6.3

Name (print first and last) _____ **Per**_____ **Date:** 2/3 due 2/5

6.3 Polygons: Quadrilateral applications **Geometry Regents 2013-2014 Ms. Lomac**

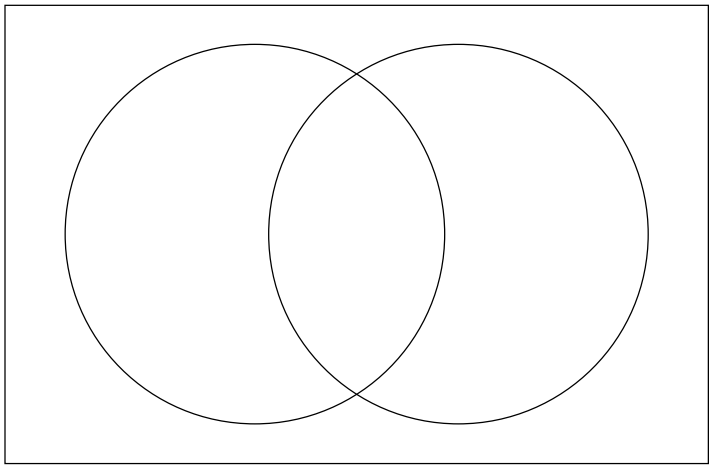
SLO: I can identify, define, and list properties of various quadrilaterals.

(1) ☐ Use the venn diagram provided to sort the quadrilaterals. Record your answers in the diagrams below.

(2) ☐ Record your venn diagrams from PART 2 on the group page on the diagrams below.

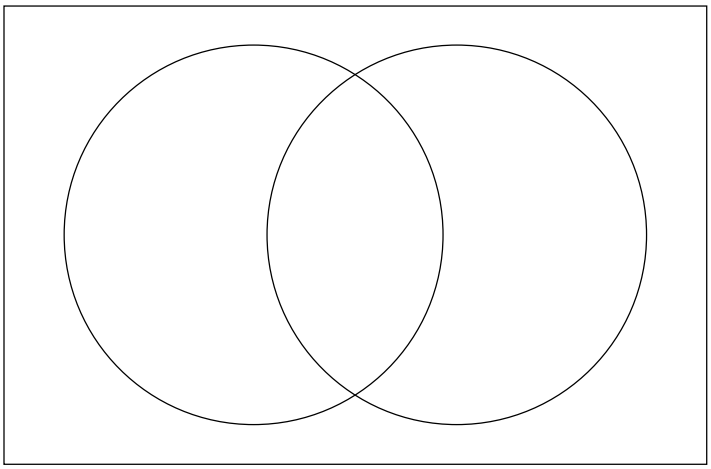
☐ (a) Left: _____

Right: _____



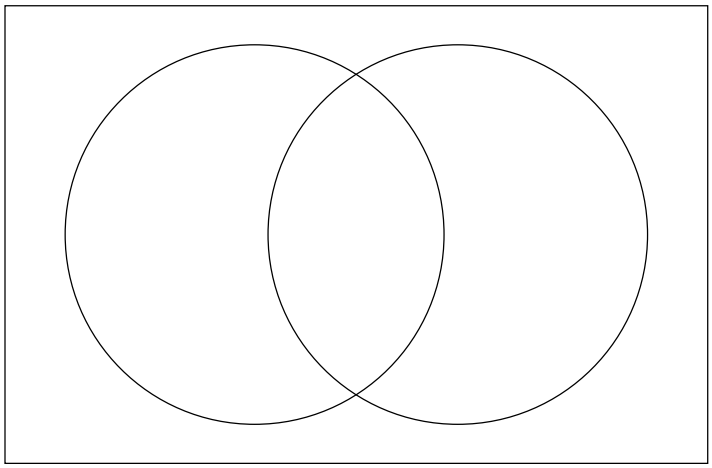
☐ (b) Left: _____

Right: _____



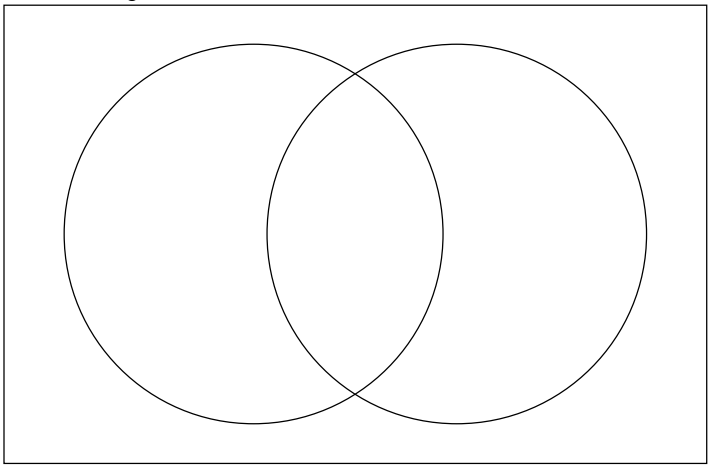
☐ (c) Left: _____

Right: _____



☐ (d) Left: _____

Right: _____



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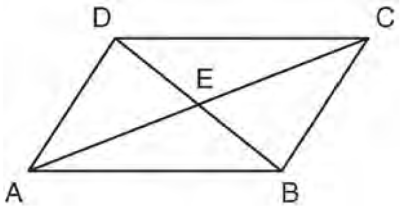
(3) ☐ Apply what you have learned. Show work for multiple choice questions when appropriate.

☐ (a) In the diagram below, parallelogram $ABCD$ has diagonals $\overline{AC}$ and $\overline{BD}$ that intersect at point E.



Which expression is *not* always true?

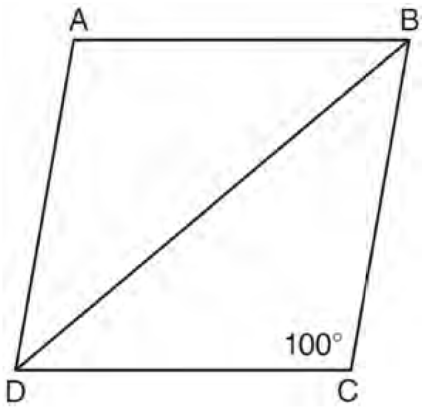
1 $\angle DAE \cong \angle BCE$

2 $\angle DEC \cong \angle BEA$

3 $\overline{AC} \cong \overline{DB}$

4 $\overline{DE} \cong \overline{EB}$

☐ (b) In the diagram below of rhombus $ABCD$, $m\angle C = 100$.



What is $m\angle DBC$?

1 40

2 45

3 50

4 80

☐ (c) Isosceles trapezoid $ABCD$ has diagonals $\overline{AC}$ and $\overline{BD}$. If $AC = 5x + 13$ and $BD = 11x - 5$, what is the value of x?

1 28

2 $10\frac{3}{4}$

3 3

4 $\frac{1}{2}$

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☐ (d) Which statement is true about every parallelogram?

1 All four sides are congruent.
2 The interior angles are all congruent.
3 Two pairs of opposite sides are congruent.
4 The diagonals are perpendicular to each other.

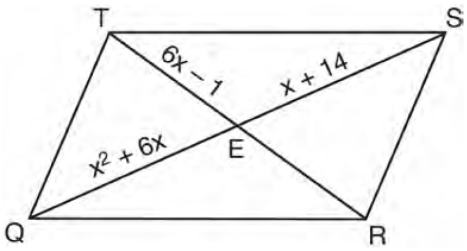
☐ (e) In rhombus $ABCD$, the diagonals $\overline{AC}$ and $\overline{BD}$ intersect at E. If $AE = 5$ and $BE = 12$, what is the length of $\overline{AB}$?

1 7
2 10
3 13
4 17

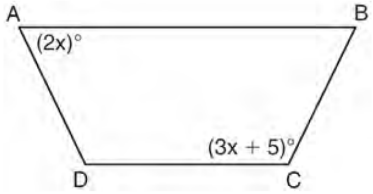
☐ (f) If the diagonals of a quadrilateral do *not* bisect each other, then the quadrilateral could be a

1 rectangle
2 rhombus
3 square
4 trapezoid

☐ (g) As shown in the diagram below, the diagonals of parallelogram $QRST$ intersect at E. If $QE = x^2 + 6x$, $SE = x + 14$, and $TE = 6x - 1$, determine TE algebraically.



☐ (h) The diagram below shows isosceles trapezoid $ABCD$ with $\overline{AB} \parallel \overline{DC}$ and $\overline{AD} \cong \overline{BC}$. If $m\angle BAD = 2x$ and $m\angle BCD = 3x + 5$, find $m\angle BAD$.



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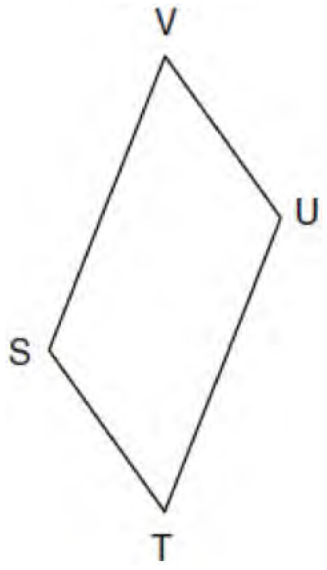
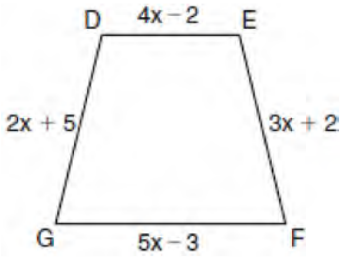
☐ (i) In the diagram below of parallelogram $STUV$, $SV = x + 3$, $VU = 2x - 1$, and $TU = 4x - 3$.



What is the length of $\overline{SV}$?

1 5
2 2
3 7
4 4

☐ (j) In the diagram below of isosceles trapezoid $DEFG$, $\overline{DE} \parallel \overline{GF}$, $DE = 4x - 2$, $EF = 3x + 2$, $FG = 5x - 3$, and $GD = 2x + 5$. Find the value of x.



☐ (k) Which reason could be used to prove that a parallelogram is a rhombus?

1 Diagonals are congruent.
2 Opposite sides are parallel.
3 Diagonals are perpendicular.
4 Opposite angles are congruent.

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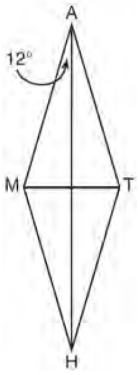
☐ (l) In the diagram below, $MATH$ is a rhombus with diagonals $\overline{AH}$ and $\overline{MT}$.



If m$\angle HAM = 12$, what is m$\angle AMT$?

1 12
2 78
3 84
4 156

☐ (m) Given: $JKLM$ is a parallelogram.
$\overline{JM} \cong \overline{LN}$
$\angle LMN \cong \angle LNM$
Prove: $JKLM$ is a rhombus.