SJA MATHEMATICS CONTEST I

Intermediate Division Sample Questions

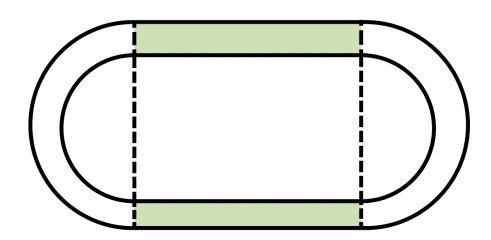
1. The product of three consecutive integers is 504. Find the smallest number among the three integers.

(A) 7 **(B)** 9 **(C)** 11

(D) 13

(E) 15

2. The figure below shows a running track. It takes $4 + \pi$ seconds for Hilly to complete one lap along the outer track with a speed of 10 meters per second. Besides, it takes $10 + 2\pi$ seconds for Hilly to complete one lap along the inner track with a speed of 4 meters per second. If the radius of the two semicircles and the horizontal length of the track are both integers, find the area of the shaded regions.



(A) $20m^2$

(B) $40m^2$ **(C)** $60m^2$ **(D)** $80m^2$

(E) $100m^2$

3. Hilly chooses three distinct integers from the interval [1,5]. What is the probability that the set of three integers can form a triangle when each value is assigned as the side length?

(A) $\frac{1}{2}$ (B) $\frac{1}{10}$ (C) $\frac{3}{10}$ (D) $\frac{5}{10}$ (E) $\frac{7}{10}$