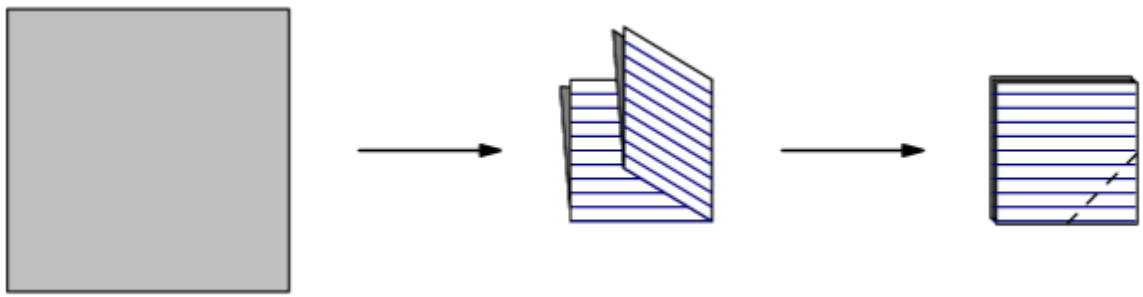
American Mathematics contest 8 (AMC 8) - Geometry problems

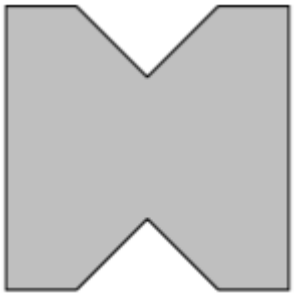
Try these AMC 8 Geometry Questions and check your knowledge!

AMC 8, 2023, Problem 2

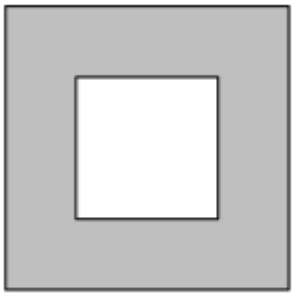
A square piece of paper is folded twice into four equal quarters, as shown below, then cut along the dashed line. When unfolded, the paper will match which of the following figures?



(B)

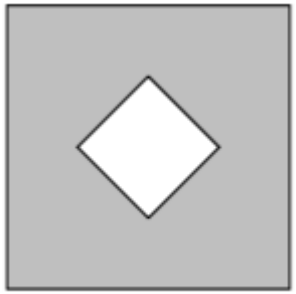


(C)



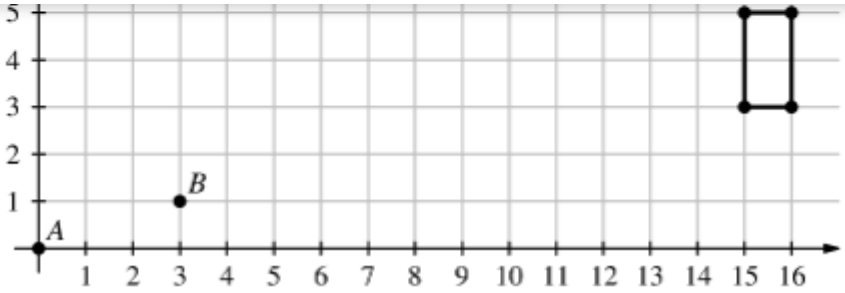
(D)

(E)



AMC 8, 2023, Problem 7

A rectangle, with sides parallel to the x-axis and y-axis, has opposite vertices located at (15,3) and (16,5). A line is drawn through points A(0,0) and B(3,1). Another line is drawn through points C(0,10) and D(2,9). How many points on the rectangle lie on at least one of the two lines?



(A) 0

(B) 1

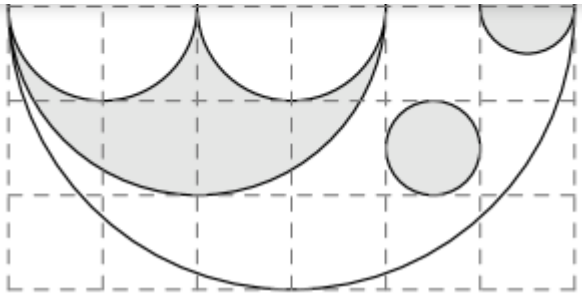
(C) 2

(D) 3

(E) 4

AMC 8, 2023, Problem 12

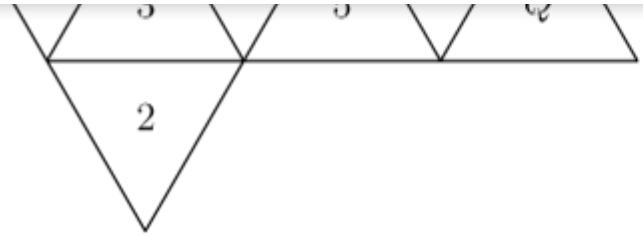
The figure below shows a large white circle with a number of smaller white and shaded circles in its interior. What fraction of the interior of the large white circle is shaded?



(A) $\frac{1}{4}$
(B) $\frac{11}{36}$
(C) $(\frac{1}{3})$
(D) (\frac{19}{36})
(E) (\frac{5}{9})

AMC 8, 2023, Problem 17

A *regular octahedron* has eight equilateral triangle faces with four faces meeting at each vertex. Jun will make the regular octahedron shown on the right by folding the piece of paper shown on the left. Which numbered face will end up to the right of Q?



(A) 1

(B) 2

(C) 3

(D) 4

(E) 5

AMC 8, 2023, Problem 19

An equilateral triangle is placed inside a larger equilateral triangle so that the region between them can be divided into three congruent trapezoids, as shown below. The side length of the inner triangle is $\frac{2}{3}$ the side length of the larger triangle. What is the ratio of the area of one trapezoid to the area of the inner triangle?

(A) 1: 3

(B) 3: 8

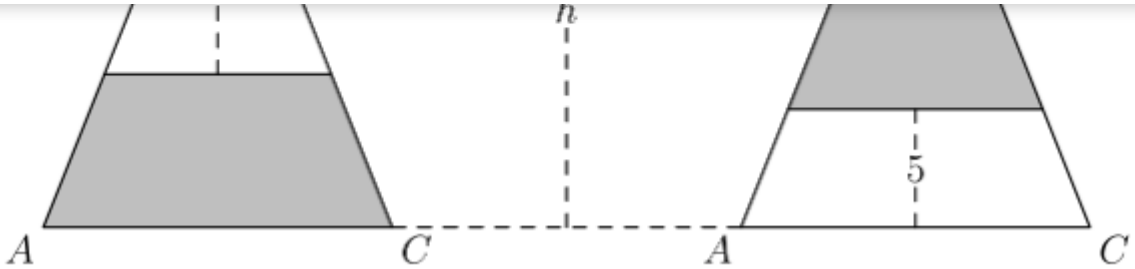
(C) 5: 12

(D) 7: 16

(E) 4: 9

AMC 8, 2023, Problem 24

Isosceles triangle A B C has equal side lengths A B and B C. In the figures below, segments are drawn parallel to $\overline{AC}$ so that the shaded portions of /(\triangle A B C /) have the same area. The heights of the two unshaded portions are 11 and 5 units, respectively. What is the height h of $\triangle ABC$?



(A) 14.6

(B) 14.8

(C) 15

(D) 15.2

(E) 15.4

AMC 8, 2022, Problem 1

The Math Team designed a logo shaped like a multiplication symbol, shown below on a grid of 1-inch squares. What is the area of the logo in square inches?

(A) 10

(B) 12

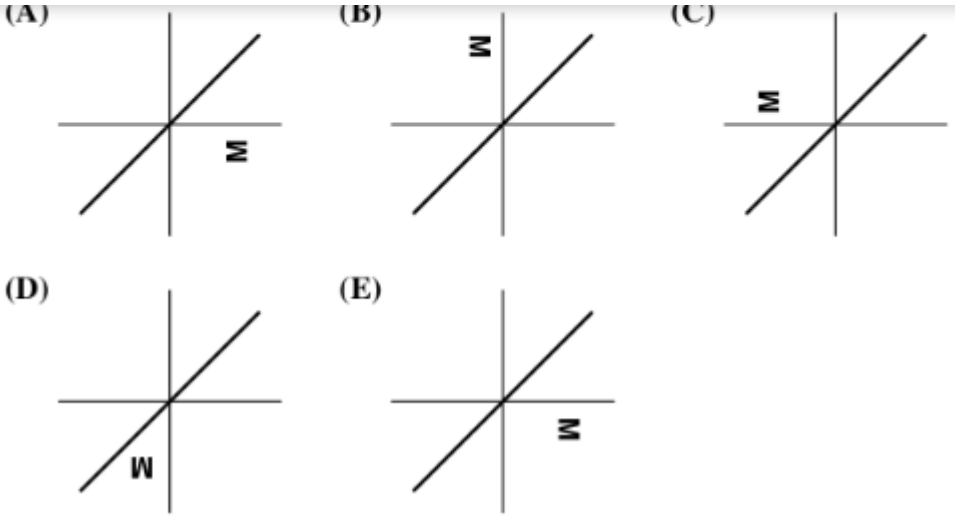
(C) 13

(D) 14

(E) 15

AMC 8, 2022, Problem 4

The letter $\mathbf{M}$ in the figure below is first reflected over the line q and then reflected over the line p. What is the resulting image?



AMC 8, 2022, Problem 18

The midpoints of the four sides of a rectangle are $(-3, 0)$, $(2, 0)$, $(5, 4)$, and $(0, 4)$. What is the area of the rectangle?

(A) 20

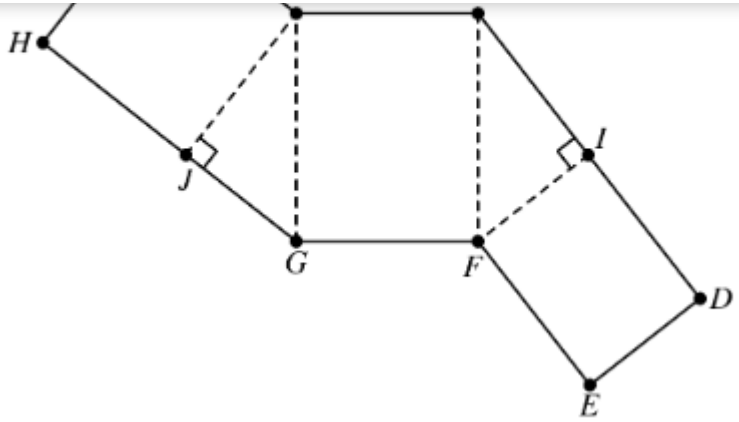
(B) 25

(C) 40

(D) 50

(E) 80

AMC 8, 2022, Problem 24



(A) 112

(B) 128

(C) 192

(D) 240

(E) 288

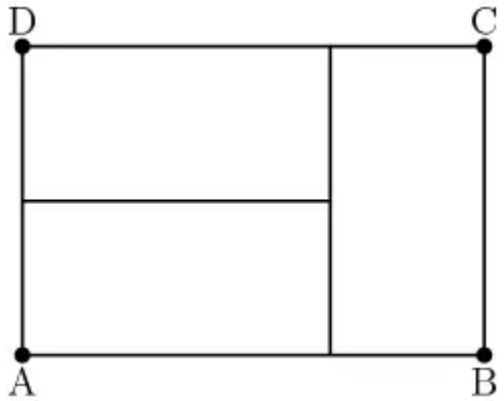
AMC 8, 2020, Problem 18

Rectangle $ABCD$ is inscribed in a semicircle with diameter $\overline{FE}$ as shown in the figure. Let $DA = 16$, and let $FD = AE = 9$.What is the area of $ABCD$?

(A) 240 (B) 248 (C) 256 (D) 264 (E) 272.

AMC 8, 2019, Problem 2

Three identical rectangles are put together to form rectangle $ABCD$, as shown in the figure below. Given that the length of the shorter side of each of the smaller rectangles is 5 feet, what is the area in square feet of rectangle $ABCD$?



(A) 45 (B) 75 (C) 100 (D) 125 (E) 150.

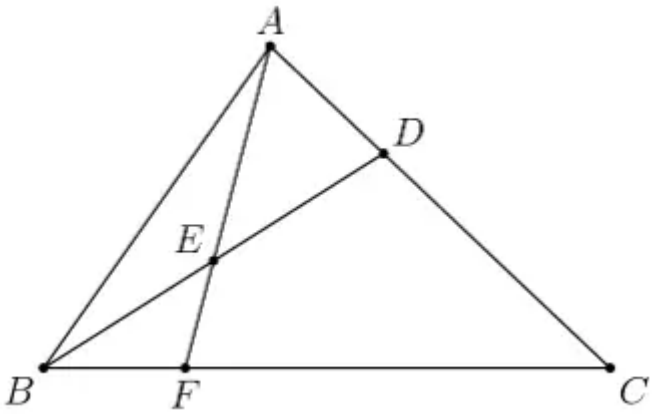
AMC 8, 2019, Problem 4

Quadrilateral $ABCD$ is a rhombus with perimeter 52 meters. The length of diagonal $\overline{AC}$ is 24 meters. What is the area in square meters of rhombus $ABCD$?

(A) 60 (B) 90 (C) 105 (D) 120 (E) 144.

AMC 8, 2019, Problem 24

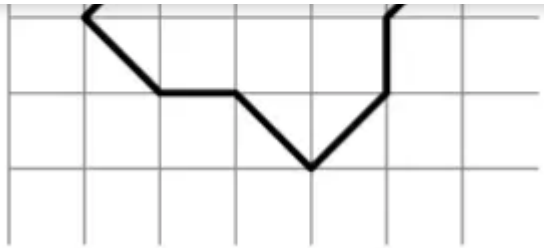
In triangle ABC, point D divides side $\overline{AC}$ so that $AD : DC = 1 : 2$. Let E be the midpoint of $\overline{BD}$ and let F be the point of intersection of line BC and line AE. Given that the area of $\triangle ABC$ is 360, what is the area of $\triangle EBF$?



(A) 24 (B) 30 (C) 32 (D) 36 (E) 40.

AMC 8, 2018, Problem 4

The twelve-sided figure shown has been drawn on 1 cm $\times$ 1 cm graph paper. What is the area of the figure in cm^2?



(A) 12 (B) 12.5 (C) 13 (D) 13.5 (E) 14.

AMC 8, 2018, Problem 9

Bob is tiling the floor of his 12 foot by 16 foot living room. He plans to place one-foot by one-foot square tiles to form a border along the edges of the room and to fill in the rest of the floor with two-foot by two-foot square tiles. How many tiles will he use?

(A) 48 (B) 87 (C) 91 (D) 96 (E) 120.

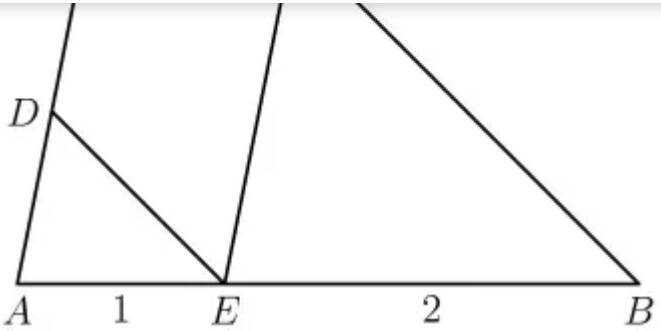
AMC 8, 2018, Problem 15

In the diagram below, a diameter of each of the two smaller circles is a radius of the larger circle. If the two smaller circles have a combined area of 1 square unit, then what is the area of the shaded region, in square units?

(A) $\frac{1}{4}$ (B) $\frac{1}{3}$ (C) $\frac{1}{2}$ (D) 1 (E) $\frac{\pi}{2}$

AMC 8, 2018, Problem 20

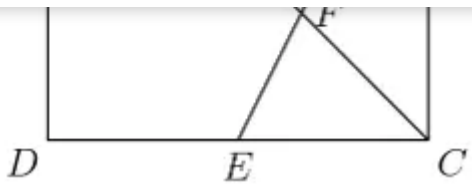
In $\triangle ABC$, a point E is on $\overline{AB}$ with $AE = 1$ and $EB = 2$. Point D is on $\overline{AC}$ so that $\overline{DE} \parallel \overline{BC}$ and point F is on $\overline{BC}$ so that $\overline{EF} \parallel \overline{AC}$. What is the ratio of the area of $CDEF$ to the area of $\triangle ABC$?



(A) $\frac{4}{9}$ (B) $\frac{1}{2}$ (C) $\frac{5}{9}$ (D) $\frac{3}{5}$ (E) $\frac{2}{3}$.

AMC 8, 2018, Problem 22

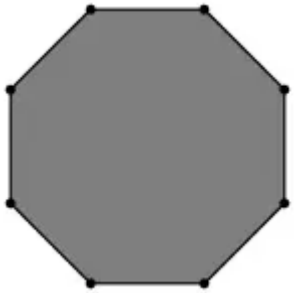
Point E is the midpoint of side $\overline{CD}$ in square $ABCD$, and $\overline{BE}$ meets diagonal $\overline{AC}$ at F. The area of quadrilateral $AFED$ is 45. What is the area of $ABCD$?



(A) 100 (B) 108 (C) 120 (D) 135 (E) 144.

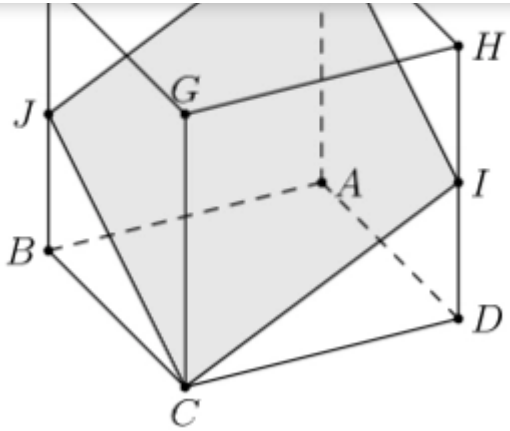
AMC 8, 2018, Problem 23

From a regular octagon, a triangle is formed by connecting three randomly chosen vertices of the octagon. What is the probability that at least one of the sides of the triangle is also a side of the octagon?



(A) $\frac{2}{7}$ (B) $\frac{5}{42}$ (C) $\frac{11}{14}$ (D) $\frac{5}{7}$ (E) $\frac{6}{7}$.

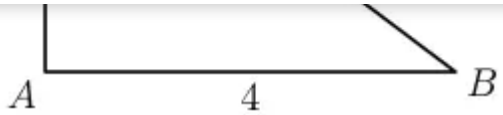
AMC 8, 2018, Problem 24



(A) $\frac{5}{4}$ (B) $\frac{4}{3}$ (C) $\frac{3}{2}$ (D) $\frac{25}{16}$ (E) $\frac{9}{4}$.

AMC 8, 2017, Problem 16

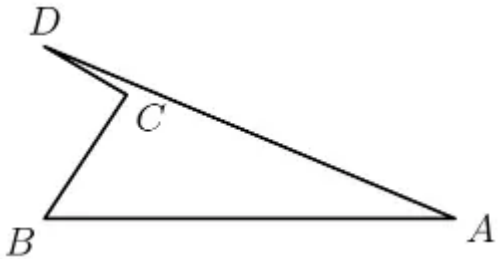
In the figure below, choose point D on $\overline{BC}$ so that $\triangle ACD$ and $\triangle ABD$ have equal perimeters. What is the area of $\triangle ABD$?



(A) $\frac{3}{4}$ (B) $\frac{3}{2}$ (C) 2 (D) $\frac{12}{5}$ (E) $\frac{5}{2}$.

AMC 8, 2017, Problem 18

In the non-convex quadrilateral $ABCD$ shown below, $\angle BCD$ is a right angle, $AB = 12$, $BC = 4$, $CD = 3$, and $AD = 13$. What is the area of the quadrilateral $ABCD$?



(A) 12 (B) 24 (C) 26 (D) 30 (E) 36.

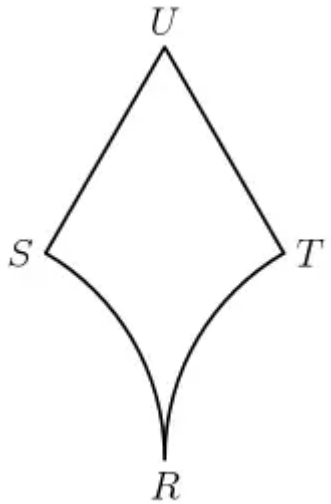
AMC 8, 2017, Problem 22

In the right triangle ABC, $AC = 12$, $BC = 5$, and angle C is a right angle. A semicircle is inscribed in the triangle as shown. What is the radius of the semicircle?

(A) $\frac{7}{6}$ (B) $\frac{13}{5}$ (C) $\frac{59}{18}$ (D) $\frac{10}{3}$ (E) $\frac{60}{13}$.

AMC 8, 2017, Problem 25

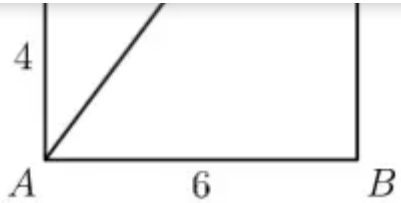
In the figure shown, $\overline{US}$ and $\overline{UT}$ are line segments each of length 2, and $m\angle TUS = 60^\circ$. Arcs TR and SR are each one-sixth of a circle with radius 2. What is the area of the region shown?



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

AMC 8, 2016, Problem 2

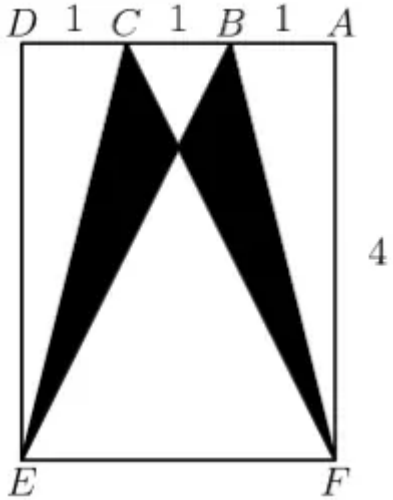
In rectangle $ABCD$, $AB = 6$ and $AD = 8$. Point M is the midpoint of $\overline{AD}$. What is the area of $\triangle AMC$?



(A) 12 (B) 15 (C) 18 (D) 20 (E) 24.

AMC 8, 2016, Problem 22

Rectangle $DEFA$ below is a 3×4 rectangle with $DC = CB = BA$. What is the area of the "bat wings" (shaded area)?

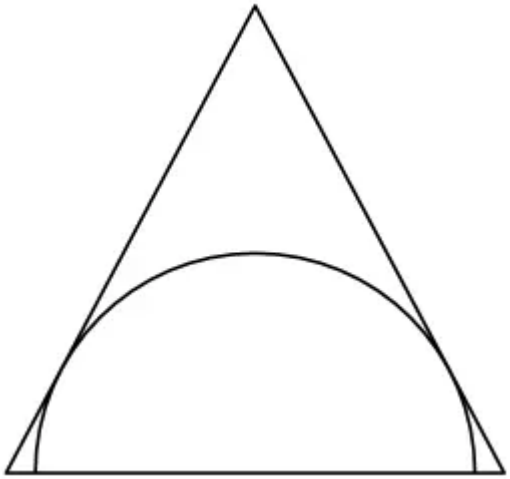


of $\angle CED$?

(A) 90 (B) 105 (C) 120 (D) 135 (E) 150

AMC 8, 2016, Problem 25

A semicircle is inscribed in an isosceles triangle with base 16 and height 15 so that the diameter of the semicircle is contained in the base of the triangle as shown. What is the radius of the semicircle?

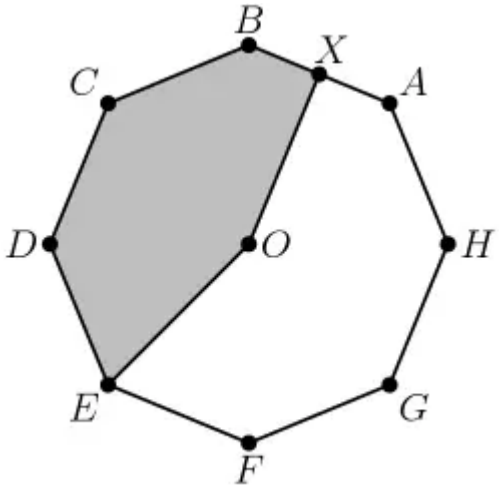


(A) $4\sqrt{3}$ (B) $\frac{120}{17}$ (C) 10 (D) $\frac{17\sqrt{2}}{2}$

(A) 12 (B)36 (C) 108 (D) 324 (E) 972.

AMC 8, 2015, Problem 2

Point O is the center of the regular octagon $ABCDEFGH$, and X is the midpoint of the side $\overline{AB}$. What fraction of the area of the octagon is shaded?



(A) $\frac{11}{32}$ (B) $\frac{3}{8}$ (C) $\frac{13}{32}$ (D) $\frac{7}{16}$ (E) $\frac{15}{32}$.

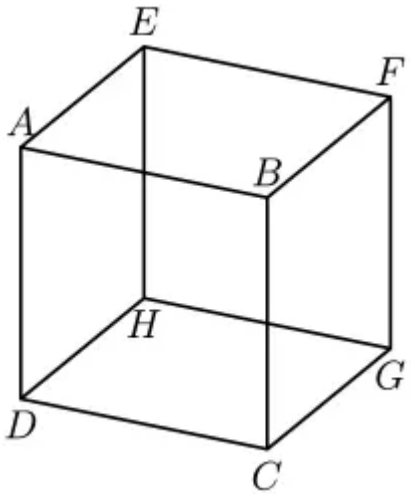
AMC 8, 2015, Problem 6

What is the smallest whole number larger than the perimeter of any triangle with a side of length 5 and a side of length 19?

(A) 24 (B) 29 (C) 43 (D) 48 (E) 57.

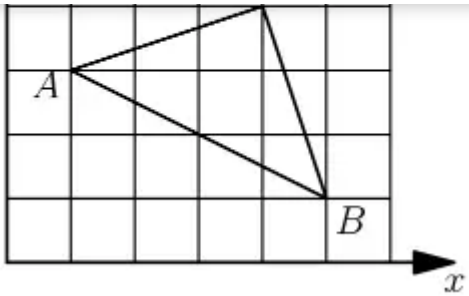
AMC 8, 2015, Problem 12

How many pairs of parallel edges, such as $\overline{AB}$ and $\overline{GH}$ or $\overline{EH}$ and $\overline{FG}$, does a cube have?



(A) 6 (B) 12 (C) 18 (D) 24 (E) 36.

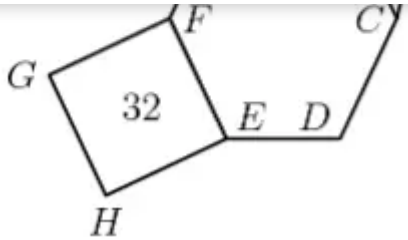
AMC 8, 2015, Problem 19



(A) $\frac{1}{6}$ (B) $\frac{1}{5}$ (C) $\frac{1}{4}$ (D) $\frac{1}{3}$ (E) $\frac{1}{2}$

AMC 8, 2015, Problem 21

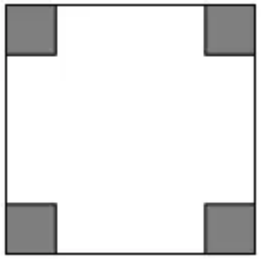
In the given figure hexagon $ABCDEF$ is equiangular, $ABJI$ and $FEHG$ are squares with areas 18 and 32 respectively, $\triangle JBK$ is equilateral and $FE = BC$. What is the area of $\triangle KBC$?



(A) $6\sqrt{2}$ (B)9 (C) 12 (D) $9\sqrt{2}$ (E) 32.

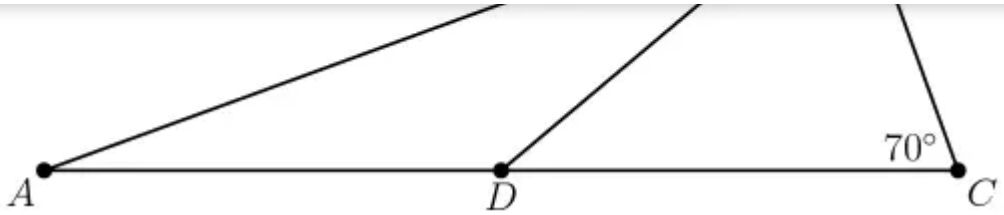
AMC 8, 2015, Problem 25

One-inch squares are cut from the corners of this 5 inch square. What is the area in square inches of the largest square that can fit into the remaining space?



(A) 9 (B) $12\frac{1}{2}$ (C) 15 (D)$15\frac{1}{2}$ (E)17

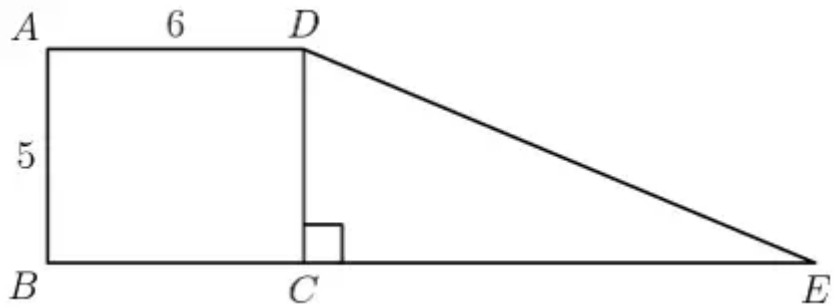
AMC 8, 2014, Problem 9



(A) 100 (B)120 (C) 135 (D) 140 (E) 150.

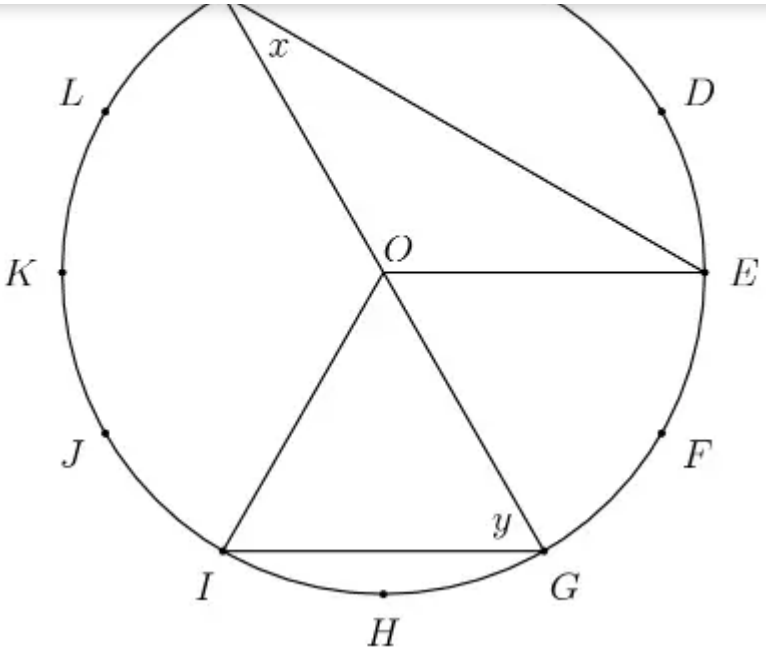
AMC 8, 2014, Problem 14

Rectangle $ABCD$ and right triangle DCE have the same area. They are joined to form a trapezoid, as shown. What is DE?



(A) 12 (B) 13 (C) 14 (D) 15 (E) 16.

AMC 8, 2014, Problem 15

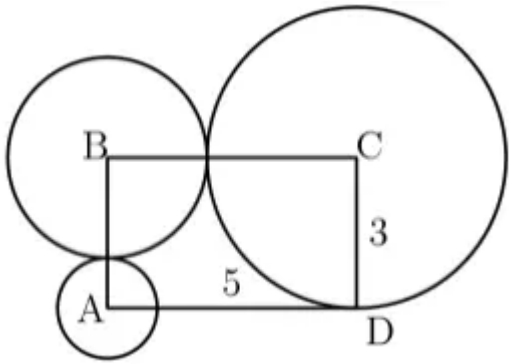


(A) 75 (B) 80 (C) 90 (D) 120 (E) 150.

AMC 8, 2014, Problem 19

A cube with 3-inch edges is to be constructed from 27 smaller cubes with 1-inch edges. Twenty-one of the cubes are colored red and 6 are colored white. If the 3-inch cube is constructed to have the smallest possible white surface area showing, what fraction of the surface area is white?

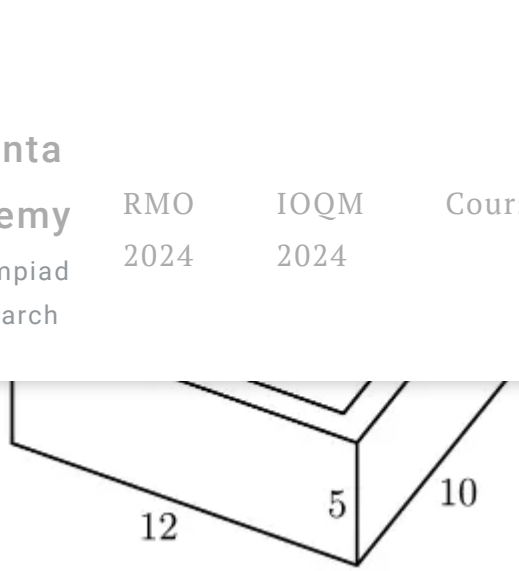
Rectangle $ABCD$ has sides $CD = 3$ and $DA = 5$. A circle with a radius of 1 is centered at A, a circle with a radius of 2 is centered at B, and a circle with a radius of 3 is centered at C. Which of the following is closest to the area of the region inside the rectangle but outside all three circles?



(A) 3.5 (B) 4.0 (C) 4.5 (D) 5.0 (E) 5.5.

AMC 8, 2013, Problem 18

Isabella uses one-foot cubical blocks to build a rectangular fort that is 12 feet long, 10 feet wide, and 5 feet high. The floor and the four walls are all one foot thick. How many blocks does the fort contain?



(A)204 (B) 280 (C) 320 (D) 340 (E) 600.

AMC 8, 2013, Problem 20

A 1×2 rectangle is inscribed in a semicircle with longer side on the diameter. What is the area of the semicircle?

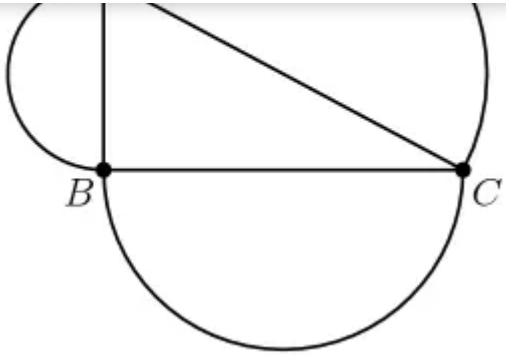
(A) $\frac{\pi}{2}$ (B) $\frac{2\pi}{3}$ (C) π (D) $\frac{4\pi}{3}$ (E) $\frac{5\pi}{3}$.

AMC 8, 2013, Problem 21

Samantha lives 2 blocks west and 1 block south of the southwest corner of City Park. Her school is 2 blocks east and 2 blocks north of the northeast corner of City Park. On school days she bikes on streets to the southwest corner of City Park, then takes a diagonal path through the park to the northeast corner, and then bikes on streets to school. If her route is as short as possible, how many different routes can she take?

(A)3 (B) 6 (C) 9 (D) 12 (E) 18.

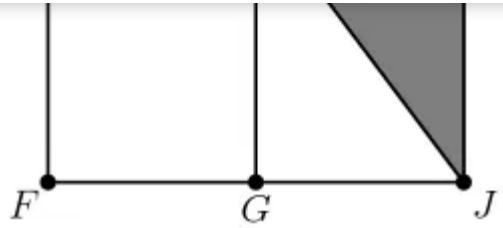
AMC 8, 2013, Problem 23



(A)7 (B)7.5 (C)8 (D)8.5 (E)9

AMC 8, 2013, Problem 24

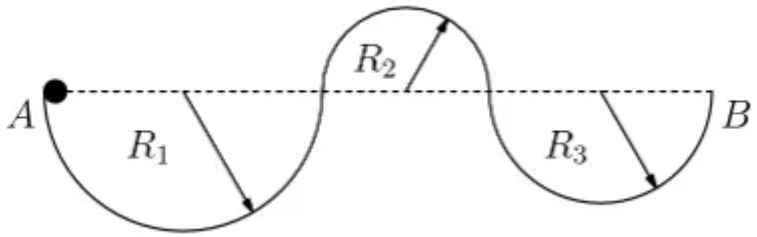
Squares $ABCD$, $EFGH$, and $GHIJ$ are equal in area. Points C and D are the midpoints of sides IH and HE, respectively. What is the ratio of the area of the shaded pentagon $AJICB$ to the sum of the areas of the three squares?



(A) $\frac{1}{4}$ (B) $\frac{7}{24}$ (C) $\frac{1}{3}$ (D) $\frac{3}{8}$ (E) $\frac{5}{12}$.

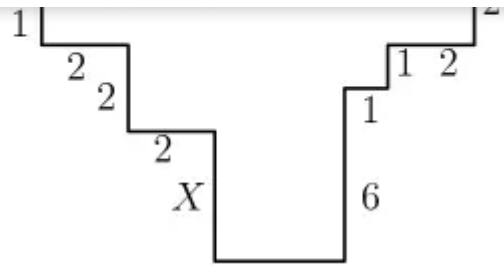
AMC 8, 2013, Problem 25

A ball with diameter 4 inches starts at point A to roll along the track shown. The track is comprised of 3 semicircular arcs whose radii are $R_1 = 100$ inches, $R_2 = 60$ inches, and $R_3 = 80$ inches, respectively. The ball always remains in contact with the track and does not slip. What is the distance the center of the ball travels over the course from A to B?



(A)238π (B)240π (C)260π (D)280π (E)500π.

AMC 8, 2012, Problem 5



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

AMC 8, 2012, Problem 6

A rectangular photograph is placed in a frame that forms a border two inches wide on all sides of the photograph. The photograph measures 8 inches high and 10 inches wide. What is the area of the border, in square inches?

(A) 36 (B) 40 (C) 64 (D) 72 (E) 88

AMC 8, 2012, Problem 17

A square with integer side length is cut into 10 squares, all of which have integer side length and at least 8 of which have area 1. What is the smallest possible value of the length of the side of the original square?

(A) 3 (B) 4 (C) 5 (D) 6 (E) 7

(A) $5\sqrt{2}$ (B) 10 (C) $10\sqrt{2}$ (D) 50 (E) $50\sqrt{2}$.

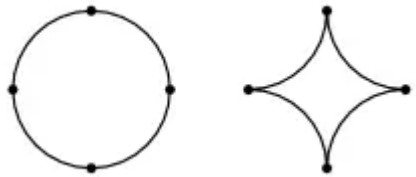
AMC 8, 2012, Problem 23

An equilateral triangle and a regular hexagon have equal perimeters. If the area of the triangle is 4, what is the area of the hexagon?

(A) 4 (B) 5 (C) 6 (D) $4\sqrt{3}$ (E) $6\sqrt{3}$.

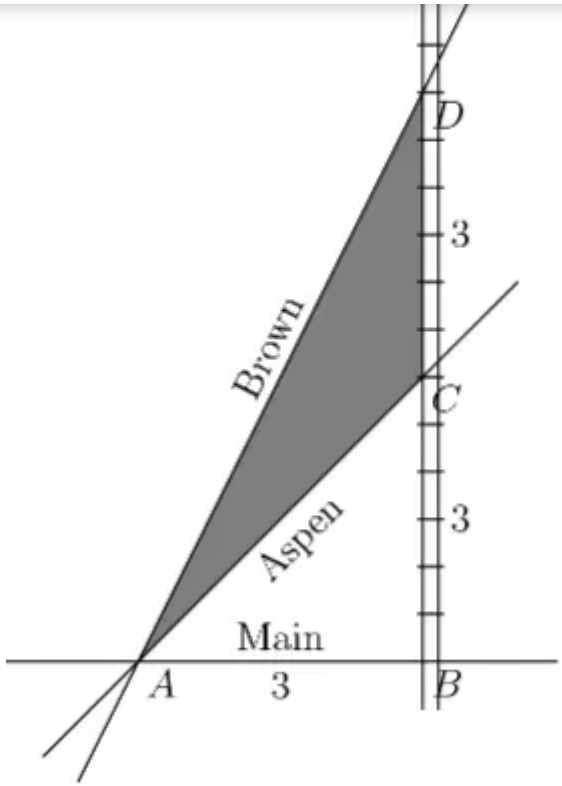
AMC 8, 2012, Problem 24

A circle of radius 2 is cut into four congruent arcs. The four arcs are joined to form the star figure shown. What is the ratio of the area of the star figure to the area of the original circle?



(A) $\frac{4-\pi}{\pi}$ (B) $\frac{1}{\pi}$ (C) $\frac{\sqrt{2}}{\pi}$ (D) $\frac{\pi-1}{\pi}$ (E) $\frac{3}{\pi}$

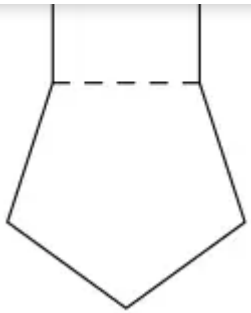
AMC 8, 2009, Problem 7



(A)2 (B) 3 (C) 4.5 (D) 6 (E) 9.

AMC 8, 2009, Problem 9

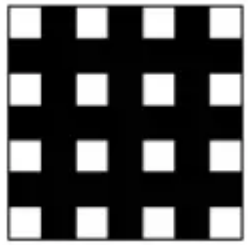
Construct a square on one side of an equilateral triangle. On one non-adjacent side of the square, construct a regular pentagon, as shown. On a non-adjacent side of the pentagon, construct a hexagon. Continue to construct regular polygons in the same way, until



(A)21 (B)23 (C)25 (D)27 (E)29.

AMC 8, 2009, Problem 18

The diagram represents a 7-foot-by-7-foot floor that is tiled with 1-square-foot black tiles and white tiles. Notice that the corners have white tiles. If a 15-foot-by-15-foot floor is to be tiled in the same manner, how many white tiles will be needed?

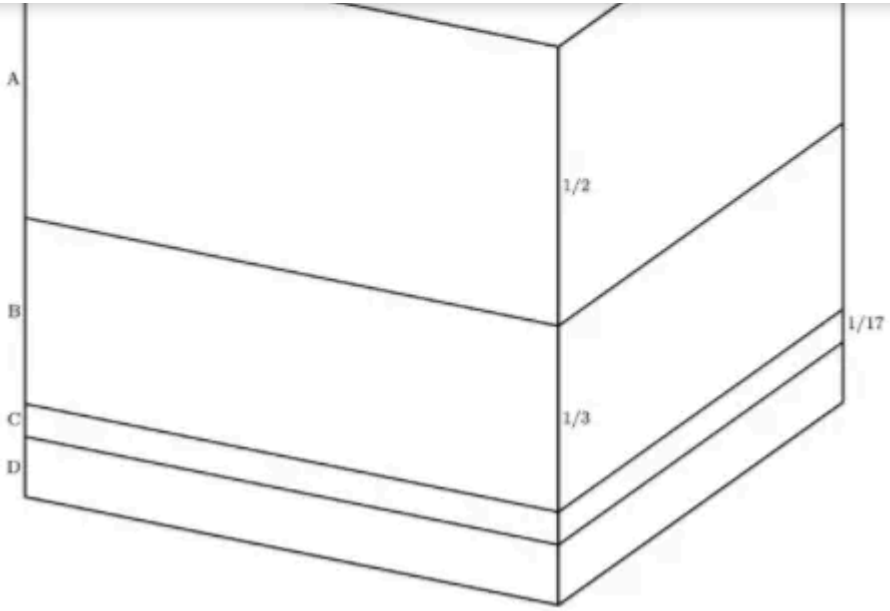


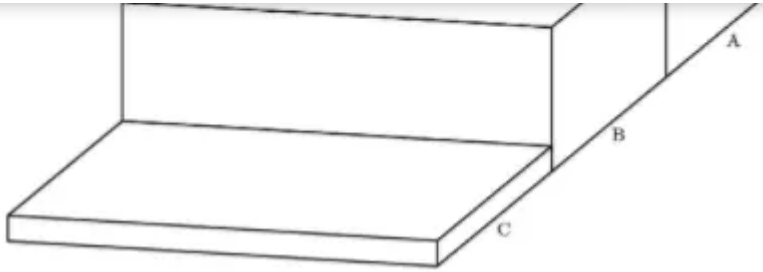
(A) 49 (B) 57 (C) 64 (D) 96 (E) 126.

(A)5 (B) 6 (C) 7 (D) 8 (E) 9.

AMC 8, 2009, Problem 25

A one-cubic-foot cube is cut into four pieces by three cuts parallel to the top face of the cube. The first cut is $1/2$ foot from the top face. The second cut is $1/3$ foot below the first cut, and the third cut is $1/17$ foot below the second cut. From the top to the bottom the pieces are labeled A, B, C, and D. The pieces are then glued together end to end as shown in the second diagram. What is the total surface area of this solid in square feet?

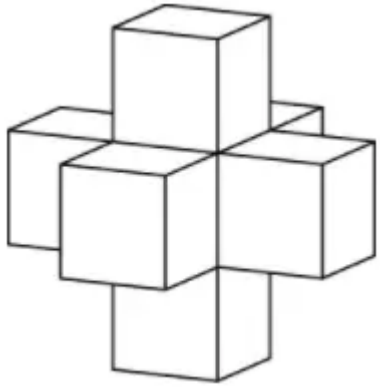

A
B
C
D
1/2
1/3
1/17

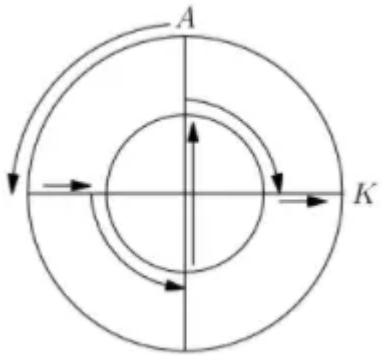


(A)6 (B)7 (C)$\frac{419}{51}$ (D)$\frac{158}{17}$ (E)11.

AMC 8, 2008, Problem 16

A shape is created by joining seven unit cubes, as shown. What is the ratio of the volume in cubic units to the surface area in square units?

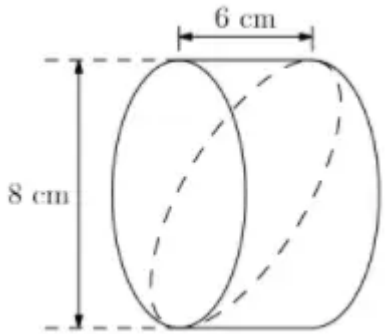


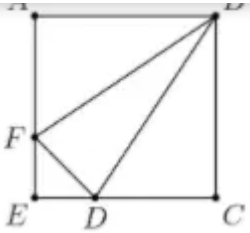


(A) $10\pi + 201$ (B) $10\pi + 30$ (C) $10\pi + 40$ (D) $20\pi + 20$ (E) $20\ pi + 40$.

AMC 8, 2008, Problem 21

Jerry cuts a wedge from a 6-cm cylinder of bologna as shown by the dashed curve. Which answer choice is closest to the volume of his wedge in cubic centimeters?



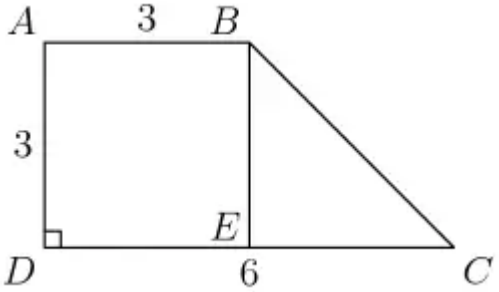


(A) $\frac{1}{6}$ (B) $\frac{2}{9}$ (C) $\frac{5}{18}$ (D) $\frac{1}{3}$

(E) $\frac{7}{20}$.

AMC 8, 2008, Problem 25

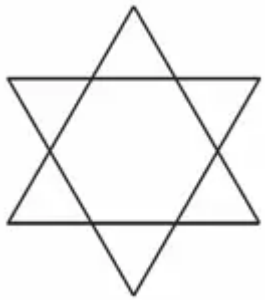
Margie's winning art design is shown. The smallest circle has radius 2 inches, with each successive circle's radius increasing by 2 inches. Which of the following is closest to the percent of the design that is black?



(A) 3 (B) 4.5 (C) 6 (D) 9 (E) 18

AMC 8, 2007, Problem 12

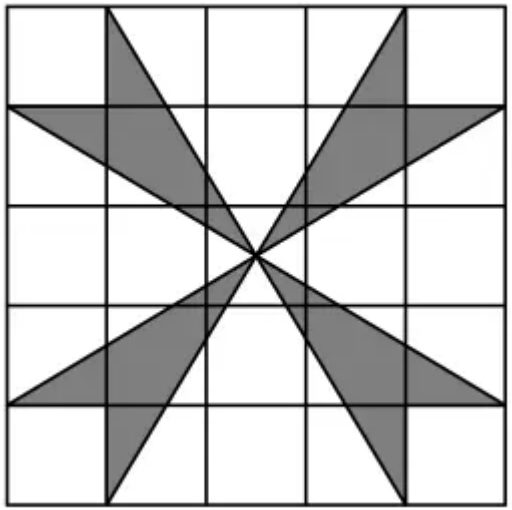
A unit hexagram is composed of a regular hexagon of side length 1 and its 6 equilateral triangular extensions, as shown in the diagram. What is the ratio of the area of the extensions to the area of the original hexagon?



(A) 5 (B) 8 (C) 13 (D) 14 (E) 18

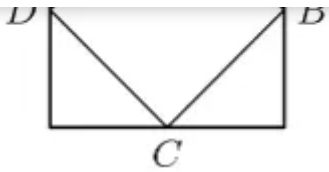
AMC 8, 2007, Problem 23

What is the area of the shaded pinwheel shown in the 5×5 grid?



(A) 4 (B) 6 (C) 8 (D) 10 (E) 12

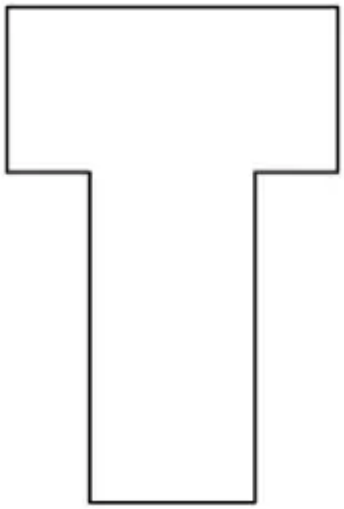
AMC 8, 2006, Problem 5



(A) 15 (B)20 (C) 24 (D) 30 (E) 40

AMC 8, 2006, Problem 6

The letter T is formed by placing two 2×4 inch rectangles next to each other, as shown. What is the perimeter of the T, in inches?



(A) X, Y, Z (B) Z, X, Y (C) Y, X, Z (D) Z, Y, X (E) X, Z, Y

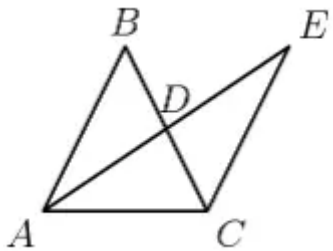
AMC 8, 2006, Problem 18

A cube with 3-inch edges is made using 27 cubes with 1-inch edges. Nineteen of the smaller cubes are white and eight are black. If the eight black cubes are placed at the corners of the larger cube, what fraction of the surface area of the larger cube is white?

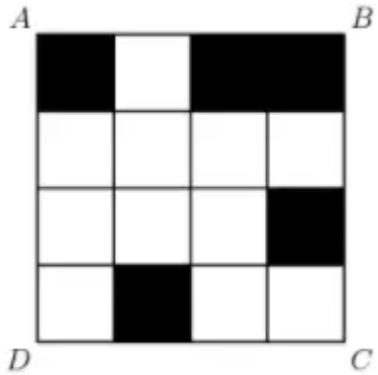
(A) $\frac{1}{9}$ (B) $\frac{1}{4}$ (C) $\frac{4}{9}$ (D) $\frac{5}{9}$ (E) $\frac{19}{27}$

AMC 8, 2006, Problem 19

Triangle ABC is an isosceles triangle with $\overline{AB} = \overline{BC}$. Point D is the midpoint of both $\overline{BC}$ and $\overline{AE}$, and $\overline{CE}$ is 11 units long. Triangle ABD is congruent to triangle ECD. What is the length of $\overline{BD}$?



square $ABCD$?



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

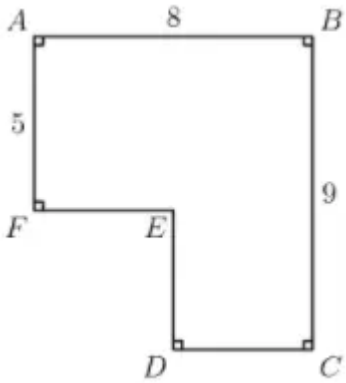
AMC 8, 2005, Problem 9

In quadrilateral $ABCD$, sides $\overline{AB}$ and $\overline{BC}$ both have length 10, sides $\overline{CD}$ and $\overline{DA}$ both have length 17, and the measure of angle ADC is 60°. What is the length of diagonal $\overline{AC}$?

(A) 13.5 (B) 14 (C) 15.5 (D) 17 (E) 18.5

AMC 8, 2005, Problem 13

The area of polygon $ABCDEF$ is 52 with $AB = 8, BC = 9$ and $FA = 5$. What is $DE + EF$?



(A) 47 (B) 8 (C) 9 (D) 10 (E) 11

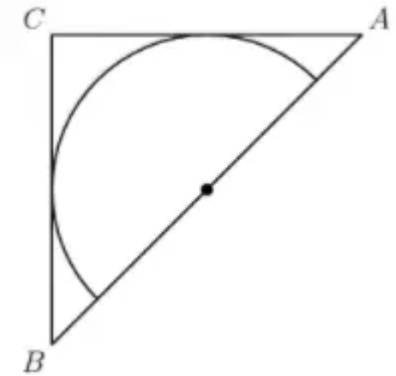
AMC 8, 2005, Problem 19

What is the perimeter of trapezoid $ABCD$?

(A) 180 (B) 188 (C) 196 (D) 200 (E) 204

AMC 8, 2005, Problem 23

Isosceles right triangle ABC encloses a semicircle of area 2π. The circle has its center O on hypotenuse $\overline{AB}$ and is tangent to sides $\overline{AC}$ and $\overline{BC}$. What is the area of triangle ABC ?



(A) 6 (B) 8 (C) 3π (D) 10 (E) 4π

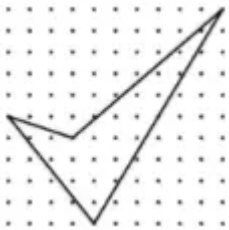
AMC 8, 2005, Problem 25

A square with side length 2 and a circle share the same center. The total area of the regions that are inside the circle and outside the square is equal to the total area of the regions that are outside the circle and inside the square. What is the radius of the circle?

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

AMC 8, 2004, Problem 14

What is the area enclosed by the geoboard quadrilateral below?



(A) 15 (B) $18\frac{1}{2}$ (C) $22\frac{1}{2}$ (D) 27 (E) 41.

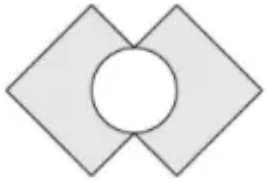
AMC 8, 2004, Problem 24

In the figure, $ABCD$ is a rectangle and $EFGH$ is a parallelogram. Using the measurements given in the figure, what is the length d of the segment that is perpendicular to $\overline{HE}$ and $\overline{FG}$?

(A) 6.8 (B) 7.1 (C) 7.6 (D) 7.8 (E) 8.1

AMC 8, 2004, Problem 25

Two 4×4 squares intersect at right angles, bisecting their intersecting sides, as shown. The circle's diameter is the segment between the two points of intersection. What is the area of the shaded region created by removing the circle from the squares?



(A) $16 - 4\pi$ (B) $16 - 2\pi$ (C) $28 - 4\pi$ (D) $28 - 2\pi$ (E) $32 - 2\pi$

AMC 8, 2003, Problem 6

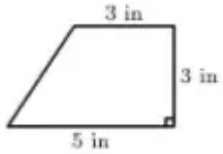
Given the areas of the three squares in the figure, what is the area of the interior triangle?

(A) 13 (B) 30 (C) 60 (D) 300 (E) 1800

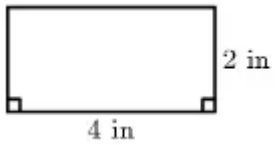
AMC 8, 2003, Problem 8

Bake Sale
Four friends, Art, Roger, Paul and Trisha, bake cookies, and all cookies have the same thickness. The shapes of the cookies differ, as shown.

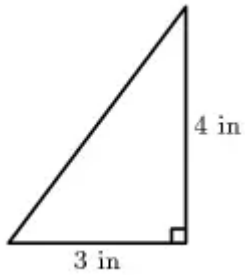
Art's cookies are trapezoids.



Roger's cookies are rectangles.



Trisha's cookies are triangles.



Each friend uses the same amount of dough, and Art makes exactly 12 cookies. Who gets the fewest cookies from one batch of cookie dough?

(A) Art (B) Roger (C) Paul (D) Trisha (E) There is a tie for fewest.

AMC 8, 2003, Problem 21

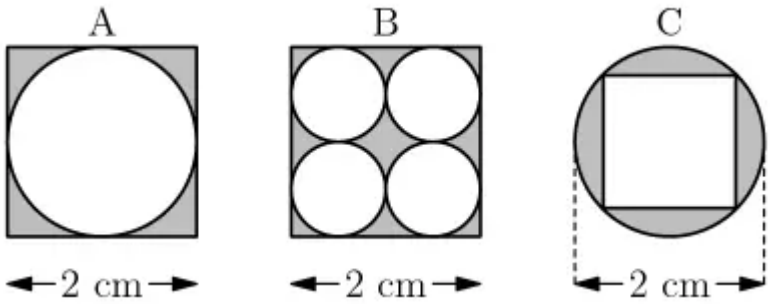
The area of trapezoid $ABCD$ is 164 cm^2. The altitude is 8 cm, AB is 10 cm, and CD is 17 cm. What is BC, in centimeters?

A D

(A) 9 (B) 10 (C) 12 (D) 15 (E) 20

AMC 8, 2003, Problem 22

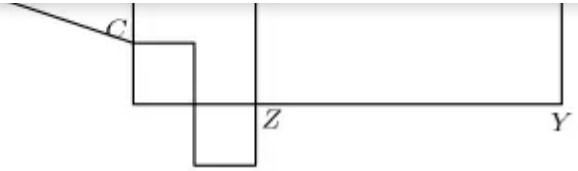
The following figures are composed of squares and circles. Which figure has a shaded region with largest area?



(A) A only (B) B (C) C only (D) both A and B (E) all are equal

AMC 8, 2003, Problem 25

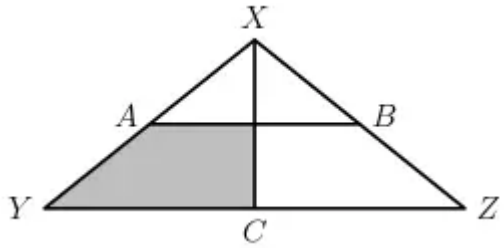
In the figure, the area of square $WXYZ$ is 25 cm^2. The four smaller squares have sides 1 cm long, either parallel to or coinciding with the sides of the large square. In $\triangle ABC$, $AB = AC$, and when $\triangle ABC$ is folded over side $\overline{BC}$, point A coincides with O, the center of square $WXYZ$. What is the area of $\triangle ABC$, in square centimeters?



(A) $\frac{15}{4}$ (B) $\frac{21}{4}$ (C) $\frac{27}{4}$ (D) $\frac{21}{2}$
(E) $\frac{27}{2}$

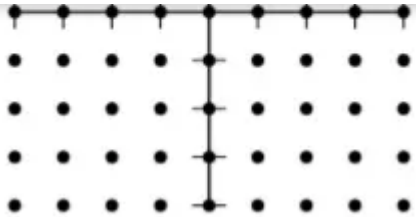
AMC 8, 2002, Problem 20

The area of triangle XYZ is 8 square inches. Points A and B are midpoints of congruent segments $\overline{XY}$ and $\overline{XZ}$. Altitude $\overline{XC}$ bisects $\overline{YZ}$. The area (in square inches) of the shaded region is



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

AMC 8, 2001, Problem 11



(A) 12

(B) 15

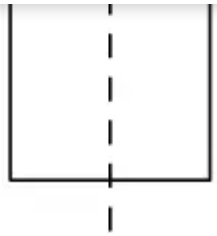
(C) 18

(D) 21

(E) 24

AMC 8, 2001, Problem 16

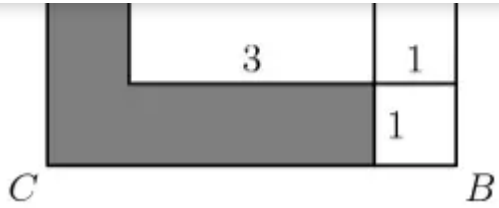
A square piece of paper, 4 inches on a side, is folded in half vertically. Both layers are then cut in half parallel to the fold. Three new rectangles are formed, a large one and two small ones. What is the ratio of the perimeter of one of the small rectangles to the perimeter of the large rectangle?



(A) $\frac{1}{3}$ (B) $\frac{1}{2}$ (C) $\frac{3}{4}$ (D) $\frac{4}{5}$
(E) $\frac{5}{6}$.

AMC 8, 2000, Problem 6

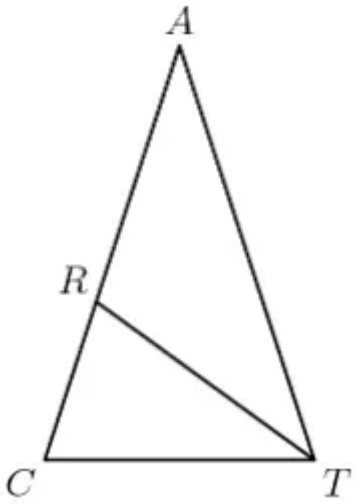
Figure $ABCD$ is a square. Inside this square three smaller squares are drawn with the side lengths as labeled. The area of the shaded L -shaped region is



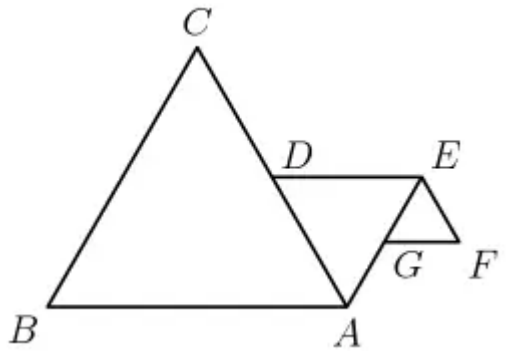
(A) 7 (B) 10 (C) 12.5 (D) 14 (E) 15.

AMC 8, 2000, Problem 13

In triangle CAT, we have $\angle ACT = \angle ATC$ and $\angle CAT = 36^\circ$. If $\overline{TR}$ bisects $\angle ATC$ then $\angle CRT =$



the perimeter of figure $ABCDEFG$?



(A) 12 (B) 13 (C) 15 (D) 18 (E) 21.

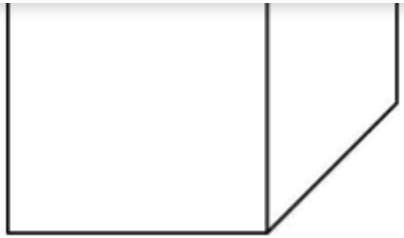
AMC 8, 2000, Problem 19

Three circular arcs of radius 5 units bound the region shown. Arcs AB and AD are quarter circles, and arc BCD is a semicircle. What is the area, in square units, of the region?

(A) 25 (B) $10+5\pi$ (C) 50 (D) $50+5\pi$ (E) 25π.

AMC 8, 2000, Problem 22

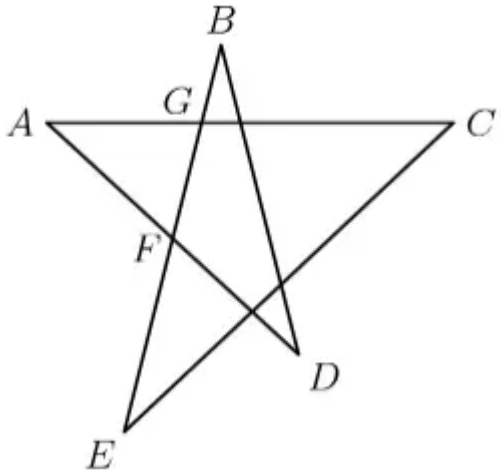
A cube has edge length 2 . Suppose that we glue a cube of edge length 1 on top of the big cube so that one of its faces rests entirely on the top face of the larger cube. The percent increase in the surface area (sides, top, and bottom) from the original cube to the new solid formed is closest to

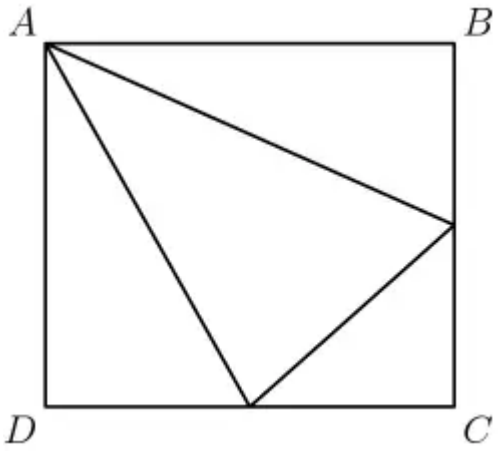


(A) 10 (B) 15 (C) 17 (D) 21 (E) 25.

AMC 8, 2000, Problem 24

If $\angle A = 20^\circ$ and $\angle AFG = \angle AGF$, then $\angle B + \angle D =$





(A) 21 (B) 27 (C) 30 (D) 36 (E) 40.

AMC 8, 1999, Problem 5

A rectangular garden 60 feet long and 20 feet wide is enclosed by a fence. To make the garden larger, while using the same fence, its shape is changed to a square. By how many square feet does this enlarge the garden?

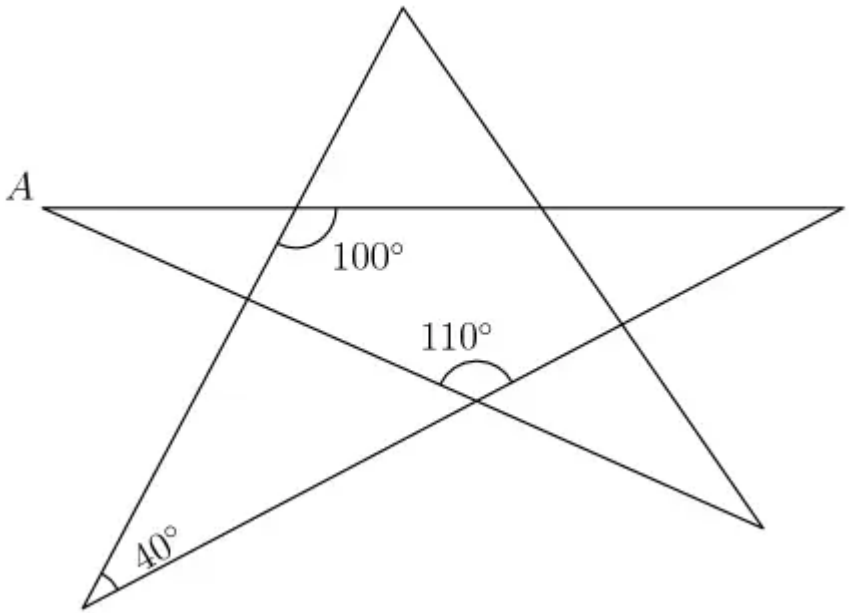
(A) 100 (B) 200 (C) 300 (D) 400 (E) 500.

AMC 8, 1999, Problem 14

In trapezoid $ABCD$, the sides AB and CD are equal. The perimeter of $ABCD$ is

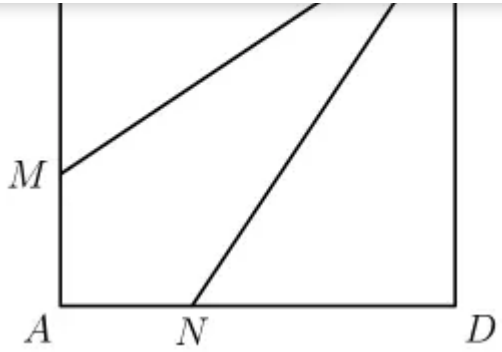
AMC 8, 1999, Problem 21

The degree measure of angle A is



(A) 20 (B) 30 (C) 35 (D) 40 (E) 45.

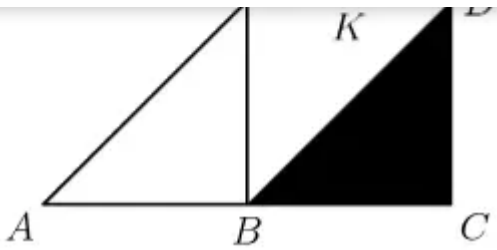
AMC 8, 1999, Problem 23



(A) $\sqrt{10}$ (B) $\sqrt{12}$ (C) $\sqrt{13}$ (D) $\sqrt{14}$ (E) $\sqrt{15}$.

AMC 8, 1999, Problem 25

Points B, D, and J are midpoints of the sides of right triangle ACG. Points K, E, I are midpoints of the sides of triangle JDG, etc. If the dividing and shading process is done 100 times (the first three are shown) and $AC = CG = 6$, then the total area of the shaded triangles is nearest



(A) 6 (B) 7 (C) 8 (D) 9 (E) 10.

some useful link

- Our AMC - AIME Program
- Stick and dots in Combinatorics || AMC 8, 2019 Problem 25 - watch & learn

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