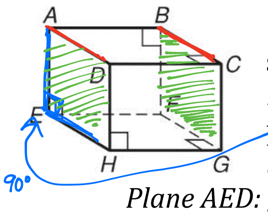
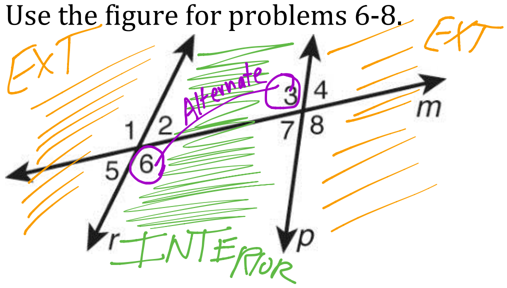
Use the cube figure for problems 1-3.



1. Identify a pair of parallel segments. AD // BC
2. Identify a segment perpendicular to AE. $\overline{EH}$
3. Identify a plane parallel to *Plane AED:* BFC

4. True or false: Skew lines are on the same plane. false "aske"
5. How many pairs of corresponding angles are formed by two lines and a transversal? 4 8 angles... 4 pairs

Use the figure for problems 6-8.



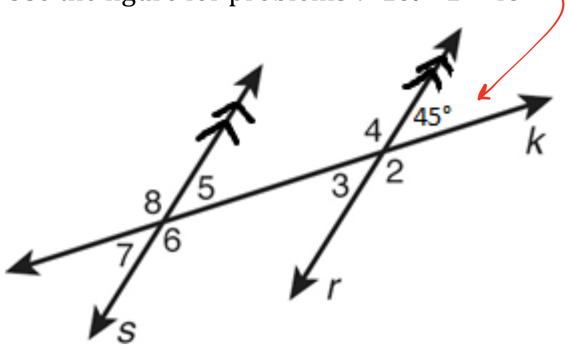
6. What type of angle pair are ∠6 and ∠3? Alternate interior

7. Which line is the transversal? m (m crosses both r & p)

8. ∠4 and ∠2 are corresponding angles. Are they congruent? Why or why not?

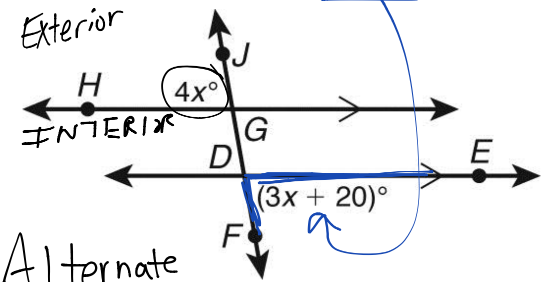
No; the lines r & p are not parallel.

Use the figure for problems 9-15. ∠1 = 45°.



9. ∠2 = 135°
10. ∠3 = 45°
11. ∠4 = 135°
12. ∠5 = 135°
13. ∠6 = 135°
14. ∠7 = 45°
15. ∠8 = 135°

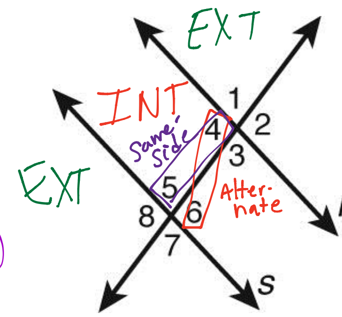
16. Find the measure of ∠ FDE. 80°



Alternate Exterior Angles.

$4x = 3x + 20$
$-3x \quad -3x$
$x = 20$
$\angle FDE = 3x + 20 = 3(20) + 20 = 60 + 20 = \boxed{80}$

Refer to the diagram for 17-18.



17. What type of angle are ∠4 and ∠5? Same-side interior

18. If ∠4 = (3x)° and ∠5 = (2x+15)°, what value of x would prove that *r* ∥ s? x = 33

$3x + 2x + 15 = 180°$
$5x + 15 = 180°$
$-15 \quad -15$
$5x = 165$
$\frac{5x}{5} = \frac{165}{5}$
$x = 33$

★ Caution!! ★
In parallel lines, Same-side interior angles add up to 180° (supplementary).
Don't set them equal to each other. ★

19. Find the slope of the line through points:

J(−4, 3) and K(6, 4). 1/10

$\frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - 3}{6 - -4} = \frac{1}{6+4} = \frac{1}{10}$

20. Are these lines parallel, perpendicular, or neither? Explain.

Same slope | opposite reciprocal slopes | slopes have no relationship

$\begin{cases} 3x + 2y = 6 \\ 4x - 6y = 24 \end{cases}$

Solve for y.

$3x + 2y = 6$
$-3x \quad -3x$
$\frac{2y}{2} = \frac{6 - 3x}{2}$
$y = 3 \boxed{-\frac{3}{2}} x$ slope

$4x - 6y = 24$
$-4x \quad -4x$
$\frac{-6y}{-6} = \frac{24 - 4x}{-6}$
$y = -4 + \frac{4}{6}x$ reduce
$y = -4 + \boxed{\frac{2}{3}} x$ slope

$-3/2 \Rightarrow 2/3$
neg → pos

Perpendicular lines.

Study Guide:

- 25 questions, free response
- Covers sections:
  - All of 3.1, 3.2, 3.3
  - Parts of 3.5, 3.6: how to find slope (3.5), and parallel and perpendicular slopes from equations (3.6).
- Heavy emphasis on vocab: see sample test

3.1

- Given a 3-dimesional figure, be able to identify parallel segments or lines, perpendicular segments or lines, parallel planes (remember that three (and only three) points are needed to define a plane, and skew lines. See p 148: #2-5.
- From a figure, identify the transversal line (the line that crosses two others) and the angle pairs created (corresponding, alternate interior, alternate exterior, same-side interior).
  - REMEMBER: If the lines are **not** parallel, then these angle pairs are not the same measurement.
  - From last unit: Vertical angles are always congruent; angles in a linear pair are supplementary.
  - See pg. 148: #6-9

3.2

- Know that when lines are parallel, corresponding angles (angles in "matching" positions) are congruent.
  - Pg 159: ex 1
- Given a pair of parallel lines and a transversal across them, be able to find (or "unlock") all the angle measurements formed.
  - Sample test #9-15
  - P 159: #13-19
- **Remember** in parallel lines, corresponding angles, alternate interior angles, and alternate exterior angles are pairs which are all congruent (meaning both angles measures equal each other). BUT, for same-side interior angles, the two angles aren't necessarily equal, but instead add-up to make 180°
  - See p.156 ex. 2B
- Set up and solve a multi-step equation from a figure with corresponding/alt.int/alt ext/same-side int. angles to find x, then plug x back in to find the actual angle measure.
  - See p. 156: #2 (bottom of page) answer: 60°
  - P. 158: #6-11

3.3

- If lines are parallel, then corresponding angles (or alt.int, or alt exterior) are congruent. The converse (or "backwards" argument) is also true: If corresponding angles (or alt. int, or alt. ext)are congruent, then two lines are parallel.
- Construct a reasoning argument to show that two lines are parallel given angle information:
  - "Hashtag shape" proof from class: p. 164 ex 3
  - Practice problem: p. 164: #3 (bottom of page) Hint: prove that L and N are parallel, and that M and N are parallel. Then the conclusion becomes obvious.

3.5

- Given two points, find their slope: rise over run; rise refers to change in y-values, so subtract them; run refers to change in x-values so subtract them; then divide
  - $m = \frac{y_2 - y_1}{x_2 - x_1}$ helpful hint: "yum yums on the picnic table"
-

3.6

- Given two equations, use algebra to solve for *y* to re-write equations in slope-intercept form to then analyze their slopes:
  - If both equations slopes are the same, then the lines are parallel.
  - If both equations slopes are opposite reciprocals (ex. one of them is 2/3 and the other is -3/2) then the lines are perpendicular.
  - If neither such relationship is present, then the lines are neither parallel nor perpendicular.