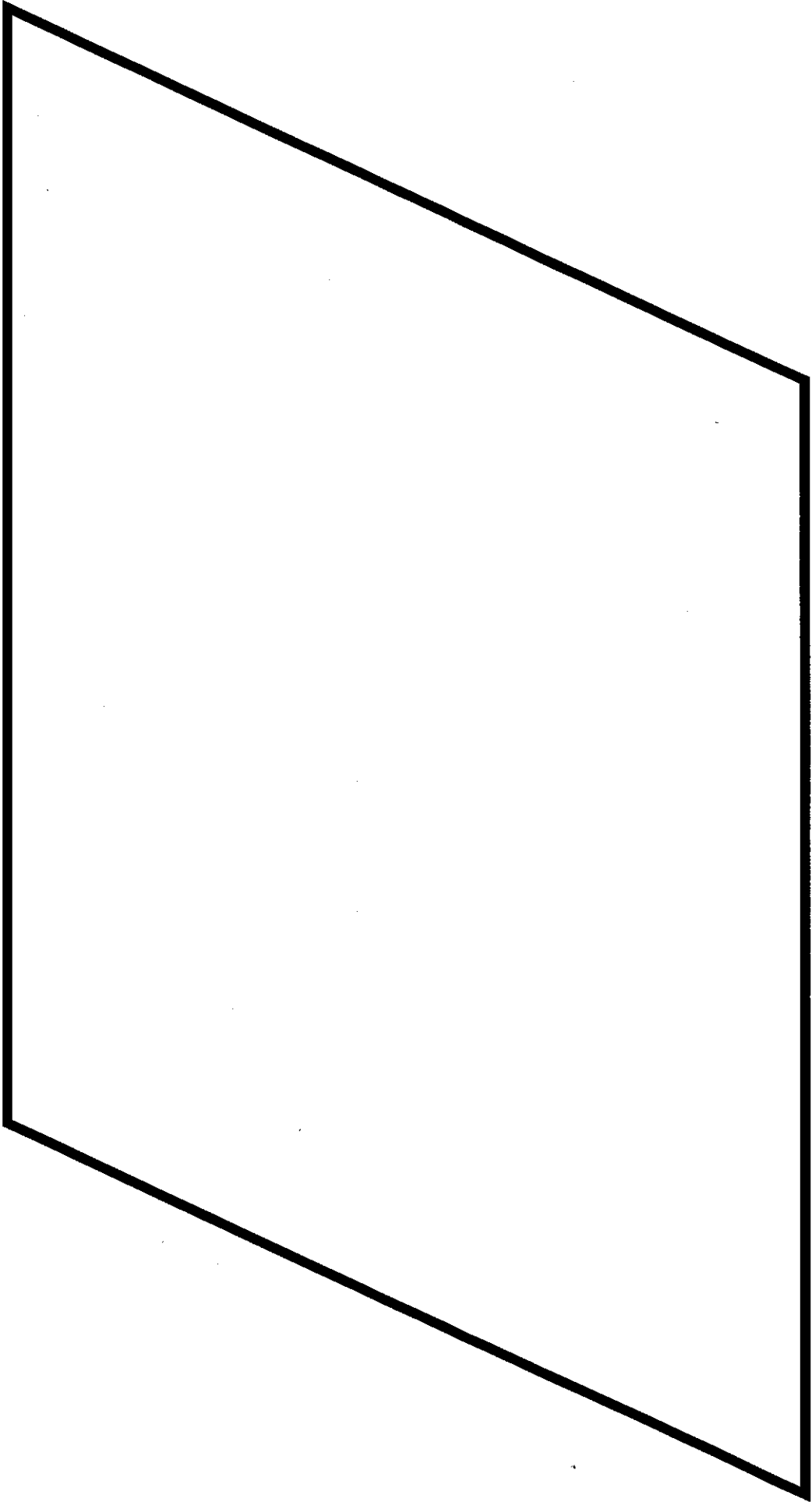


Quadrilaterals Mini Unit

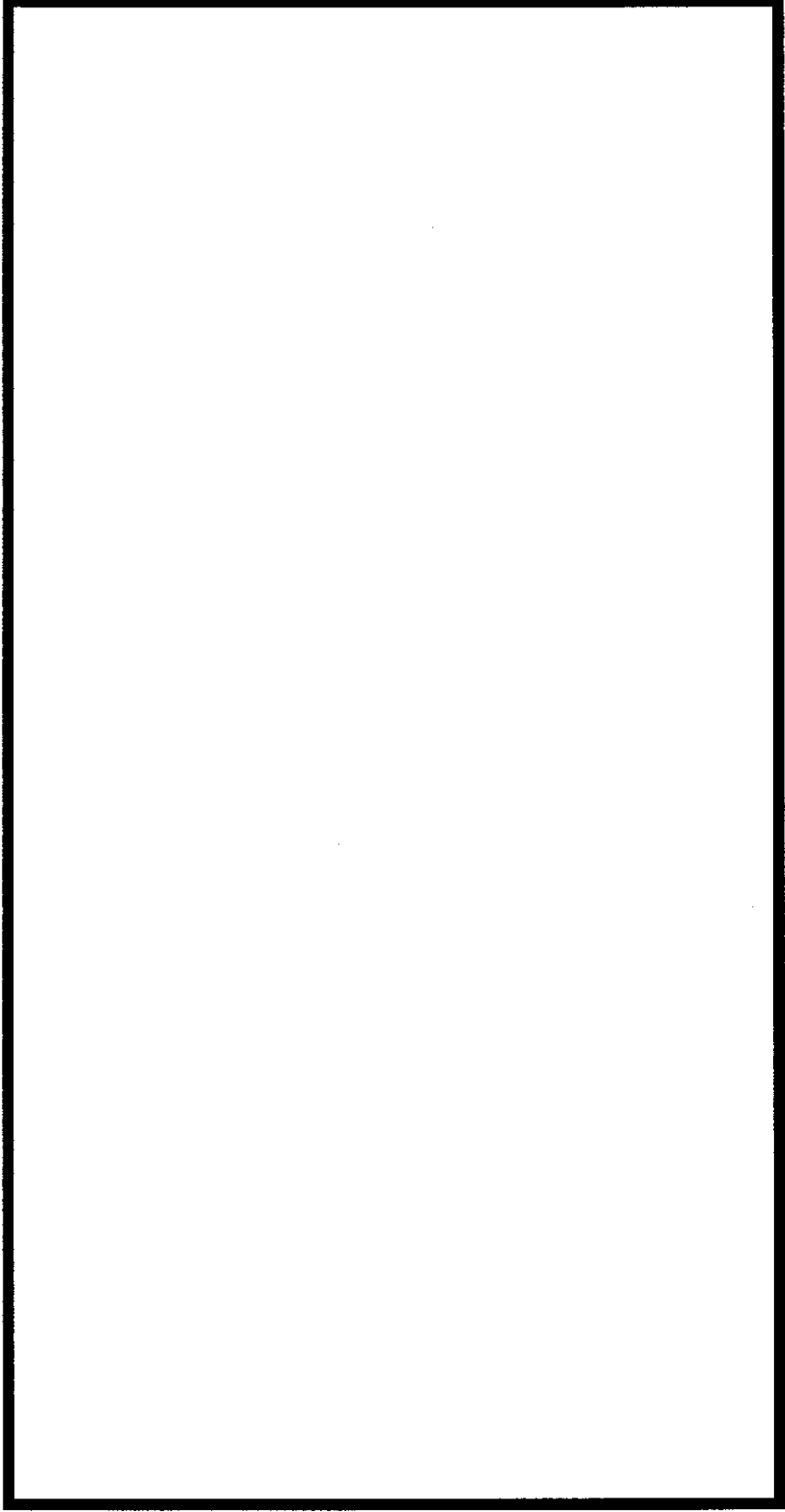
Geometry

| Date | Topic |
|--------------------------|---|
| Monday February 8 | Finish test Discovery (parallelogram, rectangle) |
| Tuesday February 9 | Discovery (Rhombus, Square, Trapezoids, Kite) Hierarchy |
| Wednesday February 10 | Foldable Application Problems Classwork: pages 1-2 Homework: pages 3-4 |
| Thursday February 11 | Application Problems Classwork: pages 5-7 Homework: pages 8-9 |
| Friday February 12 | QUIZ |

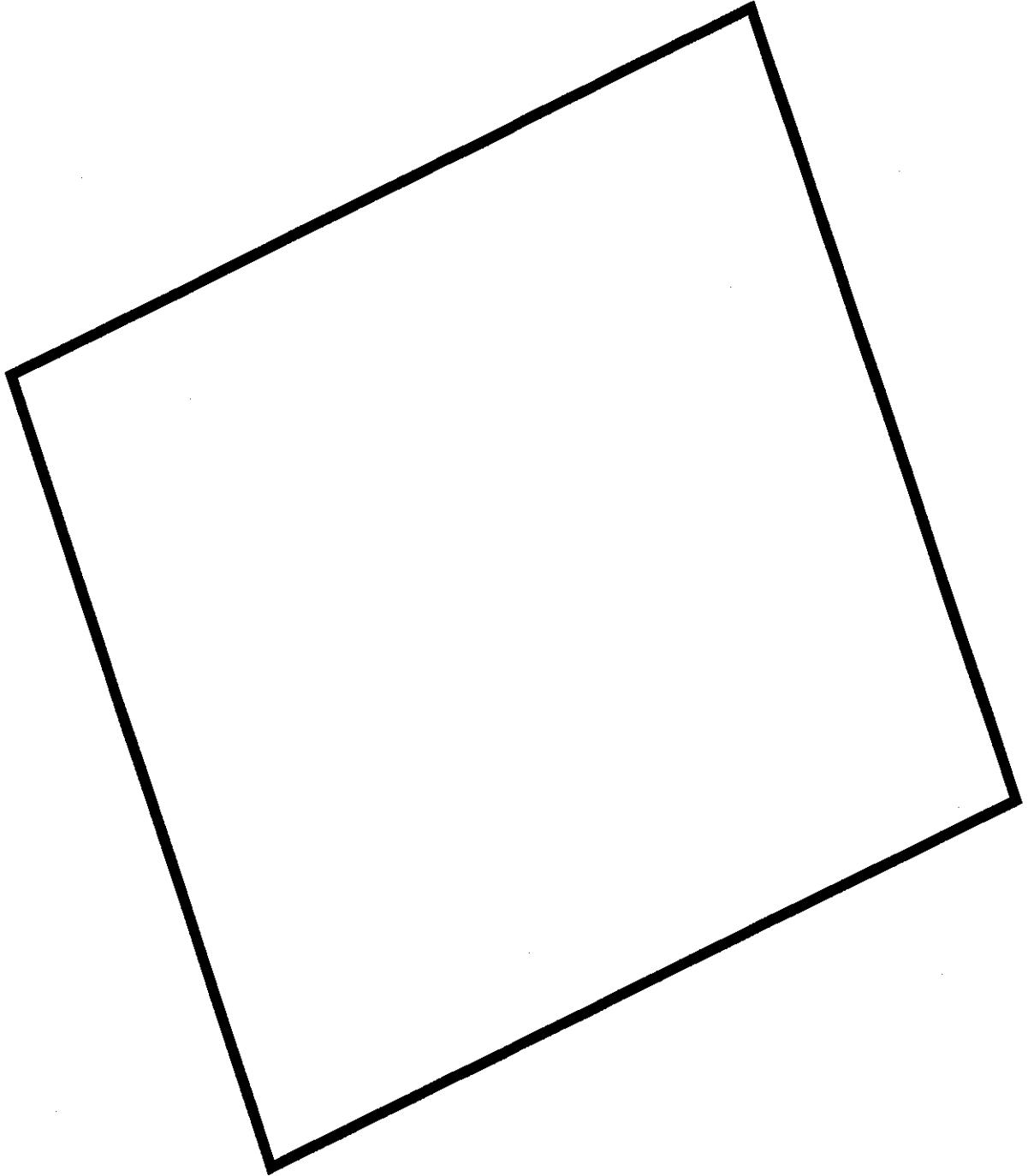
Parallelograms



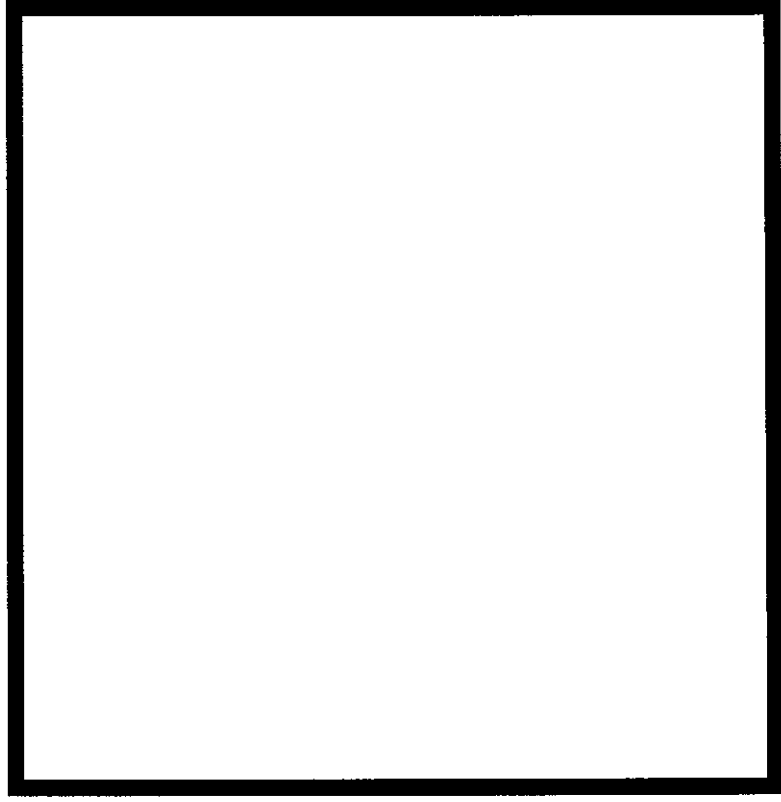
Rectangle



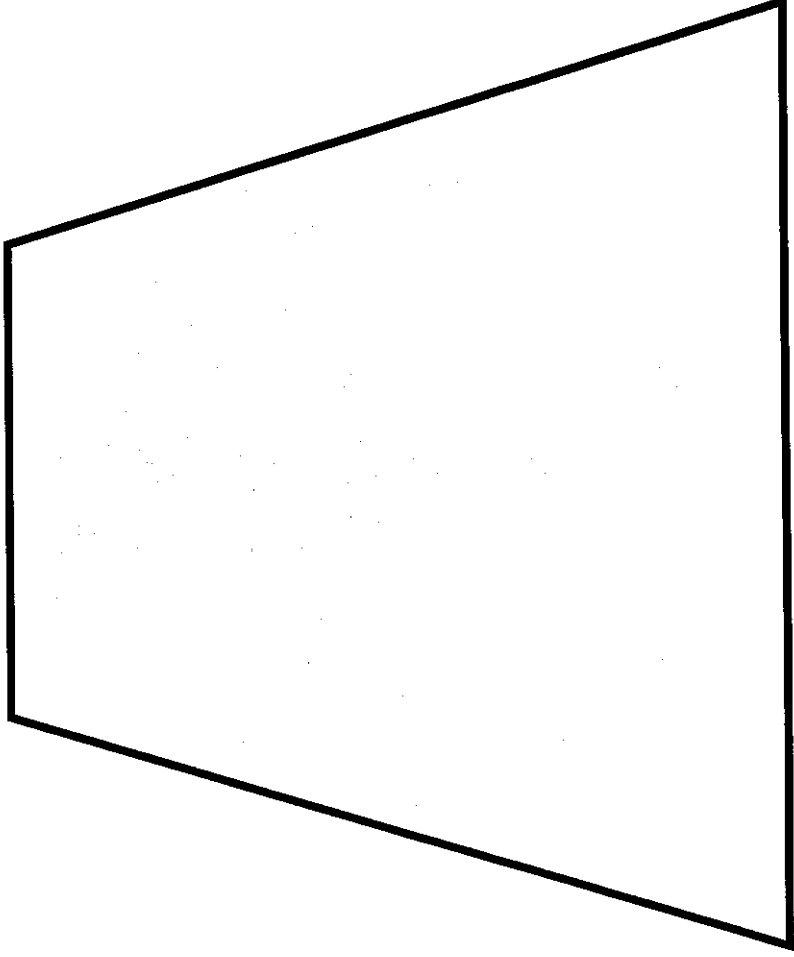
Rhombus



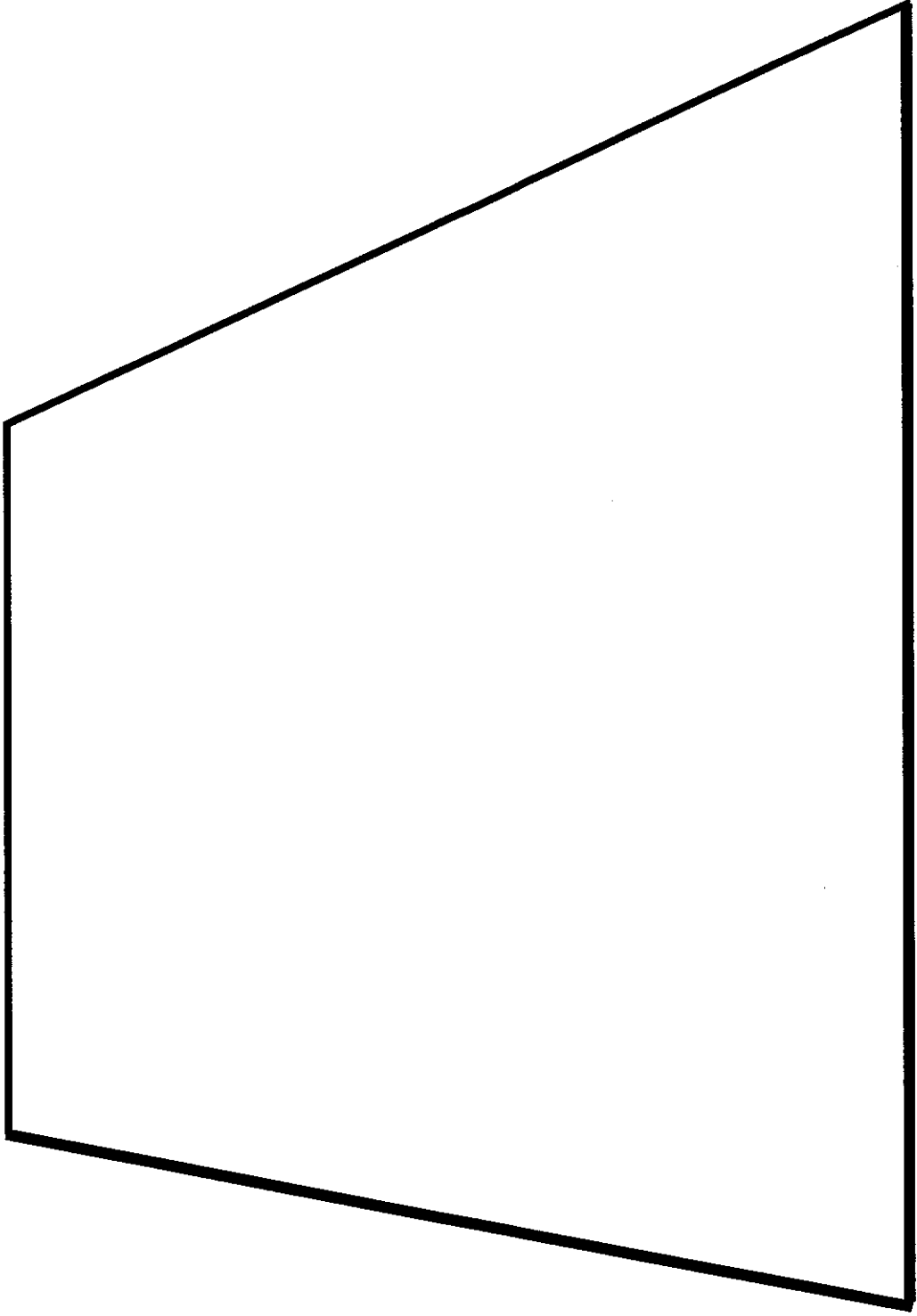
square



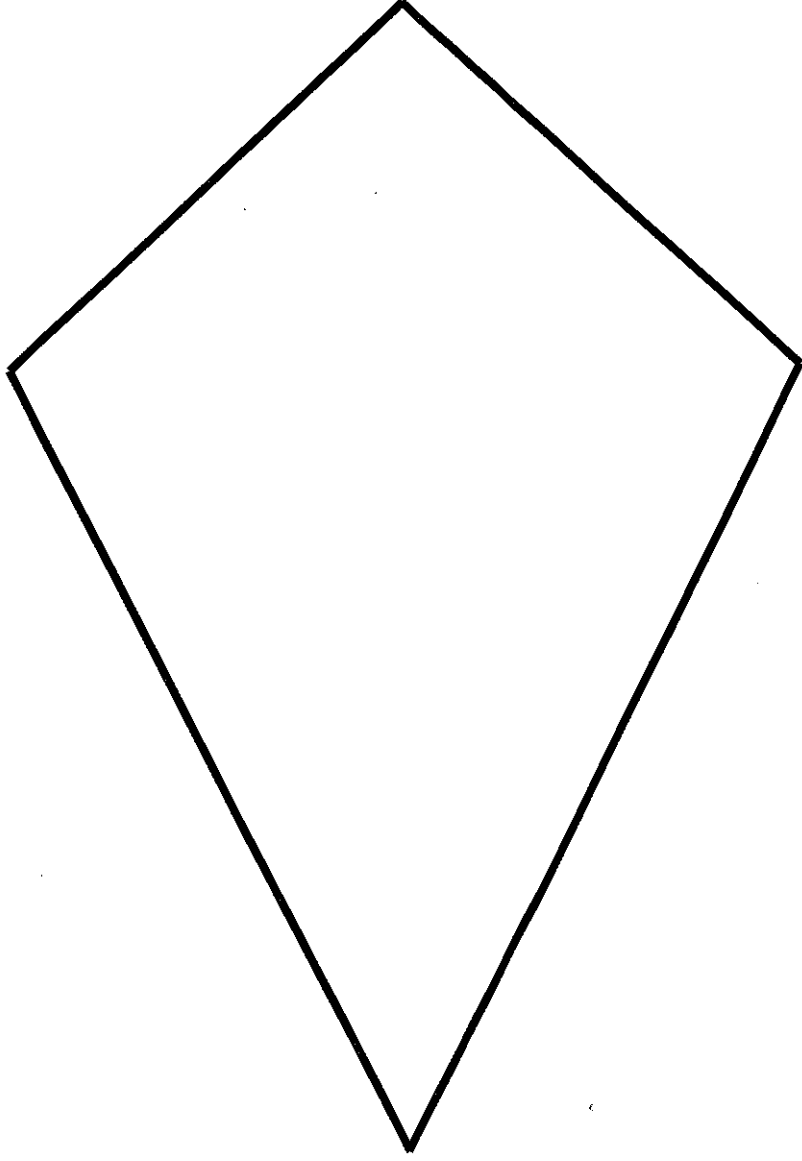
Isosceles Trapezoid



Trapezoid



Kite

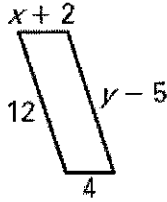


Name: _____ Date: _____

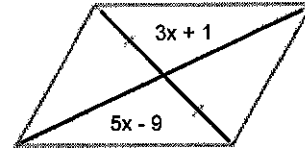
Quadrilaterals and Parallelograms Homework

Find the missing variable in each parallelogram.

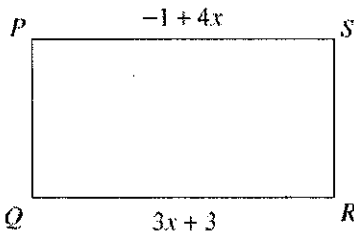
1.



2.

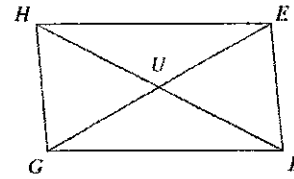


3.

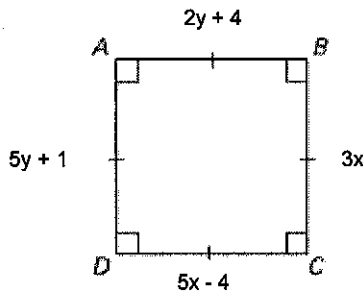


4.

$UH = 19$
 $FH = 5x - 7$

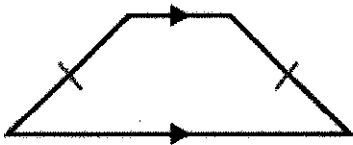


5.

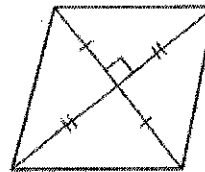


Decide if the figure is a parallelogram. If yes, can you identify the type of parallelogram? If it is not, explain why not.

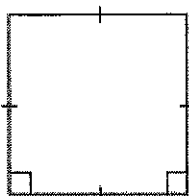
6.



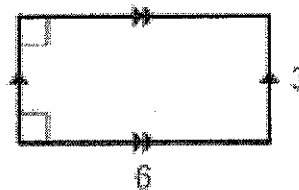
7.



8.



9.



Exercise Set A

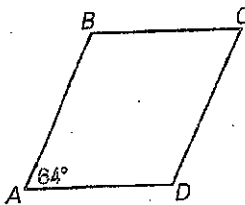


MM1G1c Use the coordinate plane to investigate properties of and verify conjectures related to triangles and quadrilaterals.

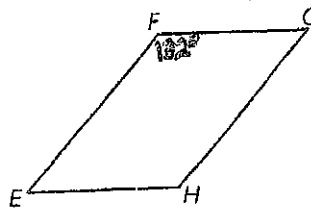
MM1G3d Understand, use, and prove properties of and relationships among special quadrilaterals: parallelogram, rectangle, rhombus, square, trapezoid, and kite.

Find the measure of the indicated angle in the parallelogram.

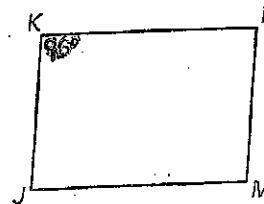
1. Find $m\angle B$.



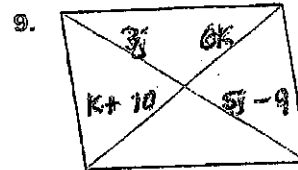
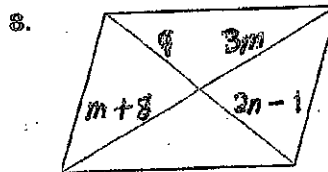
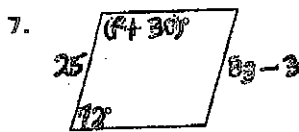
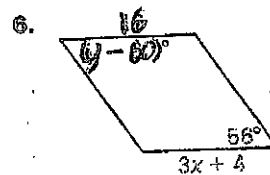
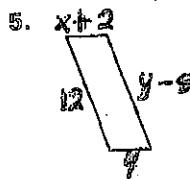
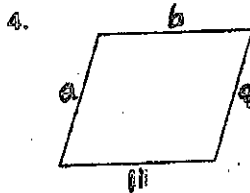
2. Find $m\angle G$.



3. Find $m\angle M$.



Find the value of each variable in the parallelogram.



10. In $\square WXYZ$, $m\angle W$ is 50 degrees more than $m\angle X$. Sketch $\square WXYZ$. Find the measure of each interior angle. Then label each angle with its measure.

11. In $\square EFGH$, $m\angle G$ is 25 degrees less than $m\angle H$. Sketch $\square EFGH$. Find the measure of each interior angle. Then label each angle with its measure.

Find the indicated measure in $\square ABCD$.

12. $m\angle AEB$

13. $m\angle BAE$

14. $m\angle AED$

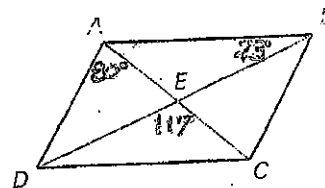
15. $m\angle ECB$

16. $m\angle BAD$

17. $m\angle DCE$

18. $m\angle ADC$

19. $m\angle DCB$



**Exercise
Set B**



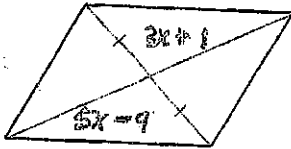
MM1G1a Determine the distance between two points.

MM1G1e Use the coordinate plane to investigate properties of and verify conjectures related to triangles and quadrilaterals.

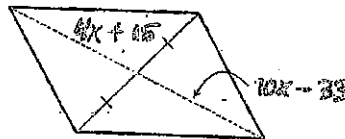
MM1G3d Understand, use, and prove properties of and relationships among special quadrilaterals: parallelogram, rectangle, rhombus, square, trapezoid, and kite.

For what value of x is the quadrilateral a parallelogram?

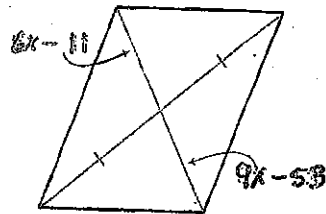
1.



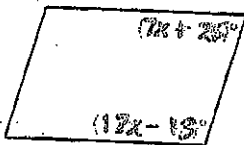
2.



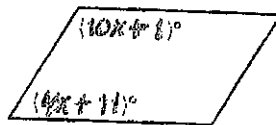
3.



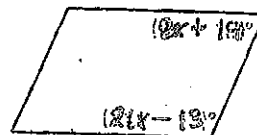
4.



5.



6.



Decide whether you are given enough information to determine that the quadrilateral is a parallelogram.

7. Opposite sides are parallel.
8. Opposite sides are congruent.
9. Two pairs of consecutive sides are congruent.
10. Two pairs of consecutive angles are congruent.
11. Diagonals are congruent.
12. Diagonals bisect each other.
13. All four sides are congruent.
14. Consecutive angles are supplementary.

Prove that the points represent the vertices of a parallelogram. Use the method indicated.

15. $A(-4, 7), B(3, 0), C(2, -5), D(-5, 2)$; Both pairs of opposite sides are parallel.
16. $A(-2, 8), B(2, 7), C(5, 1), D(1, 2)$; Both pairs of opposite sides are congruent.

Find all the possible coordinates for the fourth vertex of a parallelogram with the given vertices. Then draw the parallelogram on a graph.

17. $(4, -1), (-4, 1), (0, 8)$
18. $(3, -4), (-2, -1), (1, 2)$

UNIT 5

Exercise
Set B

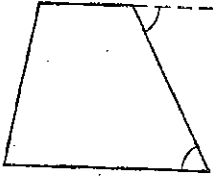


MM1G1e Use the coordinate plane to investigate properties of and verify conjectures related to triangles and quadrilaterals.

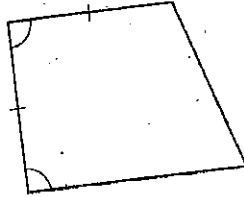
MM1G3d Understand, use, and prove properties of and relationships among special quadrilaterals: parallelogram, rectangle, rhombus, square, trapezoid, and kite.

Determine whether the quadrilateral is a trapezoid. If it is, is it an isosceles trapezoid?

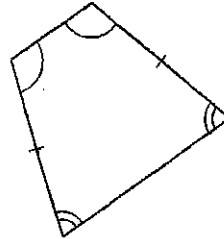
1.



2.

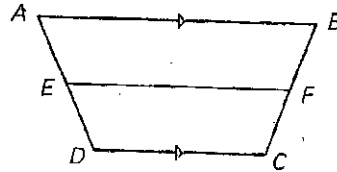


3.



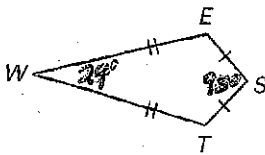
Quadrilateral $ABCD$ is a trapezoid with midsegment \overline{EF} . Use the given information to answer the following.

4. If $m\angle B = 73^\circ$, then $m\angle C = \underline{\quad?}$.
5. If $m\angle A = 51^\circ$ and $m\angle C = 105^\circ$, then $m\angle D = \underline{\quad?}$.
6. If $m\angle A = 48^\circ$ and $m\angle C = 112^\circ$, then $m\angle CFE = \underline{\quad?}$.
7. If $AB = 28$ and $DC = 13$, then $EF = \underline{\quad?}$.
8. If $EF = 13$ and $DC = 6$, then $AB = \underline{\quad?}$.
9. If $EF = x + 5$ and $DC + AB = 4x + 6$, then $EF = \underline{\quad?}$.

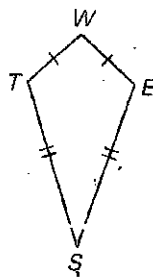


$WEST$ is a kite. Find the measures of the missing angles.

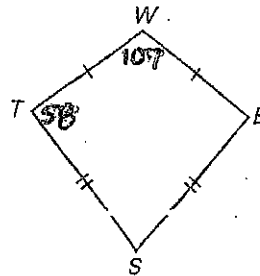
10.



11.

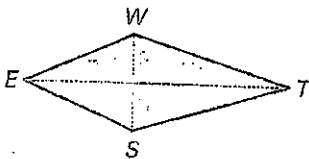


12.

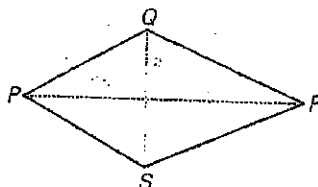


Use Theorem 5.33 and the Pythagorean Theorem to find the side lengths of the kite. Write the lengths in simplest radical form.

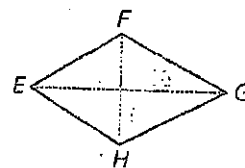
13.



14.



15.



Review for Test 12

Name: _____

Period: _____

~~Quiz~~ properties of Quadrilaterals

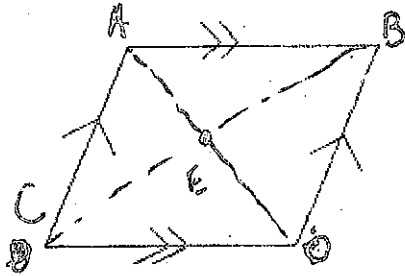
Fill in the blank for each definition with the appropriate term (use each name only once).

1. _____ has one set of parallel sides.
2. _____ has two pairs of consecutive congruent sides.
3. _____ has four right angles.
4. _____ has two pairs of parallel sides.
5. _____ has four congruent sides.
6. _____ has four sides.
7. _____ has four congruent sides and four right angles.
8. List three properties of parallelograms (do not include the definition).
9. List all three quadrilaterals that are parallelograms.
10. Name all three quadrilaterals that have perpendicular diagonals.

Accelerated Alg/Geo A
Quadrilaterals

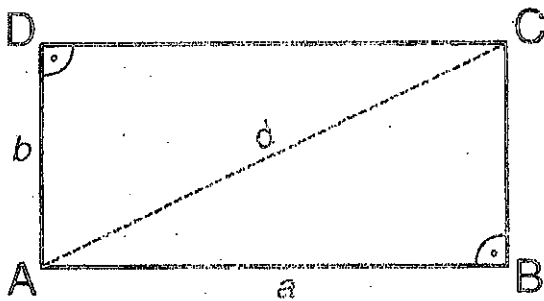
Name: _____

For problems 1-4 use the following rhombus.



1. $AB=3x+1$ and $BD=7x-7$, solve for x . What is the length of BD ?
2. If $m\angle ABD$ is 75, what is the $m\angle ACD$?
3. If the $m\angle AEB$ is $5x-10$, solve for x .
4. What is the $m\angle CAB$?

For problems 5-7 use the rectangle below:



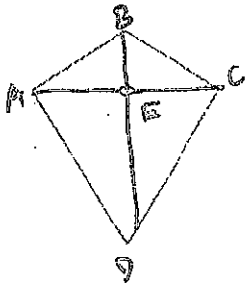
5. If $DB=10$ and $DA=8$, find AB .

5. If $DA=10$ and $DC=13$, what is the perimeter of rectangle $ABCD$?

6. If $DC=4$ and $DB=5$, what is CB ?

7. If $DE=15$ and $EB=10x-1$, what is x ?

Use the kite below to answer questions 8-10



8. The $m\angle BEC$ is $10x+10$. Solve for x .

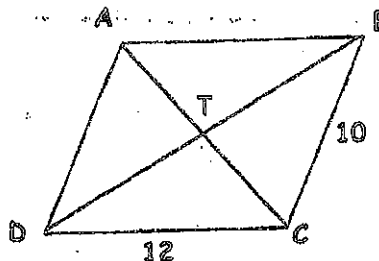
9. If $AB=10x+10$ and $BC=9x-1$, what is x ?

10. If $AB=4$ and $AD=7$, what is the perimeter of kite $ABCD$?

Name: _____ Date: _____ Period: _____

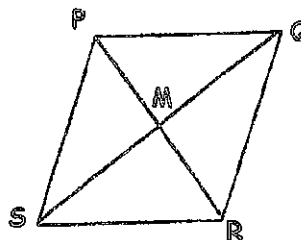
Properties of Parallelograms

Problems 1-4. Use the parallelogram at right.



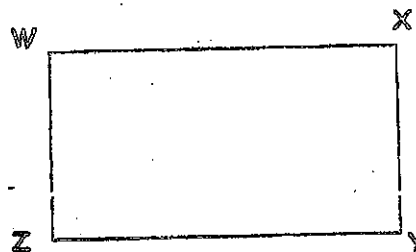
- 1) Find the perimeter
- 2) If $CT = 9$, find AT .
- 3) If $m\angle CDA = 60^\circ$, find $m\angle CBA$ and $m\angle BAD$.
- 4) If $AT = 4x - 7$ and $CT = -x + 13$, solve for x .

Problems 5-8. Use the rhombus at right.



- 5) If $PS = 6$, find the perimeter of $PQRS$.
- 6) If $PQ = 3x + 7$ and $QR = -x + 17$, solve for x .
- 7) If $m\angle PSM = 22^\circ$, find $m\angle RSM$ and $m\angle SPQ$.
- 8) If $m\angle PMQ = 4x - 5$, solve for x .

Problems 9-12. Use the quadrilateral at right.

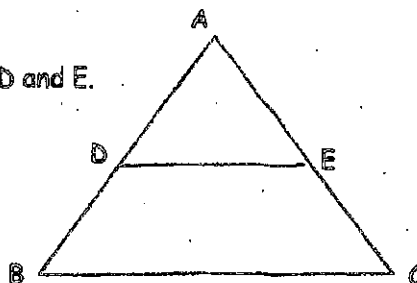


- 9) If $WX = YZ$ and $WZ = XY$, must $WXYZ$ be a rectangle? Explain your answer.
- 10) If $m\angle WZY = 90^\circ$, must $WXYZ$ be a rectangle? Explain your answer.
- 11) If the information in problems 9-10 are both true, must $WXYZ$ be a rectangle? Explain your answer.
- 12) If $WXYZ$ is a rectangle, $WY = 15$ and $WZ = 9$. Find YZ and XZ .

Problems 13-14. Use the triangle at the right, with midpoints D and E.

13) If $m\angle ADE = 35^\circ$, find $m\angle ABC$.

14) If $DE = 2x + 1$ and $BC = 5x - 2$, solve for x .



Problems 15-18. Use the kite at the right.

15) If $m\angle XWZ = 95^\circ$, find $m\angle XYZ$.

16) If $m\angle WZY = 110^\circ$ and $m\angle WXY = 40^\circ$, find

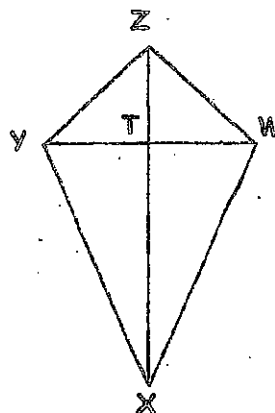
(a) $m\angle WZT$

(b) $m\angle TXW$

(c) $m\angle ZWX$

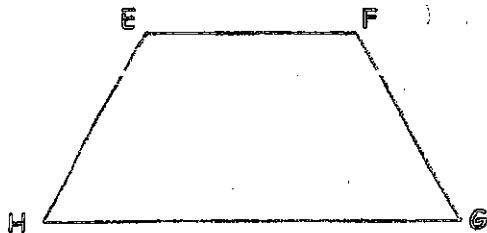
17) If $WZ = 5$ and $WT = 4$, find ZT .

18) If $WT = 4$, $TZ = 3$, and $TX = 10$, find the perimeter of $WXYZ$.



Problem 19. Given trapezoid EFGH with EF parallel to GH , and $\angle H \cong \angle G$.

Prove that $EH \cong FG$. Write a flowchart or T-chart to show your thinking. (Hint: Create a triangle).



Quadrilateral Hierarchy

Quadrilateral

- ✓ Four sided polygon

Kite

- ✓ A quadrilateral that has two pairs of consecutive congruent sides, BUT opposite sides are not congruent
- ✓ Diagonals are not congruent
- ✓ ONLY ONE pair of opposite angles are congruent
- ✓ The OTHER pair of opposite angles are bisected by one of the diagonals

(This is the line of symmetry)

*Diagonals are not congruent

Parallelogram

- ✓ A quadrilateral with both pairs of opposite sides parallel
- ✓ Opposite sides and angles are congruent
- ✓ Consecutive angles are supplementary
- ✓ The diagonals bisect each other

*Diagonals are not congruent

Trapezoid

- ✓ A quadrilateral with EXACTLY one pair of opposite sides parallel
- ✓ Leg angles are supplementary

*Diagonals are not congruent

Isosceles Trapezoid

- ✓ A trapezoid whose legs are congruent
- ✓ Both pairs of base angles (separately) are congruent
- ✓ Diagonals are congruent

Rhombus

- ✓ A parallelogram with 4 congruent sides
- ✓ Diagonals are perpendicular AND bisect a pair of opposite angles

* Diagonals are not congruent

Rectangle

- ✓ A parallelogram with 4 congruent angles (all 90 degrees)
- ✓ Diagonals are congruent
- ✓ Diagonals form 4 isosceles triangles

Square

- ✓ A parallelogram with 4 congruent angles and sides
- ✓ Diagonals are congruent
- ✓ Holds all properties for a rhombus and a rectangle