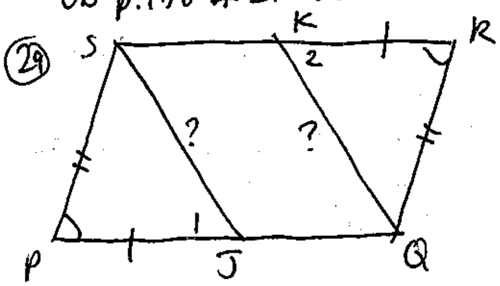
HW #50 Solutions: (Proofs Only)

OB p.170 # 29–32

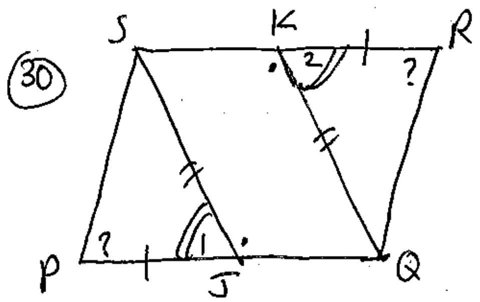
(29)



Given: Parallelogram PQRS
$\overline{PJ} \cong \overline{RK}$
Prove: $\overline{SJ} \cong \overline{QK}$

Statements	Reasons
1. PQRS is a parallelogram.	1. Given.
2. $\overline{SP} \cong \overline{RQ}$ (s ≅ s)	2. Opposite sides of a parallelogram are congruent. (1)
3. $\angle P \cong \angle R$ (a ≅ a)	3. Opposite angles of a parallelogram are ≅. (1).
4. $\overline{PJ} \cong \overline{RK}$ (s ≅ s)	4. Given.
5. $\triangle SPJ \cong \triangle QRK$	5. SAS Postulate. (2,3,4)
6. $\overline{SJ} \cong \overline{QK}$	6. Corresponding parts of ≅ △'s are ≅. (5).

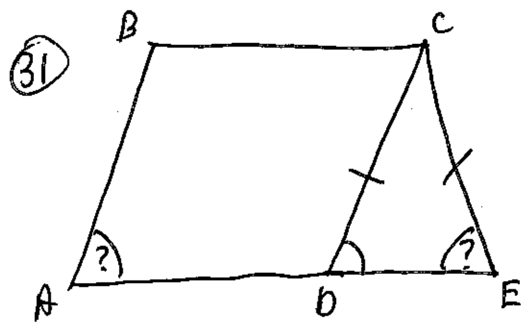
(30)



Given: Parallelogram JQKS
$\overline{PJ} \cong \overline{RK}$
Prove: $\angle P \cong \angle R$

Statements	Reasons
1. JQKS is a parallelogram.	1. Given.
2. $\overline{JS} \cong \overline{QK}$ (s ≅ s)	2. Opposite sides of a parallelogram are congruent. (1)
3. $\angle SKQ \cong \angle SJQ$	3. Opposite angles of a parallelogram are ≅. (1).
4. $\angle 1$ is supp. to $\angle SJQ$, $\angle 2$ is supp. to $\angle SKQ$.	4. If two angles form a linear pair, then they are supplementary.
5. $\angle 1 \cong \angle 2$ (a ≅ a)	5. If two angles are ≅, then their supplements are congruent. (3,4)
6. $\overline{PJ} \cong \overline{RK}$ (s ≅ s)	6. Given.
7. $\triangle PSJ \cong \triangle RQK$	7. SAS Postulate. (2,5,6).
8. $\angle P \cong \angle R$	8. Corresponding parts of congruent triangles are congruent. (7).

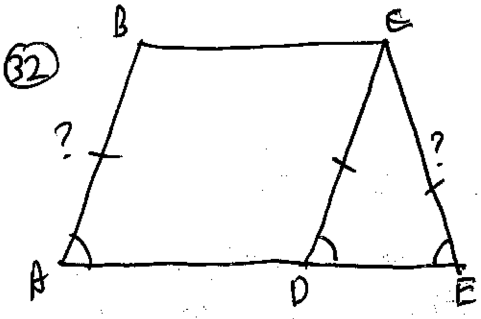
(31)



Given: Parallelogram ABCD
$\overline{CD} \cong \overline{CE}$
Prove: $\angle A \cong \angle E$

Statements	Reasons
1. ABCD is a parallelogram.	1. Given.
2. $\overline{AB} \parallel \overline{CD}$	2. Opposite sides of a parallelogram are parallel. (1).
3. $\angle A \cong \angle CDE$	3. If two parallel lines are cut by a transversal, then corresponding angles are congruent. (2)
4. $\overline{CD} \cong \overline{CE}$	4. Given.
5. $\angle CDE \cong \angle E$	5. If two sides of a triangle are congruent, then the angles opposite them are congruent. (4)
6. $\angle A \cong \angle E$	6. Transitive Property. (3,5).

(32)



Given: Parallelogram ABCD
$\angle A \cong \angle E$

Prove: $\overline{AB} \cong \overline{CE}$

Statements	Reasons
1. ABCD is a parallelogram.	1. Given.
2. $\overline{AB} \parallel \overline{CD}$	2. Opposite sides of a parallelogram are parallel. (1).
3. $\angle A \cong \angle CDE$	3. If two parallel lines are cut by a transversal, then ~~alt int~~ corresponding angles are congruent. (2).
4. $\angle A \cong \angle E$	4. Given.
5. $\angle CDE \cong \angle E$	5. Transitive Property. (3, 4).
6. $\overline{CD} \cong \overline{CE}$	6. If two angles of a triangle are congruent, then the sides opposite them are congruent. (5).
7. $\overline{AB} \cong \overline{CD}$	7. Opposite sides of a parallelogram are congruent. (1)
8. $\overline{AB} \cong \overline{CE}$	8. Transitive Property. (6, 7).