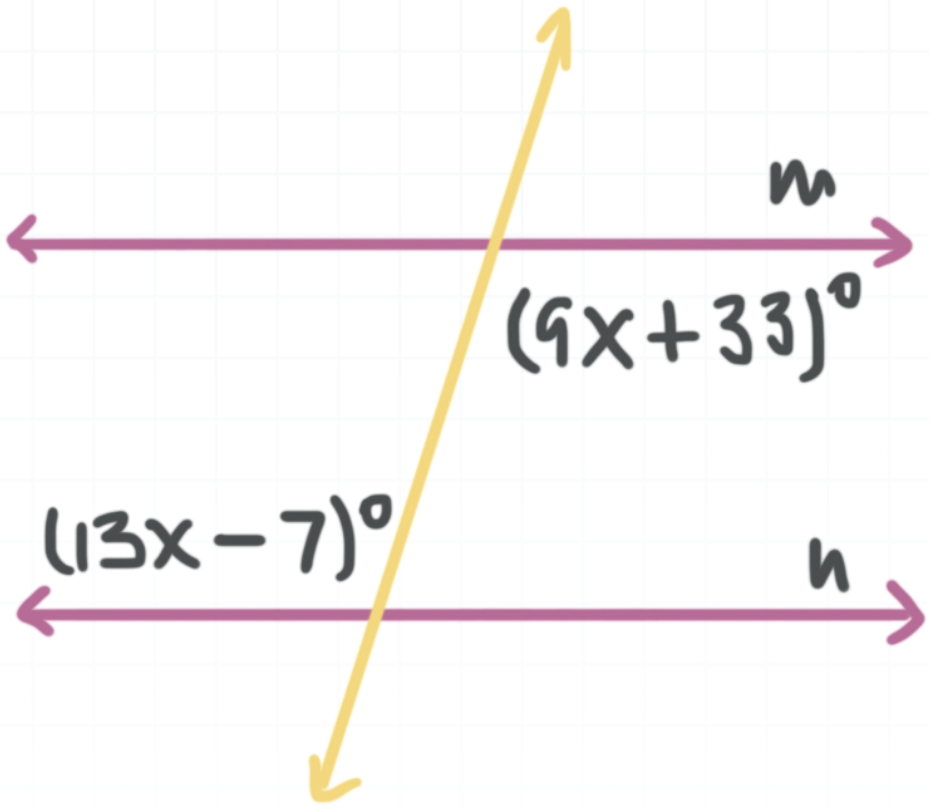
Topic: Angles and transversals

Question: Find x, given that $m \parallel n$.



Answer choices:

A 5

B 6

C 8

D 10

Solution: D

When parallel lines intersect a transversal, alternate interior angles are congruent. The angles of measure $(13x - 7)^\circ$ and $(9x + 33)^\circ$ are a pair of alternate interior angles, so they're congruent.

$$13x - 7 = 9x + 33$$

$$4x = 40$$

$$x = 10$$

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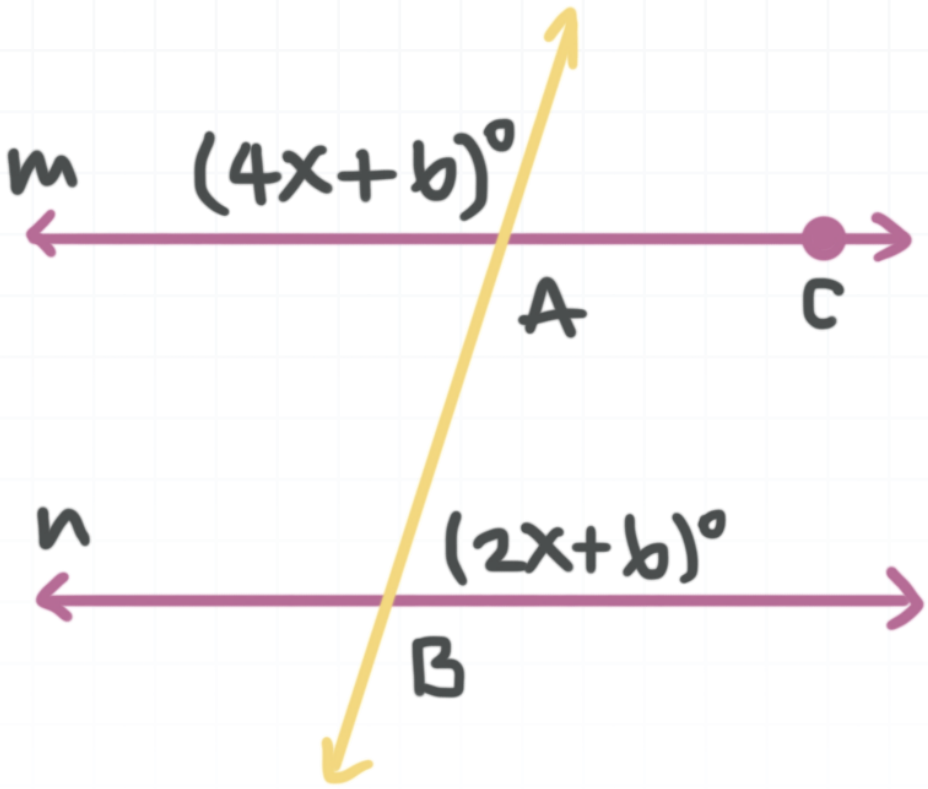

Answer choices:

A 28

B 32

C 36

D 40

Solution: A

Angle BAC and the angle of measure $(4x + 6)^\circ$ are a pair of vertical angles, so they're congruent.

$$m\angle BAC = (4x + 6)^\circ$$

When parallel lines intersect a transversal, consecutive interior angles are supplementary. Angle BAC and the angle of measure $(2x + 6)^\circ$ are a pair of consecutive interior angles. Therefore,

$$(4x + 6) + (2x + 6) = 180$$

$$6x + 12 = 180$$

$$6x = 168$$

$$x = 28$$

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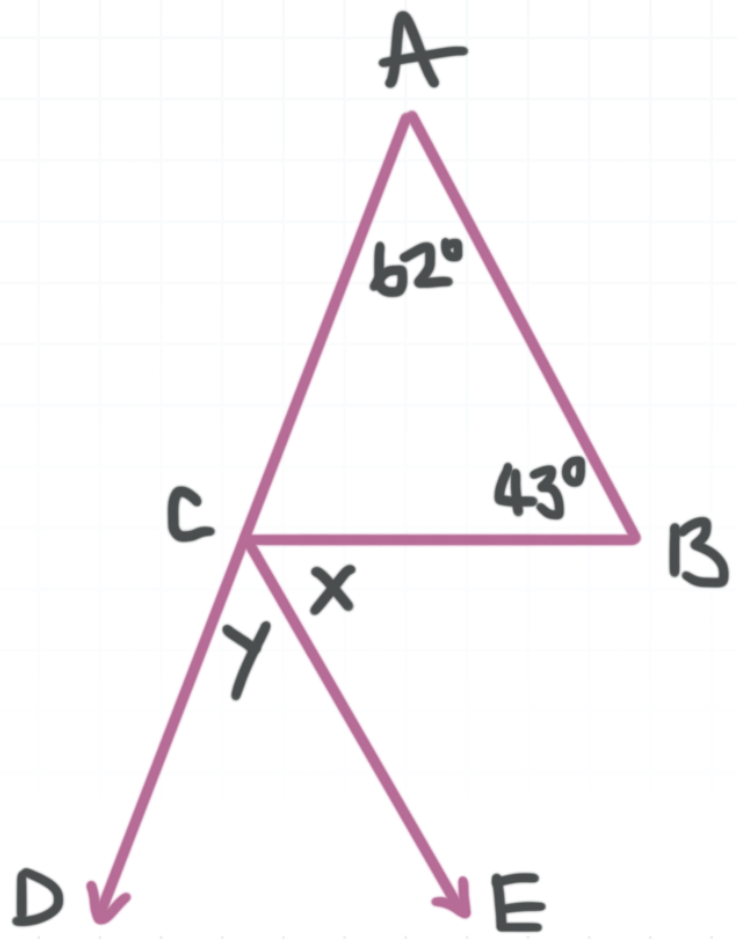
Question: Given that $\overline{AB} \parallel \overline{CE}$, find the value of $y - x$, where both x and y are in degrees.



Answer choices:

A 11°

B 15°

C 19°

D 21°

Solution: C

When parallel lines intersect a transversal, alternate interior angles are congruent. Angles BCE and ABC are a pair of alternate interior angles. Therefore,

$$m\angle BCE = m\angle ABC$$

$$x = 43^\circ$$

When parallel lines intersect a transversal, corresponding angles are congruent. Angles DCE and CAB are a pair of corresponding angles. Therefore,

$$m\angle DCE = m\angle CAB$$

$$y = 62^\circ$$

So we see that

$$y - x = 62^\circ - 43^\circ$$

$$y - x = 19^\circ$$