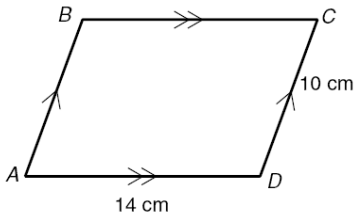
Geometry A **Name** _____
6.1 Properties of Parallelograms **Hour** _____ **Date** _____

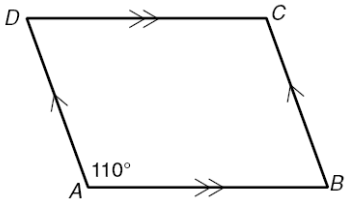
Assignment

Find each indicated measure in parallelogram *ABCD*.



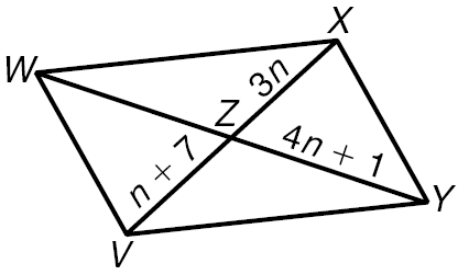
1. $AB =$ _____
2. $BC =$ _____

Find each indicated measure in parallelogram *ABCD*.



3. $m\angle B =$ _____
4. $m\angle C =$ _____
5. $m\angle D =$ _____

***VWXY* is a parallelogram. Find each indicated measure. Show all calculations.**



6. $VX =$ _____
7. $XZ =$ _____
8. $ZW =$ _____
9. $WY =$ _____

Suppose that $\overline{AB}$ has endpoints *A*(-3, 6) and *B*(1, -4).

10. Find the length of $\overline{AB}$.

11. Find the midpoint of $\overline{AB}$.

12. Find the slope of $\overline{AB}$

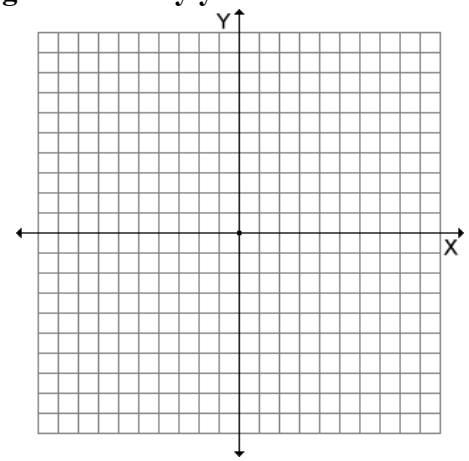
Geometry A **Name** _____

6.2 Proving a Quadrilateral is a Parallelogram **Hour** _____ **Date** _____

Assignment

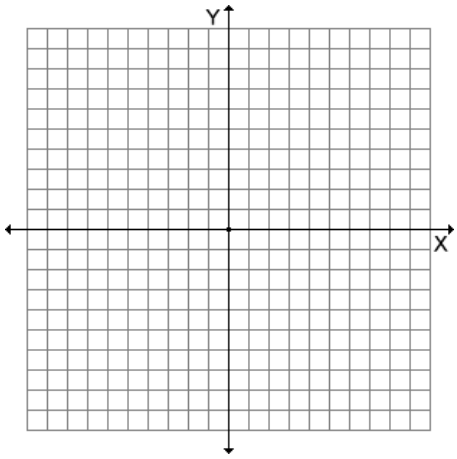
Determine whether a figure with the given vertices is a parallelogram. Justify your answer.

1. *Q*(-6, -6), *R*(2, 2), *S*(-1, 6), *T*(-5, 2); **Show all calculations.**
   Use the **slope formula.**



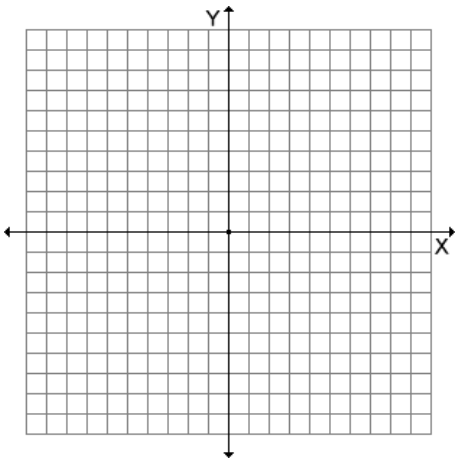
Parallelogram? _____ Justification _____

2. *W*(-6, -5), *X*(-1, -4), *Y*(0, -1), *Z*(-5, -2); **Show all calculations.**
   Use the **distance formula.**



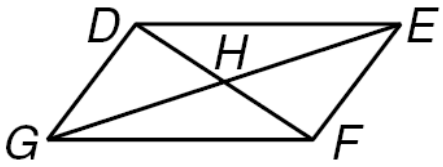
Parallelogram? _____ Justification _____

3. *H*(5, 6), *J*(9, 0), *K*(8, -5), *L*(3, 2); **Show all calculations.**
   Use the **midpoint formula.**



Parallelogram? _____ Justification _____

Review:
Complete each statement about parallelogram *DEFG*. Justify your answer.



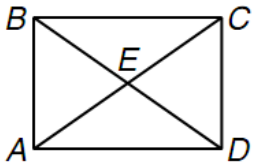
Statement	Justification
1. $\overline{DE}$ ∥ _____	1. _____
2. $\overline{FE} \cong$ _____	2. _____
3. $\overline{FH} \cong$ _____	3. _____
4. $\angle EFG \cong$ _____	4. _____
5. $\angle DEF$ is supplementary to _____ and _____	5. _____

Geometry A **Name** _____
6.3 Properties of Rectangles **Hour** _____ **Date** _____

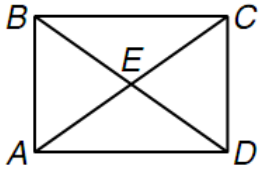
Assignment

***ABCD* is a rectangle.**

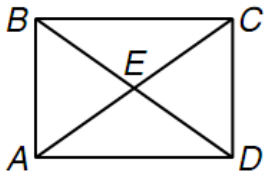
1. If $AC = 2x + 13$ and $DB = 4x - 1$, find x. **Show your calculations.**



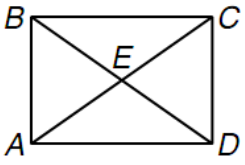
2. If $AC = x + 3$ and $DB = 3x - 19$, find AC. **Show your calculations.**



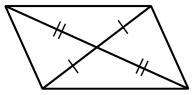
3. If $m\angle DAC = 2x + 4$ and $m\angle BAC = 3x + 1$, find x. **Show your calculations.**



4. If $m\angle BDC = 7x + 1$ and $m\angle ADB = 9x - 7$, find $m\angle CBD$. **Show your calculations.**



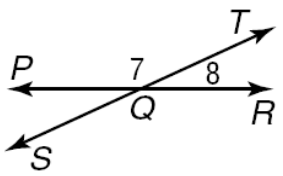
5. Is there enough information to state that the figure below is a parallelogram? _____



Justification _____

6. R is between J and K. Find n if $JR = 2n - 12$, $RK = 3n + 10$, and $JK = 33$ cm.

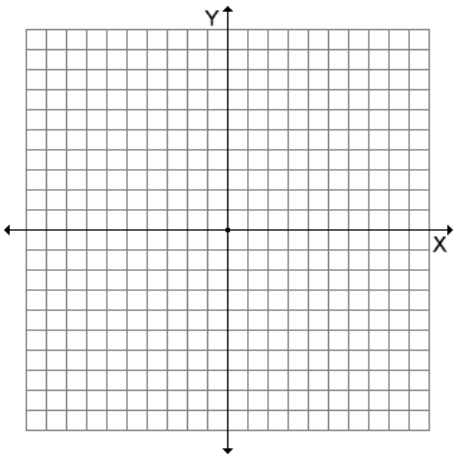
7. If $m\angle 7 = 5x - 5$ and $m\angle 8 = 4x + 14$, find the value of x.



Geometry A **Name** _____
6.4 Proving a Quadrilateral is a Rectangle **Hour** _____ **Date** _____

Assignment

1. Determine whether $W(-4, 5)$, $X(6, 0)$, $Y(3, -6)$, and $Z(-7, -1)$ are vertices of a rectangle. **Show all work.** (Hint: use the midpoint formula and distance formula).



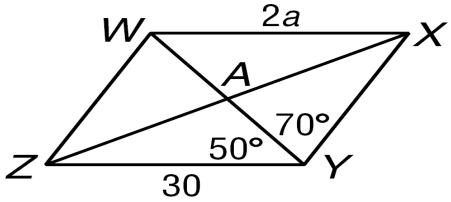
$WXYZ$ is / is not a rectangle.

Justification: _____.

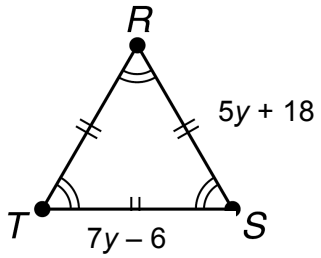
2. $WXYZ$ is a parallelogram. Find each indicated value.

$a =$ _____ $m\angle YWX =$ _____

$m\angle YWZ =$ _____ $m\angle XYZ =$ _____



3. Find the perimeter of ΔRST.



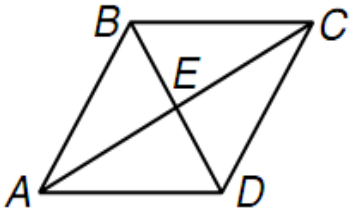
4. **Given:** $\angle A$ and $\angle B$ are vertical angles.
Conjecture: $\angle A \cong \angle B$
Which of the following would be a counterexample to the conjecture?

A. $m\angle A = 45$ and $m\angle B = 45$
B. $m\angle A = 100$ and $m\angle B = 80$
C. $m\angle A = 90$ and $m\angle B = 90$
D. None of the above, because the conjecture is true.

Geometry B **Name** _____
6.5 Properties of Rhombi and Squares **Assignment** **Hour** _____ **Date** _____

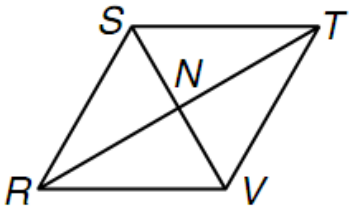
In rhombus *ABCD*, *BE* = 18, and *AE* = 24.

1. *AB* = _____
2. *BC* = _____
3. *AD* = _____
4. *DE* = _____
5. *CE* = _____
6. *AC* = _____
7. *DB* = _____
8. $m\angle AED$ = _____



In rhombus *STVR*, $m\angle STN = 25^{o}$.

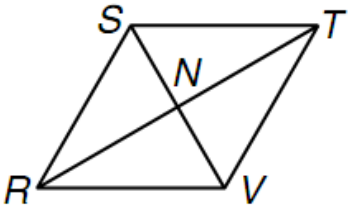
9. $m\angle VTN$ = _____
10. $m\angle TVS$ = _____
11. $m\angle RVS$ = _____
12. $m\angle SRT$ = _____
13. $m\angle VRT$ = _____
14. $m\angle RST$ = _____
15. $m\angle STV$ = _____
16. $m\angle RNV$ = _____



In rhombus *RSTV*, *RS* = 5*y* + 2, *ST* = 3*y* + 6, *NV* = 6, and $m\angle NTV = 30^{o}$.

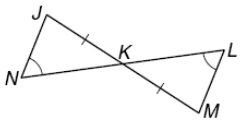
17. Find the value of *y*. **Show all calculations.**

18. Find *TV*. **Show all calculations.**

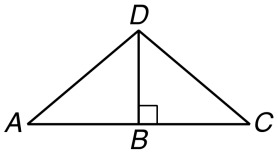


Identify the triangle congruence postulate that could be used to prove that each pair of triangles are congruent based on the given information. If it is not possible to prove that the triangles are congruent, choose "not possible."

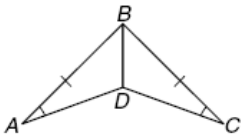
19.



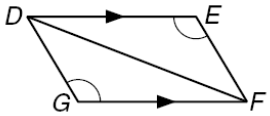
20.



21.



22.

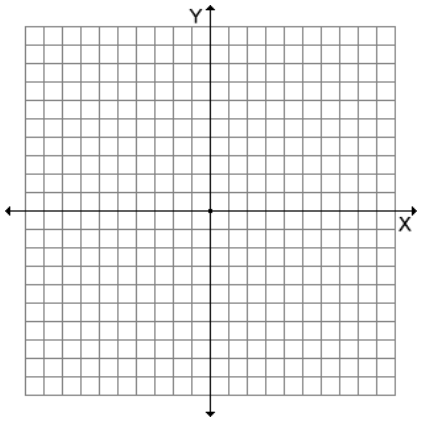


Geometry A **Name** _____
6.6 Proving that a Quadrilateral is a Rhombus or a Square **Hour** _____ **Date** _____

Assignment

Given each set of vertices, determine whether *QRST* is a parallelogram, rhombus, rectangle, or square. List all that apply. Justify your reasoning. Show all calculations.

1. $Q(-4, 5)$, $R(4, 1)$, $S(1, -5)$, $T(-7, -1)$



QRST is a (circle all that apply)

Parallelogram *Rectangle* *Rhombus* *Square*

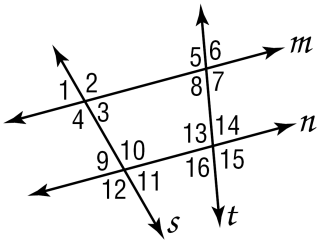
2. Which one of the following pairs of slopes are slopes corresponding to parallel lines?

A. $\frac{5}{3}$ and $\frac{6}{10}$ **B.** $\frac{5}{3}$ and $\frac{20}{12}$ **C.** $-\frac{10}{6}$ and $\frac{5}{3}$ **D.** $\frac{5}{3}$ and $-\frac{9}{15}$

3. Which one of the following pairs of slopes are slopes corresponding to perpendicular lines?

A. $\frac{5}{3}$ and $\frac{6}{10}$ **B.** $\frac{5}{3}$ and $\frac{20}{12}$ **C.** $-\frac{10}{6}$ and $\frac{5}{3}$ **D.** $\frac{5}{3}$ and $-\frac{9}{15}$

4. Which angle pair are $\angle 11$ and $\angle 16$ in the figure at the right?



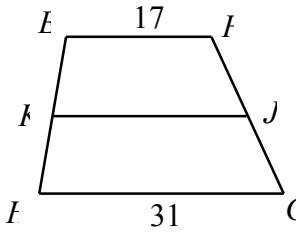
A. Vertical Angles (VA)
B. Corresponding Angles (CA)
C. Alternate Interior Angles (AIA)
D. Alternate Exterior Angles (AEA)
E. Consecutive Interior Angles (CIA)

Geometry A
6.7 Trapezoids

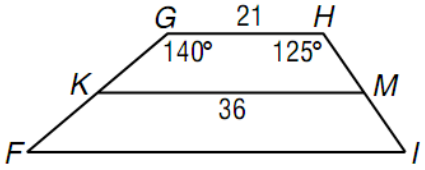
Name _____
Hour _____ **Date** _____

Assignment

1. For trapezoid *EFGH*, *J* and *K* are the midpoints of the legs. Find *JK*. **Show all calculations.**



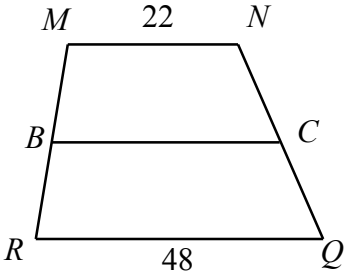
2. For trapezoid *FGHI*, *K* and *M* are the midpoints of the legs. Find *FI*, $\angle F$ and $\angle I$. **Show all calculations.**



3. In trapezoid *MNQR*, *B* and *C* are midpoints of the legs. Let $\overline{AD}$ be the median of *MNCB*.

a. Draw and label $\overline{AD}$ on the figure.

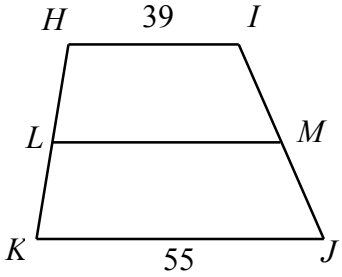
b. Find *AD*.
Show all calculations.



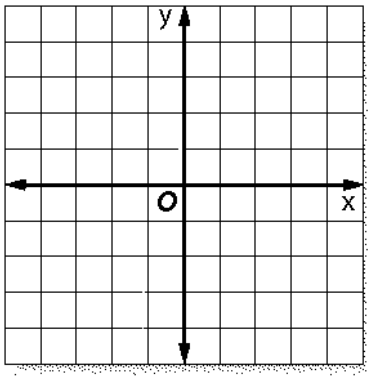
4. In trapezoid *HIJK*, *L* and *M* are midpoints of the legs. Let $\overline{NP}$ be the median of *LMJK*.

a. Draw and label $\overline{NP}$ on the figure.

b. Find *NP*.
Show all calculations.



5. Verify that *A*(-3, -2), *B*(4, -2), *C*(-1, 5), and *D*(2, 5), are vertices of a trapezoid. Justify your answer.



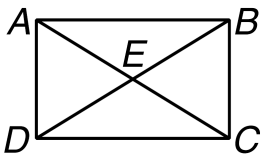
ABCD is a trapezoid.

Justification: _____

6. *CDEF* is a parallelogram. $m\angle D = 47^o$. Find the indicated values.

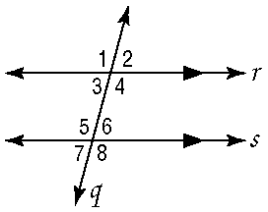
$m\angle C =$ _____ $m\angle E =$ _____ $m\angle F =$ _____

7. *ABCD* is a rectangle. If $m\angle DAC = 7x + 1$ and $m\angle BAC = 9x - 7$, find $m\angle DCA$. **Show all calculations.**



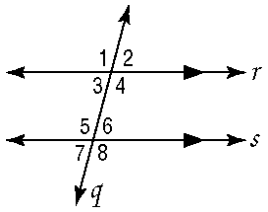
In problems #8 and 9, *r* || *s*. Solve for *x*, then find the measures of the indicated angles.

8. $m\angle 4 = x + 35, \quad m\angle 6 = 4x + 10$



$x =$ _____, $m\angle 4 =$ _____, $m\angle 2 =$ _____

9. $m\angle 5 = 6x + 12, \quad m\angle 4 = 7x - 9$



$x =$ _____, $m\angle 4 =$ _____, $m\angle 6 =$ _____

State the property, definition, theorem, or postulate that justifies each statement.

10. $CD = CD$. _____

11. If $\overline{AB} \cong \overline{BC}$ and $\overline{BC} \cong \overline{CE}$, then $\overline{AB} \cong \overline{CE}$. _____

12. If *N* is between *M* and *P*, then $MN + NP = MP$. _____

13. If $\overline{MN} \cong \overline{PQ}$, then $\overline{PQ} \cong \overline{MN}$. _____

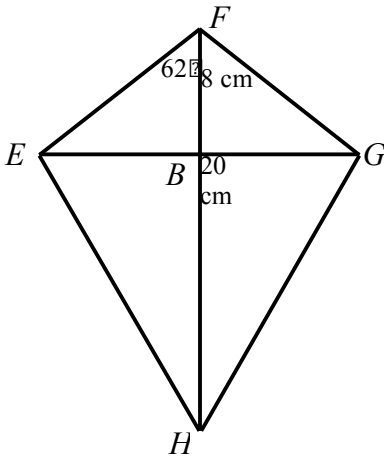
14. If $m\angle 7 + m\angle 8 = 85^o$ and $m\angle 8 = 41^o$, then $m\angle 7 + 41^o = 85^o$. _____

15. If *R* is the midpoint of $\overline{QT}$, then $\overline{QR} \cong \overline{RT}$. _____

Geometry A **Name** _____
6.8 Kites & Quadrilaterals **Hour** _____ **Date** _____

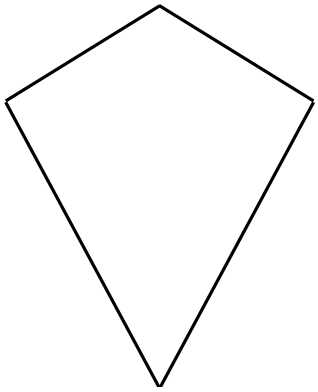
Assignment

1. *EFGH* is a kite with ends *F* and *H*. If *EG* = 30 cm, find the indicated lengths and angle measures.

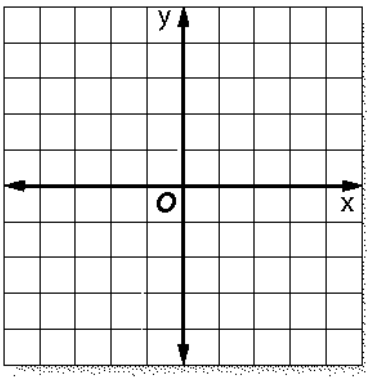


$m\angle GBH$ $m\angle BEF =$ _____

2. Given ABCD is a kite with ends *A* and *C*, solve for *x* and find all missing side lengths.



3. Verify that *A*(1, -3), *B*(4, -2), *C*(3, 1), and *D*(-2, 1), are vertices of a kite. Justify your answer.



ABCD is a kite.

Justification: _____

For # 4-11, fill in the blanks.

4. The diagonals of a parallelogram _____ one another.

5. Opposite angles of a parallelogram are _____.

6. Opposite sides of parallelograms are _____ and _____.

7. Consecutive angles of parallelograms are _____.

8. The diagonals of a rectangle are _____.

9. All angles of a rectangle are _____.

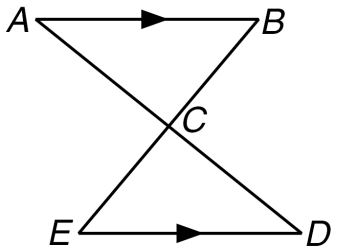
10. The diagonals of a rhombus are _____ and _____.

11. All sides of a rhombus are _____.

12. Complete the following proof:

Given: C is the midpoint of $\overline{AD}$
C is the midpoint of $\overline{BE}$

Prove: $\Delta ABC \cong \Delta DEC$



Statements	Reasons
1. C is the midpoint of $\overline{AD}$	1.
2.	2. Midpoint Theorem
3. C is the midpoint of $\overline{BE}$	3.
4.	4. Midpoint Theorem
5.	5. Vertical Angles Theorem
6. $\Delta ABC \cong \Delta DEC$	6.

Geometry A **Name** _____
6.9 Constructions of Quadrilaterals **Hour** _____ **Date** _____

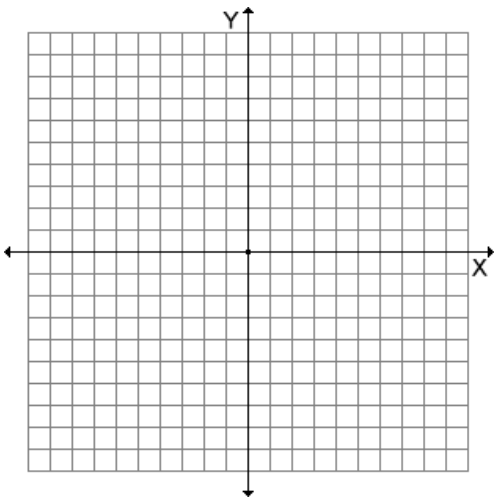
Assignment

1. Construct a parallelogram**.**

2. Construct a square**.**

3. Determine whether the quadrilateral with the given vertices is a parallelogram, rectangle, rhombus, or square. Circle all that apply. Show all calculations.

   B(0, 3), *E*(6, -2), *F*(1, -8), *G*(-5, -3)



   BEFG is a (circle all that apply)

   Parallelogram Rectangle Rhombus Square