Angles in Triangles and Polygons

Solution

4. A

$\because AB = AC$

$\therefore \quad \angle ABC = \angle ACB$

$x = 2y$

$\angle ABC + \angle ACB = \angle BAD$ (ext. $\angle$ of Δ)

$2y + 2y = 144^\circ$

$y = 36^\circ$

5. A

$\because AB = AC$ (given)

$\therefore \angle ACB = \angle ABC = 53^\circ$ (base $\angle$s, isos. Δ)

$\angle BAC = 180^\circ - 53^\circ \times 2$ ($\angle$ sum of Δ)

$\angle BAC = 74^\circ$

$\angle CAD = \angle BAC = 74^\circ$

$m = 180^\circ - 62^\circ - 74^\circ$ ($\angle$ sum of Δ)

$= 44^\circ$

6. A

$\because AB = AC$ (given)

$\therefore \angle ABC = \angle ACB$ (base $\angle$s, isos. Δ)

$\angle BAD = \angle CAD = 20^\circ$

$m = \dfrac{180^\circ - 20^\circ \times 2}{2} = 70^\circ$

7. A

$\because AE = AD$ (given)

$\therefore \angle AED = \angle ADE$ (base $\angle$s, isos. Δ)

$= \dfrac{180^\circ - 2 \times 17^\circ}{2}$ ($\angle$ sum of Δ)

$= 73^\circ$

$\angle AEF + \angle AED = 180^\circ$ (adj. $\angle$s on st. line)

$\angle AEF = 107^\circ$

$\angle BEF = \dfrac{107^\circ}{2} = 53.5^\circ$

$\angle BFE = 180^\circ - 105.5^\circ - 53.5^\circ$ ($\angle$ sum of Δ)

$\angle BFE = 21^\circ$

$\angle CFE + \angle AEF = 180^\circ$ (int. $\angle$s, $AE \,//\, CF$)

$n + 21^\circ + 107^\circ = 180^\circ$

$n = 52^\circ$