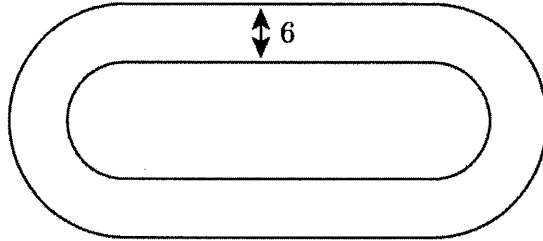


AMC Practice Problems from AMC 12B 2011 Exam

8. Keiko walks once around a track at exactly the same constant speed every day. The sides of the track are straight, and the ends are semicircles. The track has width 6 meters, and it takes her 36 seconds longer to walk around the outside edge of the track than around the inside edge. What is Keiko's speed in meters per second?

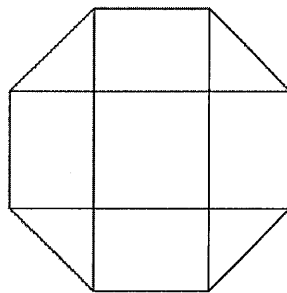


- (A)  $\frac{\pi}{3}$     (B)  $\frac{2\pi}{3}$     (C)  $\pi$     (D)  $\frac{4\pi}{3}$     (E)  $\frac{5\pi}{3}$

10. Rectangle  $ABCD$  has  $AB = 6$  and  $BC = 3$ . Point  $M$  is chosen on side  $AB$  so that  $\angle AMD = \angle CMD$ . What is the degree measure of  $\angle AMD$ ?

- (A) 15    (B) 30    (C) 45    (D) 60    (E) 75

12. A dart board is a regular octagon divided into regions as shown. Suppose that a dart thrown at the board is equally likely to land anywhere on the board. What is the probability that the dart lands within the center square?



- (A)  $\frac{\sqrt{2}-1}{2}$     (B)  $\frac{1}{4}$     (C)  $\frac{2-\sqrt{2}}{2}$     (D)  $\frac{\sqrt{2}}{4}$     (E)  $2-\sqrt{2}$

13. Brian writes down four integers  $w > x > y > z$  whose sum is 44. The pairwise positive differences of these numbers are 1, 3, 4, 5, 6, and 9. What is the sum of the possible values for  $w$ ?

- (A) 16      (B) 31      (C) 48      (D) 62      (E) 93

15. How many positive two-digit integers are factors of  $2^{24} - 1$ ?

- (A) 4      (B) 8      (C) 10      (D) 12      (E) 14

16. Rhombus  $ABCD$  has side length 2 and  $\angle B = 120^\circ$ . Region  $R$  consists of all points inside the rhombus that are closer to vertex  $B$  than any of the other three vertices. What is the area of  $R$ ?

- (A)  $\frac{\sqrt{3}}{3}$       (B)  $\frac{\sqrt{3}}{2}$       (C)  $\frac{2\sqrt{3}}{3}$       (D)  $1 + \frac{\sqrt{3}}{3}$       (E) 2