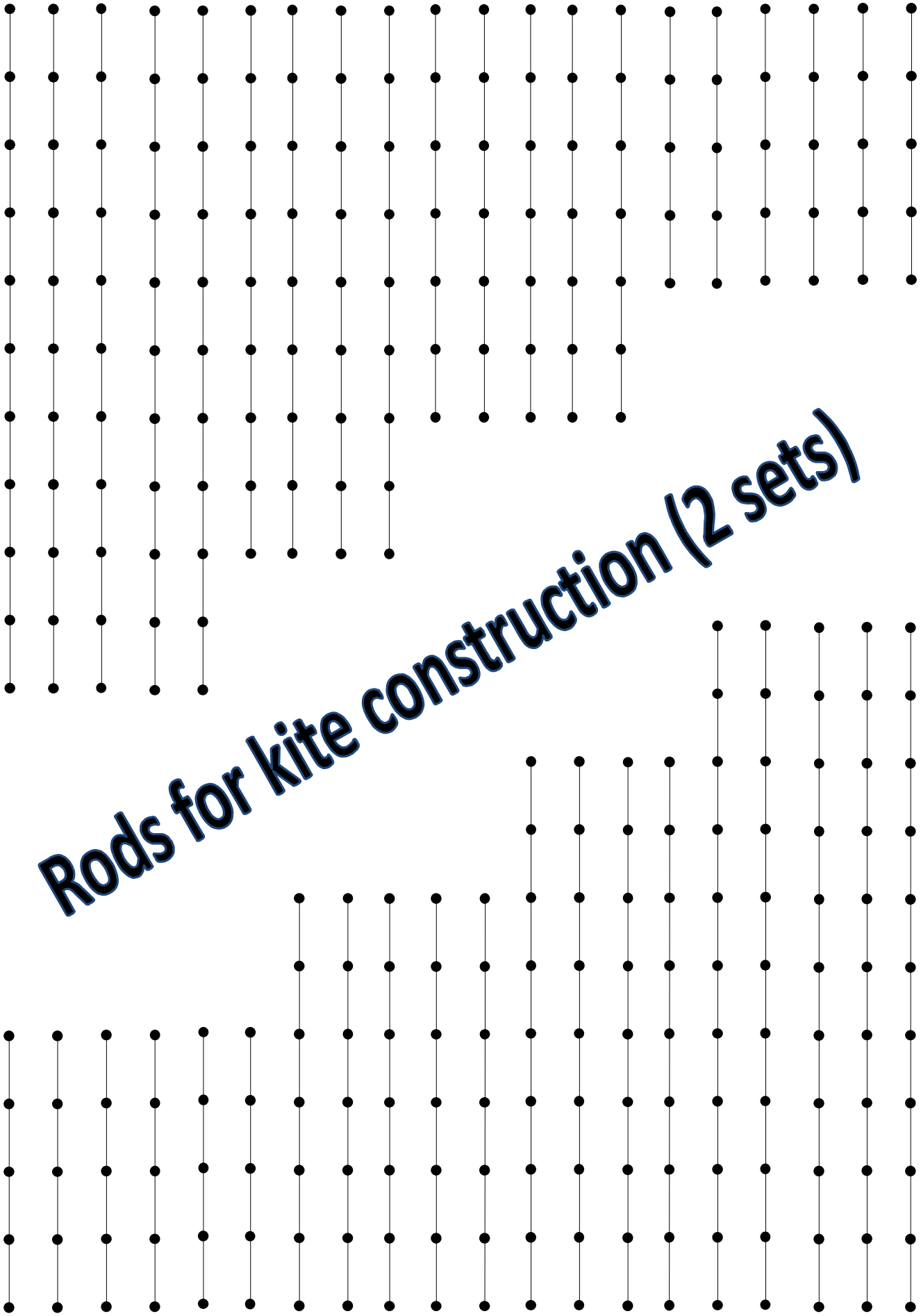
(3) _____My base angles are congruent and my diagonals are congruent.

(4) _____My diagonals bisect each other and they are perpendicular. Sometimes I have right angles, but I don't have to.

(5) I have 4 sides.


Rods for kite construction (2 sets)

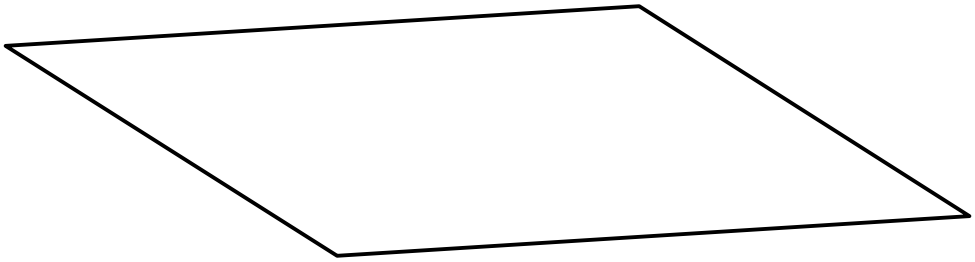
6.2

Name (print first and last) _____ **Per**_____ **Date:** 12/21 due 12/23

6.2 Polygons: Quadrilateral definitions and Properties **Geometry Regents 2013-2014 Ms. Lomac**

How will you get there? "A GUIDE WILL HELP ME FOLLOW THE PATH."

(1)  Parallelogram diagram and directions.



☐ The lengths of the 2 support rods (diagonals) are_____

☐ The intersection of the two rods (diagonals) is located so that _____

_____

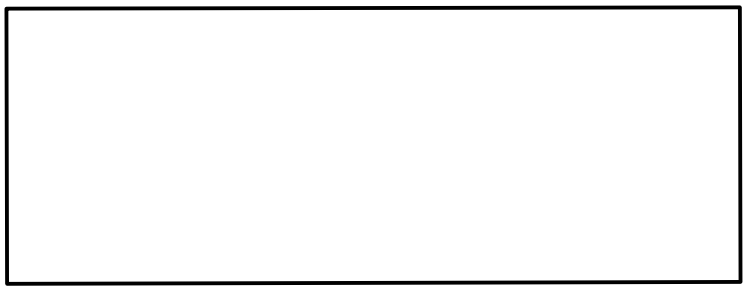
☐ The rods (diagonals) intersect and form angles that _____

_____

☐ The relationship between each diagonal and the angles of the parallelogram is _____

_____

(2)  Rectangle diagram and directions.



☐ The lengths of the 2 support rods (diagonals) are_____

☐ The intersection of the two rods (diagonals) is located so that _____

_____

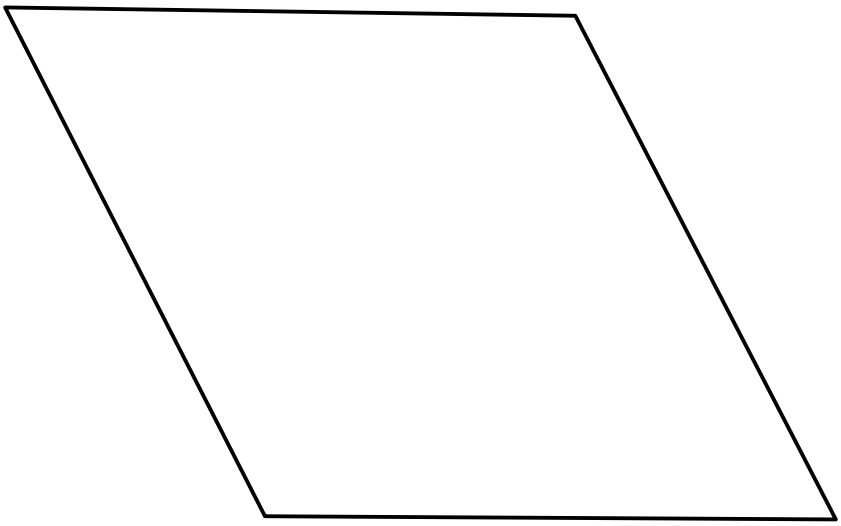
☐ The rods (diagonals) intersect and form angles that _____

_____

☐ The relationship between each diagonal and the angles of the rectangle is _____

_____

(3) Rhombus diagram and directions.



☐ The lengths of the 2 support rods (diagonals) are_____

☐ The intersection of the two rods (diagonals) is located so that _____

_____

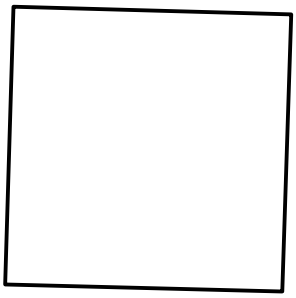
☐ The rods (diagonals) intersect and form angles that _____

_____

☐ The relationship between each diagonal and the angles of the rhombus is _____

_____

(4) Square diagram and directions.



☐ The lengths of the 2 support rods (diagonals) are_____

☐ The intersection of the two rods (diagonals) is located so that _____

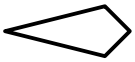
_____

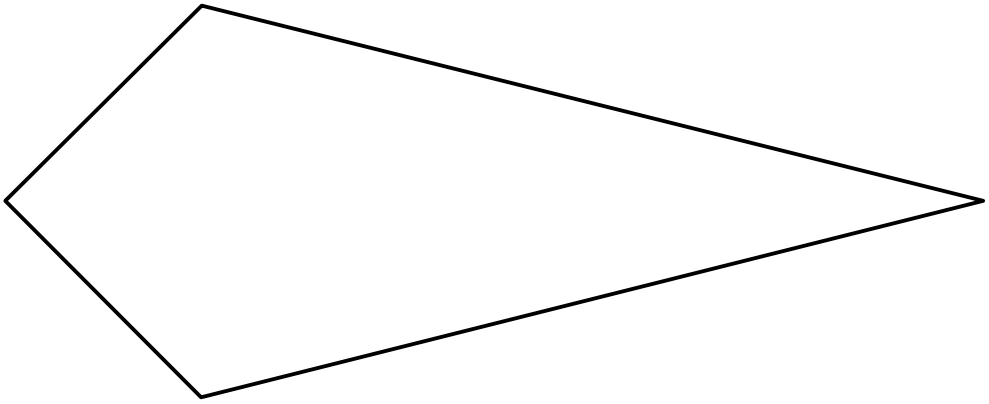
☐ The rods (diagonals) intersect and form angles that _____

_____

☐ The relationship between each diagonal and the angles of the square is _____

_____

(5)  Kite diagram and directions.



☐ The lengths of the 2 support rods (diagonals) are_____

☐ The intersection of the two rods (diagonals) is located so that _____

_____

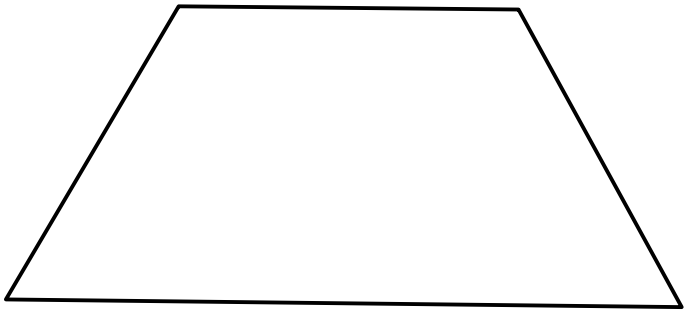
☐ The rods (diagonals) intersect and form angles that _____

_____

☐ The relationship between each diagonal and the angles of the kite is _____

_____

(6)  Isosceles Trapezoid diagram and directions.



☐ The lengths of the 2 support rods (diagonals) are_____

☐ The intersection of the two rods (diagonals) is located so that _____

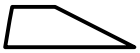
_____

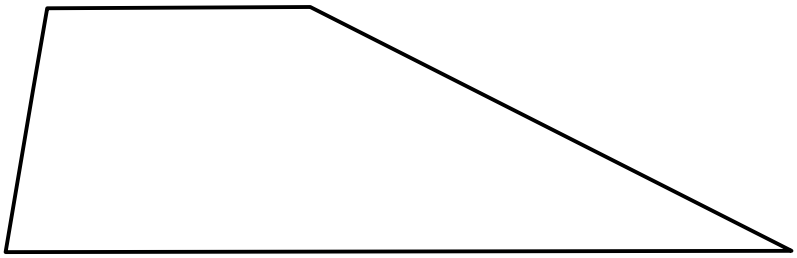
☐ The rods (diagonals) intersect and form angles that _____

_____

☐ The relationship between each diagonal and the angles of the isosceles trapezoid is _____

_____

(7)  Trapezoid diagram and directions.



☐ The lengths of the 2 support rods (diagonals) are_____

☐ The intersection of the two rods (diagonals) is located so that _____

_____

☐ The rods (diagonals) intersect and form angles that _____

_____

☐ The relationship between each diagonal and the angles of the trapezoid is _____

_____

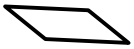
(8) On the "6.2 Polygon Quadrilateral Definitions and Properties" chart under column 4 (diagonal properties) record what you learned about diagonals for each shape.

6.2

Name (print first and last) _____ **Per**_____ **Date:** 12/21 due 12/23

6.2 Polygons: Quadrilateral definitions and Properties **Geometry Regents 2013-2014 Ms. Lomac**

How will you get there? "I CAN FOLLOW A MARKED PATH."

(1)  Parallelogram diagram and directions.

☐ The lengths of the 2 support rods (diagonals) are_____

☐ The intersection of the two rods (diagonals) is located so that _____

_____

☐ The rods (diagonals) intersect and form angles that _____

_____

☐ The relationship between each diagonal and the angles of the parallelogram is _____

_____

(2)  Rectangle diagram and directions.

☐ The lengths of the 2 support rods (diagonals) are_____

☐ The intersection of the two rods (diagonals) is located so that _____

_____

☐ The rods (diagonals) intersect and form angles that _____

_____

☐ The relationship between each diagonal and the angles of the rectangle is _____

_____

(3)  Rhombus diagram and directions.

☐ The lengths of the 2 support rods (diagonals) are_____

☐ The intersection of the two rods (diagonals) is located so that _____

_____

☐ The rods (diagonals) intersect and form angles that _____

_____

☐ The relationship between each diagonal and the angles of the rhombus is _____

_____

(4)  Square diagram and directions.

☐ The lengths of the 2 support rods (diagonals) are_____

☐ The intersection of the two rods (diagonals) is located so that _____

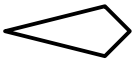
_____

☐ The rods (diagonals) intersect and form angles that _____

_____

☐ The relationship between each diagonal and the angles of the square is _____

_____

(5)  Kite diagram and directions.

☐ The lengths of the 2 support rods (diagonals) are_____

☐ The intersection of the two rods (diagonals) is located so that _____

_____

☐ The rods (diagonals) intersect and form angles that _____

_____

☐ The relationship between each diagonal and the angles of the kite is _____

_____

(6)  Isosceles Trapezoid diagram and directions.

☐ The lengths of the 2 support rods (diagonals) are_____

☐ The intersection of the two rods (diagonals) is located so that _____

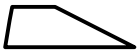
_____

☐ The rods (diagonals) intersect and form angles that _____

_____

☐ The relationship between each diagonal and the angles of the isosceles trapezoid is _____

_____

(7)  Trapezoid diagram and directions.

☐ The lengths of the 2 support rods (diagonals) are_____

☐ The intersection of the two rods (diagonals) is located so that _____

_____

☐ The rods (diagonals) intersect and form angles that _____

_____

☐ The relationship between each diagonal and the angles of the trapezoid is _____

_____

(8) On the "6.2 Polygon Quadrilateral Definitions and Properties" chart under column 4 (diagonal properties) record what you learned about diagonals for each shape.

6.2

Name (print first and last) _____ Per_____ Date: 12/21 due 12/23

6.2 Polygons: Quadrilateral definitions and Properties Geometry Regents 2013-2014 Ms. Lomac

How will you get there? "I'LL MAKE MY OWN PATH."

(1) Parallelogram diagram and directions.

(2) Rectangle diagram and directions.

(3) Rhombus diagram and directions.

(4) Square diagram and directions.

(5) Kite diagram and directions.

(6) Isosceles Trapezoid diagram and directions.

(7) Trapezoid diagram and directions.

(8) On the “6.2 Polygon Quadrilateral Definitions and Properties” chart under column 4 (diagonal properties) record what you learned about diagonals for each shape.