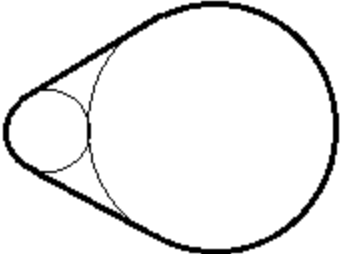
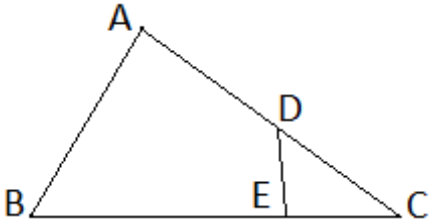
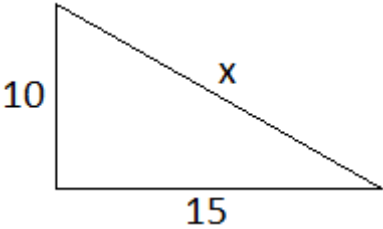




Geometry 7th/8th

1	Bessie the cow is tied to the outside corner of a barn shaped like a regular hexagon. The length of the rope with which she is tied is 12 feet, and the sides of the barn are 20 feet long. In square feet, what is the area of land she is free to graze?
2	A circle with radius 3 is tangent to a circle of radius 9. A belt (shown bold) is wrapped completely around the circles. What is the length of the belt? 
3	An equilateral triangle and a square have the same perimeter. If the square has an area of 36 square units, what is the area of the triangle in square units?
4	Triangle ABC has side lengths $AB = 6$, $BC = 12$, and $AC = 9$. Point D is on AC such that $AD = 5$ and $DC = 4$. Point E is on BC such that $BE = 9$ and $EC = 3$. Find DE . 
5	Given the right triangle below, what integer is closest to the value of x ? 
6	Melody Pond pours the same amount of orange juice into two right circular cylinders. The first cylinder has a base radius of 4 inches and a height of 5 inches, while the second has a base radius of 2 inches and a height of 10 inches. If the height of the orange juice in the first container is 2 inches, how many inches high is the orange juice in the second container?
7	Five faces of a $4 \times 4 \times 4$ cube are painted red. The sixth face is painted gold. The cube is then cut into 64 unit cubes. How many of the unit cubes have exactly one face painted red?
8	What is the area of isosceles trapezoid $ABCD$ with $AB = 12$, $BC = DA = 5$, and $CD = 18$?
9	An equilateral triangle ABC and a regular pentagon $ACDEF$ share a side AC and do not overlap. What is the measure of angle CBF , in degrees?
10	The midpoints of the sides of a rectangle are connected to make a quadrilateral. Then, the midpoints of the sides of the new quadrilateral are connected to make another quadrilateral. What is the ratio of the area of the last quadrilateral to the area of the original rectangle? Express your answer as a fraction in simplest form.