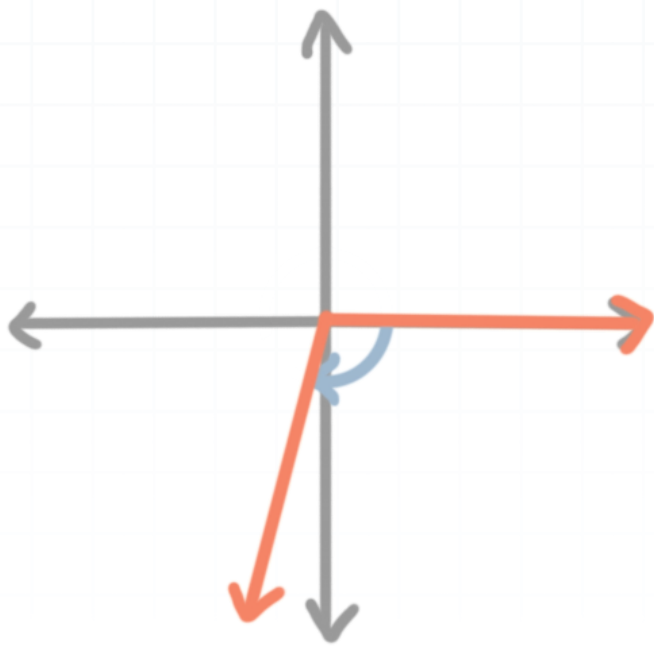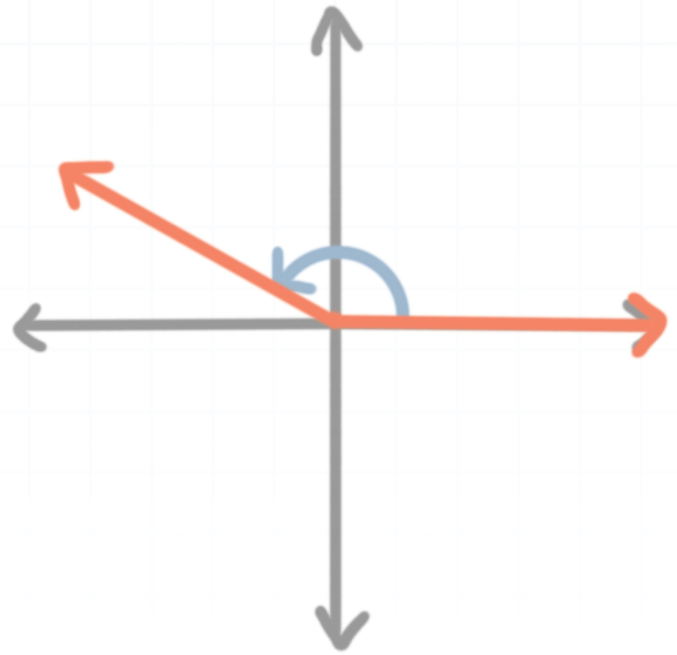**Topic**: Positive and negative angles

Question: Which choice could be a sketch of $-210°$ in standard position?

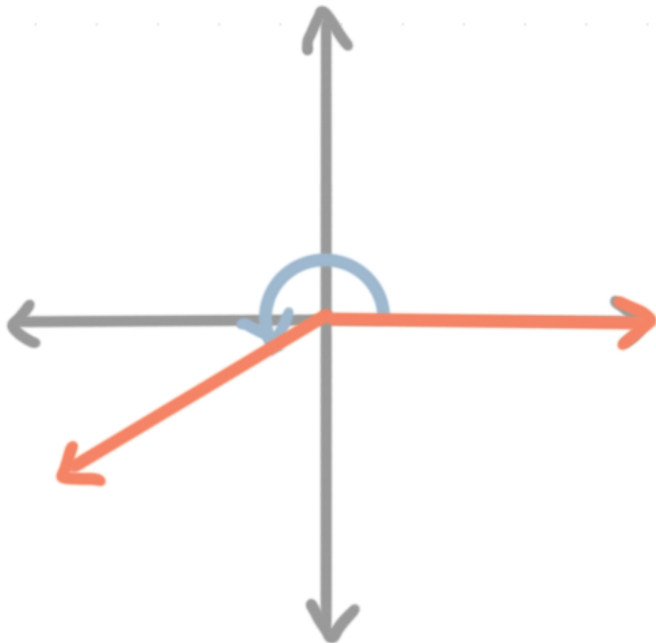**Answer choices**:
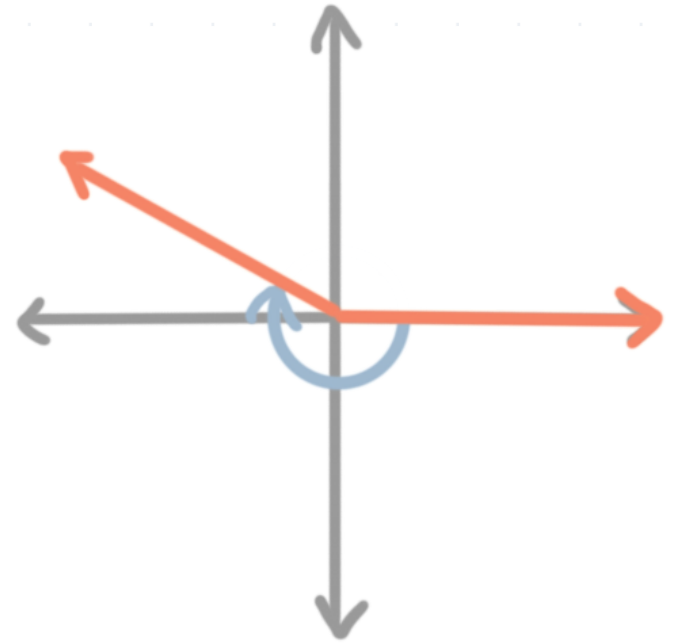
A

B

C

D

Solution: D

An angle of $-210°$ is negative, so its terminal side is reached from its initial side by making a rotation of $210°$ in the negative (clockwise) direction about the origin. Based on only the direction of rotation, A and D are the only possible correct choices.

Rotating in the negative direction, we know that $-90°$ gets us from the starting point on the positive x-axis to the negative y-axis, and $-180°$ gets us to the negative x-axis. An angle of $-210°$ has us rotating even further than $-180°$, which means D must be the correct answer choice. Answer choice A looks like an approximately $-100°$ angle, since its rotation is just past the negative y-axis.

Topic: Positive and negative angles

Question: Where is the initial side of an angle located, if its sketched in standard position?

Answer choices:

A   Along the positive side of the x-axis

B   Along the negative side of the x-axis

C   Along the positive side of the y-axis

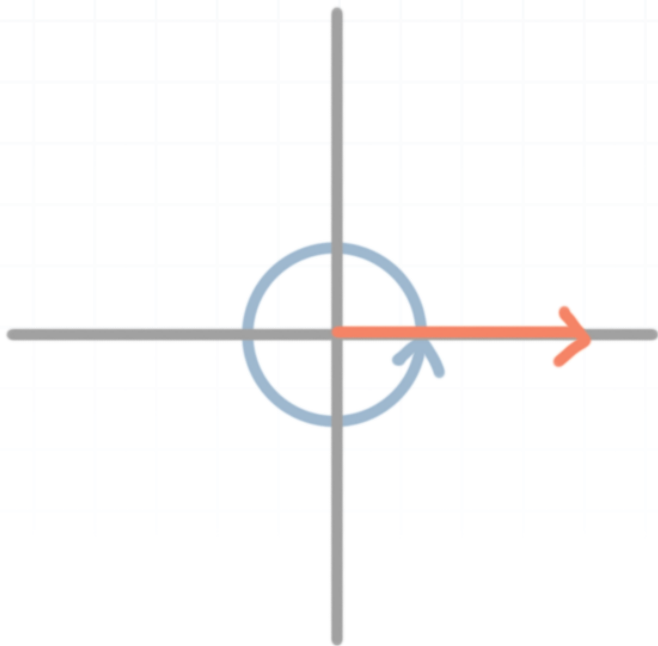D   Along the negative side of the y-axis

Solution: A

The "initial side" is the side where the angle begins. In standard position, this side is always sketched along the positive side of the x-axis.
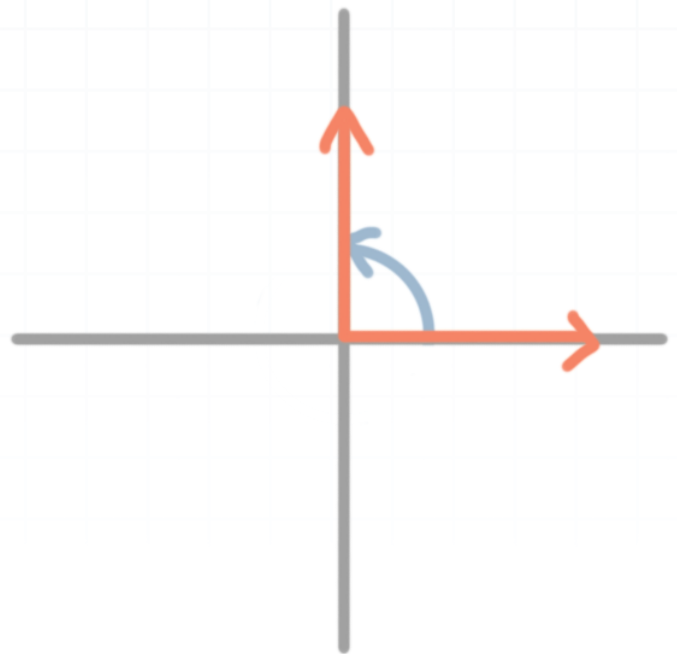
Topic: Positive and negative angles

Question: Which of the following could be a sketch of an $810°$ angle in standard position?

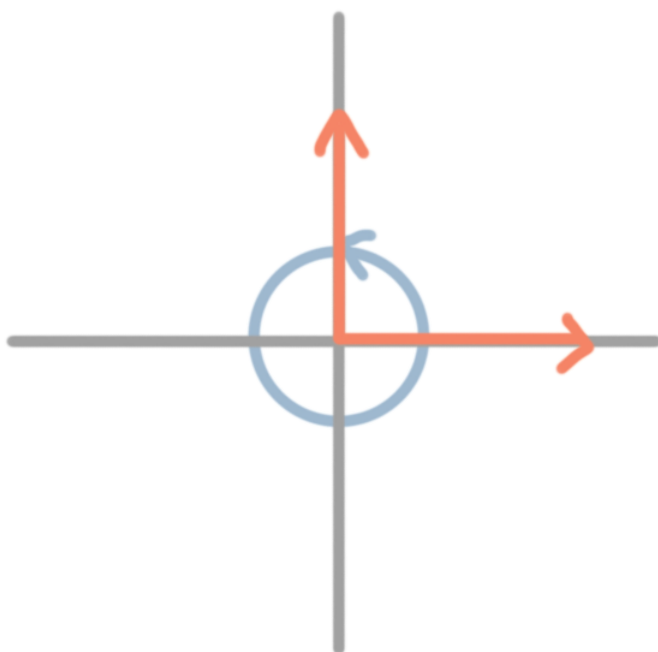**Answer choices**:

A

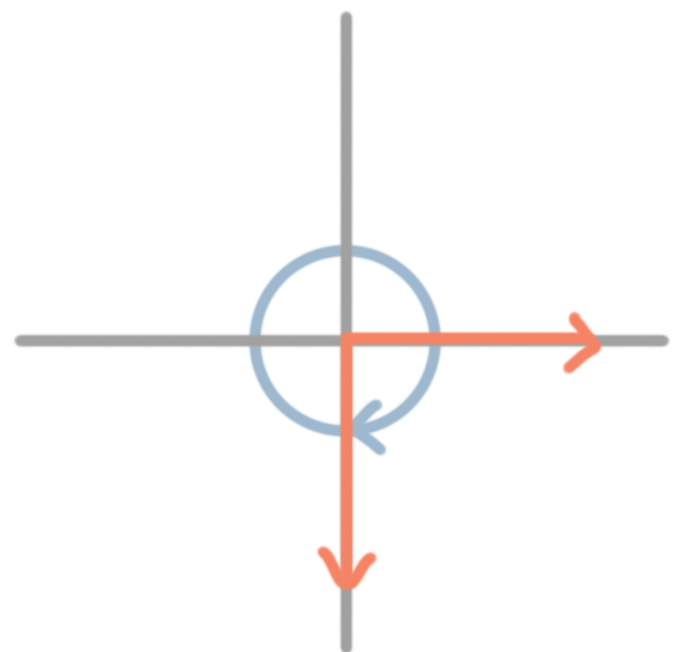B

C

D

Solution: C

Since $720° < 810°$, the angle $810°$ is more than two full rotations. We'll find out how much more by finding the difference between the angles.

$$810° - 720° = 90°$$

So to sketch the angle, we'll put the initial side of the angle along the positive side of the x-axis. Then we'll rotate counterclockwise, into the first quadrant, rotating two full rotations, all the way around the circle, and then an additional $90°$.

Because $90°$ falls along the positive side of the y-axis, the terminal side of $810°$ should also fall along the positive side of the y-axis.