

Suppose a fair 100-sided die is rolled once and the resulting value is called  $X$ . That is,  $X \in \{1, 2, 3, \dots, 100\}$ . What is the variance of  $\sin(\pi X/2)$ ?

- (a)  $1/2$
- (b)  $1/4$
- (c)  $1$
- (d)  $2$
- (e)  $100$
- (f)  $50$
- (g)  $25$
- (h)  $\sqrt{2}$
- (i)  $1/8$
- (j)  $4$
- (k)  $25/2$
- (l) None of these