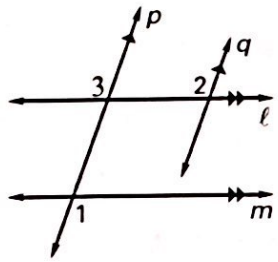
Proofs

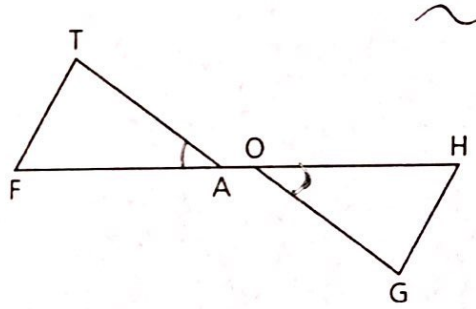
Write a two-column proof.

1. Given: $\ell \parallel m, p \parallel q$
   Prove: $\angle 1 \cong \angle 2$



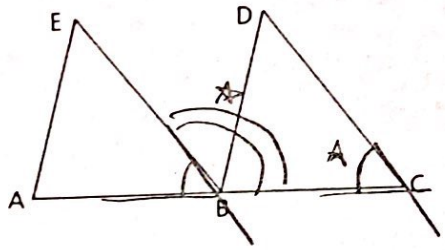
Statements	Reasons
① $\ell \parallel m$, $p \parallel q$ diagram	① Given
② $\angle 1$ and $\angle 3$ are alt. ext $\measuredangle$s; $\angle 3$ and $\angle 2$ are corresponding $\measuredangle$s	② Assumed by diagram
③ $\angle 1 \cong \angle 3$	③ If lines are $\parallel$, then alt. ext. $\measuredangle$s are $\cong$
④ $\angle 3 \cong \angle 2$	④ If lines are $\parallel$, then corresponding $\measuredangle$s are $\cong$.
⑤ $\angle 1 \cong \angle 2$	⑤ Transitive POC

2. Given: $\angle FAT \cong \angle HOG$
   Prove: $\overline{AT} \parallel \overline{GO}$



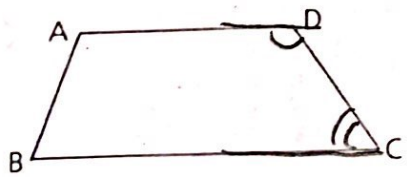
Statements	Reasons
① $\angle FAT \cong \angle HOG$ diagram	① Given
② $\angle FAT$ and $\angle HOG$ are alt. ext $\measuredangle$s	② Assumed by diagram
③ $\overline{AT} \parallel \overline{GO}$	③ If alt. ext. $\measuredangle$s are $\cong$, then the segs are $\parallel$.

3. Given: $\angle ABE \cong \angle BCD$
   Prove: $\angle EBC$ supp $\angle BCD$



Statements	Reasons
① $\angle ABE \cong \angle BCD$ diagram	① Given
② $\angle ABE$ and $\angle BCD$ are corresponding $\measuredangle$s; $\angle EBC$ and $\angle BCD$ are consecutive int $\measuredangle$s	② Assumed by diagram
③ $\overline{EB} \parallel \overline{DC}$	③ If corresponding $\measuredangle$s are $\cong$, then the segs are $\parallel$.
④ $\angle EBC$ supp $\angle BCD$	④ If segs are $\parallel$, then consecutive int $\measuredangle$s are supp

4. Given: $\angle C$ supp. $\angle D$
   Prove: $\angle A$ supp. $\angle B$



Statements	Reasons
① $\angle C$ supp $\angle D$ diagram	① Given
② $\angle C$ and $\angle D$ are consecutive int $\measuredangle$s; $\angle A$ and $\angle B$ are consecutive int $\measuredangle$s	② Assumed by diagram
③ $\overline{AD} \parallel \overline{CD}$	③ If consecutive int $\measuredangle$s are supp, then the segs are $\parallel$
④ $\angle A$ supp $\angle B$	④ If segs are $\parallel$, then consecutive int $\measuredangle$s are supp.