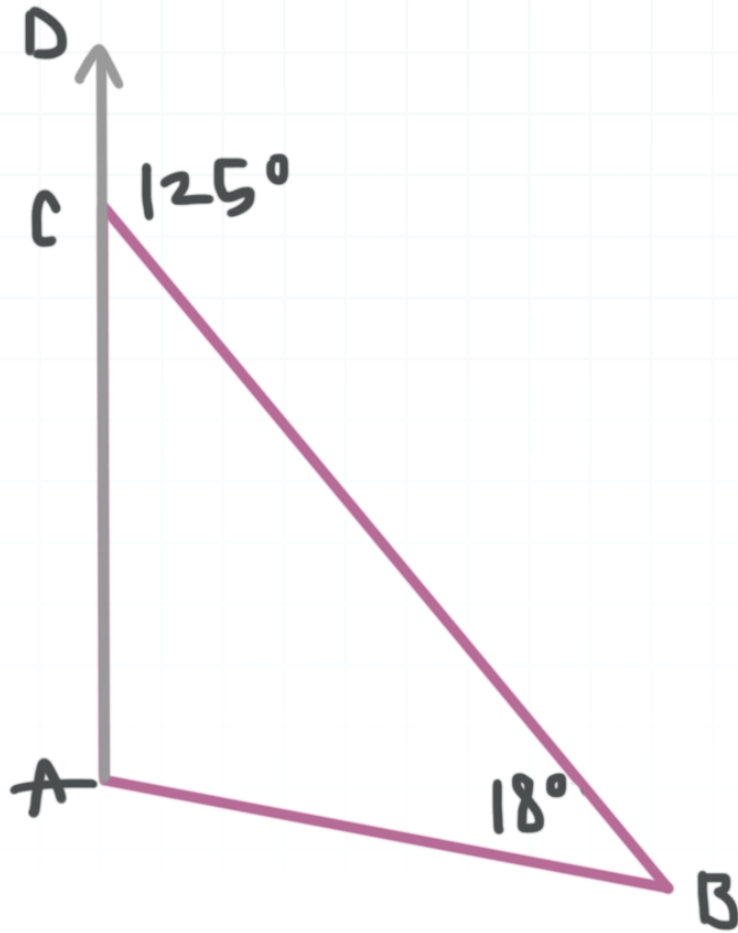**Topic**: Interior angles of triangles

Question: What is $m\angle BAC + m\angle CBA$?

Answer choices:

A   55°

B   73°

C   107°

D   125°

Solution: D

The angles $\angle ACB$ and $\angle BCD$ form a straight line, so

$$m\angle ACB + 125° = 180°$$

$$m\angle ACB = 55°$$

The measures of the three interior angles of a triangle add up to $180°$, so

$$55° + m\angle BAC + 18° = 180°$$

$$m\angle BAC = 107°$$

Therefore,

$$m\angle BAC + m\angle CBA = 107° + 18° = 125°$$

If you know the theorem that states that the measure of an exterior angle of a triangle is equal to the sum of the measures of the two remote interior angles (the two interior angles that aren't adjacent to that exterior angle), then you could use that to easily solve this problem.

Topic: Interior angles of triangles

Question: What is the value of x?
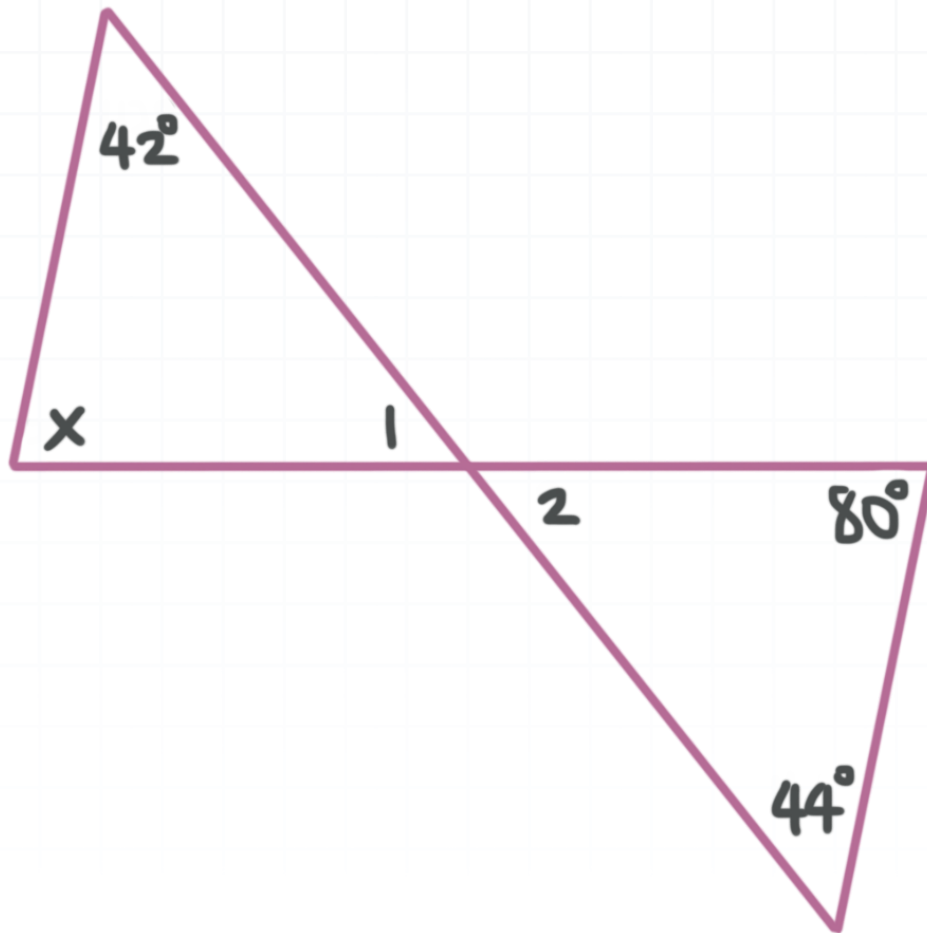
Answer choices:

A   56°

B   82°

C   88°

D   92°

Solution: B

The measures of the three interior angles of a triangle add up to $180°$, so

$$m\angle 2 + 80° + 44° = 180°$$

$$m\angle 2 = 56°$$

Angle 1 and angle 2 are a pair of vertical angles, and vertical angles are congruent, so
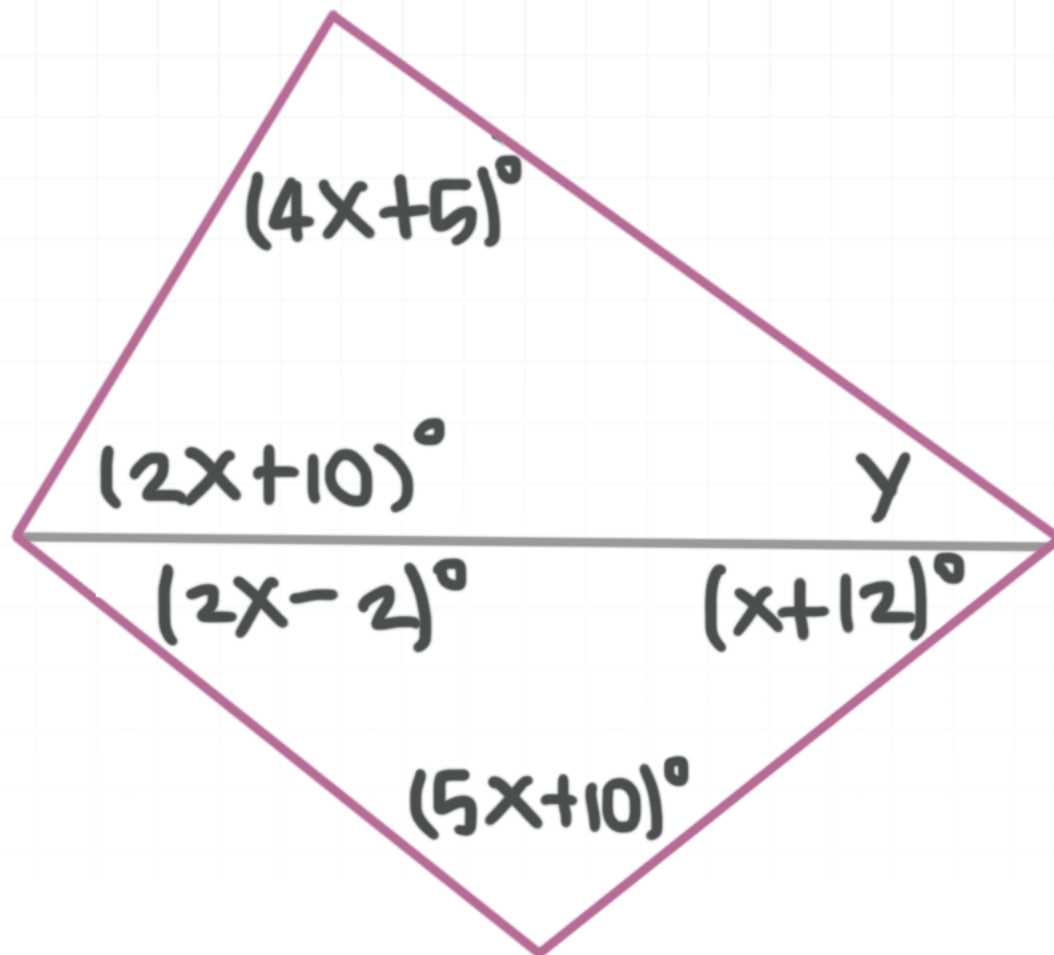
$$m\angle 1 = m\angle 2 = 56°$$

Again, the measures of the three interior angles of a triangle add up to $180°$, so we see that

$$m\angle 1 + 42° + x = 180°$$

$$56° + 42° + x = 180°$$

$$x = 82°$$

Topic: Interior angles of triangles

Question: Find the value of y.

Answer choices:

A   35°

B   42°

C   45°

D   51°

Solution: C

The measures of the three interior angles of a triangle add up to $180°$, so in the bottom triangle, we have

$$(2x - 2)° + (x + 12)° + (5x + 10)° = 180°$$

$$8x° + 20° = 180°$$

$$8x° = 160°$$

$$x° = 20°$$

$$x = 20$$

Applying this value of x to the top triangle, and using the fact that the sum of the measures of the interior angles is $180°$, we get

$$(2x + 10)° + (4x + 5)° + y = 180°$$

$$2(20°) + 10° + 4(20°) + 5° + y = 180°$$

$$135° + y = 180°$$

$$y = 45°$$