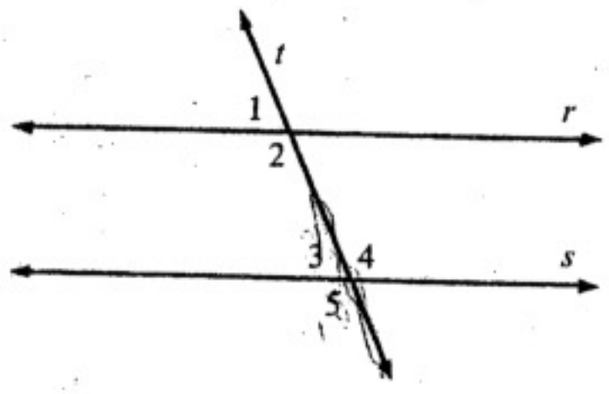
O = pen l

WRITTEN EXERCISES

A

1. Given: The plane figure;
   $m\angle 2 = 122$; $m\angle 4 = 122$.
   Prove: $r \parallel s$.

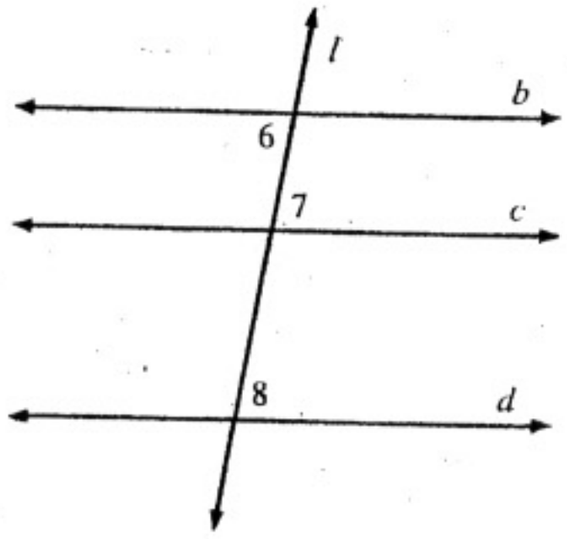
2. Given: The plane figure;
   $m\angle 2 = 130$; $m\angle 3 = 50$.
   Prove: $r \parallel s$.



Exs. 1, 2

3. Given: The plane figure;
   $\angle 6 \cong \angle 8$; $c \parallel d$.
   Prove: $b \parallel c$.

4. Given: The plane figure;
   $m\angle 6 = y$; $m\angle 7 = y$; $c \parallel d$.
   Prove: $b \parallel d$.



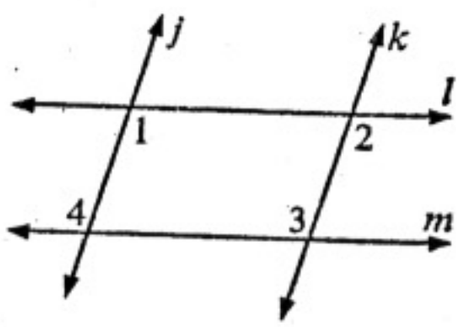
Exs. 3, 4

5. Given: The plane figure; $j \parallel k$; $\angle 1 \cong \angle 3$.
   Prove: $l \parallel m$.

6. Given: The plane figure; $l \parallel m$; $\angle 1 \cong \angle 3$.
   Prove: $j \parallel k$.

7. Given: The plane figure; $j \parallel k$; $\angle 2 \cong \angle 4$.
   Prove: $l \parallel m$.

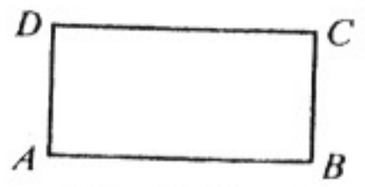
8. Given: The plane figure; $l \parallel m$; $\angle 2 \cong \angle 4$.
   Prove: $j \parallel k$.



Exs. 5–8

9. Given: The plane figure; $\angle A$, $\angle B$, and $\angle C$ are rt. $\measuredangle$s.
   Prove: $\overline{AD} \parallel \overline{BC}$; $\overline{AB} \parallel \overline{DC}$.

10. Given: The plane figure; $\overline{AB} \parallel \overline{DC}$; $\overline{AD} \perp \overline{DC}$; $\overline{CB} \perp \overline{AB}$.
    Prove: $\overline{AD} \parallel \overline{BC}$.

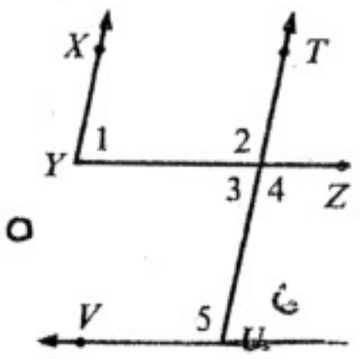


Exs. 9, 10

$\overline{XY} \parallel \overline{UT}$ $\angle 1 \cong \angle 6$

11. Given: ~~The plane figure; $m\angle 1 + m\angle 5 = 180$;~~
    ~~$m\angle 1 + m\angle 2 = 180$.~~
    Prove: $\overline{YZ} \parallel \overline{VU}$.

12. Given: The plane figure; $\overline{YZ} \parallel \overline{VU}$; ~~$\angle 1 \cong \angle 5$~~ $m\angle 1 + m\angle 5 = 180$
    ~~are supplementary~~.
    Prove: $\overline{XY} \parallel \overline{TU}$.

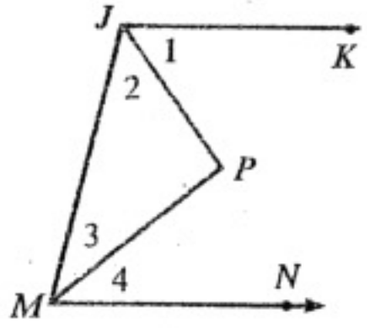


Exs. 11, 12

B

13. Given: The plane figure; $\overrightarrow{JP}$ bisects $\angle KJM$; $\overrightarrow{MP}$ bisects $\angle JMN$; $m\angle 2 + m\angle 3 = 90$.
    Prove: $\overline{JK} \parallel \overline{MN}$.

14. Given: The plane figure; $m\angle 1 = m\angle 2 = b$; $m\angle 3 = m\angle 4 = (90 - b)$.
    Prove: $\overline{JK} \parallel \overline{MN}$.



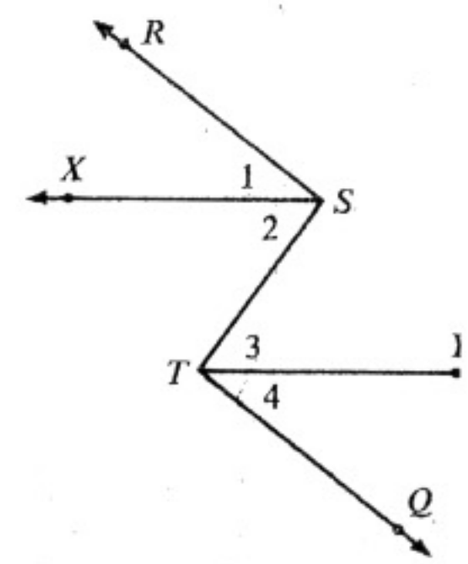
Exs. 13, 14

15. Given: $\angle RST$ and $\angle QTS$ are rt. $\measuredangle$s.
    Prove: $\overline{RS} \parallel \overline{TQ}$.

16. Given: $\angle RST$ and $\angle QTS$ are rt. $\measuredangle$s; $\angle 1 \cong \angle 4$.
    Prove: $\overline{XS} \parallel \overline{TY}$.

17. Given: $\overline{XS} \parallel \overline{TY}$; $m\angle 1 = m\angle 4$.
    Prove: $\overline{RS} \parallel \overline{TQ}$.

18. Given: $m\angle RST = m\angle QTS$; $m\angle 1 = m\angle 4$.
    Prove: $\overline{XS} \parallel \overline{TY}$.



Exs. 15–18

Converses found on p. 156, Exercises 17, 18.

19. Prove: If two lines are cut by a transversal so that alternate exteri angles are congruent, the lines are parallel.

20. Prove: If two lines are cut by a transversal so that interior angles the same side of the transversal are supplementary, the lines are parall

21. Prove: If two lines are parallel to a third line, and all three are cut by transversal, the first two lines are parallel to each other.

22. Use an indirect proof to prove that: In a plane, if two lines are paral to a third line, the first two lines are parallel to each other.