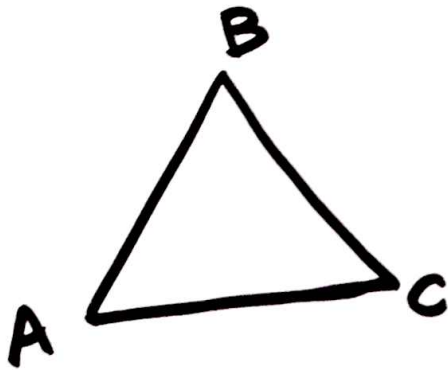# 3.1 Triangle Angle Sum Theorem

triangle – a 3-sided polygon

Each segment of a $\triangle$ is called a <u>side</u>.
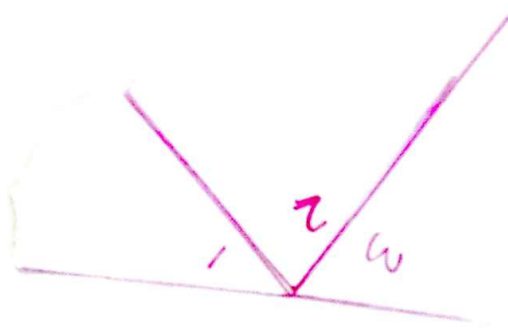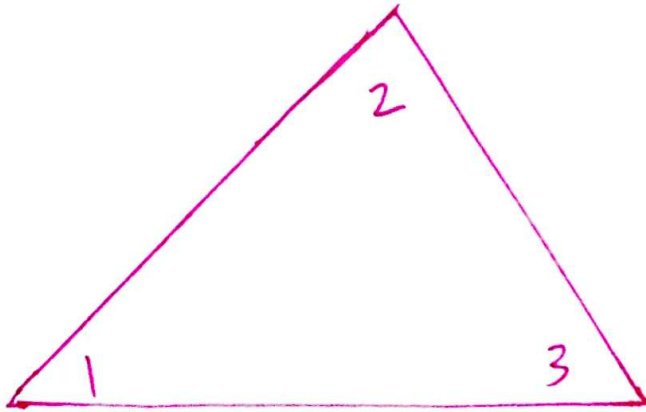Each point is called a <u>vertex</u>. (plural: vertices)

Names: $\triangle ABC$, $\triangle BAC$, etc.

sides: $\overline{AB}, \overline{BC}, \overline{CA}$

Vertices: B, A, C

Triangle-Angle Sum Theorem

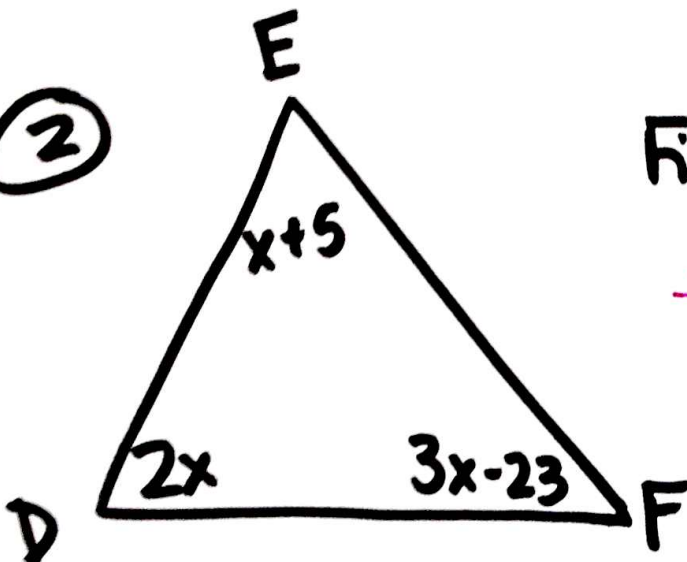The sum of the measures of the angles of <u>any</u> $\triangle$ is 180°.

Examples

①
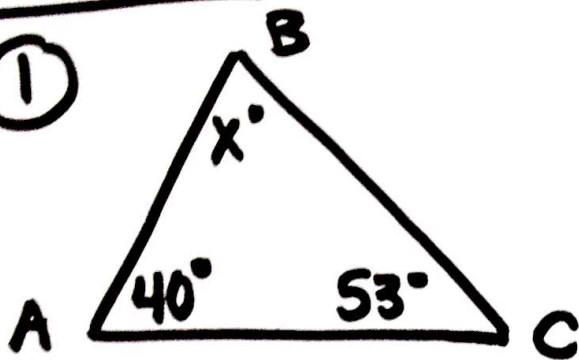
Find x.

$$x + 40 + \mathbf{53} = 180$$
$$x + 93 = 180$$
$$ -93 \quad -93$$
$$\boxed{x = 87}$$

②

Find m∠E.

$$2x + 3x - 23 + x + 5 = 180$$
$$6x - 18 = 180$$
$$ +18 \quad +18$$
$$\frac{6x}{6} = \frac{198}{6}$$
$$x = 33$$

$$m\angle E = x+5$$
$$= 33 + 5$$
$$\boxed{38}$$

③
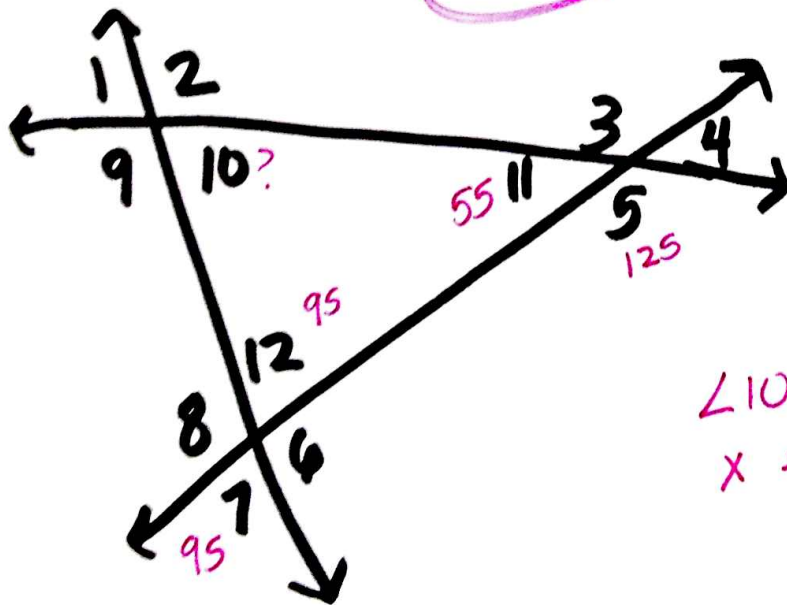
If m∠7 = 95, m∠5 = 125, find m∠10.

$$\angle 10 + \angle 11 + \angle 12 = 180$$
$$x + 55 + 95 = 180$$
$$x + 150 = 180$$
$$ -150 \quad 150$$
$$\boxed{30}$$