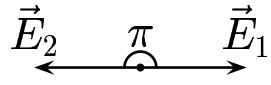
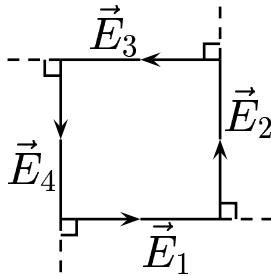


# of slit	1st min. angle	Phasor diagram
2-slit	$\phi_1 = \pi$	
4-slit	$\phi_1 = \frac{\pi}{2}$	

From the 2-slit and 4-slit cases, use deduction to determine  $\phi_1$  for the  $N$ -slit case.

- A) For the  $N$ -slit case,  $\phi_1 = \left(\frac{N}{2}\right) \pi$ .
- B) For the  $N$ -slit case,  $\phi_1 = \pi$ .
- C) For the  $N$ -slit case,  $\phi_1 = \left(\frac{1}{4} - \frac{N}{16}\right) \pi$ .

D) For the  $N$ -slit case,  $\phi_1 = \frac{2\pi}{N}$ .

38.04-01 N Slits 2004-3-24

For the 2-slit,  $2 \phi_1 = 2 \pi$ ,  $\phi_1 = \pi$ ;

For the 4-slit,  $4 \phi_1 = 2 \pi$ ,  $\phi_1 = \frac{\pi}{2}$ ,  $\dots$

For the N-slit,  $N \phi_1 = 2 \pi$ , or  $\phi_1 = \frac{2 \pi}{N}$ .

Answer **D**.