

TRIANGLES

- 2009B 12. Distinct points A , B , C , and D lie on a line, with $AB = BC = CD = 1$. Points E and F lie on a second line, parallel to the first, with $EF = 1$. A triangle with positive area has three of the six points as its vertices. How many possible values are there for the area of the triangle?
- (A) 3 (B) 4 (C) 5 (D) 6 (E) 7

- 2018B 12. Line segment \overline{AB} is a diameter of a circle with $AB = 24$. Point C , not equal to A or B , lies on the circle. As point C moves around the circle, the centroid (center of mass) of $\triangle ABC$ traces out a closed curve missing two points. To the nearest positive integer, what is the area of the region bounded by this curve?
- (A) 25 (B) 38 (C) 50 (D) 63 (E) 75
- 2002A 13. The sides of a triangle have lengths of 15, 20, and 25. Find the length of the shortest altitude.
- (A) 6 (B) 12 (C) 12.5 (D) 13 (E) 15
- 2010A 14. Triangle ABC has $AB = 2 \cdot AC$. Let D and E be on \overline{AB} and \overline{BC} , respectively, such that $\angle BAE = \angle ACD$. Let F be the intersection of segments AE and CD , and suppose that $\triangle CFE$ is equilateral. What is $\angle ACB$?
- (A) 60° (B) 75° (C) 90° (D) 105° (E) 120°

- 2014A 14. The y -intercepts, P and Q , of two perpendicular lines intersecting at the point $A(6, 8)$ have a sum of zero. What is the area of $\triangle APQ$?
- (A) 45 (B) 48 (C) 54 (D) 60 (E) 72
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- 2008B 15. How many right triangles have integer leg lengths a and b and a hypotenuse of length $b + 1$, where $b < 100$?
- (A) 6 (B) 7 (C) 8 (D) 9 (E) 10
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- 2013A 15. Two sides of a triangle have lengths 10 and 15. The length of the altitude to the third side is the average of the lengths of the altitudes to the two given sides. How long is the third side?
- (A) 6 (B) 8 (C) 9 (D) 12 (E) 18