



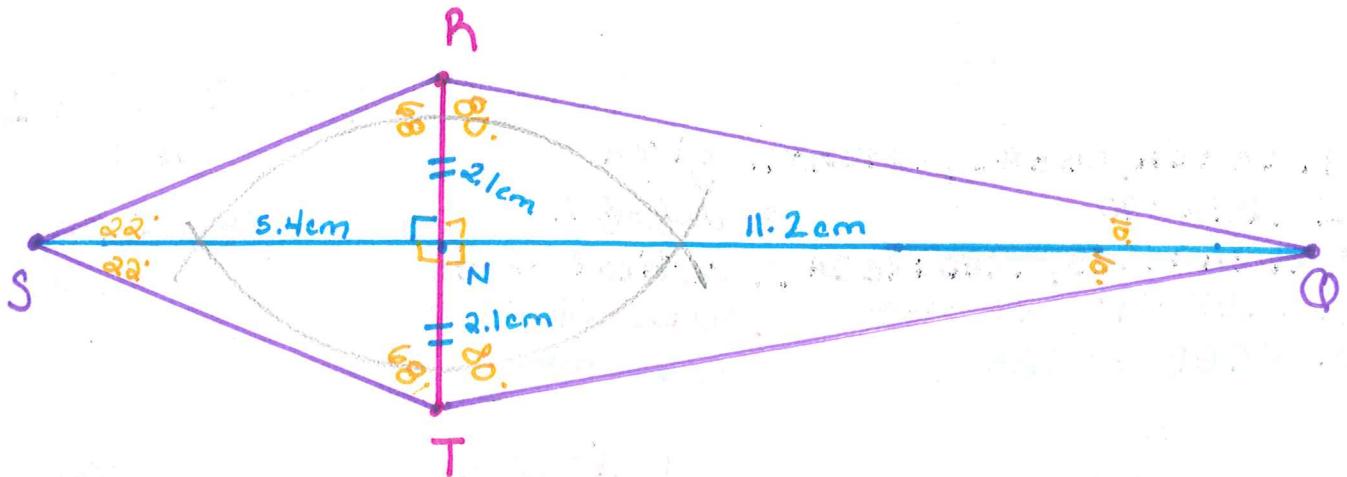
Acc Geometry- "Wrapping Up" Quadrilaterals

Key



Construct a Kite.

1. Draw a line segment RT and construct a line which is a perpendicular bisector to segment RT.
2. Pick two different points on your perpendicular line and call them S and Q.
3. Then discuss how this can create a kite.



- 1.) Use a protractor to measure the angles formed by the intersection of QS and RT and measure all of the sides of your kite.
- 2.) Measure the interior angles of kite QRST. Are they congruent? If so, what ones?
 $\angle RSQ \cong \angle TSQ$, $\angle SRT \cong \angle STR$, $\angle QRT \cong \angle QTR$
 and $\angle RQS \cong \angle TQS$.
- 3.) Label the intersection of QS and RT as point N. Find the lengths of QN, NS, TN, and NR. How are they related?

$$\text{ONLY } RN \cong NT$$

- 4.) How many pairs of congruent triangles can be found in kite QRST?

3 pairs, $\triangle SNR \cong \triangle SNT$ and $\triangle QRN \cong \triangle QTN$
 AND $\triangle SRQ \cong \triangle STQ$

- 5.) Determine whether the lines of the equations $y=4x-3$, $y=7x-60$, $x-4y=-3$, and $x-7y=-60$ determine the side of your kite, justify your reasoning.

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fig:

yes, diags are L
 and the diagonal that is
 longer bisects the shorter
 diagonal.

$$1) y = -x - 3 \quad -7y = -x - 60 \\ y = \frac{1}{7}x + \frac{3}{7} \quad y = \frac{1}{7}x + \frac{60}{7}$$

Proving Kite and Trapezoid Properties

Directions: Use Kite ABCD to prove #1-2.

- 1.) Write a proof by contradiction.

Given: $DC=DA$, $CB=AB$, $\angle DEC=90^\circ$

Prove: $DE \neq EB$

1. Assume $DE = EB$

2. If $DE = EB$, $CE = CE$ bc it is reflexive.

$\angle CEB = 90^\circ$ by def of \perp , and $\angle CED \cong \angle CEB$
 $\triangle DCE \cong \triangle BCE$ by SAS. And thus by CPCTC
 $CD \cong CB$.

3. $CD \cong CB$ contradicts the given. $\therefore DE \neq EB$.

Prove: $m\angle CBD = m\angle ABD$

1. $DC = DA$, $CB = AB$, $\angle DEC = 90^\circ$ 1. given

2. $\angle DEA = 90^\circ$

2. def of \perp

3. $\angle DEA = \angle CEB$, $\angle CED = \angle BEA$ 3. vertical $\angle \cong$

4. $\angle CEB = 90^\circ$, $\angle BEA = 90^\circ$ 4. substitution

5. $\angle CEB = \angle BEA$

5. substitution

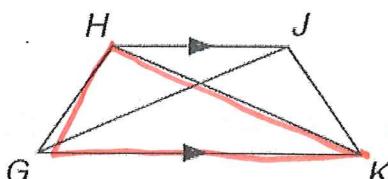
6. $\triangle CEB \cong \triangle AEB$
HL

7. $\angle CBD \cong \angle ABD$
CPCTC

3.) Given: $\overline{HJ} \parallel \overline{GK}$,

$\triangle HGK \cong \triangle JKG$, $\overline{HG} \not\parallel \overline{JK}$

Prove: GHJK is an isosceles trapezoid.



1. $HJ \parallel GK$.

$\triangle HGK \cong \triangle JKG$
 $HG \not\cong JK$

1. given

2. $HG \cong JK$

2. CPCTC

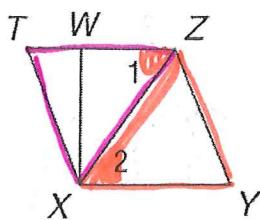
3. GHJK is an isosceles trapezoid

3. def of isosceles trapezoid

4.) Given: $\triangle TZX \cong \triangle YXZ$,

$\overline{WX} \not\parallel \overline{ZY}$

Prove: XYZW is a trapezoid.



1. $\triangle TZX \cong \triangle YXZ$ 1. given
 $WX \not\parallel ZY$

2. $\angle 1 \cong \angle 2$

2. CPCTC

3. $WZ \parallel XY$

3. \cong alt int \angle form \parallel lines

4. XYZW is a trapezoid

4. def of trapezoid