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TRIANGLES

2008B 7. An equilateral triangle of side length 10 is completely filled in by non-overlapping equilateral triangles of side length 1. How many small triangles are required?

(A) 10 **(B)** 25 **(C)** 100 **(D)** 250 **(E)** 1000

2011B 7. The sum of two angles of a triangle is $\frac{6}{5}$ of a right angle, and one of these two angles is 30° larger than the other. What is the degree measure of the largest angle in the triangle?

(A) 69 **(B)** 72 **(C)** 90 **(D)** 102 **(E)** 108

2013B 7. Six points are equally spaced around a circle of radius 1. Three of these points are the vertices of a triangle that is neither equilateral nor isosceles. What is the area of this triangle?

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

2004B 8. Minneapolis-St. Paul International Airport is 8 miles southwest of downtown St. Paul and 10 miles southeast of downtown Minneapolis. Which of the following is closest to the number of miles between downtown St. Paul and downtown Minneapolis?

(A) 13 **(B)** 14 **(C)** 15 **(D)** 16 **(E)** 17

2007A 8. Triangles ABC and ADC are isosceles with $AB = BC$ and $AD = DC$. Point D is inside $\triangle ABC$, $\angle ABC = 40°$, and $\angle ADC = 140°$. What is the degree measure of $\angle BAD$?

(A) 20 **(B)** 30 **(C)** 40 **(D)** 50 **(E)** 60

2017B 8. Points $A(11, 9)$ and $B(2, -3)$ are vertices of $\triangle ABC$ with $AB = AC$. The altitude from A meets the opposite side at $D(-1, 3)$. What are the coordinates of point C?

(A) $(-8, 9)$ **(B)** $(-4, 8)$ **(C)** $(-4, 9)$ **(D)** $(-2, 3)$

(E) $(-1, 0)$

2014A 9. The two legs of a right triangle, which are altitudes, have lengths $2\sqrt{3}$ and 6. How long is the third altitude of the triangle?

(A) 1 **(B)** 2 **(C)** 3 **(D)** 4 **(E)** 5

2016B 9. All three vertices of $\triangle ABC$ lie on the parabola defined by $y = x^2$, with A at the origin and $\overline{BC}$ parallel to the x-axis. The area of the triangle is 64. What is the length BC?

(A) 4 **(B)** 6 **(C)** 8 **(D)** 10 **(E)** 16

2000

10. The sides of a triangle with positive area have lengths 4,6, and x. The sides of a second triangle with positive area have lengths 4, 6, and y. What is the smallest positive number that is **not** a possible value of $|x-y|$?

(A) 2 **(B)** 4 **(C)** 6 **(D)** 8 **(E)** 10

2005B

10. In $\triangle ABC$, we have $AC = BC = 7$ and $AB = 2$. Suppose that D is a point on line AB such that B lies between A and D and $CD = 8$. What is BD?

(A) 3 **(B)** $2\sqrt{3}$ **(C)** 4 **(D)** 5 **(E)** $4\sqrt{2}$

2006B

10. In a triangle with integer side lengths, one side is three times as long as a second side, and the length of the third side is 15. What is the greatest possible perimeter of the triangle?

(A) 43 **(B)** 44 **(C)** 45 **(D)** 46 **(E)** 47

2007B

10. Two points B and C are in a plane. Let S be the set of all points A in the plane for which $\triangle ABC$ has area 1. Which of the following describes S ?

(A) two parallel lines **(B)** a parabola **(C)** a circle **(D)** a line segment **(E)** two points

2009B

10. A flagpole is originally 5 meters tall. A hurricane snaps the flagpole at a point x meters above the ground so that the upper part, still attached to the stump, touches the ground 1 meter away from the base. What is x ?

(A) 2.0 **(B)** 2.1 **(C)** 2.2 **(D)** 2.3 **(E)** 2.4

2016B

10. A thin piece of wood of uniform density in the shape of an equilateral triangle with side length 3 inches weighs 12 ounces. A second piece of the same type of wood, with the same thickness, also in the shape of an equilateral triangle, has side length 5 inches. Which of the following is closest to the weight, in ounces, of the second piece?

(A) 14.0 **(B)** 16.0 **(C)** 20.0 **(D)** 33.3 **(E)** 55.6