In #1-6, use the diagram to name each of the following. Assume that the lines and planes that appear to be parallel are parallel.

1. A pair of parallel planes
2. All lines that are parallel to $\overline{AB}$
3. All lines that are parallel to $\overline{DH}$
4. Two lines that are skew to $\overline{EJ}$
5. All lines that are parallel to plane $JFA$
6. A plane parallel to $\overline{LH}$

In #7-10, identify all pairs of each type of angles in the diagram. Name the two lines and the transversal that form each pair.

7. Corresponding angles
8. Alternate interior angles
9. Same-side interior angles
10. Alternate exterior angles

In #11-16, describe the statement as true or false. If false, explain. Assume that lines and planes that appear to be parallel are parallel.

11. $\overline{CB} \parallel \overline{HG}$
12. $\overline{ED} \parallel \overline{HG}$
13. plane $AED \parallel$ plane $FGH$
14. plane $ABH \parallel$ plane $CDF$
15. $\overline{AB}$ and $\overline{HG}$ are skew lines
16. $\overline{AE}$ and $\overline{BC}$ are skew lines
In #17-22, determine whether each statement is **always**, **sometimes**, or **never** true.

17. Two parallel lines are coplanar.
18. Two skew lines are coplanar.
19. Two planes that do not intersect are parallel.
20. Two lines that lie in parallel planes are parallel.
21. Two lines in intersecting planes are skew.
22. A line and a plane that do not intersect are skew.

23. A transversal $r$ intersects lines $\ell$ and $m$. If $\ell$ and $r$ form $\angle 1$ and $\angle 2$ and $m$ and $r$ form $\angle 3$ and $\angle 4$, sketch a diagram that meets the following conditions.

- $\angle 1 \cong \angle 2$
- $\angle 3$ is an interior angle.
- $\angle 4$ is an exterior angle.
- $\angle 3$ and $\angle 4$ are supplementary.
- $\angle 2$ and $\angle 4$ lie on opposite sides of $r$.

24. Complete the proof.

**Given:** $a \parallel b, c \parallel d$

**Prove:** $\angle 1 \cong \angle 3$

![Diagram](image)

<table>
<thead>
<tr>
<th>Statements</th>
<th>Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) $a \parallel b$</td>
<td>1) Given</td>
</tr>
<tr>
<td>2) $\angle 3$ and $\angle 2$ are supplementary.</td>
<td>2) a. ?</td>
</tr>
<tr>
<td>3) $c \parallel d$</td>
<td>3) Given</td>
</tr>
<tr>
<td>4) $\angle 1$ and $\angle 2$ are supplementary.</td>
<td>4) b. ?</td>
</tr>
<tr>
<td>5) $\angle 1 \cong \angle 3$</td>
<td>5) c. ?</td>
</tr>
</tbody>
</table>

Find the value(s) of the variable(s).

25. 

26. 

27. 

28. 

29. 

30.
31. **Error Analysis**  Which solution for the value of x in the figure at the right is incorrect? Explain.

A. \[2x = x + 75\]  
\[x = 75\]

B. \[2x + (x + 75) = 180\]  
\[3x + 75 = 180\]  
\[3x = 105\]  
\[x = 35\]

---

**Write a proof.**

32. Given:  \(\ell \parallel m\)  
Prove:  \(\angle 2 \cong \angle 6\)

(Hint: This is a proof of the CA Theorem, so you cannot use that!)

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<tr>
<th>Statements</th>
<th>Reasons</th>
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<td>1.</td>
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33. Given:  \(a \parallel b; \angle 1 \cong \angle 4\)  
Prove:  \(\angle 2 \cong \angle 3\)

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<td>1.</td>
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<td>6.</td>
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**In #34-35, use the diagram at the right.**

34. Suppose the measures of \(\angle 1\) and \(\angle 2\) are in a 4:11 ratio. Find their measures.

35. The diagram contains contradictory information. What is it? Why is it contradictory?