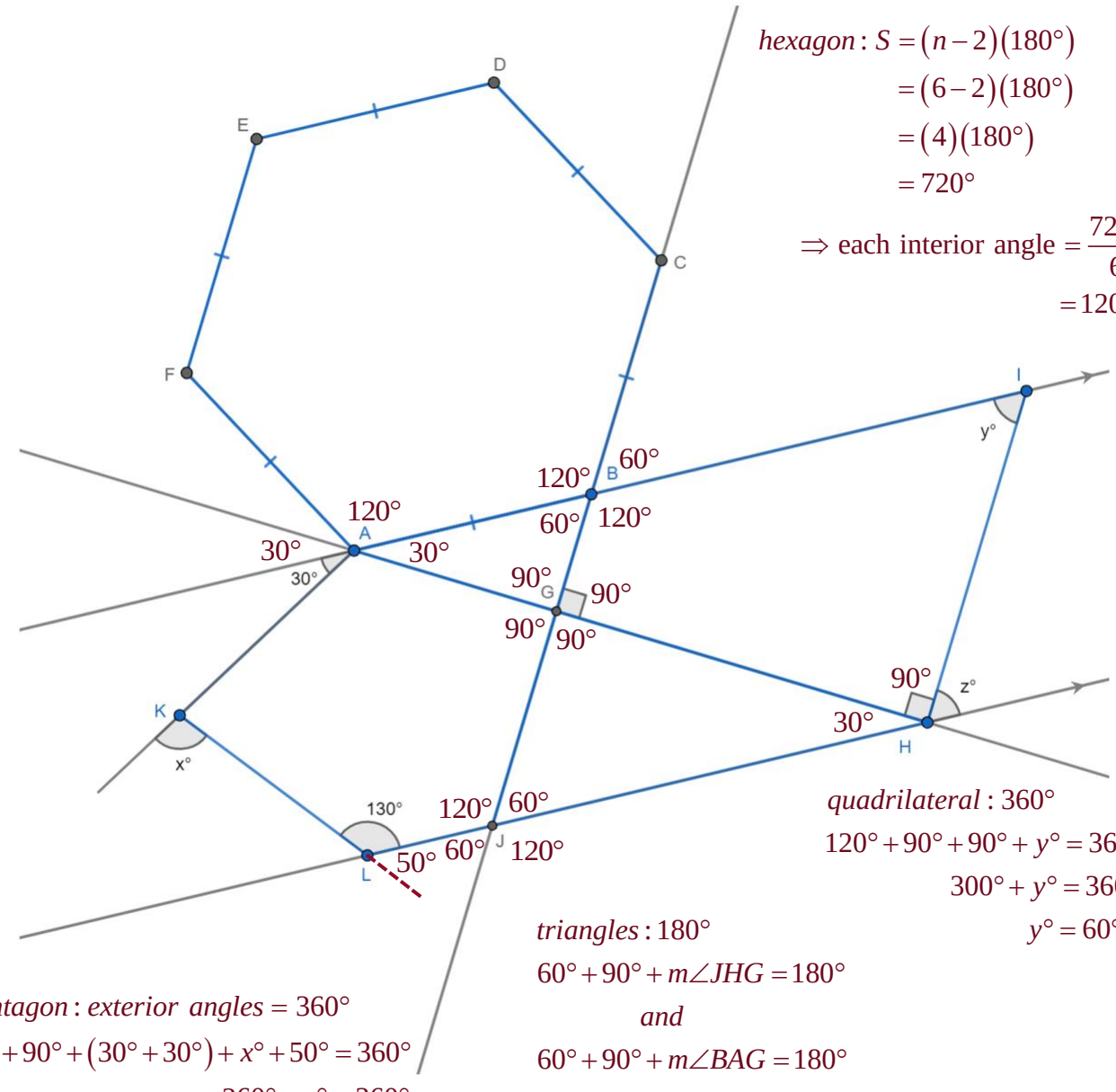
## POLYGON PUZZLE (SAMPLE RESPONSES)

Lines $\overline{AI}$ and $\overline{LH}$ are parallel. Use the image below to find the sum of $x$, $y$, and $z$.




$$hexagon: S = (n-2)(180°)$$
$$= (6-2)(180°)$$
$$= (4)(180°)$$
$$= 720°$$

$$\Rightarrow \text{each interior angle} = \frac{720°}{6}$$
$$= 120°$$

$$quadrilateral: 360°$$
$$120° + 90° + 90° + y° = 360°$$
$$300° + y° = 360°$$
$$y° = 60°$$

$$triangles: 180°$$
$$60° + 90° + m\angle JHG = 180°$$
$$and$$
$$60° + 90° + m\angle BAG = 180°$$
$$\Rightarrow m\angle JHG = m\angle BAG = 30°$$

$$pentagon: exterior\ angles = 360°$$
$$60° + 90° + (30° + 30°) + x° + 50° = 360°$$
$$260° + x° = 360°$$
$$x° = 100°$$

$$30° + 90° + z = 180°$$
$$120° + z° = 360°$$
$$z° = 60°$$

The sum of $x$, $y$, and $z$ is __220__.