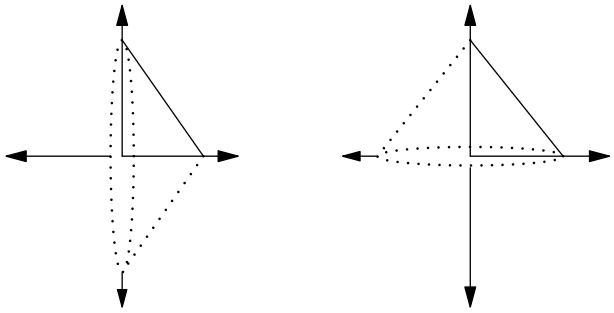
Geometry Worksheet (3A4)

(1) _____ The measures of four angles of a quadrilateral form an arithmetic sequence. The largest is 15 degrees less than twice the smallest. What is the measure, in degrees, of the largest angle?

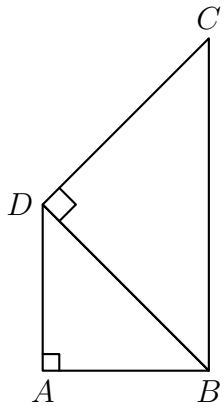
(2) _____ The triangular region having vertices $A(0,0)$, $B(3,0)$ and $C(0,4)$ is rotated about the x-axis to form a solid having volume X. The same triangular region is then rotated about the y-axis to form a solid having volume Y. What is the ratio of X to Y? Express your answer as a common fraction.



(3) _____ The point $(5,3)$ is reflected about the line $x = 2$. The image point is then reflected about the line $y = 2$. The resulting point is (a, b). Compute $a + b$.

(4) _____ A farmer ties his goat to the corner of a 10-foot by 15-foot rectangular shed in an otherwise empty field. The length of rope from the shed to the goat is 25 feet. Over how many square feet of the field can his goat roam? Express your answer in terms of π?

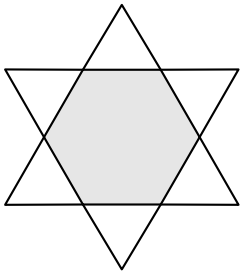
(5) _____ Each triangle in this figure is an isosceles right triangle. The length of $\overline{BC}$ is 2 units. What is the number of units in the perimeter of quadrilateral $ABCD$? Express your answer in simplest radical form.



(6) _____ A circle is inscribed in a square. What is the ratio of the area of the square *not* within the circle to the *total* area of the square? Express your answer as a common fraction in terms of π?

(7) _____ The endpoints of segment $\overline{AB}$ are $A(0, 8)$ and $B(15, 0)$. What is the shortest distance, in units, from $P(0, 0)$ to segment $\overline{AB}$? Express your answer as a common fraction.

(8) _____ Two congruent equilateral triangles intersect so the region of intersection is a regular hexagon as shown. The area of each unshaded equilateral triangle is 4m^2. How many square centimeters are in the area of the shaded hexagon?

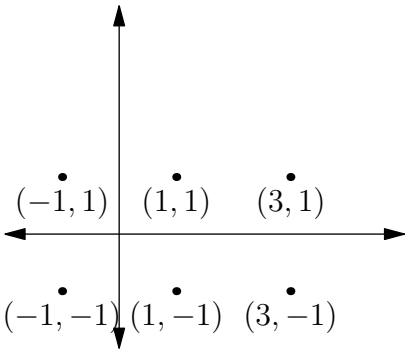


(9) _____ Each corner of a cube is sliced off, leaving a triangular face at each corner and octagonal faces for each face of the original cube. How many edges will the new polyhedron have?

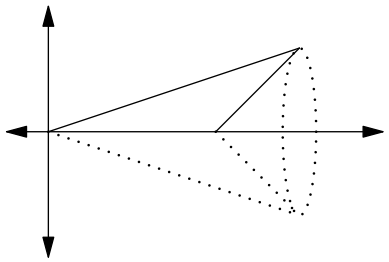
(10) _____ Two congruent cylinders each have radius 8 inches and height 3 inches. The radius of one cylinder and the height of the other are both increased by the same number of inches. The resulting volumes are equal. How many inches is the increase? Express your answer as a common fraction.

(11) _____ Find the number of cubic centimeters in the volume of the cylinder formed by rotating a square with side length 14 centimeters about its vertical line of symmetry. Express your answer in terms of π.

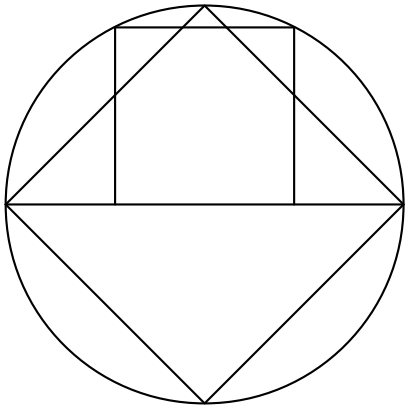
(12) _____ The graph shows six labeled points. How many distinct circles of radius 2 units are in the coordinate plane and pass through exactly two of the labeled points on this graph?



(13) _____ The vertices of a triangle are at (0, 0), (12, 0) and (18, 6). The triangle and its interior are rotated about the x-axis to form a solid figure. What is the volume, in cubic units, of this solid? Express your answer in terms of π.



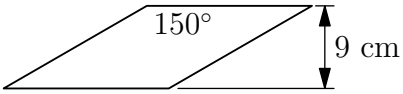
(14) _____ A square is inscribed in a semicircle, and a second square is inscribed in the whole circle, as shown below. What is the ratio of the area of the smaller square to the area of the larger square? Express your answer as a common fraction.



(15) _____ A square blanket measuring x feet by x feet was folded in half, folded in half again and finally folded in half one last time. After these three successive folds, without ever unfolding, the blanket covers an area of 8 square feet. What is the value of x?

(16) _____ What is the mean of the measures of the three exterior angles of a triangle if two of the interior angles have measures of 63 and 78 degrees?

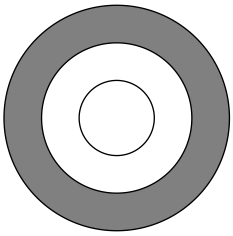
(17) _____ What is the number of centimeters in the perimeter of the rhombus shown?



(18) _____ What is the number of square inches in the surface area of a cube with space diagonal of length $3\sqrt{3}$ inches?

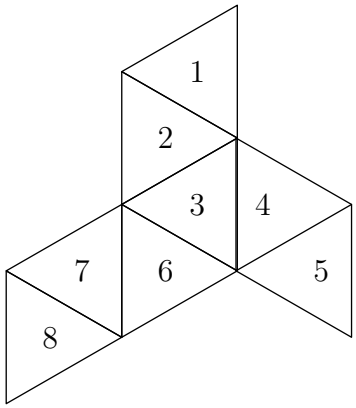
(19) _____ A triangle has vertices at $(-3, 2), (6, -2), (3, 5)$. How many square units are in the area of the triangle? Express your answer as a decimal to the nearest tenth.

(20) _____ The concentric circles are drawn as shown with radii 2, 4 and 6 units. What is the ratio of the area of the smallest circle to the area of the shaded region? Express your answer as a common fraction.



(21) _____ A line segment drawn from a vertex of a unit square to a point on the square forms two regions. The area of the smaller region is one-third of the area of the larger region. How many units are in the length of that segment? Express your answer as a common fraction in simplest radical form.

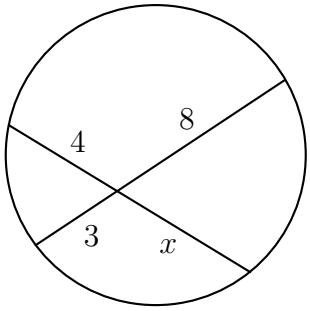
(22) _____ This net is folded into a regular octahedron. What is the sum of the numbers on the triangular faces sharing an edge with the face with a "1" on it?



(23) _____ The perimeter of a regular hexagon is 48 inches. What is the number of square inches in the positive difference between the areas of the circumscribed and the inscribed circles of the hexagon? Express your answer in terms of π.

(24) _____ The hour hand of a clock is 6 inches long and the minute hand is 8 inches long. What is the ratio of the distance in inches traveled by the tip of the hour hand to the distance in inches traveled by the tip of the minute hand from noon to 3 p.m.? Express your answer as a common fraction.

(25) _____ Two chords intersect as shown. What is the number of units in the value of x?



(26) _____ A triangle with sides $3a - 1$, $a^2 + 1$ and $a^2 + 2$ has a perimeter of 16 units. What is the number of square units in the area of the triangle?

(27) _____ If all angles are measured in degrees, the ratio of three times the measure of $\angle A$ to four times the measure of the complement of $\angle A$ to half the measure of the supplement of $\angle A$ is $3 : 14 : 4$. What is the number of degrees in the measure of the complement of $\angle A$?

(28) _____ What is the positive value of m such that the triangle bounded by the lines $y = 0, x = 12$ and $y = mx$ has an area of 1872 square units?

(29) _____ The volume of a cylinder is 60 cubic centimeters. What is the number of cubic centimeters in the volume of the sphere it circumscribes?

(30) _____ What integer is closest to the area of a triangle whose sides are 5, 6 and 7 units?