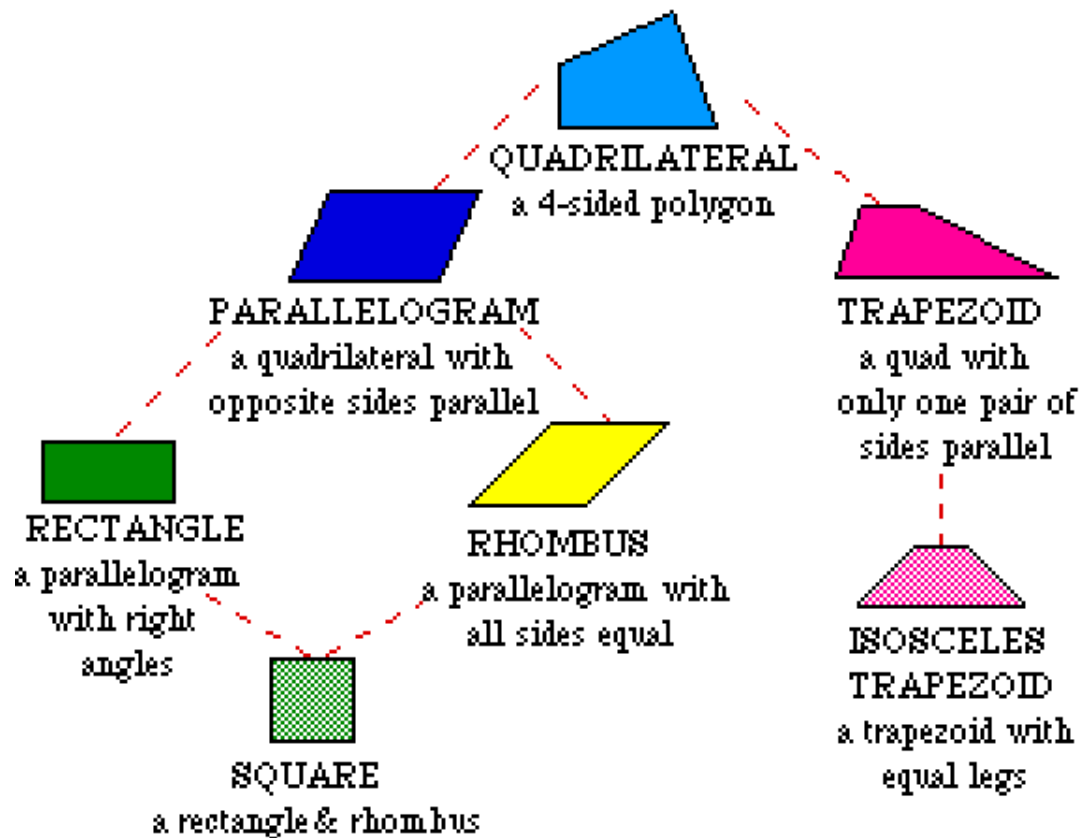


Quadrilateral Proofs – Packet #2



Name _____ Period ____

Teacher _____

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Day 5: Review

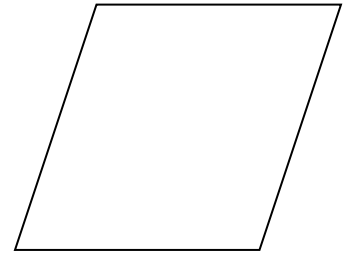
Day 6: Test

Day 1 – Parallelograms

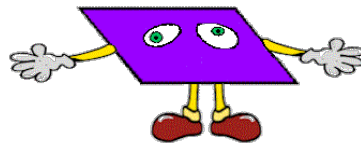
Warm – Up

Two consecutive angles of a parallelogram measure $3x + 42$ and $9x - 18$. What are the measures of the angles?

- A 13, 167
- B 58.5, 31.5
- C 39, 141
- D 81, 99

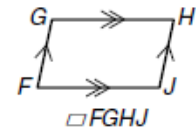


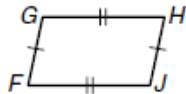
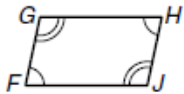
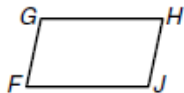
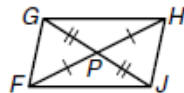
Properties of the Parallelogram



Parallelogram

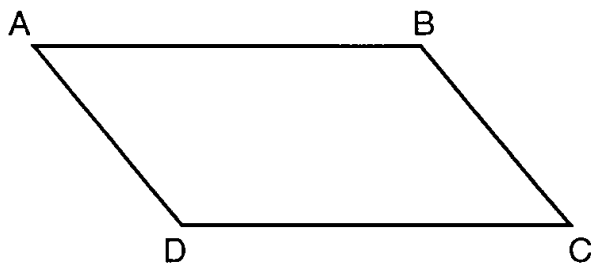
A parallelogram is a quadrilateral with two pairs of parallel sides. All parallelograms, such as $\square FGHJ$, have the following properties.



Properties of Parallelograms			
	$\overline{FG} \cong \overline{HJ}$ $\overline{GH} \cong \overline{FJ}$		$\angle F \cong \angle H$ $\angle G \cong \angle J$
Opposite sides are congruent.		Opposite angles are congruent.	
	$m\angle F + m\angle G = 180^\circ$ $m\angle G + m\angle H = 180^\circ$ $m\angle H + m\angle J = 180^\circ$ $m\angle J + m\angle F = 180^\circ$		$\overline{FP} \cong \overline{HP}$ $\overline{GP} \cong \overline{JP}$
Consecutive angles are supplementary.		The diagonals bisect each other.	

Complete the statement and give the reason that justifies the statement.

Given: ABCD is a parallelogram

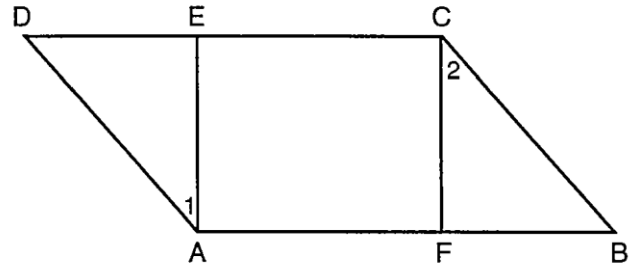


Statements	Reasons
a. $\overline{AB} \cong \underline{\hspace{1cm}}$ and $\overline{AD} \cong \underline{\hspace{1cm}}$	a.
b. $\angle A \cong \underline{\hspace{1cm}}$ and $\angle D \cong \underline{\hspace{1cm}}$	b.
c. $\overline{AB} \parallel \underline{\hspace{1cm}}$ and $\overline{AD} \parallel \underline{\hspace{1cm}}$	c.
d. $\angle A$ <i>suppl.</i> $\underline{\hspace{1cm}}$ and $\underline{\hspace{1cm}}$ $\angle C$ <i>suppl.</i> $\underline{\hspace{1cm}}$ and $\underline{\hspace{1cm}}$	d.
e. Draw \overline{AC} and \overline{BD} . (The lines intersect at E.)	e. Two Points Make a Line.
f. $\angle BAC \cong \underline{\hspace{1cm}}$ and $\angle DAC \cong \underline{\hspace{1cm}}$	f.
g. $\overline{AE} \cong \underline{\hspace{1cm}}$ and $\overline{DE} \cong \underline{\hspace{1cm}}$	g.

Proofs

Given: $\square ABCD$
 $\overline{DE} \cong \overline{FB}$

Prove: a) $\triangle DEA \cong \triangle BFC$
 b) $\angle 1 \cong \angle 2$



STATEMENT

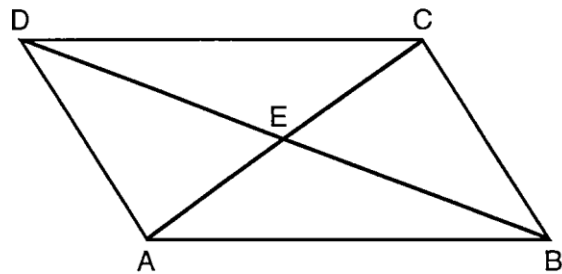
REASONS

1. Parallelogram ABCD
2. $\overline{AD} \cong$ _____
3. $\angle D \cong$ _____
4. $\overline{DE} \cong \overline{FB}$
- 5.
- 6.

1. Given
- 2.
- 3.
4. Given
- 5.
- 6.

Given: $\square ABCD$

Prove: $\triangle AEB \cong \triangle CED$



STATEMENT

REASONS

1. Parallelogram ABCD
2. $\overline{AB} \cong$ _____
3. $\overline{AB} \parallel$ _____
4. $\angle CAB \cong$ _____
5. $\angle AEB \cong$ _____
- 6.

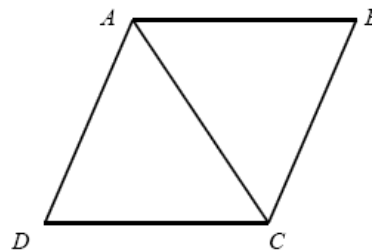
1. Given
- 2.
- 3.
- 4.
- 5.
- 6.

You Try It!

Given: $\square ABCD$

Prove: $\triangle DAC \cong \triangle BCA$

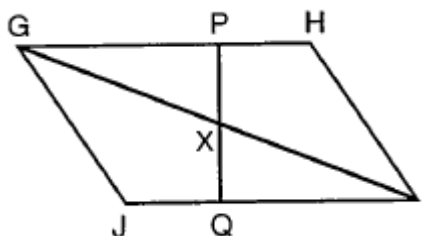
(At most 6 steps! You may not need all 6!!!)



Statements	Reasons
1	1
2	2
3	3
4	4
5	5
6	6

Given: $\square GHIJ$
 $\overline{HP} \cong \overline{JQ}$

Prove: $\overline{PX} \cong \overline{QX}$



Statements	Reasons
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8

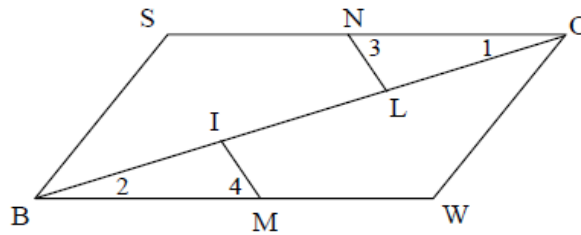
You Try It!

Given: $WOSB$ is a parallelogram

$$\angle 3 \cong \angle 4$$

$$\overline{MW} \cong \overline{SN}$$

Prove: $\overline{IM} \cong \overline{LN}$



Statements

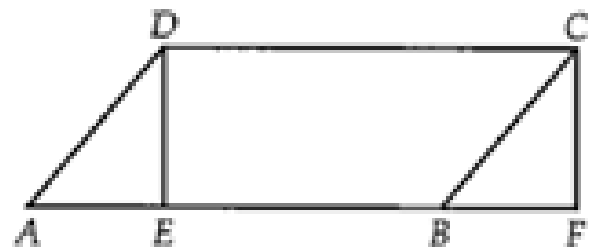
Reasons

Challenge

Given: $ABCD$ is a parallelogram.

$$\overline{DE} \perp \overline{AF}, \overline{CF} \perp \overline{AF}$$

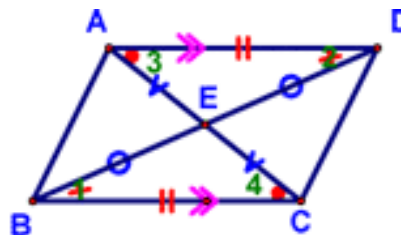
Prove: $\overline{DE} \cong \overline{CF}$



SUMMARY

Given: Parallelogram ABCD

Prove: \overline{AC} and \overline{DB} bisect each other

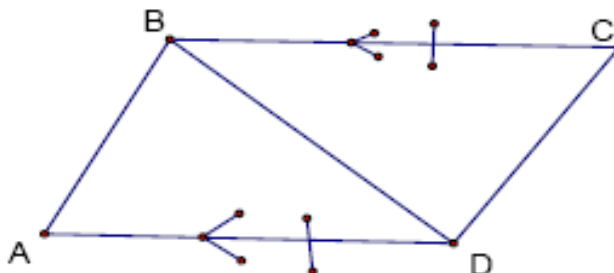


Statements	Reasons
1. Parallelogram ABCD	1. Given
2. $\overline{AD} \parallel \overline{BC}$	2. Opposite sides of a parallelogram are \parallel
A 3. $\angle 1 \cong \angle 2$	3. $\parallel \rightarrow \text{Alt Angles} \cong$
A 4. $\angle 3 \cong \angle 4$	4. $\parallel \rightarrow \text{Alt Angles} \cong$
S 5. $\overline{AD} \cong \overline{BC}$	5. Opposite sides of a parallelogram are \cong
6. $\triangle BEC \cong \triangle DEA$	6. ASA (3, 5, 4)
7. $\overline{DE} \cong \overline{BE}$	7. CPCTC
8. $\overline{AE} \cong \overline{CE}$	8. CPCTC
9. \overline{AC} and \overline{DB} bisect each other	9. $2 \cong \text{ segs} \rightarrow \text{segment bisector}$

Exit Ticket

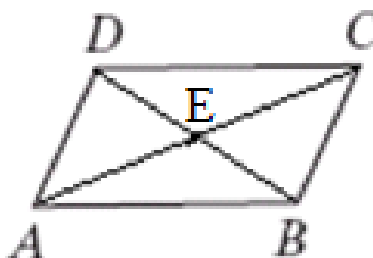
Identify the reason that proves $\triangle ABD \cong \triangle CDB$.

- A) SSS
- B) SAS
- C) ASA
- D) AAS



HW - Day 1

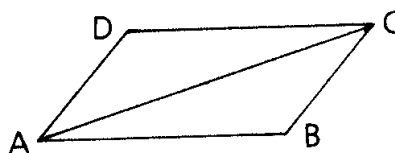
- 1) **Given:** ABCD is a parallelogram.
Prove: $\triangle AEB \cong \triangle CED$



Statements

Reasons

- 2) **Given:** \square ABCD (ABCD is a \square .)
Conclusion: $\triangle ABC \cong \triangle CDA$



Statements

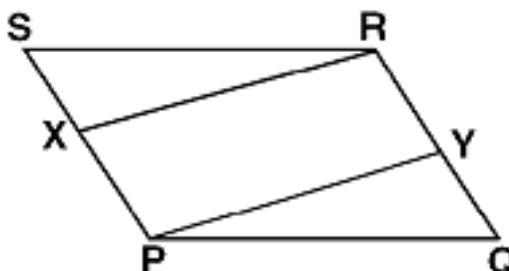
Reasons

Day 2 - Ways to prove a quadrilateral is a parallelogram

Warm – Up

Given: $\square PQRS$
 $\overline{XP} \cong \overline{RY}$

Prove: $\overline{XR} \cong \overline{YP}$

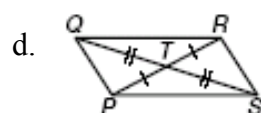
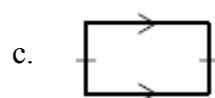
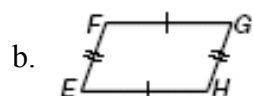
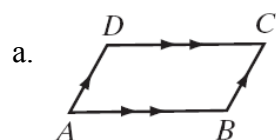


<u>Statements</u>	<u>Reasons</u>
1.	1. Given
2. $\overline{SP} \cong \overline{QR}$ $\overline{\hspace{1cm}} \cong \overline{\hspace{1cm}} \quad (\text{S})$	2.
3. $\angle S \cong \angle Q \quad (\text{S})$	3.
4. $\angle S \cong \angle Q \quad (\text{A})$	4.
5.	5.
6. $\overline{XR} \cong \overline{YP}$	6.

You can show that a quadrilateral is a parallelogram by using any of the conditions listed below.

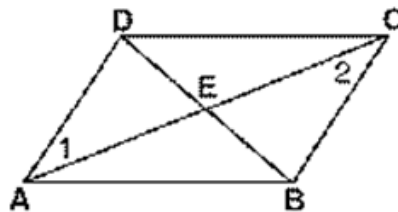
Conditions for Parallelograms
<ul style="list-style-type: none"> • Both pairs of opposite sides are parallel (definition). • One pair of opposite sides is parallel and congruent. • Both pairs of opposite sides are congruent. • Both pairs of opposite angles are congruent. • The diagonals bisect each other. • One angle is supplementary to both its consecutive angles.

Determine whether each quadrilateral must be a parallelogram. Justify your answer.



1. Given: \overline{DB} bisects \overline{AC}
 $\angle 1 \cong \angle 2$

Prove: $ABCD$ is a parallelogram



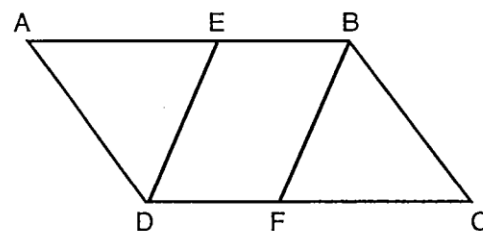
Statements

Reasons

2.

Given: $\square ABCD$
 $\overline{AE} \cong \overline{CF}$

Prove: $\square EBFD$



STATEMENT

REASONS

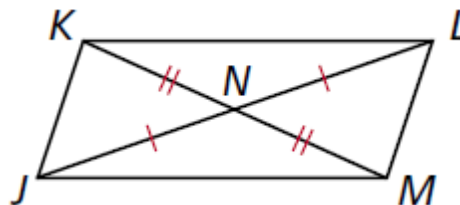
1. $\overline{AE} \cong \overline{CF}$, $\square ABCD$
2. $\angle A \cong$ _____
3. $\overline{AD} \cong$ _____
4. \triangle _____ $\cong \triangle$ _____
5. $\overline{ED} \cong$ _____
6. $\overline{EB} \cong$ _____
7. $EBFD$ is a _____

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

You Try It!

Given: \overline{JL} and \overline{KM} bisect each other.

Prove: $JKLM$ is a parallelogram.

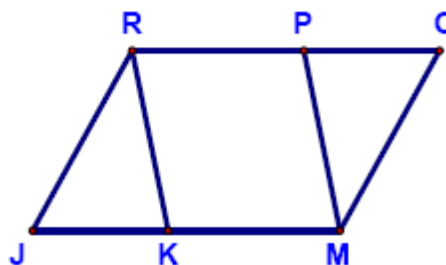


Statements	Reasons

Challenge

Given: $RKMP$ is a \square
 $\angle JRK \cong \angle PMO$

Prove: $RJMO$ is a \square

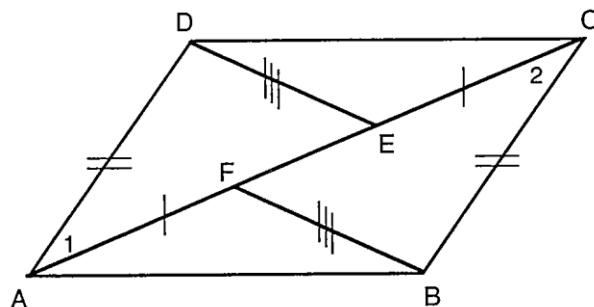


Statements	Reasons

SUMMARY

GIVEN: $\overline{AD} \cong \overline{BC}$
 $\overline{AF} \cong \overline{EC}$
 $\overline{DE} \cong \overline{FB}$

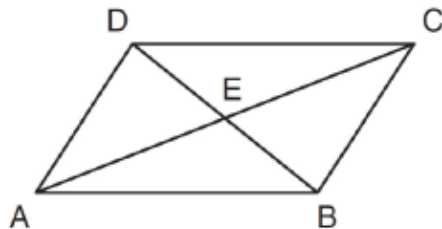
PROVE: $ABCD$ is a \square



STATEMENTS	REASONS
1. $\overline{AD} \cong \overline{BC}$ $\overline{DE} \cong \overline{FB}$	1. Given (s \cong s) (s \cong s)
2. $\overline{AF} \cong \overline{EC}$	2. Given
3. $\overline{AE} \cong \overline{CF}$ $(\overline{AF} + \overline{FE} = \overline{CE} + \overline{FE})$	3. Addition Postulate (s \cong s)
4. $\triangle ADE \cong \triangle CBF$	4. s.s.s. \cong s.s.s.
5. $\angle 1 \cong \angle 2$	5. Corresponding parts of congruent triangles are congruent.
6. $\overline{AD} \parallel \overline{BC}$	6. If two lines are cut by a transversal and a pair of alternate interior angles are congruent, then the lines are parallel.
7. $ABCD$ is a \square	7. A quadrilateral is a parallelogram if a pair of sides are both congruent and parallel. [Steps 1 and 6]

Exit Ticket

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



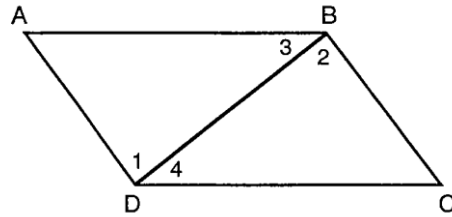
Which expression is *not* always true?

- 1) $\angle DAE \cong \angle BCE$
- 2) $\angle DEC \cong \angle BEA$
- 3) $\overline{AC} \cong \overline{DB}$
- 4) $\overline{DE} \cong \overline{EB}$

Day 2 – HW

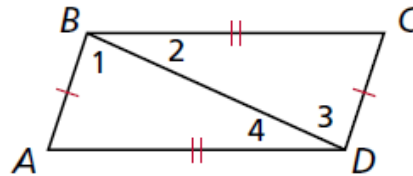
1. Given: $\angle 1 \cong \angle 2$
 $\angle 3 \cong \angle 4$

Prove: $\square ABCD$



STATEMENT	REASONS
1. $\angle 1 \cong \angle 2$	1.
2. $\overline{BC} \parallel \underline{\hspace{1cm}}$	2.
3. $\angle 3 \cong \angle 4$	3.
4. $\overline{AB} \parallel \underline{\hspace{1cm}}$	4.
5. ABCD is a $\underline{\hspace{1cm}}$	5.

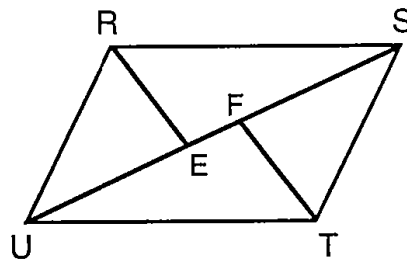
2. Given: $\overline{AB} \cong \overline{CD}$,
 $\overline{BC} \cong \overline{DA}$
 Prove: ABCD is a parallelogram.
 Proof:



Statements	Reasons
1. $\overline{AB} \cong \overline{CD}$, $\overline{BC} \cong \overline{DA}$	1. Given
2. $\overline{BD} \cong \overline{BD}$	2. a. $\underline{\hspace{1cm}}$?
3. $\triangle DAB \cong$ b. $\underline{\hspace{1cm}}$?	3. c. $\underline{\hspace{1cm}}$?
4. $\angle 1 \cong$ d. $\underline{\hspace{1cm}}$? , $\angle 4 \cong$ e. $\underline{\hspace{1cm}}$?	4. CPCTC
5. $\overline{AB} \parallel \overline{CD}$, $\overline{BC} \parallel \overline{DA}$	5. f. $\underline{\hspace{1cm}}$?
6. ABCD is a parallelogram.	6. g. $\underline{\hspace{1cm}}$?

3. Given: $\angle REU \cong \angle TFS$
 $\overline{UE} \cong \overline{SF}, \overline{RE} \cong \overline{FT}$

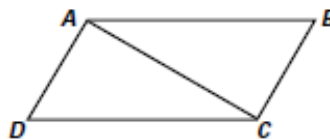
Prove: $\square RSTU$



Statements

Reasons

4. Given: Quadrilateral $ABCD$
 $\overline{AB} \cong \overline{CD}$
 $\overline{AB} \parallel \overline{CD}$
 Prove: $ABCD$ is a parallelogram



Statements

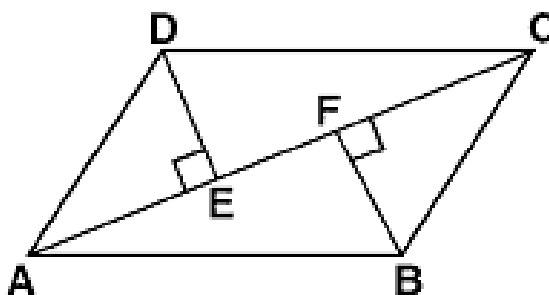
Reasons

Day 3 – Proofs with Special Parallelograms

Warm – Up

Given: $\overline{DE} \perp \overline{AC}$
 $\overline{BF} \perp \overline{AC}$
 $\overline{AE} \cong \overline{FC}$
 $\overline{DE} \cong \overline{FB}$

Prove: ABCD is a parallelogram



<u>Statements</u>	<u>Reasons</u>
1.	1. Given
2. \angle ___ and \angle ___ are right \angle s	2.
3. \angle ___ \cong \angle ___ (A)	3.
4. (S)	4. Given
5. (S)	5. Given
6. Δ \cong Δ	6. (__, __, __)
7.	7. CPCTC
8.	8. CPCTC
9. ABCD is a parallelogram	9.

Rectangles

Definition: A rectangle is a parallelogram with one right angle.



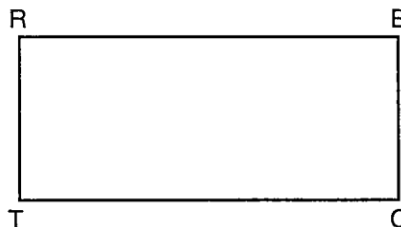
Theorems

Properties of Rectangles

THEOREM	HYPOTHESIS	CONCLUSION
6-4-1 If a quadrilateral is a rectangle, then it is a parallelogram. (rect. \rightarrow \square)		$ABCD$ is a parallelogram.
6-4-2 If a parallelogram is a rectangle, then its diagonals are congruent. (rect. \rightarrow diags. \cong)		$\overline{AC} \cong \overline{BD}$

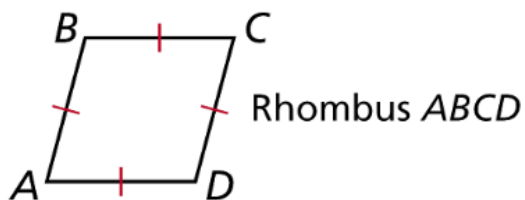
Complete the statement and give the reason that justifies the statement.

Given: Rectangle RECT



STATEMENT	REASONS
a. $\angle R$ is a _____ angle	a.
b. $\overline{RT} \cong$ _____ and $\overline{RE} \cong$ _____	b.
c. $\overline{RT} \parallel$ _____ and $\overline{RE} \parallel$ _____	c.
d. $\angle R \cong \angle E \cong \angle C \cong \angle T$	d.
e. Draw \overline{ET}	e. 2 points make a line
f. $\angle RET \cong$ _____	f.
g. Draw \overline{RC}	g. 2 points make a line
f. $\overline{ET} \cong$ _____	f.

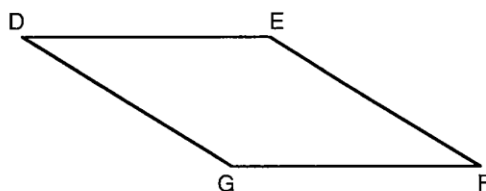
A **rhombus** is a quadrilateral with four congruent sides.



Theorems Properties of Rhombuses		
THEOREM	HYPOTHESIS	CONCLUSION
6-4-3 If a quadrilateral is a rhombus, then it is a parallelogram. (rhombus \rightarrow \square)		$ABCD$ is a parallelogram.
6-4-4 If a parallelogram is a rhombus, then its diagonals are perpendicular. (rhombus \rightarrow diags. \perp)		$\overline{AC} \perp \overline{BD}$
6-4-5 If a parallelogram is a rhombus, then each diagonal bisects a pair of opposite angles. (rhombus \rightarrow each diag. bisects opp. \angle s)		$\angle 1 \cong \angle 2$ $\angle 3 \cong \angle 4$ $\angle 5 \cong \angle 6$ $\angle 7 \cong \angle 8$

Complete the statement and give the reason that justifies the statement.

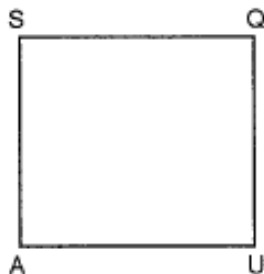
Given: Rhombus DEFG



STATEMENT	REASONS
a. $\overline{DE} \cong \overline{EF} \cong \overline{FG} \cong \overline{GD}$	a.
b. $\angle D \cong \angle F$, $\angle E \cong \angle G$	b.
c. Draw \overline{DF}	c. 2 points make a line
d. $\angle GDF \cong \angle EDF$	d.
e. $\angle EFD \cong \angle GFD$	e.
f. Draw \overline{EG} (to intersect \overline{DF} at X)	f. 2 points make a line
g. $\overline{DF} \perp$ _____	g.
h. $\overline{EX} \cong$ _____ and $\overline{DX} \cong$ _____	h.

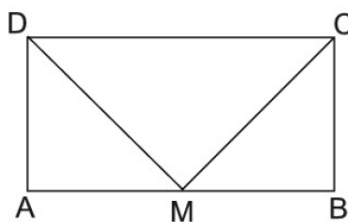
Square ABCD

Given: Square SQUA



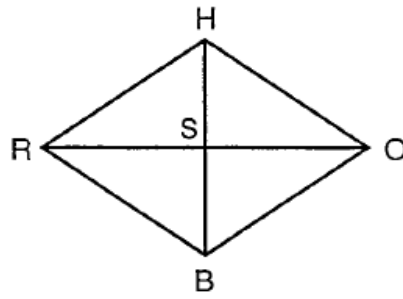
STATEMENT	REASONS
a. $\angle S$ is a _____ angle	a.
b. $\overline{SQ} \cong \overline{QU} \cong \overline{UA} \cong \overline{SA}$	b.
c. $\angle S \cong \angle Q \cong \angle U \cong \angle A$	c.
d. Draw \overline{SU} and \overline{QA}	d. 2 points make a line
e. $\overline{SU} \perp$ _____	e.
f. $\overline{SU} \cong$ _____	f.
g. $\angle ASU \cong \angle QSU$	g.
h. $\angle SUA \cong \angle QUS$	h.

Prove: $\overline{DM} \cong \overline{CM}$



Statements	Reasons

- 2) Given: Rhombus RHOB
- Prove: $\angle HSR \cong \angle HSO$



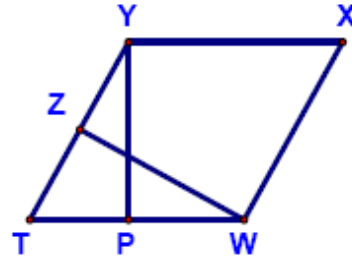
Statements

Reasons

Challenge

Given: $YTWX$ is a \square
 $\overline{YP} \perp \overline{TW}$
 $\overline{ZW} \perp \overline{TY}$
 $\overline{TP} \cong \overline{TZ}$

Prove: $YTWX$ is a rhombus



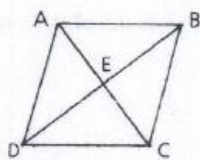
Statements

Reasons

SUMMARY

Given: ABCD is a rhombus.
diagonals \overline{AC} , \overline{BD}

Prove: $\triangle AED \cong \triangle AEB \cong$
 $\triangle BEC \cong \triangle CED$

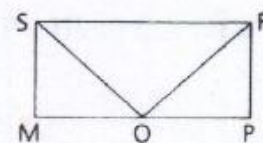


- | | |
|------------------------------------------------------------------------------------|-------------------------------------------|
| 1 ABCD is a rhombus. | 1 Given |
| 2 Diagonals \overline{AC} , \overline{BD} | 2 Given |
| 3 $\overline{AB} \cong \overline{BC} \cong \overline{CD} \cong \overline{DA}$ | 3 All sides of a rhombus \cong . |
| 4 \overline{AC} , $\overline{BD} \perp$ bis each other. | 4 Diag of rhombus \perp bis each other. |
| 5 $\overline{AE} \cong \overline{EC}$, $\overline{DE} \cong \overline{EB}$ | 5 Bis divides a seg into 2 \cong segs. |
| 6 $\triangle AED \cong \triangle AEB \cong$
$\triangle BEC \cong \triangle CED$ | 6 SSS |

Given: \square MPRS

$\overline{MO} \cong \overline{PO}$

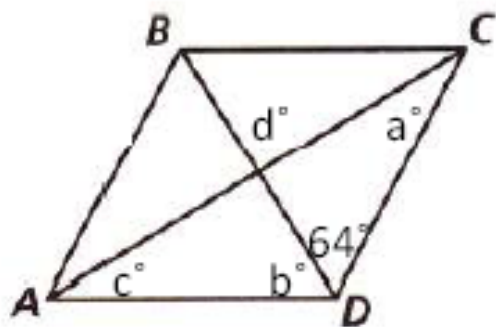
Prove: $\triangle ROS$ is isos.



- | | |
|---------------------------------------|------------------------------------------------------|
| 1 \square MPRS | 1 Given |
| 2 $\overline{MO} \cong \overline{PO}$ | 2 Given |
| 3 $\overline{SM} \cong \overline{RP}$ | 3 Opp sides \cong in a \square . |
| 4 $\angle M$ is a rt \angle . | 4 In a \square , all \angle s are rt \angle s. |
| 5 $\angle P$ is a rt \angle . | 5 Same as 4 |
| 6 $\angle M \cong \angle P$ | 6 All rt \angle s are \cong . |
| 7 $\triangle SMO \cong \triangle RPO$ | 7 SAS |
| 8 $\overline{SO} \cong \overline{RO}$ | 8 CPCTC |
| 9 $\triangle ROS$ is isos. | 9 An isos \triangle has 2 sides \cong . |

Exit Ticket

Find the value of each variable in the rhombus.



a = _____

b = _____

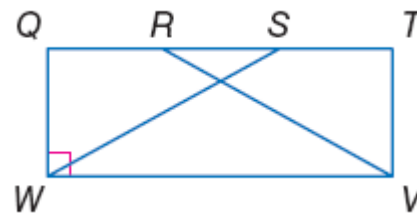
c = _____

d = _____

Day 3 – HW

1. Given: $QTVW$ is a rectangle.
 $\overline{QR} \cong \overline{ST}$

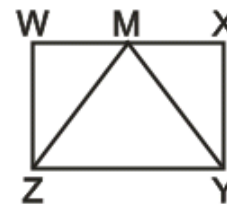
Prove: $\triangle SWQ \cong \triangle RVT$



Statements

Reasons

2. Given: Rectangle $WXYZ$, M is the midpoint of \overline{WX} .
 Prove: $\triangle ZMY$ is isosceles.

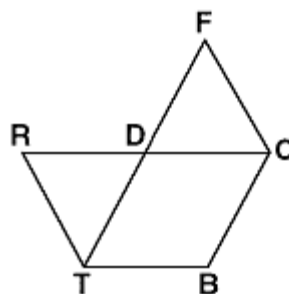


Statements

Reasons

3. Given: $TBCD$ is a rhombus
 $\angle RTB \cong \angle FCB$

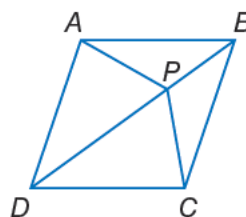
Prove: $\overline{RD} \cong \overline{DF}$



Statements

Reasons

4. Write a two-column proof to prove that if $ABCD$ is a rhombus with diagonal \overline{DB} , then $\overline{AP} \cong \overline{CP}$.



Statements

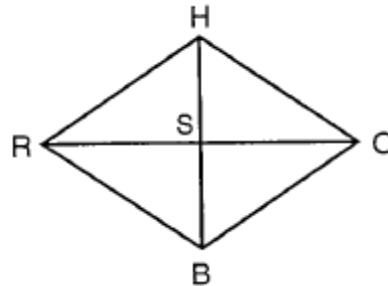
Reasons

Day 4 – Proofs with Trapezoids

Warm – Up

Given: $\overline{HS} \cong \overline{SB}$, $\overline{RS} \cong \overline{SO}$
 $\overline{HR} \cong \overline{HO}$

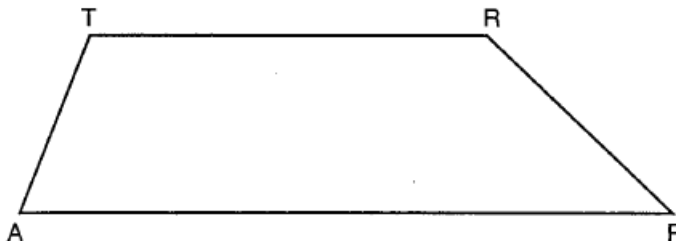
Prove: RHOB is a rhombus



<u>Statements</u>	<u>Reasons</u>
1.	1. Given
2. $\Delta \cong \Delta$	2. (__, __, __)
3. RHOB is a Parallelogram	3. _____ of a quadrilateral bisect each other \rightarrow _____
4. RHOB is a Rhombus	4. \cong _____ sides of a Parallelogram \rightarrow Rhombus

Complete the statement and give the reason that justifies the statement.

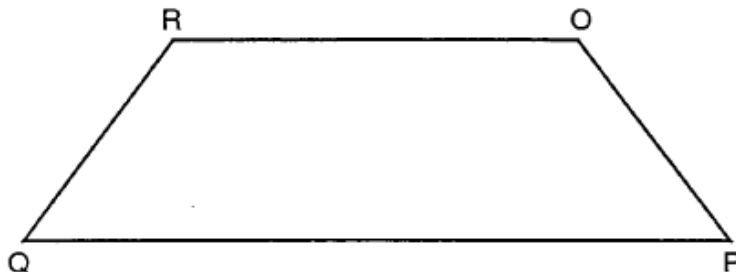
Given: Trapezoid TRPA (\overline{AP} and \overline{TR} are bases)



STATEMENT	REASONS
a. $\overline{TR} \parallel$ _____	a.
b. $\angle T$ and _____ are supplementary	b.
c. $\angle R$ and _____ are supplementary	c.

Complete the statement and give the reason that justifies the statement.

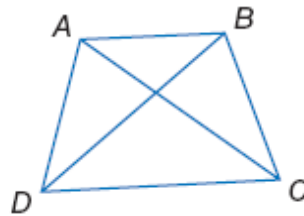
Given: Isosceles Trapezoid RQPO (\overline{OR} and \overline{PQ} are bases.)



STATEMENT	REASONS
a. $\overline{RQ} \parallel$ _____	a.
b. $\overline{RO} \cong$ _____	b.
c. $\angle O \cong$ _____	c.
d. $\angle Q \cong$ _____	d.
e. Draw \overline{QO} and \overline{RP}	e. 2 points make a line
f. $\overline{QO} \cong$ _____	f.
g. $\angle QRP \cong$ _____	g.
h. $\angle RQO \cong$ _____	h.

Example 1: **Given:** $ABCD$ is an isosceles trapezoid.

Prove: $\triangle ADC \cong \triangle BCD$



Statements

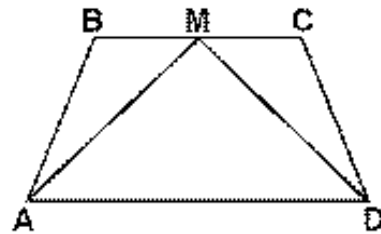
Reasons

Example 2: **Given:** $ABCD$ is an isosceles trapezoid

$\overline{AD} \parallel \overline{BC}$

M is the midpoint of \overline{BC}

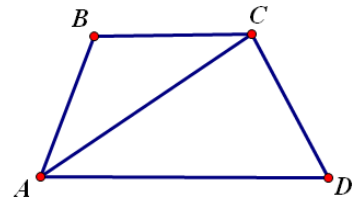
Prove: $\triangle MAD$ is isosceles



Statements

Reasons

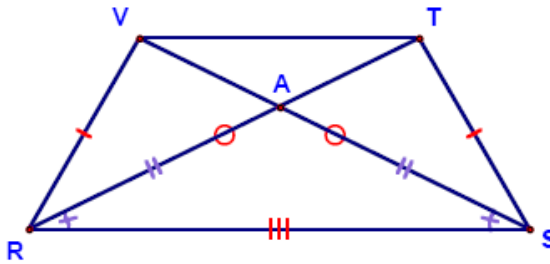
Challenge: Given: \overrightarrow{AC} bisects $\angle BAD$.
 $\overline{AB} \cong \overline{BC}$,
 $\overline{AB} \nparallel \overline{CD}$
Prove: ABCD is a trapezoid.



SUMMARY

Given: \overline{RVTS} is an isos. trapezoid with legs \overline{VR} & \overline{TS}

Prove: $\triangle ARS$ is isosceles



Statements	Reasons
1. \overline{RVTS} is an isos. trapezoid with legs \overline{VR} & \overline{TS}	1. Given
S 2. $\overline{VR} \cong \overline{TS}$	2. Legs of an Isos. Trap are \cong
S 3. $\overline{VS} \cong \overline{TR}$	3. Diagonals of an Isos. Trap are \cong
S 4. $\overline{RS} \cong \overline{RS}$	4. Reflexive Property
5. $\triangle VRS \cong \triangle TSR$	5. SSS (2, 3, 4)
6. $\angle TRS \cong \angle VSR$	6. CPCTC
7. $\overline{AR} \cong \overline{AS}$	7. If \triangle , then \triangle
8. $\triangle ARS$ is isosceles	8. If \triangle , then Isos. \triangle

Exit Ticket

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) $\frac{1}{2}$

Day 4 – HW

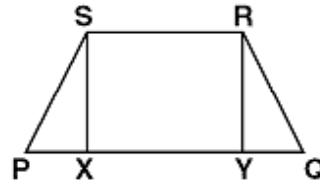
1. Given: PQRS is an isosceles trapezoid

$$\overline{PQ} \parallel \overline{SR}$$

$$\overline{SX} \perp \overline{PQ}$$

$$\overline{RY} \perp \overline{PQ}$$

Prove: $\angle PSX \cong \angle QRY$



Statements

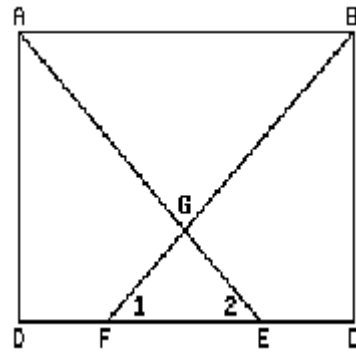
Reasons

2. Given: rectangle ABCD, \overline{DFEC} , \overline{AGE} , \overline{BGF} , and $\overline{DF} \cong \overline{CE}$.

Prove: (a) $\triangle ADE \cong \triangle BCF$

(b) $\angle 1 \cong \angle 2$

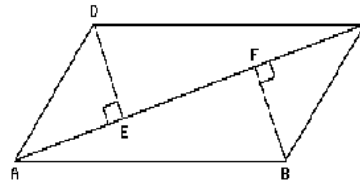
(c) $\overline{GF} \cong \overline{GE}$



Statements

Reasons

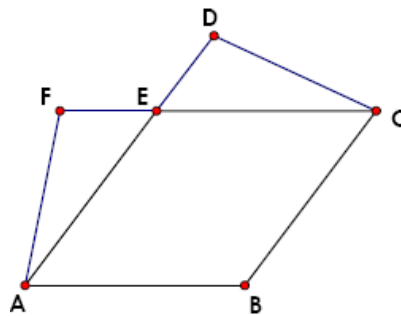
3. Given: quadrilateral ABCD, diagonal \overline{AC} , $\overline{DE} \perp \overline{AC}$, $\overline{BF} \perp \overline{AC}$, $\overline{AE} \cong \overline{CF}$, and $\overline{DE} \cong \overline{BF}$.
 Prove: ABCD is a parallelogram.



Statements

Reasons

4. **Given:** ABCE is a rhombus
 $\angle FAB \cong \angle DCB$
Prove: $\overline{FE} \cong \overline{DE}$

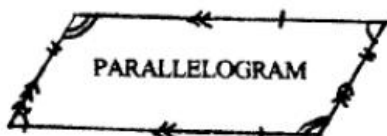


Statements

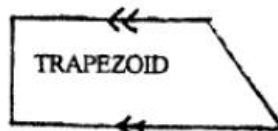
Reasons

SUMMARY

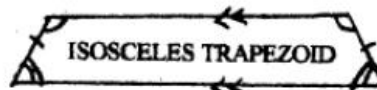
QUADRILATERAL FAMILY



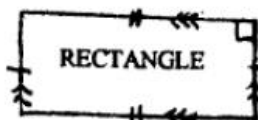
1. Both pairs of opposite sides are parallel.
2. Both pairs of opposite sides are congruent.
3. Both pairs of opposite angles are congruent.
4. Two consecutive angles are supplementary.
5. Diagonals bisect each other.
6. One diagonal cuts the parallelogram into two congruent triangles.



Only one pair of opposite sides are parallel.



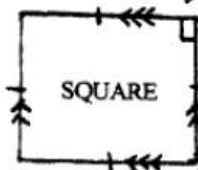
1. Legs are congruent.
2. Lower base angles are congruent.
3. Upper base angles are congruent.
4. Diagonals are congruent.
5. An upper base angle and a lower base angle are supplementary.



1. Has all the properties of a parallelogram.
2. Has four right angles.
3. Diagonals are congruent.



1. Has all the properties of a parallelogram.
2. Has four congruent sides.
3. Diagonals are perpendicular.
4. Diagonals bisect the angles formed by its sides.



Has all the properties of a rectangle and rhombus.
(and parallelogram)