3 - 2
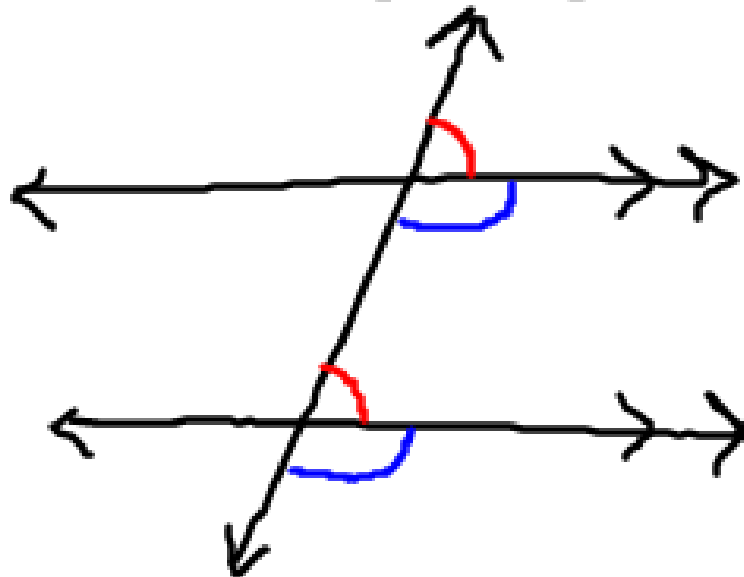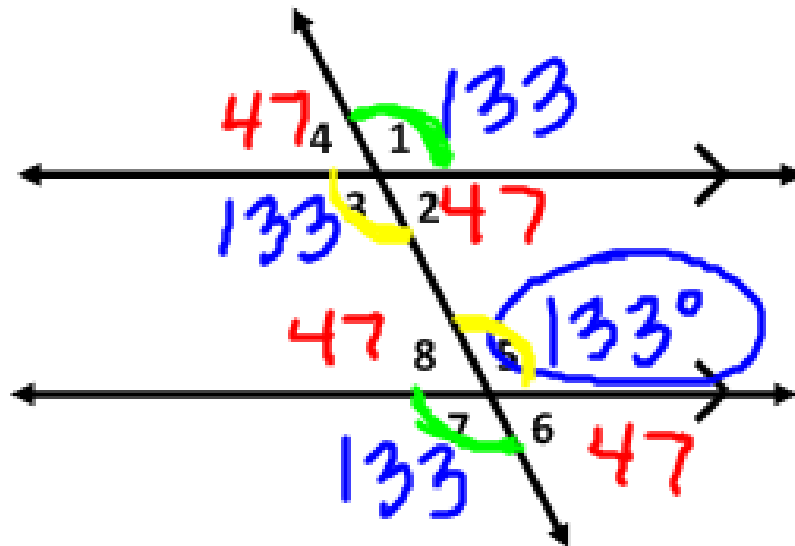# Angles and Parallel Lines

Postulate 3.1:

Corresponding Angles Postulate

If two parallel lines are cut by a transversal, then each pair of corresponding angles is congruent.

Ex: If m∠3 = 133°, find m∠5.

47₄ 1 133
133 3 2 47
47 8 5 133°
133 7 6 47

Theorem 3.1:

Alternate Interior Angles Theorem

If two parallel lines are cut by a transversal, then each pair of alternate interior angles is congruent.
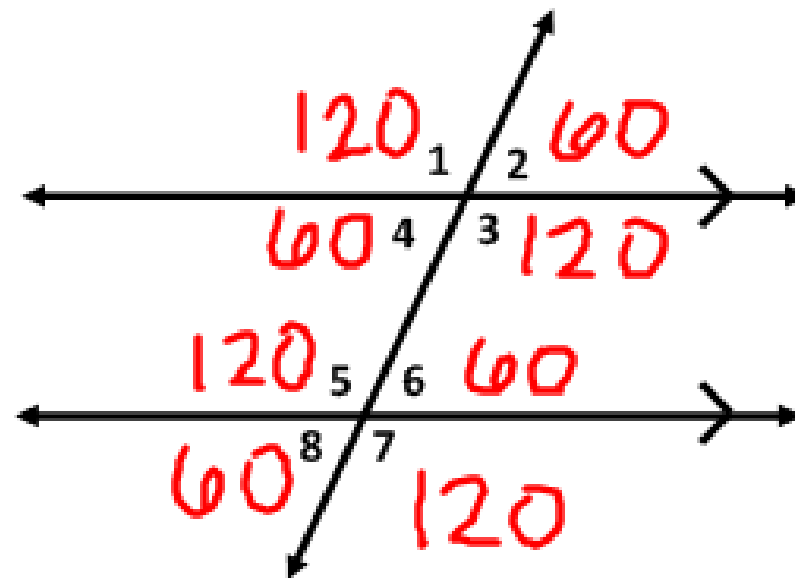
Theorem 3.2:

Consecutive Interior Angles Theorem

If two parallel lines are cut by a transversal, then each pair of consecutive interior angles is supplementary.

Theorem 3.3:

Alternate Exterior Angles Theorem

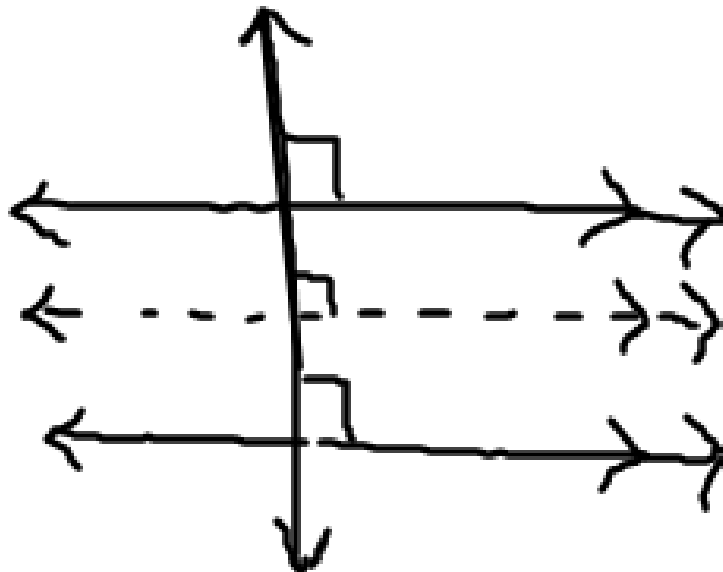If two parallel lines are cut by a transversal, then each pair of alternate exterior angles is congruent.

Ex: If m∠1 = 120°, find all the others.
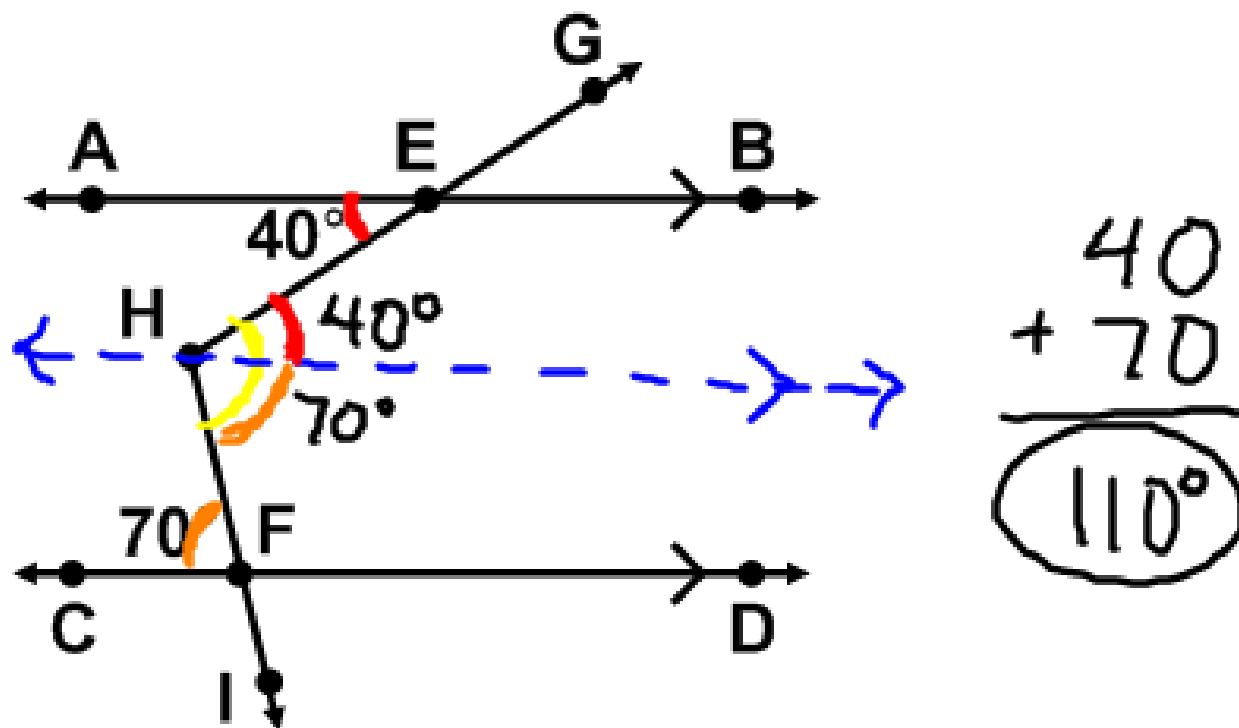
Theorem 3.4:

Perpendicular Transversal Theorem

In a plane, if a line is perpendicular to one of two parallel lines, then it is perpendicular to the other.

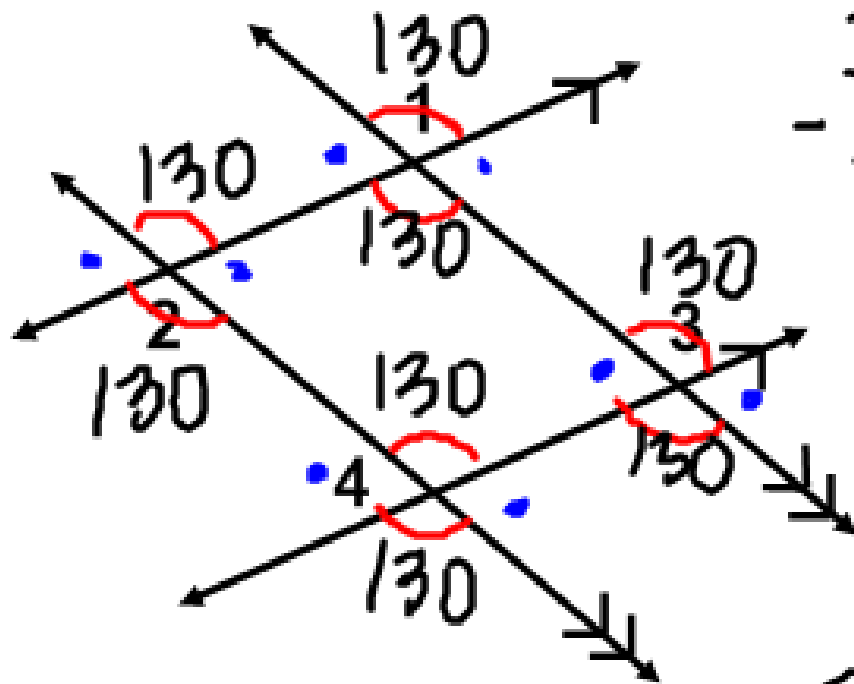# Standardized Test Practice

Find m∠GHI.

G

A   E   B

40°

H   40°

70°

70 F

C   D

I

$$\begin{array}{r} 40 \\ + 70 \\ \hline 110° \end{array}$$

Ex: If $m\angle 1 = 3x + 40$, $m\angle 2 = 2(y - 10)$, and $m\angle 3 = 2x + 70$, find x and y.

$3\cdot 30 + 40$

$$3x + 40 = 2x + 70$$
$$-2x \qquad -2x$$

$$x + 40 = 70$$
$$-40 \quad -40$$

$$\boxed{x = 30}$$

$$2(y-10) = 130$$
$$2y - 20 = 130$$
$$+20 \quad +20$$
$$2y = 150$$

$$\boxed{y = 75}$$

Homework:

p.136 #14 - 24 even, 32, 34