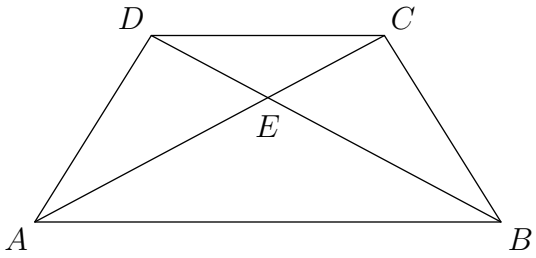
Geometry Worksheet (5A4)

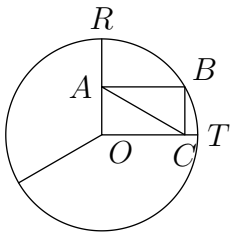
(1) _____ $ABCD$ is a trapezoid with the measure of base $\overline{AB}$ twice the measure of the base $\overline{CD}$. Point E is the point of intersection of the diagonals. The measure of diagonal $\overline{AC}$ is 11. Find the length of segment $\overline{EC}$. Express your answer as a common fraction.



(2) _____ Suppose the points A, B, C, D, E, and F are the vertices of a regular hexagon with sides of length 1 unit. What is AD?

(3) _____ A clock has struck 4 o'clock. In exactly how many minutes will the two hands first be at right angles? Express your answer as a mixed number.

(4) _____ In the figure below, O is the center of the circle and point B is on the circle, given $OR = 8$ and $CT = 2$, find the length of diagonal $\overline{AC}$ in rectangle $ABCO$.



(5) _____ Suppose the points A, B, C, D, E, and F are the vertices of a regular hexagon with sides of length 1 unit. What is AC?

(6) _____ What is the volume in cubic inches of a rectangular box that has sides of areas 48, 66, and 88 square inches?

(7) _____ Parallelogram $ABCD$ has its vertices at $A(2, -3)$, $B(4, 5)$, $C(-5, 5)$, and $D(-7, -3)$. What is the area of the parallelogram?

(8) _____ Parallelogram $ABCD$ has vertices $A(3, 3)$, $B(-3, -3)$, $C(-9, -3)$, and $D(-3, 3)$. If a point is selected at random from the region determined by the parallelogram, what is the probability that the point is not above the x-axis? Express your answer as a common fraction.

(9) _____ The sum of the number of cubic units in the volume plus the number of square units in the surface area of a cube equals six times the number of units in the sum of the lengths of its edges. What is the length of each edge of the cube?

(10) _____ A cylindrical beaker is 8 cm high and has a radius of 3 cm. How many such beakers of water will it take to fill a spherical tank of radius 6 cm?

(11) _____ Two angles of a triangle are in the ratio 7:2 and their difference is 45 degrees. Find the number of degrees in the measure of the largest angle of the triangle.

(12) _____ How many square centimeters are in the surface area of a regular octahedron which has edges of 4 cm?

(13) _____ A regular hexagon is 4 cm on each side. How many equilateral triangles, 2 cm on each side, would be required to tile the hexagon?

(14) _____ What is the total surface area in square centimeters of a cube whose volume is 2,197 cubic centimeters?

(15) _____ If a line segment is drawn between the midpoints of 2 adjacent sides of a square to form a triangle, what is the ratio of the area of the triangle to the area of the square? Express your answer as a common fraction.

(16) _____ A square with sides of length 12 inches is circumscribed about another square as shown. What is the sum of the perimeters of the two squares? Express your answer in the form of $a + b\sqrt{c}$.

(17) _____ Circles of radius 2 with centers at (2,0) and (0,2) overlap in the shaded area as shown in the figure. Find the area in terms of π.