

Millitte #5.# 3 1% · 13 192 · /3 190 · 13. 19% An isosceles triangle with base 10 cm has an area of 60 cm^2 . Find its perimeter.

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23 cm a.

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- b. 26 cm
- 31 cm c.
- 34 cm d.

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36 cm e.

a. 3

c. 12.00 新井 接尾 d. 12.00

24 d.

Withit the the the withthe \$6 \$ 18 alitute # # * * astille the the " is the multilite # ** 6. This figure is formed by three arcs drawn using each vertex of the equilateral triangle as a center and a side of the triangle as a radius. If the shaded area is $18p - 27\sqrt{3}$, then a side of Institute ## # '& PR 而如此他教祥等死 频频学家 而此此他称样谱像 the triangle is multilite # ** Institute # # '\$

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mutute # # 3 PS IL the He 'S PC tilute #e.9 's % 加加斯林塔幣 加加斯林省梯 7. Three circles of radii 2, 4, and 6 are tangent to each other externally. Find the area of the triangle formed by connecting their centers.

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而如此此的林华堂了。 matitute ## # '& PK It cannot be determined from the information given. e.

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b. 4

mythute ## # '& R 8. In the unit square, find the distance from E to \overline{AD} in terms of a and b, the lengths of \overline{DF} Y. and \overline{AG} , respectively. Bille the the the hstitute the th

b 面动地推荐林塔梯 Anitante ## # 13 PR mitute ## # 18 18 加频林塔佛 me the the the the Έ 13 % No. mutute ## illa. the contraction of the con c. $\frac{a-b}{a+b}$ **** Antitute # # E N. а D's institute ## $\frac{b}{a+b}$ d. _____a b.

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mutilite # # '& PL Y. 9. In the figure shown below the circles with centers O and R each have a radius of 2. If tinstitute \$ mstitute # *PQ*=1, then what is the perimeter of rectangle *KLMN*? Κ 面动机机新林塔梯 movinte # ** ** multille # # 'S PS · 13 8% ·13 1% N. stitute # O Ρ mstitute # Q R 加加新林省保 加加斯林·省幣 13 840 而动动地。称林塔 Se . tute the the the Y. Ν \mathbf{M}_{λ} the the star tute the a. 20 units e. 28 units b. 22 units c. 24 units d. 26 units

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- tree A and 4 meters from tree B. A map indicates that treasure is buried 2 meters from tree A and 4 meters from tree B. Assuming the information on the map is true, what is the greatest number of places you would be required to dig (if you know what were locate the treasure? 10. Tree A stands 5 meters from tree B. A map indicates that treasure is buried 2 meters from *** % % greatest number of places you would be required to dig (if you know what you are doing) to
 - 频*^{*法 %} 频林·浅邻 3 c. d. 4

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b. 2

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- 物***** e. It cannot be determined from the information given.
- 11. The length of the two sides in a parallelogram are 5 cm and 12 cm. Find the sum of the squares of the diagonals of the parallelogram.





15. A point is randomly selected within the rectangle with vertices (0,0), (2,0), (2,3), and (0,3). mistine # # 'S PC What is the probability that the *x*-coordinate of the point is less than the *y*-coordinate? mistitute ## tute \$ inte the Express your answer as a common fraction.

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1/3 a.

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- b. 1/2 2/3
- c. d. 7/12
 - 3/4 e.

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- ilute 教林·海州 limte # # '3 1% withite the the 'S PR 加加林林塔梯 muitute # ** 16. What is the distance between the centroids of any two faces of a regular tetrahedron of edge length 1?
 - b. $\sqrt{3}/2$

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- a. $\sqrt{3}/6$ b c. 1/3
 - d. 1/2
 - $\sqrt{2}/3$. e.

~ 17. In circle O, the chords AB and CD intersect at point E. If AE=EB, CE=4, and ED=9, what finstitute * is the length of \overline{AB} ?

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- a. 6 b. 8
- C. d.

e.

- 而此此此称林塔然 而此此他恭祥送祭 面动机机新林省除 multure ## # '& PE multille the the 'S 18. Each angle of a rectangle is bisected. Let P, Q, R, and S be the points of intersection of the pairs of bisectors adjacent to the same side of the rectangle. Then PORS is a 面动机机称林塔然 multule # # 'S R
 - rectangle a.

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- b. rhombus
- parallelogram with unequal adjacent sides quadrilateral with no special procession C.

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- d.
- e. square

19. Two of the exterior angles of a pentagon have measures 75° and 105°. The measures of the stitute # remaining three exterior angles have the ratio 3:4:5. The measure of the smallest angle, in degrees, is

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- 15 a.
- e. 75 版 称 林 塔 化 30 b.

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20. The length, width, and height of a rectangular solid are in ratio of 3:4:12. If the diagonal of 而如此他称并安然 tinstitute ### the solid is 39 inches long, what is the length of the longest dimension of the solid? itute the ute \$ itute \$

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- b. 48 in.
- c. 36 in.
- d. 72 in.
- e. none of these

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柳林海绵 而时间他教祥 21. Inside square ABCD with side of length x, quarter circle arcs with radius x are drawn using A and B as centers. The arcs intersect at a point E inside the square. The distance from E to the side CD is:



a. 5 units matitule ## # '& PL 22. If a plane, 12 units from the center of a sphere, intersects the sphere in a circle with radius 9 matitute # # * multitute # # 3

- b. 5.20 units
- c. 7.94 units

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u. 15 units e. 16.5 units 23. A re-频从资料 频林塔梯 物林海外 23. A round table can be made square by dropping the four leaves down. If a side of the square table measures 36 inches, approximately how much smaller is the area of the table when the leaves are down than when the leaves are up?



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Institute # # '& R 24. A circle with center (4, -2) passes through (7, 2). Which of the following is the equation of Institute # tinstitute # stitute the the line tangent to the circle at (7,2)?

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a. 4x + 3y = 21b. 2x + 3y = 12a + 3y = 41d. 3x + 4y = 29e. $3x + 4 \cdots$

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matitute # # a. 1/3 little mark 's the itate 26. The angle of elevation to the top of a radio antenna on top of a building is 53.4°. After moving 200 feet closer to the building, the angle of elevation is 64.3° . Find the height, to 而此此此教林後幾 而时间很新林塔路 the nearest foot, of the building if the height of the antenna is 180 feet. 1 militite 新林 送 席 millitute ## # '3 multilite # # '3 ·13 Ph

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368 a. 256 b. c. 412 d. 506 585 e. mutilite # # '& PL

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27. A veterinarian wishes to use 132 feet of chain link fencing to enclose a rectangular region enclosed area is 576 ft 2 , then there are two possible values for *x*, measured in feet. The difference of these values is and subdivide the region into two smaller rectangles, as shown in the figure. If the total mistitute ####

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a. 10 ft b. 20 ft c. 25 ft d. 30 ft e. 36 ft

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28. *A*, *B*, and *C* are the vertices of an isosceles right triangle with right angle at *B*. The area of ΔABC is 1. Point *E* lies on side \overline{AC} of this triangle such that \overline{AE} . side \overline{BC} of this triangle such that $\overline{DE} \perp \overline{AC}$. The area of $\triangle ADC$ is

a. 1/2 **** 面动抽曲都林塔 b. $\sqrt{2}$ c. $1/\sqrt{2}$ d. $2 - \sqrt{2}$ e. $\sqrt{2}$ -1

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center of each face to the center of the opposite face. The total surface area (in square units) of the resulting solid is: 29. A 3 by 3 by 3 cube has three square holes, each with a 1 by 1 cross-section running from the

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24 a. 48 b. o. . 0 84 111 # # * * * * d.

Astitute the the 'S PE Detitute the the 'S PE 30. The figure below is a regular octagon. What fraction of its area is shaded?



而时间的新祥等除 31. The sides of a triangle have lengths, 9, 13 and k, where k is an integer. For how many inte m itute # institute 34 values of k is the triangle obtuse?

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- c. d. 17
 - 18 e.
- 训励新林省张 alitute # # * * 前肌筋病状等除 litute mat 's the 前加加斯林塔梯 multille the the 'S 32. Four children are arguing over a broken toy. Ali says Barbara broke it. Barbara says Tyler broke it. Tyler and Hei-Lam say they do not know who broke it. Only the guilty child was lying. The child who broke the toy was: matine # # B 而如此他教祥等院 matilute # # * * 而此此此新祥後
 - Ali a.
 - Barbara b.
 - c. Tyler
 - d. Hei-Lam
- 33. An isosceles right triangle is removed from each corner of a square piece of paper, so that a rectangle remains. The removed triangles are shown as gray in the picture below. Find the length of the diagonal d if the construction of the diagonal d
- 面对机能称林塔张 而前前相關新林塔路 mutute # # '& R 而时间他就被任务 W. B. W. Y. d 面射机机新林塔张 面射机能称林塔除 柳林馆像 d. 20 millitte 新林塔化 c. 18 stitute # # 3 1% N. 额於 b. $14\sqrt{2}$ a. 12 $\sqrt{2}$

34. At 3:00 the minute hand and the hour hand are perpendicular. At this time the second hand stitute # # '\$ 1% is aligned with the minute hand over the 12 on the clock. Call this position 0 seconds. At Astitute ## # the next moment when the minute hand and the hour hand are again perpendicular, the position of the second hand is closest to the position:

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- a. 8 seconds
- b. 11 seconds Maritte # ** **
 - 43 seconds c. d. 44 seconds
 - 48 seconds e.

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points A, B, C, D, E are distinct. If lengths AB, BC, CD and DE are all equal, then the measure of $\angle EAD$ is Multille # # 'S B 38. In $\triangle ADE$, $\angle ADE = 140^{\circ}$, points B and C lie on the sides of \overline{AD} and \overline{AE} , respectively, and

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- 39. A circle with area A_1 is contained in the interior of a larger circle with area $A_1 + A_2$. If the 西班班格林塔梯 radius of the larger circle is 3, and if A_1 , A_2 , $A_1 + A_2$ is an arithmetic progression, then the radius of the smaller circle is tinstitute # # Institute the th tinstitute \$
- a. $\sqrt{3}/2$ 1 b. stitute # # 13 PE c. $2/\sqrt{3}$ $\frac{1}{2} \sqrt{\frac{2}{\sqrt{2}}}$
 - 40. A vertical line divides the triangle with vertices (0,0), (1,1), and (9,1) in the xy-plane into two regions of equal area. The equation of the line is $x = \sqrt{3}$ 城水省化

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