LT 1.1 Parallel Lines and Transversal

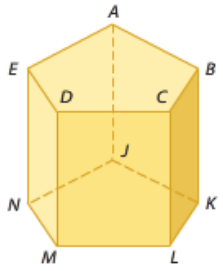
Homework: Complete #13-20 odd

Honors: Complete #13-20 odd

Practice and Problem Solving

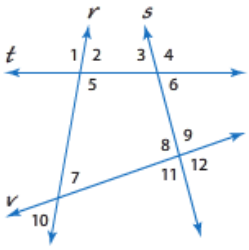
Extra Practice is on page R3.

Example 1 Refer to the figure to identify each of the following.



13. all segments parallel to $\overline{DM}$ $\overline{CL}$, $\overline{EN}$, $\overline{BK}$, $\overline{AJ}$
14. a plane parallel to plane ACD *JLM*
15. a segment skew to $\overline{BC}$ $\overline{EN}$, $\overline{AJ}$, $\overline{DM}$, $\overline{NM}$, $\overline{NJ}$, $\overline{JK}$ or $\overline{ML}$
16. all planes intersecting plane EDM *DCL, NML, AED, AEN*
17. all segments skew to $\overline{AE}$ $\overline{KL}$, $\overline{CL}$, $\overline{BK}$, $\overline{ML}$, $\overline{DM}$, $\overline{NM}$, $\overline{KJ}$
18. a segment parallel to $\overline{EN}$ $\overline{AJ}$, $\overline{BK}$, $\overline{CL}$, or $\overline{DM}$
19. a segment parallel to $\overline{AB}$ through point J $\overline{JK}$
20. a segment skew to $\overline{CL}$ through point E $\overline{AE}$, $\overline{ED}$

Examples 2–3 CCSS **PRECISION** Identify the transversal connecting each pair of angles. Then classify the relationship between each pair of angles as *alternate interior*, *alternate exterior*, *corresponding*, or *consecutive interior* angles. 21–30. See margin.



21. $\angle 4$ and $\angle 9$
22. $\angle 5$ and $\angle 7$
23. $\angle 3$ and $\angle 5$
24. $\angle 10$ and $\angle 11$
25. $\angle 1$ and $\angle 6$
26. $\angle 6$ and $\angle 8$
27. $\angle 2$ and $\angle 3$
28. $\angle 9$ and $\angle 10$
29. $\angle 4$ and $\angle 11$
30. $\angle 7$ and $\angle 11$

Example 3 **SAFETY** Identify the transversal connecting each pair of angles in the photo of a fire escape shown. Then classify the relationship between each pair of angles. 31–36. See margin.

31. $\angle 1$ and $\angle 2$
32. $\angle 2$ and $\angle 4$
33. $\angle 4$ and $\angle 5$
34. $\angle 6$ and $\angle 7$
35. $\angle 7$ and $\angle 8$
36. $\angle 2$ and $\angle 3$

37. **POWER** Power lines are not allowed to intersect.

a. What must be the relationship between power lines p and m? Explain your reasoning. See margin.

b. What is the relationship between line q and lines p and m? Line q is a transversal of lines p and m.

"See Margin" Answers

Additional Answers

21. line s; corresponding
22. line r; consecutive interior
23. line t; alternate interior
24. line v; corresponding
25. line t; alternate exterior
26. line s; alternate interior
27. line t; consecutive interior
28. line v; alternate exterior
29. line s; alternate exterior
30. line v; alternate interior
31. line a; vertical
32. line a; consecutive interior
33. line c; alternate interior
34. line d or line f; linear pair
35. line f; corresponding
36. line a; alternate interior
37a. Sample answer: Since the lines are coplanar and they cannot touch, they are parallel.

46. OPEN ENDED Plane P contains lines a and b. Line c intersects plane P at point J. Lines a and b are parallel, lines a and c are skew, and lines b and c are not skew. Draw a figure based upon this description. **See Ch. 3 Answer Appendix.**

47. CHALLENGE Suppose points A, B, and C lie in plane P, and points D, E, and F lie in plane Q. Line m contains points D and F and does not intersect plane P. Line n contains points A and E. **a. See Ch. 3 Answer Appendix.**

a. Draw a diagram to represent the situation.

b. What is the relationship between planes P and Q? **parallel**

c. What is the relationship between lines m and n? **skew**

REASONING **Plane X and plane Y are parallel and plane Z intersects plane X. Line $\overleftrightarrow{AB}$ is in plane X, line $\overleftrightarrow{CD}$ is in plane Y, and line $\overleftrightarrow{EF}$ is in plane Z. Determine whether each statement is *always*, *sometimes*, or *never* true. Explain.**

48. $\overleftrightarrow{AB}$ is skew to $\overleftrightarrow{CD}$.

49. $\overleftrightarrow{AB}$ intersects $\overleftrightarrow{EF}$.

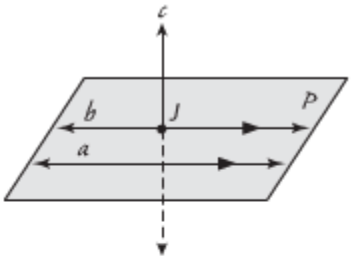
48. Sometimes; $\overleftrightarrow{AB}$ is either skew or parallel to $\overleftrightarrow{CD}$ because the lines will never intersect and are not coplanar.

49. Sometimes; $\overleftrightarrow{AB}$ intersects $\overleftrightarrow{EF}$ depending on where the planes intersect.

50. WRITING IN MATH Can a pair of planes be described as skew? Explain. **See Ch. 3 Answer Appendix.**

"See Ch. 3 Answer Appendix" Answers

46.



47a.