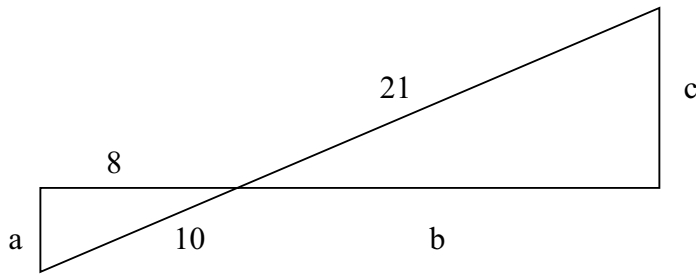
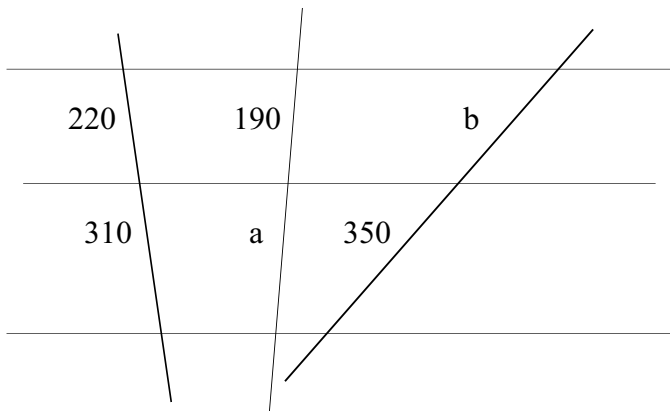


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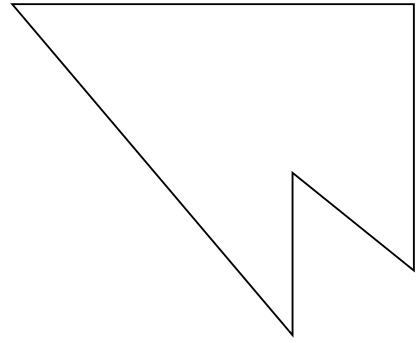
1. Find the values of a , b , c in the following diagram containing two similar right triangles.



2. For the streets in the diagram below, find the length of the two segments labeled a and b . The horizontal streets are parallel.



3. An airplane is flying north and then makes a 90 degree turn to the west. Later it makes another left turn of 125 degrees. What is the angle of a third left turn that will cause the plane to again fly north?



4. A large pizza of diameter 16" is cut into eight slices (circular sectors) and costs \$12 .
- Find the area of one slice (sector).
 - Find the central angle of a slice in degrees and radians.
 - For comparison shopping, find how much the pizza costs per square inch.
 - Find the arc length of the slice's crust (arc).
 - Later on we'll have a way to find that the length of the chord from one corner of the crust to the other corner is 6.12 inches. Find the area of the segment bounded by the chord and the arc (from part d). (Hero's formula may be helpful.)

Armed with facts like these you'll surely be the life of your next pizza party. I recommend notations be made on the place mats or napkins for convenient memorabilia for your guests.

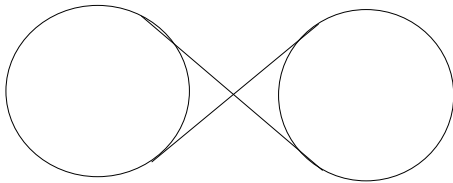
5. A simple house is 40 feet long and 30 feet wide with walls 10 feet high. The gable at each end under the roof edge is in the shape of an equilateral triangle.
- Find the area of paintable surfaces.
 - Find the area of the roof if it hangs over 2 feet in every direction.
 - If paint costs 3 cents per square foot and roofing costs 25 cents per square foot, find the cost for painting and roofing the house.
6. A window in an A-frame house has the shape of an isosceles trapezoid. The top is 30 inches wide, the bottom is 40 inches wide and the height is 24 inches wide.
- Find the length of the right and left edges.
 - Find the perimeter of the window.
 - Find the area of the window.

7. Use the trapezoidal rule and Simpson's rule to estimate the area of a lake whose widths at various places are given in the table below.

Dist. from North End in meters	0	50	100	150	200	250	300	350	400
Width in east/west dir. in meters	0	400	500	700	600	800	300	200	0

8. Find the circumference and cross sectional area of a log whose diameter is 36". If the wood weighs 40 #/ft³, find the weight of a piece 18" long.

9. Find the length of the belt in the pulley system below if the angle where the belt crosses itself is a right angle. The radius of both pulleys is 12.5 inches.



13. Find the volume of ice cream left in a cone 4" tall and 2" in diameter if the top surface has been licked flat.
14. Suppose one of the great pyramids has height 160 yards and base 240 yards (each edge). Find the volume and surface area of the pyramid. Ignore the area of the base.