18

RATIO

2015A   11. The ratio of the length to the width of a rectangle is $4 : 3$. If the rectangle has diagonal of length d, then the area may be expressed as kd^2 for some constant k. What is k?

(A) $\dfrac{2}{7}$ (B) $\dfrac{3}{7}$ (C) $\dfrac{12}{25}$ (D) $\dfrac{16}{25}$ (E) $\dfrac{3}{4}$

2010A

12. Logan is constructing a scaled model of his town. The city's water tower stands 40 meters high, and the top portion is a sphere that holds 100,000 liters of water. Logan's miniature water tower holds 0.1 liters. How tall, in meters, should Logan make his tower?

(A) 0.04   (B) $\dfrac{0.4}{\pi}$ (C) 0.4   (D) $\dfrac{4}{\pi}$ (E) 4

2006B

13. Joe and JoAnn each bought 12 ounces of coffee in a 16-ounce cup. Joe drank 2 ounces of his coffee and then added 2 ounces of cream. JoAnn added 2 ounces of cream, stirred the coffee well, and then drank 2 ounces. What is the resulting ratio of the amount of cream in Joe's coffee to that in JoAnn's coffee?

(A) $\dfrac{6}{7}$ (B) $\dfrac{13}{14}$ (C) 1   (D) $\dfrac{14}{13}$ (E) $\dfrac{7}{6}$

2007A

13. Yan is somewhere between his home and the stadium. To get to the stadium he can walk directly to the stadium, or else he can walk home and then ride his bicycle to the stadium. He rides 7 times as fast as he walks, and both choices require the same amount of time. What is the ratio of Yan's distance from his home to his distance from the stadium?

(A) $\dfrac{2}{3}$ (B) $\dfrac{3}{4}$ (C) $\dfrac{4}{5}$ (D) $\dfrac{5}{6}$ (E) $\dfrac{6}{7}$

2007A 14. A triangle with side lengths in the ratio 3:4:5 is inscribed in a circle of radius 3. What is the area of the triangle?

(A) 8.64   (B) 12   (C) 5π (D) 17.28   (E) 18

2008A 14. Older television screens have an aspect ratio of 4:3. That is, the ratio of the width to the height is 4:3. The aspect ratio of many movies is not 4:3, so they are sometimes shown on a television screen by "letterboxing" — darkening strips of equal height at the top and bottom of the screen, as shown. Suppose a movie has an aspect ratio of 2:1 and is shown on an older television screen with a 27-inch diagonal. What is the height, in inches, of each darkened strip?

(A) 2   (B) 2.25   (C) 2.5   (D) 2.7   (E) 3