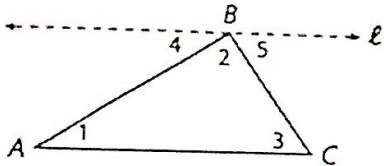# Review Sheet I

## Vocabulary

Regular Polygon   Interior Angle   Exterior Angle
Diagonal   Isosceles Triangle   Equilateral Triangle

Proofs We Have Discussed

Statements	Reasons
1. Draw line ℓ through point B parallel to $\overline{AC}$.	1. Parallel Postulate
2. $m\angle 1 = m\angle\ \mathbf{4}$ and $m\angle 3 = m\angle\ \mathbf{5}$	2. Alternate Interior Angles Theorem
3. $m\angle 4 + m\angle 2 + m\angle 5 = 180°$	3. Angle Addition Postulate and definition of straight angle
4. $m\angle\ \mathbf{1} + m\angle 2 + m\angle\ \mathbf{3} = 180°$	4. Substitution Property of Equality
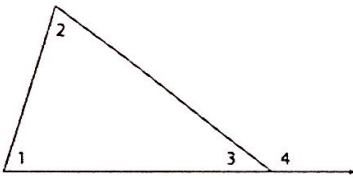
By the **Triangle Sum Theorem**, $m\angle 1 + m\angle 2 + m\angle 3 = 180°$.

Also, $m\angle 3 + m\angle 4 = \mathbf{180°}$ because they are supplementary and make a straight angle.

By the Substitution Property of Equality, then, $m\angle 1 + m\angle 2 + m\angle 3 = m\angle\ \mathbf{3} + m\angle\ \mathbf{4}$.

Subtracting $m\angle 3$ from each side of this equation leaves $m\angle 1 + m\angle 2 = m\angle 4$.

This means that the measure of an exterior angle of a triangle is equal to the sum of the measures of the remote interior angles.

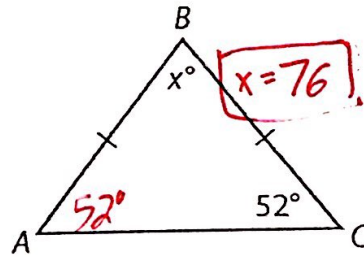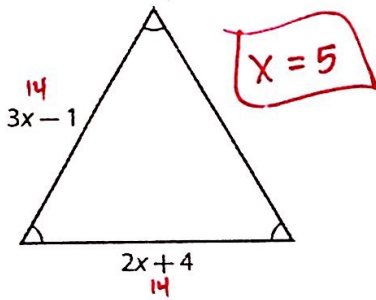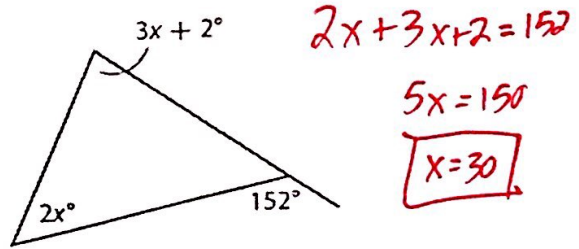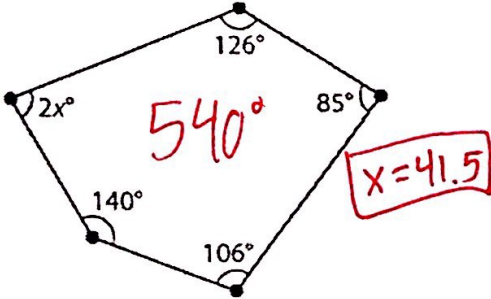**Critical Thinking** Prove $\angle B \cong \angle C$, given point M is the midpoint of $\overline{BC}$.
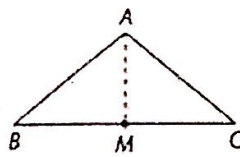
Statements	Reasons
1. M is the midpoint of $\overline{BC}$.	1. Given
2. $\overline{BM} \cong \overline{CM}$	2. Definition of midpoint
3. $\overline{AB} \cong \overline{AC}$	3. Given
4. $\overline{AM} \cong \overline{AM}$	4. Reflexive Property of Congruence
5. $\triangle AMB \cong \triangle AMC$	5. SSS Triangle Congruence Theorem
6. $\angle B \cong \angle C$	6. CPCTC

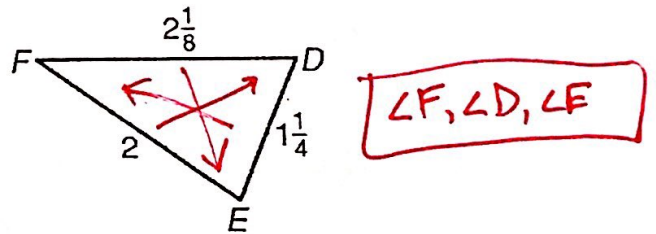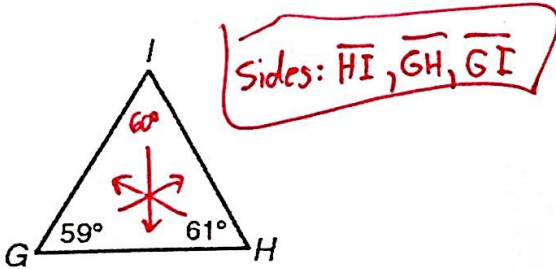How do you find the sum of the interior angles of a polygon?

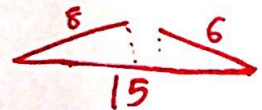$(\#\text{ of sides} - 2) \cdot 180°$

Find the value of x.

126°

2x°   540°   85°

$X = 41.5$

140°

106°

3x + 2° $2x + 3x + 2 = 152$

$5x = 150$

2x°   152° $X = 30$

14
3x − 1 $X = 5$

2x + 4
14

B
x° $X = 76$
52°   52°
A   C

Name the sides from smallest to largest.

60°
59°   61°
G   H

Sides: $\overline{HI}, \overline{GH}, \overline{GI}$

Name the angles in order from smallest to largest.

$2\frac{1}{8}$
F   D
2   $1\frac{1}{4}$
E

$\angle F, \angle D, \angle E$

Can three segments with lengths 8, 15, and 6 make a triangle? Explain your answer.

No; 8+6 is not greater than 15

8   6
15

A triangle has sides 3 cm and 8 cm. What are the possible side lengths of the third side?

$5\,\text{cm} < X < 11\,\text{cm}$

x   3
8
X > 5

3   8
x
X < 11