MX SP **10** The graph of the function $y = \sin^{-1}(x - 4)$ is transformed by being dilated horizontally with a scale factor of 2 and then translated to the right by 1. What is the equation of the transformed graph? **1**

A. $y = \sin^{-1}\left(\frac{x-9}{2}\right)$

B. $y = \sin^{-1}\left(\frac{x-10}{2}\right)$

C. $y = \sin^{-1}(2x - 6)$

D. $y = \sin^{-1}(2x - 5)$

A

- horizontal dilation of factor of 2:

$$\therefore \frac{1}{a} = 2$$

$$a = \frac{1}{2}$$

$$\therefore y = \sin^{-1}\left(\frac{x}{2} - 4\right)$$

- translated to the right by 1:

$$\therefore y = \sin^{-1}\left(\frac{x-1}{2} - 4\right)$$

$$y = \sin^{-1}\left(\frac{x-1-8}{2}\right)$$

$$y = \sin^{-1}\left(\frac{x-9}{2}\right)$$