

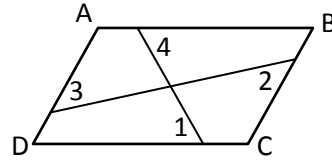
Geometry

Unit One B: Parallelograms Proof Workshop (IC43)

Name: _____

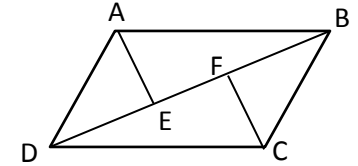
Date: _____ Period: _____

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



Prove: Parallelogram ABCD

Given: $\triangle AED \cong \triangle CFB$; $\overline{AD} \parallel \overline{BC}$



Prove: ABCD is a parallelogram

Statements

Reasons

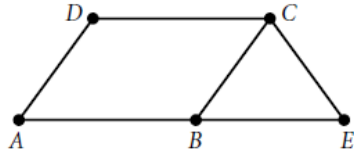
- | | |
|--|---|
| 1. $\angle 4 \cong \angle 1$ | 1. Given |
| 2. $\overline{AB} \parallel \overline{DC}$ | 2. Alt int. angles $\cong \rightarrow \parallel$ lines |
| 3. $\angle 3 \cong \angle 2$ | 3. Given |
| 4. $\overline{AD} \parallel \overline{BC}$ | 4. Alt int. angles $\cong \rightarrow \parallel$ lines |
| 5. Parallelogram ABCD | 5. If both pairs of opp sides $\parallel \rightarrow$ parallelogram |

Statements

Reasons

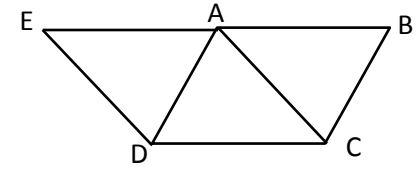
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|--|--|
| 1. $\overline{AD} \parallel \overline{BC}$ | 1. Given |
| 2. $\triangle AED \cong \triangle CFB$ | 2. Given |
| 3. $\overline{AD} \cong \overline{BC}$ | 3. CPCTC |
| 4. Parallelogram ABCD | 4. If one pair of opp sides both \parallel and $\cong \rightarrow$ parallelogram |

Given: $\triangle CBE$ is isosceles with base \overline{BE} ;
 $\overline{AD} \cong \overline{CE}$, $\angle A \cong \angle E$



Prove: Parallelogram ABCD

Given: Parallelogram EACD;
 $\angle EDA \cong \angle ACB$



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

Statements

Reasons

- | | |
|---|--|
| 1. $\overline{AD} \cong \overline{CE}$ | 1. Given |
| 2. $\triangle CBE$ is isosceles with base \overline{BE} | 2. Given |
| 3. $\overline{CE} \cong \overline{CB}$ | 3. Def of isosceles triangle |
| 4. $\overline{CB} \cong \overline{AD}$ | 4. Transitive Property (1, 3) |
| 5. $\angle E \cong \angle CBE$ | 5. Isosceles triangle thm |
| 6. $\angle A \cong \angle E$ | 6. Given |
| 7. $\angle A \cong \angle CBE$ | 7. Transitive Property (5, 6) |
| 8. $\overline{CB} \parallel \overline{AD}$ | 8. Corr angles $\cong \rightarrow \parallel$ lines |
| 9. Parallelogram ABCD | 9. If one pair of opp sides is both \parallel and $\cong \rightarrow \parallel$ gram |

Statements

Reasons

- | | |
|--|---|
| 1. $\angle EDA \cong \angle ACB$ | 1. Given |
| 2. Parallelogram EACD | 2. Given |
| 3. $\overline{ED} \parallel \overline{AC}$ | 3. \parallel gram \rightarrow opp sides \parallel |
| 4. $\angle EDA \cong \angle DAC$ | 4. \parallel lines \rightarrow alt. int. angles \cong |
| 5. $\angle DAC \cong \angle ACB$ | 5. Transitive Property (1, 4) |
| 6. $\overline{AD} \parallel \overline{BC}$ | 6. If alt. int. angles $\cong \rightarrow \parallel$ lines |