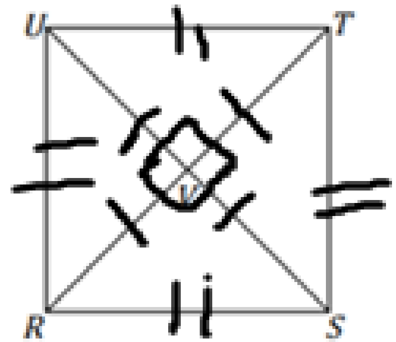
3. Complete the following proof.

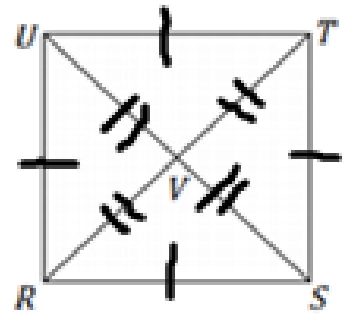
Given: $\overline{RT} \cong \overline{SU}$
$\overline{US}$ is the perpendicular bisector of $\overline{RT}$.
$\overline{RT}$ is the perpendicular bisector of $\overline{US}$.



Prove: *RSTU* is a square.

Statements	Reasons
1. $\overline{RT} \cong \overline{SU}$ $\overline{US}$ is the perpendicular bisector of $\overline{RT}$. $\overline{RT}$ is the perpendicular bisector of $\overline{US}$.	1. Given
$\overline{UV} \cong \overline{TV} \cong \overline{SV} \cong \overline{RV}$ 2. ∠UVR, ∠RVS, ∠SVT, ∠TUV are Rt ∠'s	2. Definition of perpendicular bisector
3. $m\angle UVR = m\angle RVS = m\angle SVT = m\angle TVU = 90°$	3. Def of Right ∠
4. $\angle UVR \cong \angle RVS \cong \angle SVT \cong \angle TVU$	4. All Rt ∠'s are ≅
5. $\triangle UVR \cong \triangle RVS \cong \triangle SVT \cong \triangle TVU$	5. SAS
6. $\overline{UT} \cong \overline{TS} \cong \overline{RS} \cong \overline{RU}$	6. CPCTC
7. *RSTU* is a square.	7. Def of a Square

2. Consider the two-column proof below. Put the statements and reasons in the correct order by writing the correct number in the left column.



Given: $RSTU$ is a square.

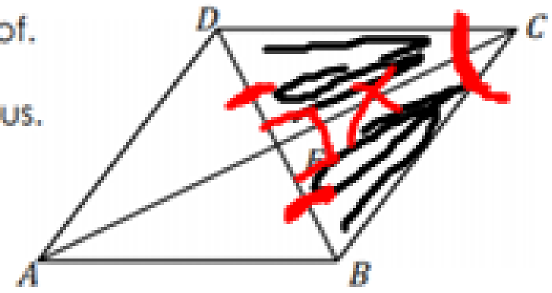
Prove: $\overline{RT} \perp \overline{SU}$

	Statements	Reasons
3	$\overline{UV} \cong \overline{SV} \cong \overline{RV} \cong \overline{TV}$	In a square, diagonals are congruent and bisect each other.
8	$\overline{RT} \perp \overline{SU}$	Definition of bisector
6	$m\angle UVR + m\angle TVU = 180°$ $m\angle RVS + m\angle TVS = 180°$	Linear Pairs
2	$\overline{UT} \cong \overline{TS} \cong \overline{RS} \cong \overline{UR}$	Definition of a square
7	$m\angle UVR = m\angle TVU = m\angle RVS = m\angle TVS = 90°$	Substitution
4	$\Delta UVR \cong \Delta RVS \cong \Delta SVT \cong \Delta TVU$	SSS
1	$RSTU$ is a square.	Given
5	$\angle UVR \cong \angle TVU \cong \angle RVS \cong \angle TVS$	CPCTC

5. Complete following proof.

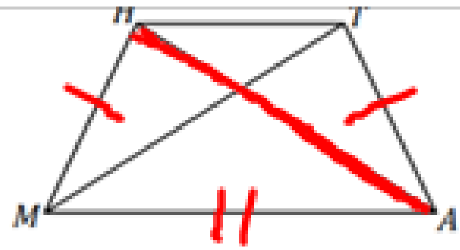
Given: $ABCD$ is a rhombus.

Prove: $\overline{AC}$ bisects $\angle DCB$ of the rhombus.



Statements	Reasons
1. $ABCD$ is a rhombus.	1. Given
2. $\overline{DB} \perp \overline{AC}$	2. Diagonals of a rhombus are perpendicular
3. $\angle DEC$ & $\angle BEC$ are Rt $\angle$s	3. Definition of perpendicular lines
4. $\angle DEC \cong \angle BEC$	4. All Rt $\angle$'s are $\cong$
5. $\overline{DE} \cong \overline{BE}$	5. In a //gram diag. bisect ea. other
6. $\overline{CE} \cong \overline{CE}$	6. Reflexive Property
7. $\Delta DEC \cong \Delta BEC$	7. SAS
8. $\angle DCE \cong \angle BCE$	8. CPCTC
9. $\overline{AC}$ bisects $\angle DCB$ of the rhombus.	9. Definition of an angle bisector

1. Complete the following proof.



Given: $MATH$ is an isosceles trapezoid.

Prove: $\angle MHA \cong \angle ATM$

Complete the paragraph proof using the bank of terms below.

It is given that $MATH$ is an isosceles trapezoid. We can prove that $\overline{MH} \cong \overline{AT}$ Def of Is. Trap. Then, $\overline{MA} \cong \overline{MA}$ by the Reflexive. We can state that $\overline{AH} \cong \overline{MT}$ by using the Trap diag Theorem. Now, we have triangles $\Delta HMA \cong \Delta TAM$ by SSS. Finally, by using CPCTC, we can prove that $\angle MHA \cong \angle ATM$.

~~Reflexive Property~~	Midsegment Theorem for Trapezoids
Trapezoid Base Angles Theorem	~~Definition of Isosceles Trapezoid~~
ASA	~~SSS~~
~~Trapezoid Diagonals Theorem~~	Transitive Property
Alternate Interior Angles	~~CPCTC~~

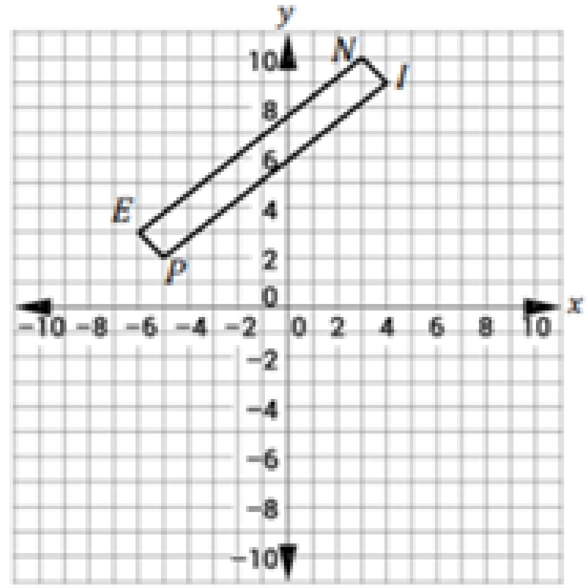
Let's discuss writing proofs using Coordinate Geometry.

- Coordinate geometry involves placing geometric figures in a Coordinate plane.
- Coordinate geometry proofs use several kinds of formulas.

Distance Formula	Slope Formula	Midpoint Formula
$d=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$	$m=\frac{y_2-y_1}{x_2-x_1}$	$M=\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

Consider the information and figure below.

Given:
$PINE$ is a quadrilateral with vertices at $P(-5,2), I(4,9)$, $N(3,10)$, and $E(-6,3)$.



Prove:
$PINE$ is a parallelogram.

Write a paragraph proof based on the above information and diagram.

Since PE slope is −1 & NI slope