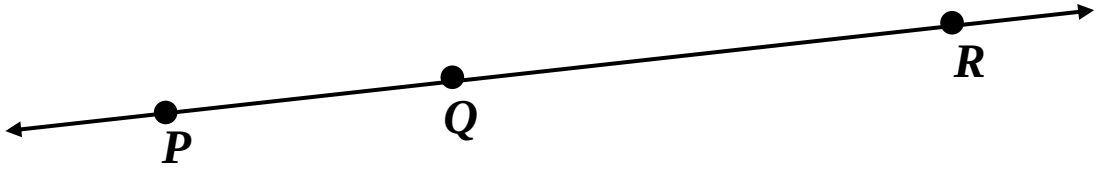
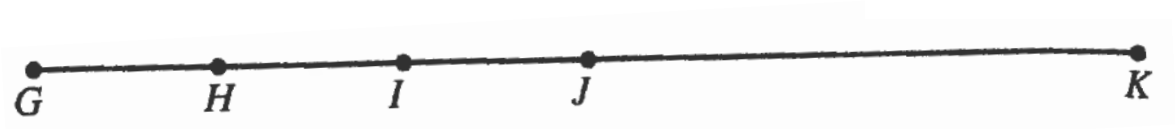
Distance on a Line:

If *P*, *Q*, and *R* are points on a line, a line segment, or a ray, and *Q* is between *P* and *R*, then $d(P,Q)+d(Q,R)=d(P,R)$**.**





If $d(G,K)=28$**,** $d(H,J)=10$**, and** $d(G,H)=d(H,I)=d(I,J)$**, then find**

$$d(H,I)$$

$$d(J,K)$$

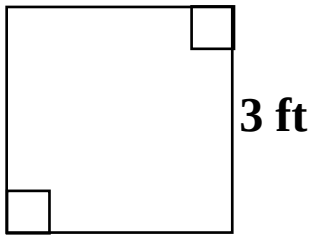
$$d(I,G)$$

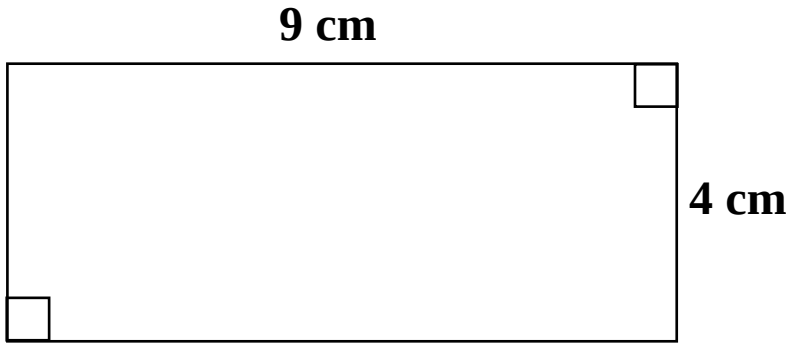
$$d(I,K)$$

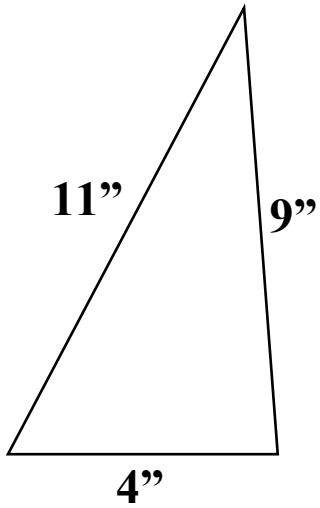
If $d(D,W)=d(O,N)$, then what can you say about $d(D,O)$ and $d(W,N)$?

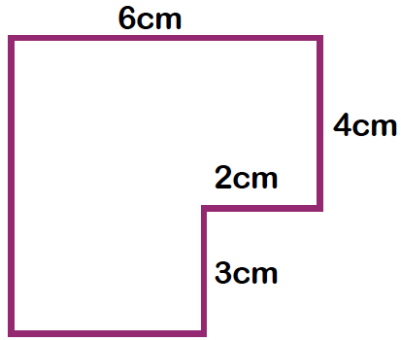
Perimeter:

It's the sum of the lengths of the sides of a polygon. Its units are units of length.



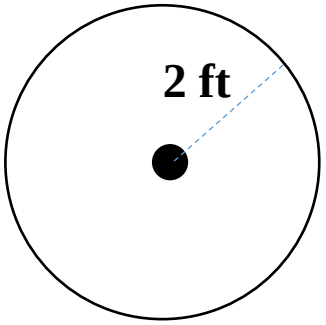


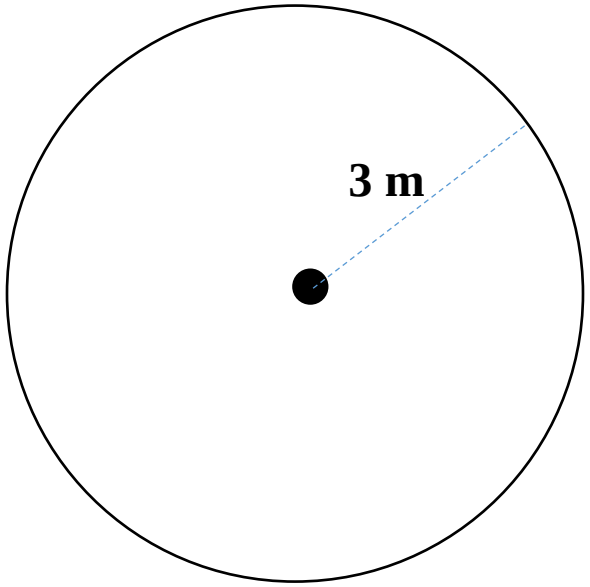




Circumference:

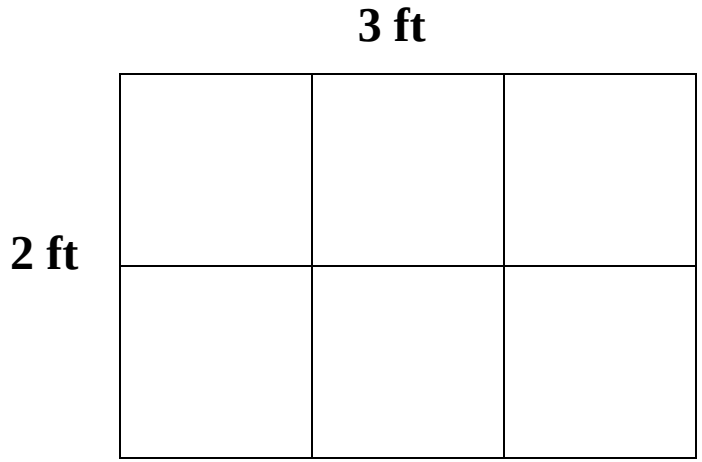
It's like perimeter for a circle. It's the distance around the circle. For every circle, the ratio of its circumference to its diameter, is always π. So the circumference can be determined by $C = \pi D$ or $C = 2\pi r$. Its units are units of length.



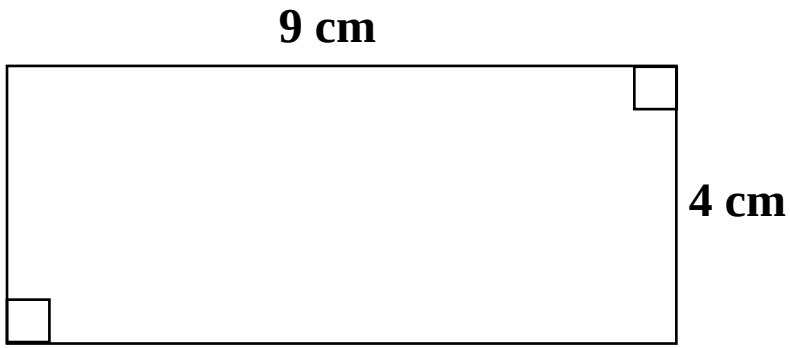


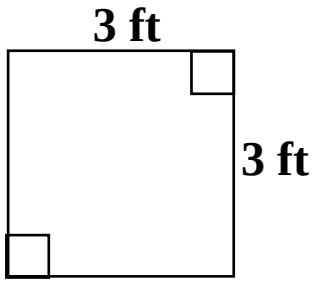
Area of a Rectangle:

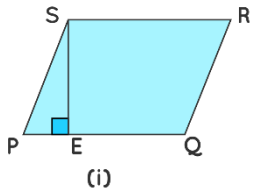
It's the number of square regions or units required to fill the rectangular region.

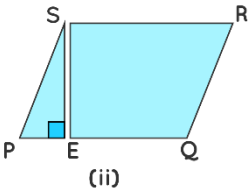


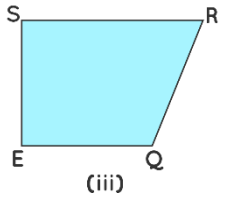
A rectangle with side measurements of 2 ft and 3 ft, can be filled with 6 square units, so its area is 6 ft^2. In general, the area of a rectangle is the product of its two perpendicular side measurements. Its units are units of squared length.

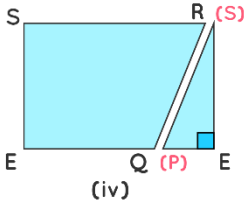

9 cm
4 cm


3 ft
3 ft

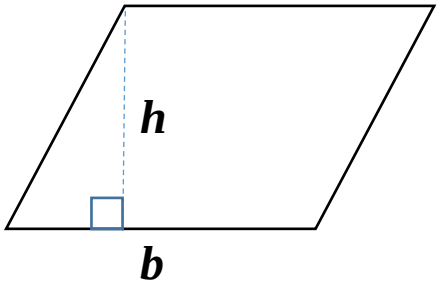




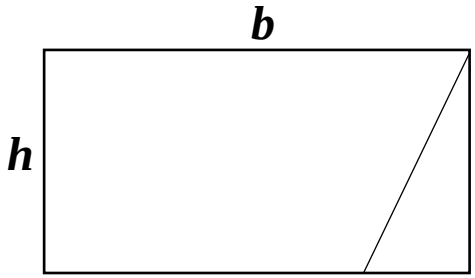




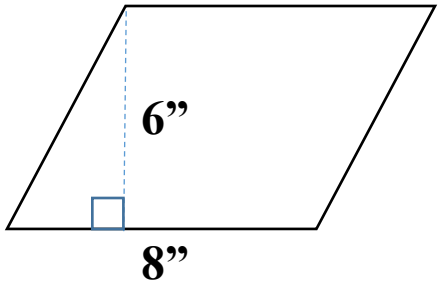
Area of a Parallelogram:

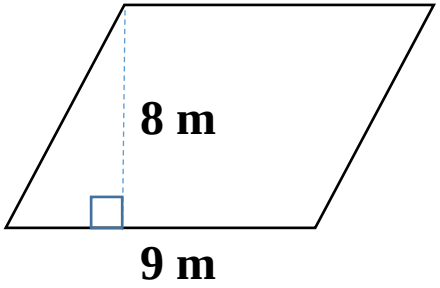


Just cut off the triangle, and re-assemble the pieces into a rectangle.

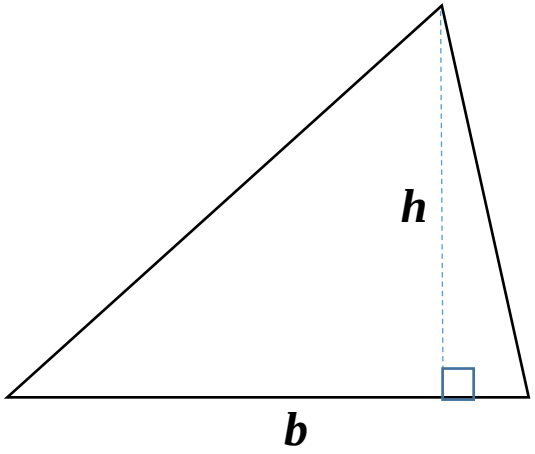


Area of a Parallelogram $= bh$.

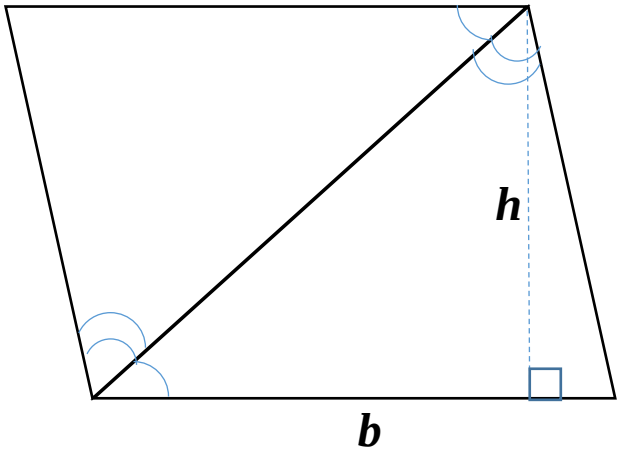

6”
8”


8 m
9 m

Area of a Triangle:

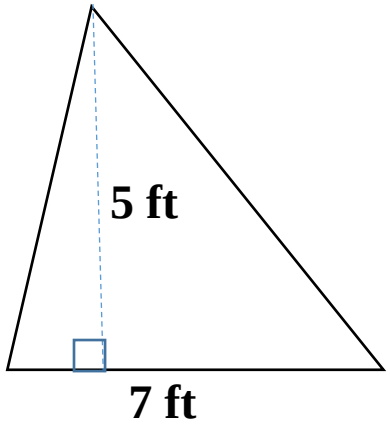


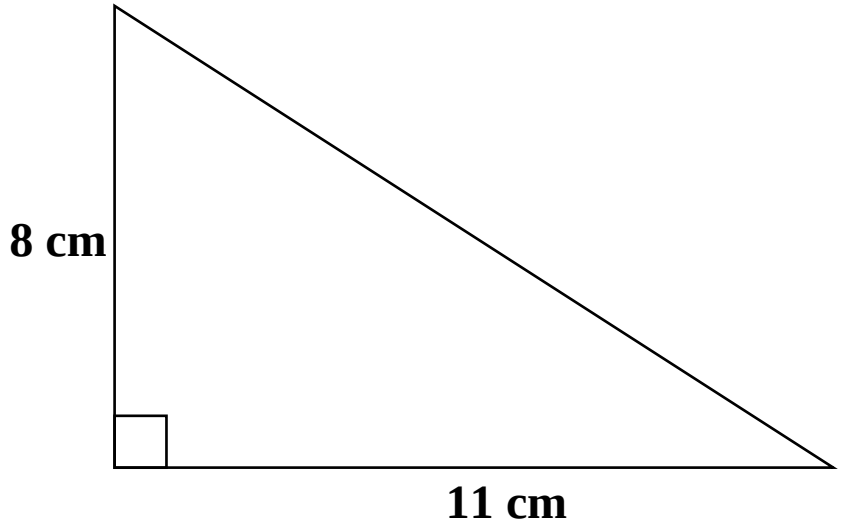
Make a copy of the triangle, and flip it and attach it to the original triangle to get a parallelogram.



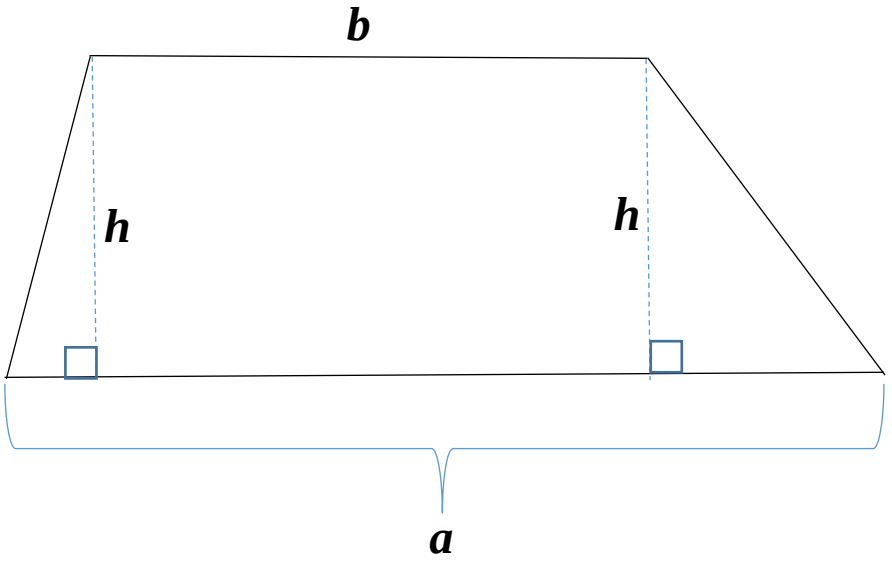
The area of the triangle is half the area of the parallelogram.

Area of a Triangle $= \frac{1}{2}bh$.

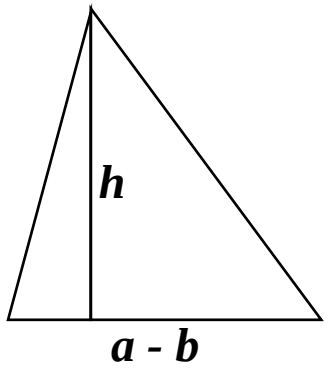




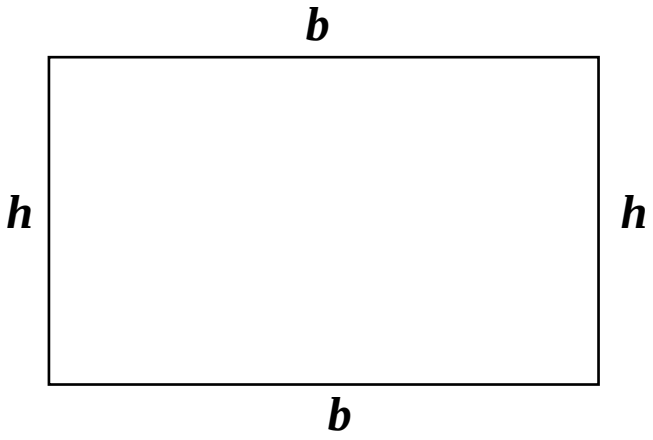
Area of a Trapezoid:



Cut off the two triangles, and assemble them into a single triangle.

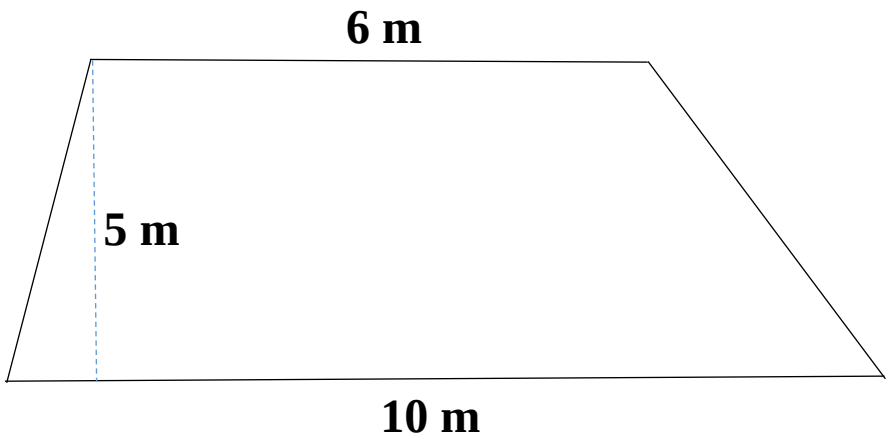


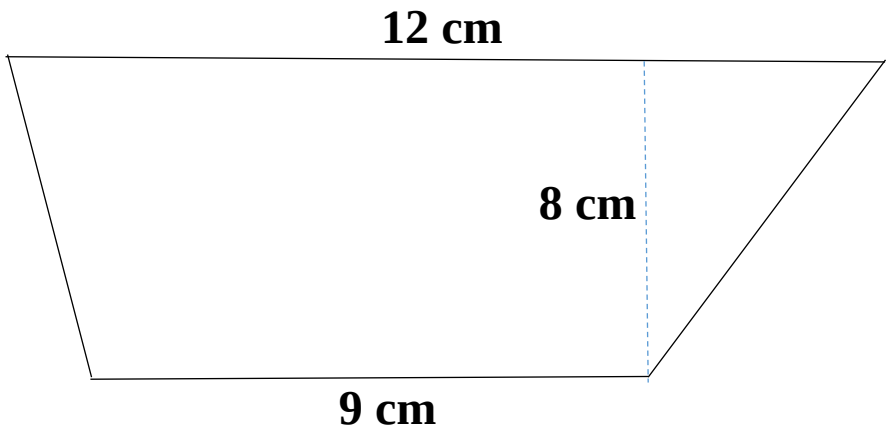
Here's the rectangle that's left behind.



The area of the trapezoid is the sum of the areas of the rectangle and the triangle.

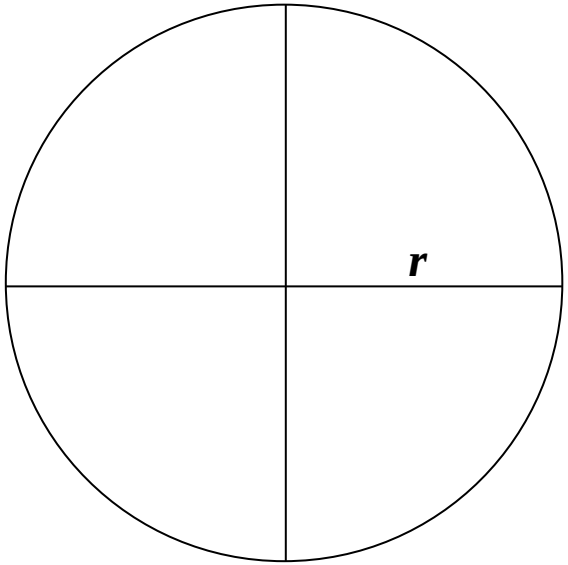
$$\begin{aligned}\text{Area of a Trapezoid} &= bh + \tfrac{1}{2}\left(a-b\right)h \\ &= bh + \tfrac{1}{2}ah - \tfrac{1}{2}bh \\ &= \tfrac{1}{2}ah + \tfrac{1}{2}bh \\ &= \tfrac{1}{2}\left(a+b\right)h\end{aligned}$$

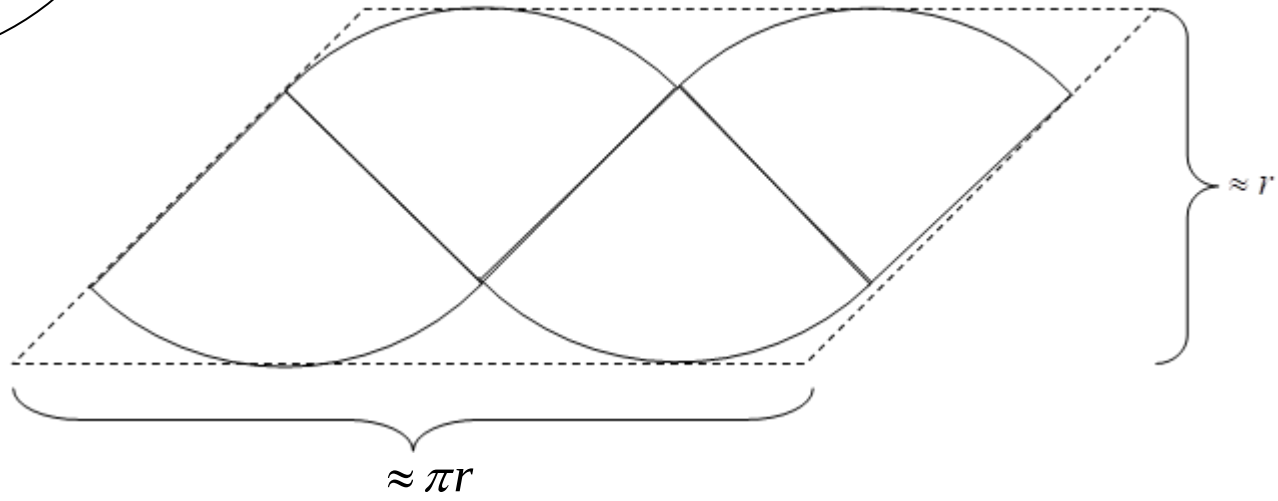

6 m
5 m
10 m


12 cm
8 cm
9 cm

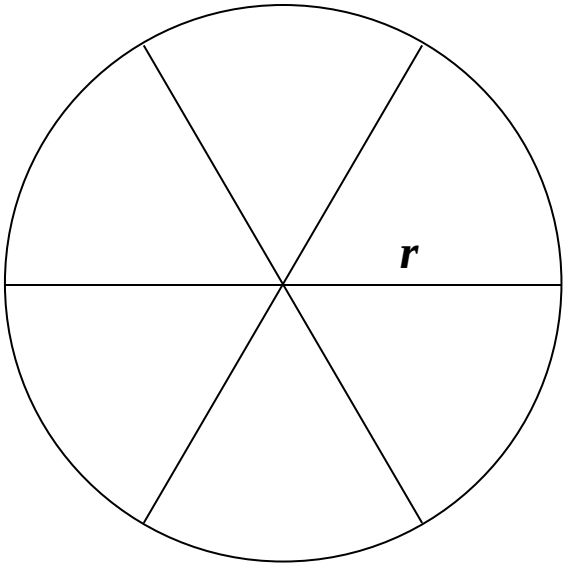
Let's find a formula for the area of a circle by cutting it into equal sectors, and then assembling them into a parallelogram-like shape.

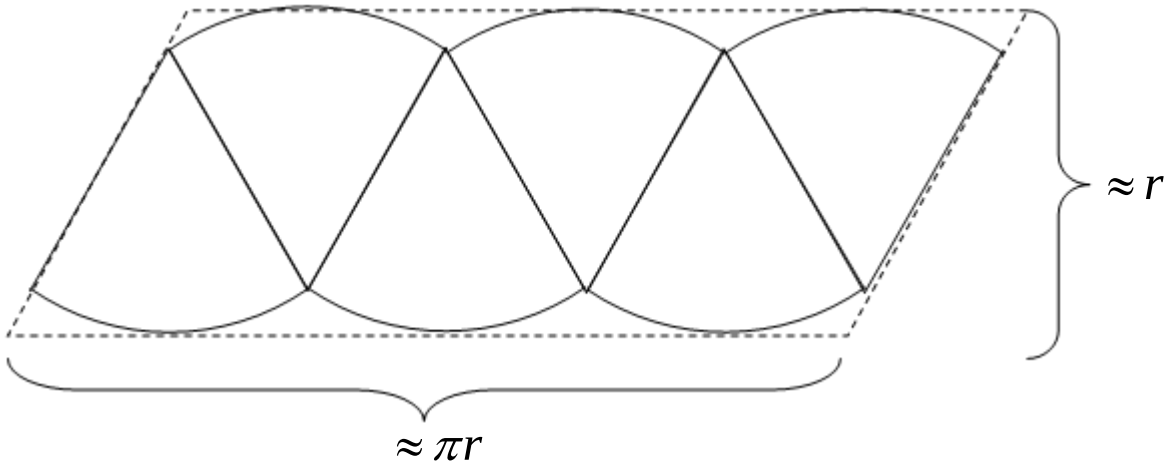
4 sectors

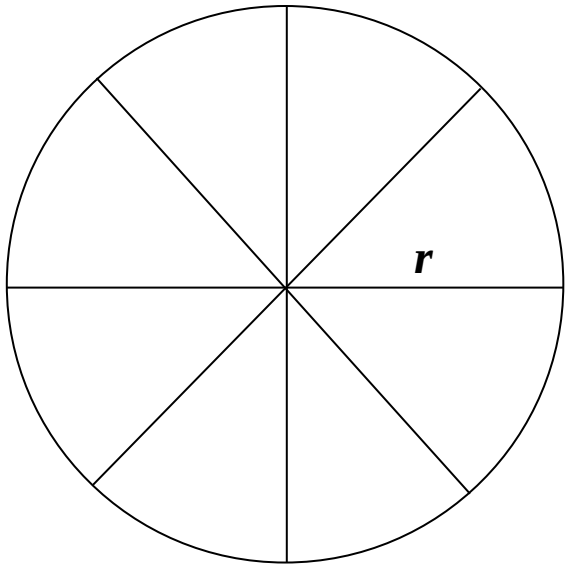




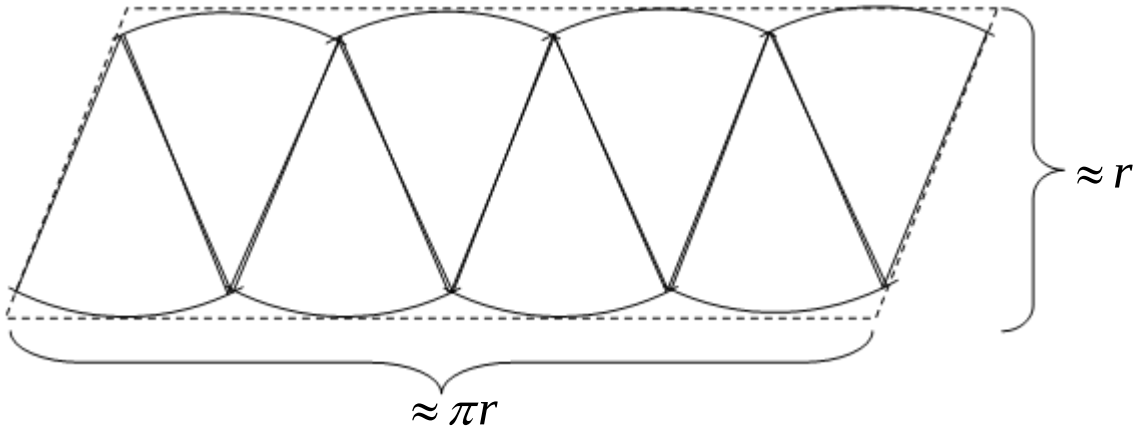
6 sectors



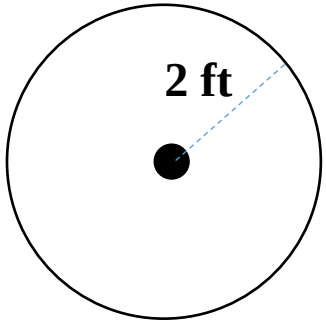


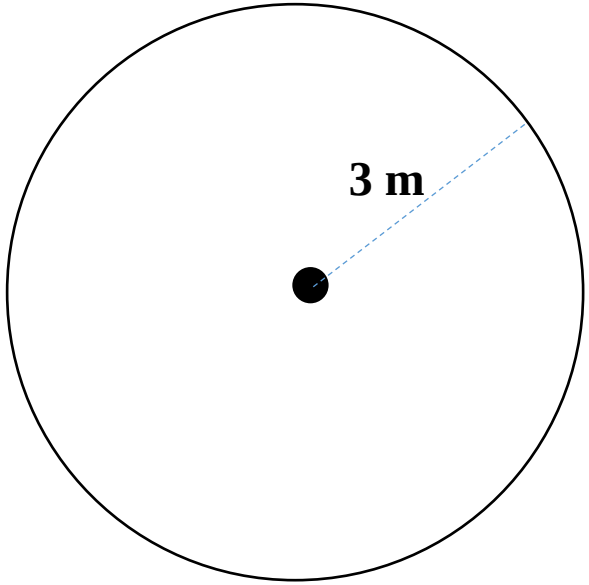


8 sectors



Area of a Circle $= \pi r^2$.





Find the area of the shaded regions.