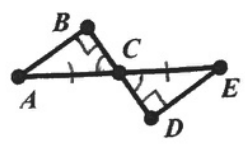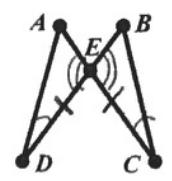**1) GIVEN:**
$\overline{BD} \perp \overline{AB}, \overline{BD} \perp \overline{DE},$
$\overline{BD}$ bisects $\overline{AE}$

**PROVE:**
$\angle A \cong \angle E$
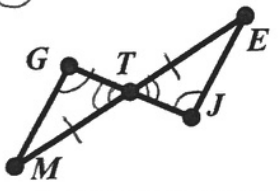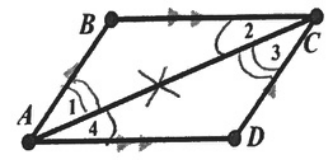


| STATEMENT | REASON |
|---|---|
| ① $\overline{BD} \perp \overline{AB}, \overline{BD} \perp \overline{DE},$ $BD$ bisects $\overline{AE}$ | ① Given |
| ② $\angle B \cong \angle D$ | ② $\perp$ lines form $\cong$ right $\angle$'s |
| ③ $\overline{AC} \cong \overline{CE}$ | ③ Def of midpt |
| ④ $\angle BCA \cong \angle ECD$ | ④ vertical $\angle$'s $\cong$ |
| ⑤ $\triangle BCA \cong \triangle ECD$ | ⑤ AAS |
| ⑥ $\angle A \cong \angle E$ | ⑥ CPCTC |

**2) GIVEN:**
$\angle D \cong \angle C$ & $\overline{DE} \cong \overline{CE}$

**PROVE:**
$\overline{AD} \cong \overline{BC}$



| STATEMENT | REASON |
|---|---|
| ① $\angle D \cong \angle C, \overline{DE} \cong \overline{CE}$ | ① Given |
| ② $\angle AED \cong \angle BEC$ | ② vertical $\angle$'s $\cong$ |
| ③ $\triangle AED \cong \triangle BEC$ | ③ ASA |
| ④ $\overline{AD} \cong BC$ | ④ CPCTC |

**3) GIVEN:**
T is the midpoint of $\overline{ME}$
& $\angle G \cong \angle J$

**PROVE:**
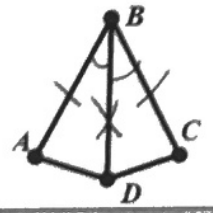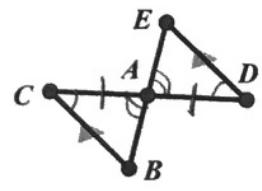$\overline{GT} \cong \overline{JT}$



| STATEMENT | REASON |
|---|---|
| ① T is the midpt of $\overline{ME}$, $\angle G \cong \angle J$ | ① Given |
| ② $\overline{MT} \cong \overline{TE}$ | ② Def of midpt |
| ③ $\angle GTM \cong \angle ETJ$ | ③ vertical $\angle$'s $\cong$ |
| ④ $\triangle GTM \cong \triangle ETJ$ | ④ AAS |
| ⑤ $\overline{GT} \cong \overline{JT}$ | ⑤ CPCTC |

**4) GIVEN:**
$\overline{AB} \| \overline{CD}$ & $\overline{BC} \| \overline{DA}$

**PROVE:**
$\angle B \cong \angle D$



| STATEMENT | REASON |
|---|---|
| ① $\overline{AB} \| \overline{CD}, \overline{BC} \| \overline{DA}$ | ① Given |
| ② $\angle 4 \cong \angle 2, \angle 1 \cong \angle 3$ | ② 2 $\|$ lines crossed by a transversal → alt. int. $\angle$'s $\cong$ |
| ③ $\overline{AC} \cong \overline{AC}$ | ③ Reflexive Prop. |
| ④ $\triangle ABC \cong \triangle CDA$ | ④ ASA |
| ⑤ $\angle B \cong \angle D$ | ⑤ CPCTC |

**5) GIVEN:**
$\overline{AB} \cong \overline{CB}$
$\overline{BD}$ bisects $\angle ABC$

**PROVE:**
$\angle A \cong \angle C$



| STATEMENT | REASON |
|---|---|
| ① $\overline{AB} \cong \overline{CB}, \overline{BD}$ bisects $\angle ABC$ | ① Given |
| ② $\angle ABD \cong \angle CBD$ | ② Def of $\angle$ bisector |
| ③ $\overline{BD} \cong \overline{BD}$ | ③ Reflexive Prop. |
| ④ $\triangle ABD \cong \triangle CBD$ | ④ SAS |
| ⑤ $\angle A \cong \angle C$ | ⑤ CPCTC |

**6) GIVEN:**
$\overline{CB} \| \overline{ED}$ & $\overline{CA} \cong \overline{DA}$

**PROVE:**
$\overline{BA} \cong \overline{EA}$



| STATEMENT | REASON |
|---|---|
| ① $\overline{CB} \| \overline{ED}, \overline{CA} \cong \overline{DA}$ | ① Given |
| ② $\angle C \cong \angle D$ | ② 2 $\|$ lines crossed by a transversal → alt int $\angle$'s $\cong$ |
| ③ $\angle CAB \cong \angle DAE$ | ③ vertical $\angle$'s $\cong$ |
| ④ $\triangle CAB \cong \triangle DAE$ | ④ ASA |
| ⑤ $\overline{BA} \cong \overline{EA}$ | ⑤ CPCTC |

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