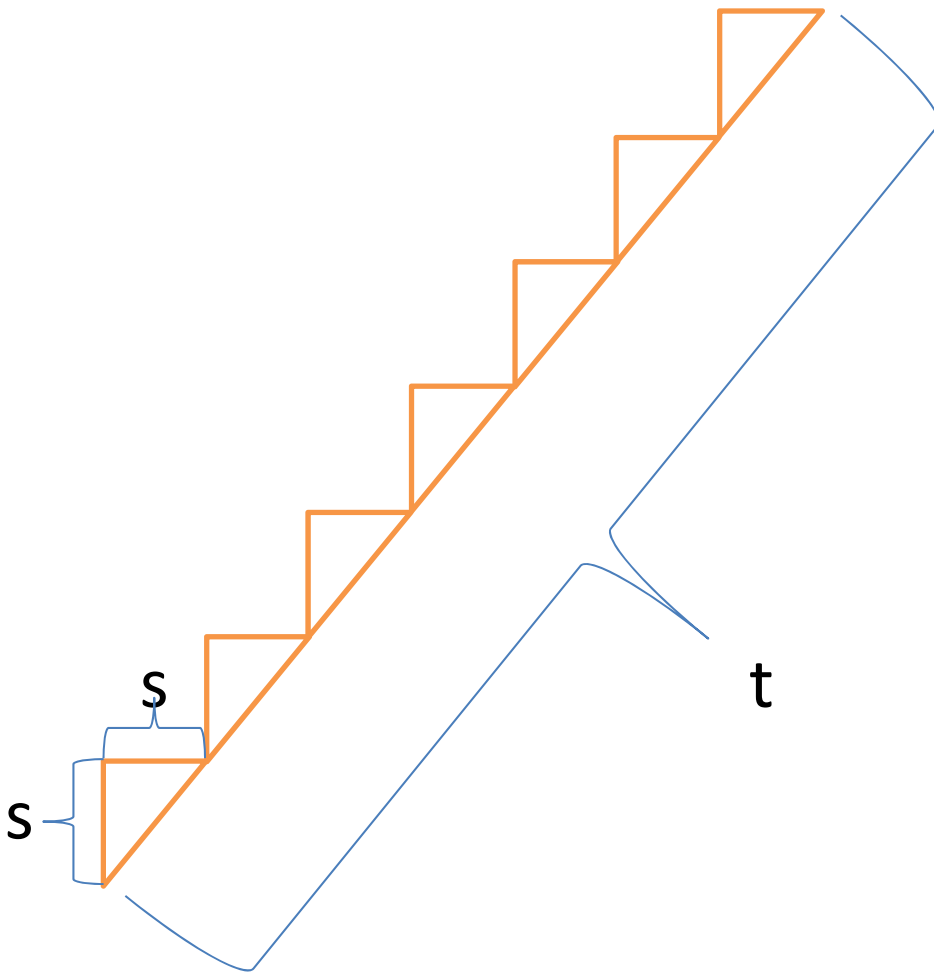


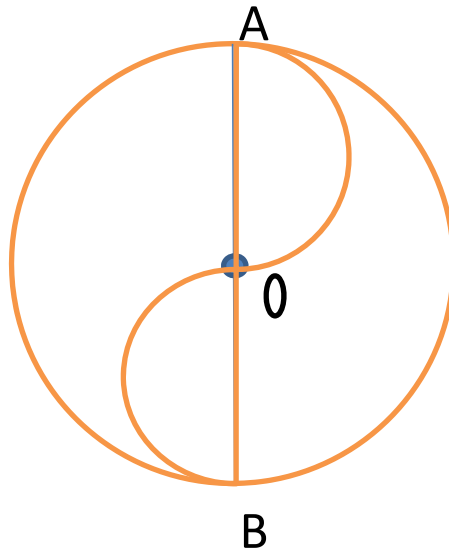
## Summer packet for Geometry completers

Show all the work and explanations for every problem using a t-chart. You will not earn any credits if explanation do not accompanies solutions. Enjoy your break and keep your mind engaged during the summer.

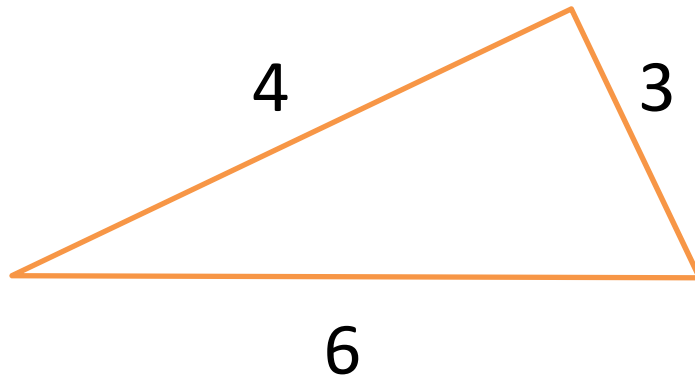
1. On the following staircase shown above both the depth and the height of each step are  $s$ , and each step forms a right angle. What is the value of  $t$  in terms of  $s$ ?



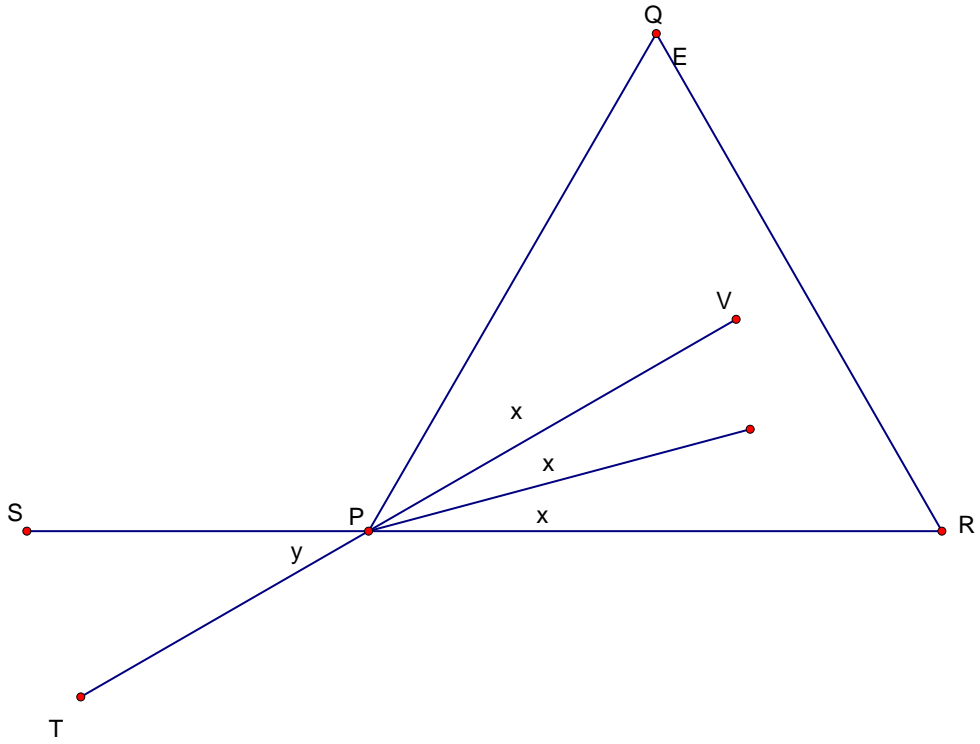
2. The circle below has center  $O$  and diameter  $AB$ . The two semicircles have diameters  $OA$  and  $OB$ . If the circumference of the circle is  $36\pi$ , what is the length of the curved path from  $A$  to  $B$  through  $O$ ?



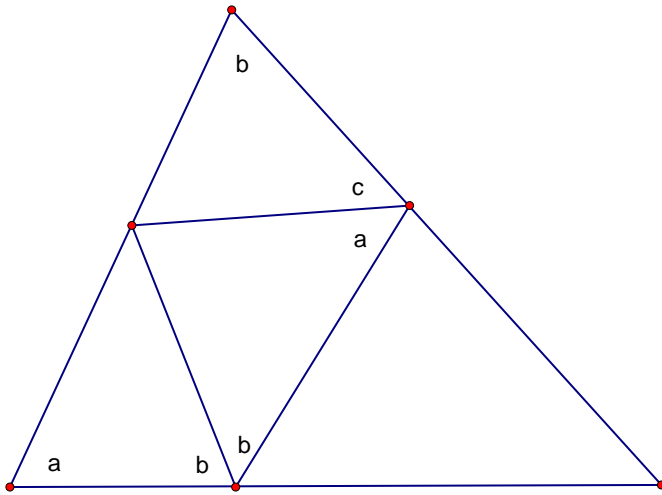
3. Each angle of triangle ABC below has the same measure as an angle in triangle XYZ (not shown).  
If the length of one side of triangle XYZ is 24, what is one possible perimeter of triangle XYZ?  
(Figure not drawn to scale)



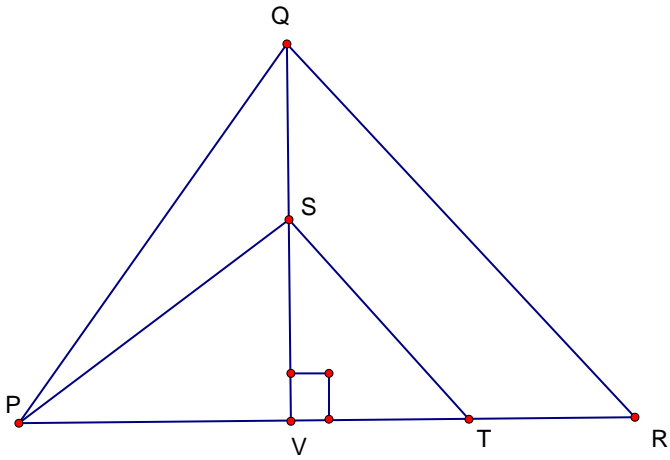
4. In the figure below, triangle PQR is equilateral and segment SR and segment TV intersect at point P. What is the value of Y?



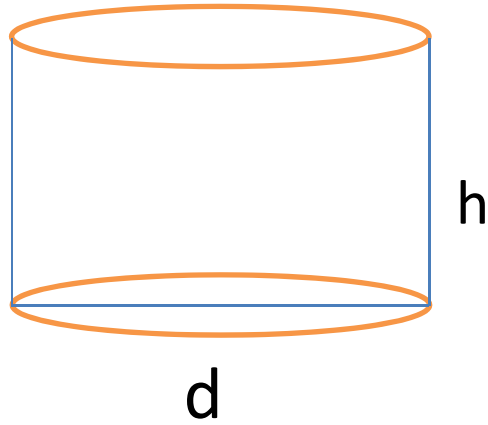
5. In the figure below what is the value of  $c$  in terms of  $a$  and  $b$ ?



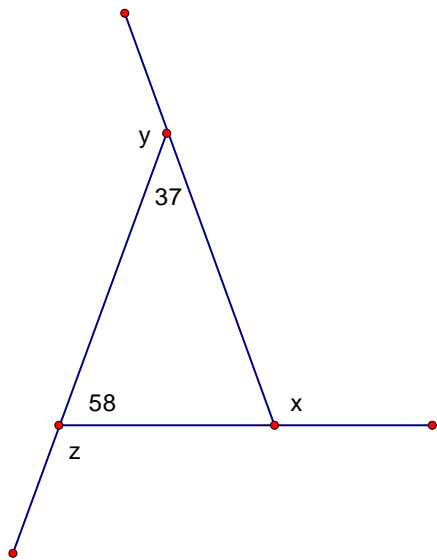
6. In triangle PQR below  $\frac{QS}{QV} = \frac{1}{3}$  and  $\frac{PT}{PR} = \frac{3}{4}$ . What is the value of the fraction  $\frac{\text{area of triangle } PST}{\text{area of triangle } PQR}$ ?



7. The right circular cylinder below has a diameter  $d$  and height  $h$ . Find the volume of the smallest rectangular box that completely contains the cylinder.

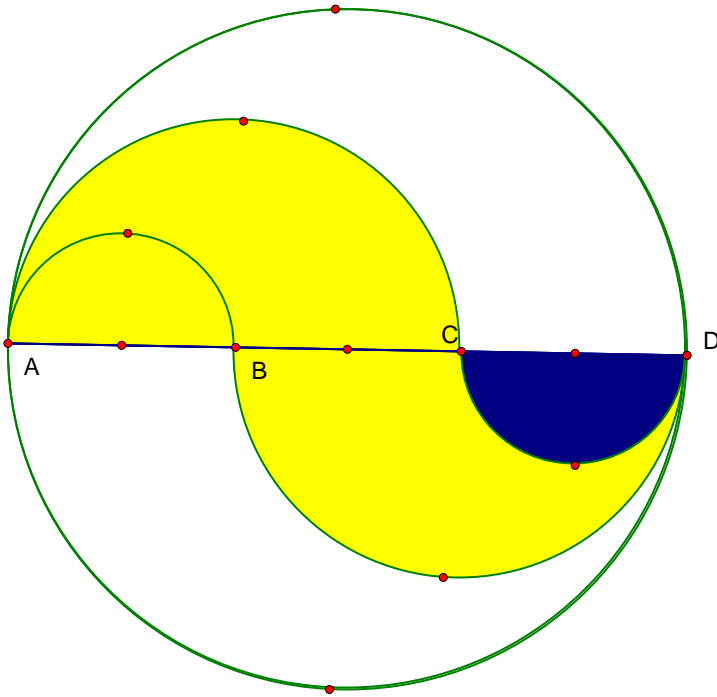


8. In the figure below find the value of  $x+y+z$ .





9. Semicircular arcs AB, AC, BD, and CD divide the circle below into regions. The points shown along the diameter AD divide it into 6 equal parts. If  $AD=6$ , what is the total area of the unshaded regions plus the black shaded regions?



10. In the figure below ABCD is a rectangle with  $BC=4$  and  $AB=6$ . Points P, Q, and R are different points on line (not shown) that is parallel to segment AD. Points P and Q are symmetric about line AB and points Q and R are symmetric about line CD. What is the length of segment PR?  
(Figure not drawn to scale)

