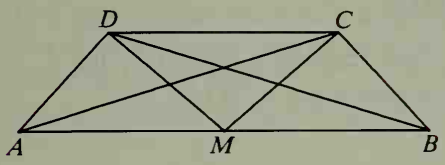
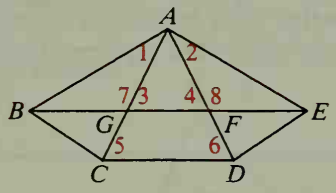
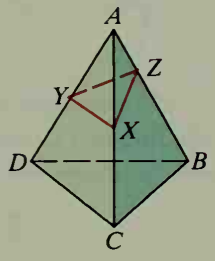
C **15.** Given: $\overline{AM} \cong \overline{MB}$; $\overline{AD} \cong \overline{BC}$; $\angle MDC \cong \angle MCD$
Prove: $\overline{AC} \cong \overline{BD}$



16. Given: $\angle 1 \cong \angle 2$; $\angle 3 \cong \angle 4$; $\angle 5 \cong \angle 6$
Prove: $\overline{BC} \cong \overline{ED}$



17. A, B, C, and D are noncoplanar. $\triangle ABC$, $\triangle ACD$, and $\triangle ABD$ are equilateral. X and Y are midpoints of $\overline{AC}$ and $\overline{AD}$. Z is a point on $\overline{AB}$. What kind of triangle is $\triangle XYZ$? Explain.



Mixed Review Exercises

1. Write the Isosceles Triangle Theorem (Theorem 4-1) and its converse (Theorem 4-2) as a single biconditional statement.

Complete each statement with the word *always*, *sometimes*, or *never*.

2. Two isosceles triangles with congruent bases are ___?___ congruent.

3. Two isosceles triangles with congruent vertex angles are ___?___ congruent.

4. Two equilateral triangles with congruent bases are ___?___ congruent.

Draw a diagram for each of the following.

5. **a.** M is between A and B.
b. M is the midpoint of $\overline{AB}$.

6. **a.** $\overline{XY}$ bisects $\overline{CD}$.
b. $\overrightarrow{XY}$ bisects $\angle CXD$.

7. **a.** acute scalene $\triangle JKL$
b. obtuse scalene $\triangle JKL$

8. **a.** acute isosceles $\triangle XYZ$
b. obtuse isosceles $\triangle XYZ$

9. **a.** right scalene $\triangle RST$
b. right isosceles $\triangle RST$

10. **a.** equilateral $\triangle EFG$
b. equiangular $\triangle EFG$

11. Write a proof in two-column form.
Given: $\overline{BE} \cong \overline{CD}$; $\overline{BD} \cong \overline{CE}$
Prove: $\triangle ABC$ is isosceles.