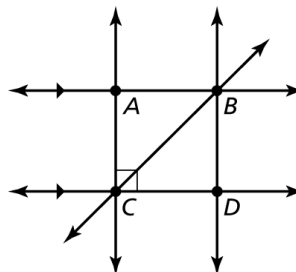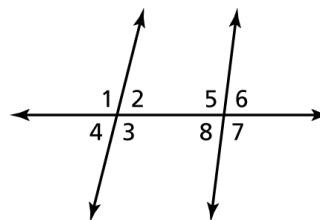**GP Geometry**

## 3.1 Assignment

### Part A

**In Exercises 1–4, use the diagram.**

1. Name a pair of parallel lines.

2. Name a pair of perpendicular lines.

3. Is $\overleftrightarrow{AB} \parallel \overleftrightarrow{BC}$? Explain.

4. Is $\overleftrightarrow{BD} \perp \overleftrightarrow{CD}$? Explain.

**In Exercises 5–8, identify _all_ pairs of angles of the given type.**

5. alternate interior

6. alternate exterior

7. corresponding

8. Same-side (consecutive) interior

9. Is it possible to draw three lines in two planes such that all three lines are skew? Explain your reasoning.

11. The given markings show how the railroad ties on a railroad track are related to each other.

   a. Name two pairs of parallel lines.

   b. Name two pairs of perpendicular lines.

   c. Name all pairs of consecutive interior angles.

   d. Name all pairs of corresponding angles.

   e. Name all pairs of alternate interior angles.

   f. Name all pairs of alternate exterior angles.
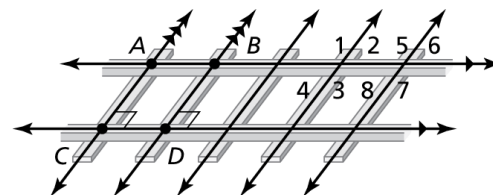
**In Exercises 1–6, use the diagram.**

1. Name a pair of parallel lines.

2. Name a pair of perpendicular lines.

3. Name a pair of skew lines.

4. Name a pair of parallel planes.

5. Is line *f* parallel to line *g*? Explain.

6. Is line *e* perpendicular to line *g*? Explain.

*Geometry*
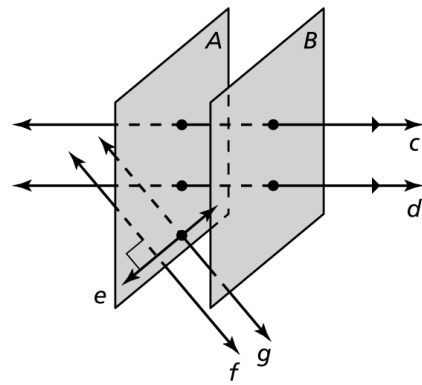
### 3.1 Practice A

1. $\overline{AB}$ and $\overline{CD}$    2. $\overline{AC}$ and $\overline{CD}$

3. no; $\overline{AB} \parallel \overline{CD}$ and by the Parallel Postulate (Post. 3.1), there is exactly one line parallel to $\overline{AB}$ through point $C$.

4. no; They are intersecting lines.

5. $\angle 2$ and $\angle 8$, $\angle 3$ and $\angle 5$

6. $\angle 1$ and $\angle 7$, $\angle 4$ and $\angle 6$

7. $\angle 1$ and $\angle 5$, $\angle 2$ and $\angle 6$, $\angle 3$ and $\angle 7$, $\angle 4$ and $\angle 8$

8. $\angle 2$ and $\angle 5$, $\angle 3$ and $\angle 8$

9. no; By definition, skew lines are not coplaner.

10. 2 pairs; 4 pairs; $(2n - 2)$ pairs

11. a. $\overline{AB}$ and $\overline{CD}$, $\overline{AC}$ and $\overline{BD}$

   b. $\overline{AC}$ and $\overline{CD}$, $\overline{BD}$ and $\overline{CD}$

   c. $\angle 2$ and $\angle 5$, $\angle 3$ and $\angle 8$

   d. $\angle 1$ and $\angle 5$, $\angle 2$ and $\angle 6$, $\angle 3$ and $\angle 7$, $\angle 4$ and $\angle 8$

   e. $\angle 2$ and $\angle 8$, $\angle 3$ and $\angle 5$

   f. $\angle 1$ and $\angle 7$, $\angle 4$ and $\angle 6$

### 3.1 Practice B

1. lines $c$ and $d$    2. lines $e$ and $f$

3. *Sample answer:* lines $c$ and $e$

4. planes $A$ and $B$

5. no; lines $f$ and $g$ appear to be coplanar and although they do not intersect, there is not enough information to determine that the lines are parallel.

6. no; lines $e$ and $g$ appear to be coplanar and intersect at a $90°$ angle, but there is not enough information to determine that the lines are perpendicular.

7. alternate interior    8. corresponding

9. alternate exterior    10. corresponding

11. consecutive exterior

12. no; The lines do not intersect, however they could be coplanar to a third plane.