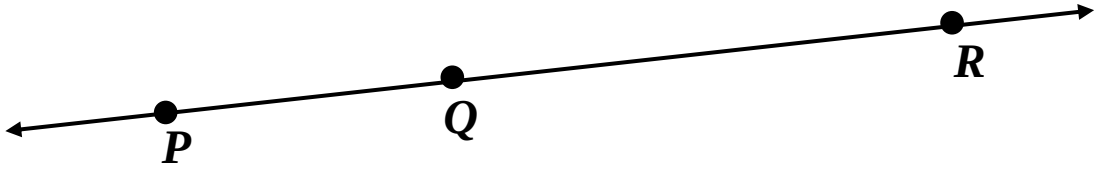
Distance on a Line:

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**

$d(H,I)$, $10=d(H,J)=d(H,I)+d(I,J)=2d(H,I)\Rightarrow d(H,I)=\boxed{5}$

$d(J,K)$, $d(G,J)=d(G,H)+d(H,I)+d(I,J)=15,$

$d(J,K)=d(G,K)-d(G,J)=28-15=\boxed{13}$

$d(I,G)$, $d(I,G)=d(G,H)+d(H,I)=\boxed{10}$

$d(I,K)$, $d(I,K)=d(I,J)+d(J,K)=\boxed{18}$

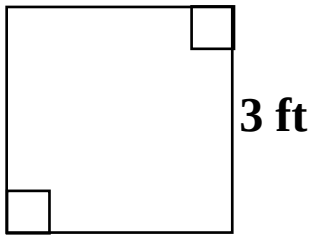
If $d(D,W)=d(O,N)$, then what can you say about $d(D,O)$ and $d(W,N)$?

$$d(D,W)=d(D,O)+d(O,W),\text{and } d(O,N)=d(O,W)+d(W,N)$$

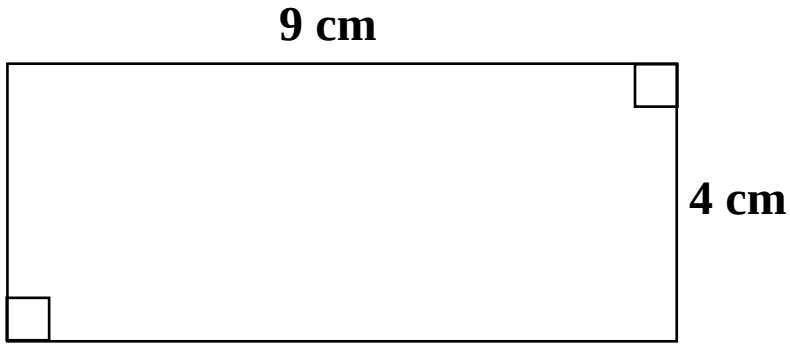
$$\text{so } d(D,O)+d(O,W)=d(O,W)+d(W,N)\Rightarrow \boxed{d(D,O)=d(W,N)}$$

Perimeter:

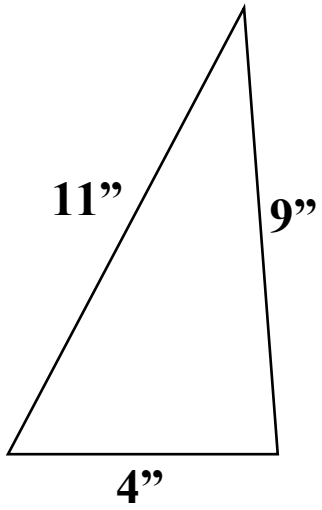
It's the sum of the lengths of the sides of a polygon. Its units are units of length.



Perimeter is 12 ft



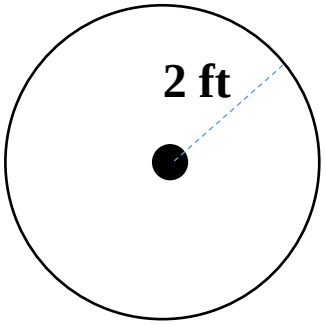
Perimeter is 26 cm



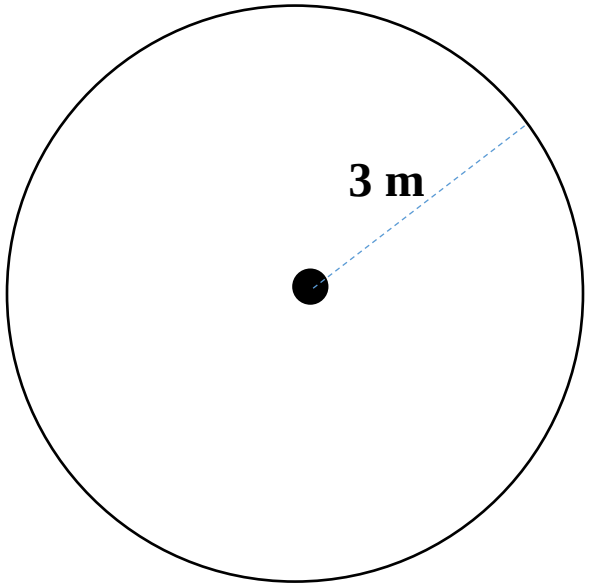
Perimeter is 24"

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.



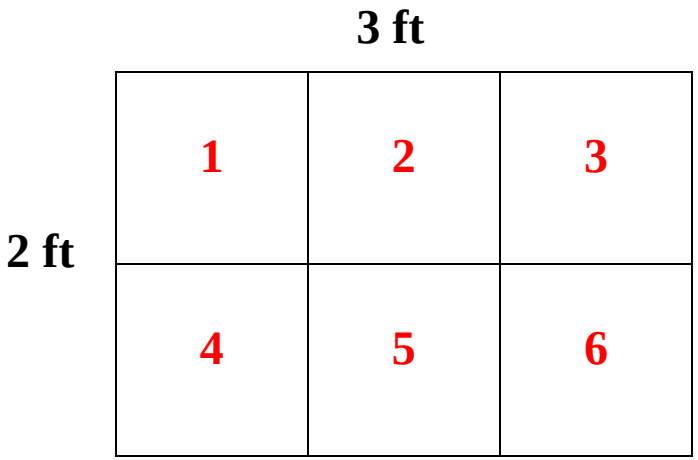
Circumference is 4π ft



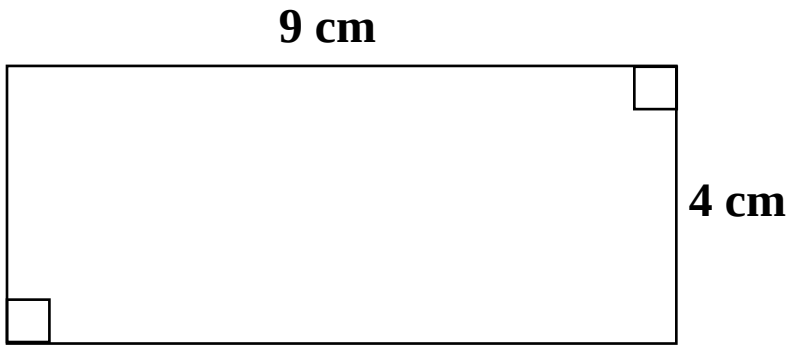
Circumference is 6π m

Area of a Rectangle:

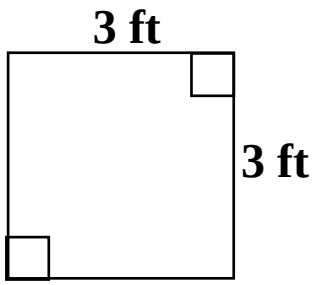
It's the number of square regions or units required to fill the rectangular region.



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 two of its perpendicular side measurements. Its units are units of squared length.

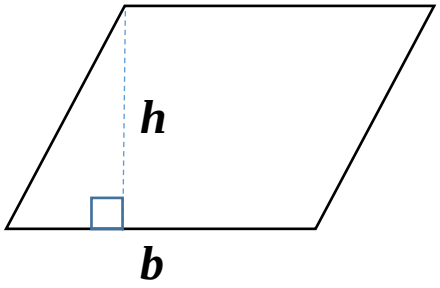


Area is 36 cm^2

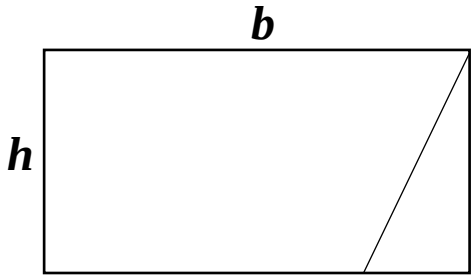


Area is 9 ft^2

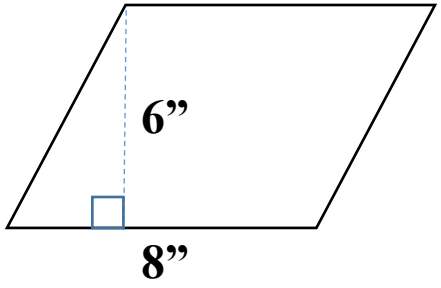
Area of a Parallelogram:



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

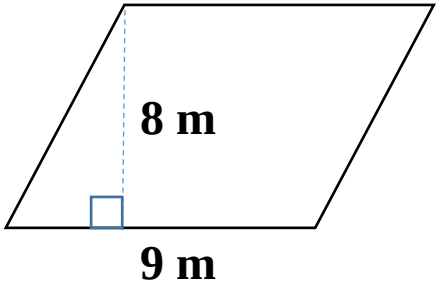


Area of a Parallelogram $= bh$.

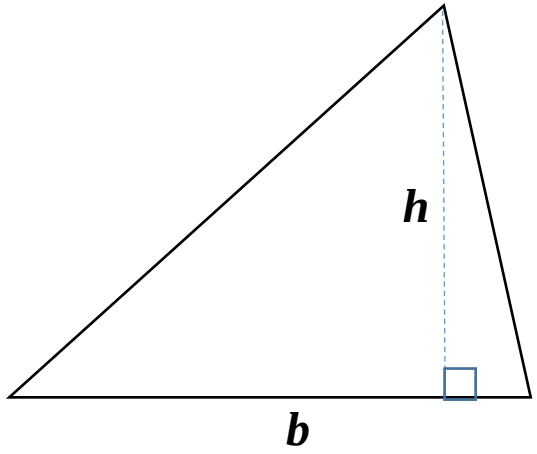


Area is 48 in^2

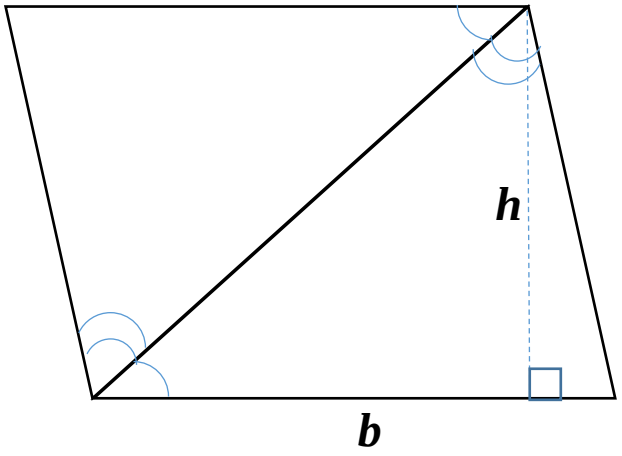
Area is 72 m^2



Area of a Triangle:

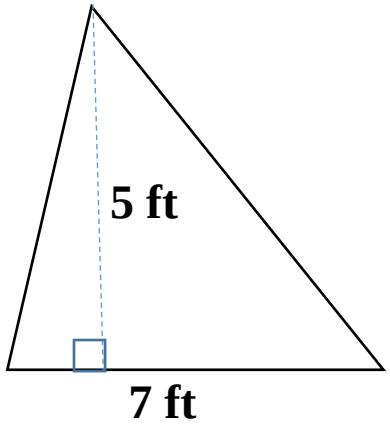


Make a copy of the triangle, and flip it and attach it to the original triangle to get a parallelogram.



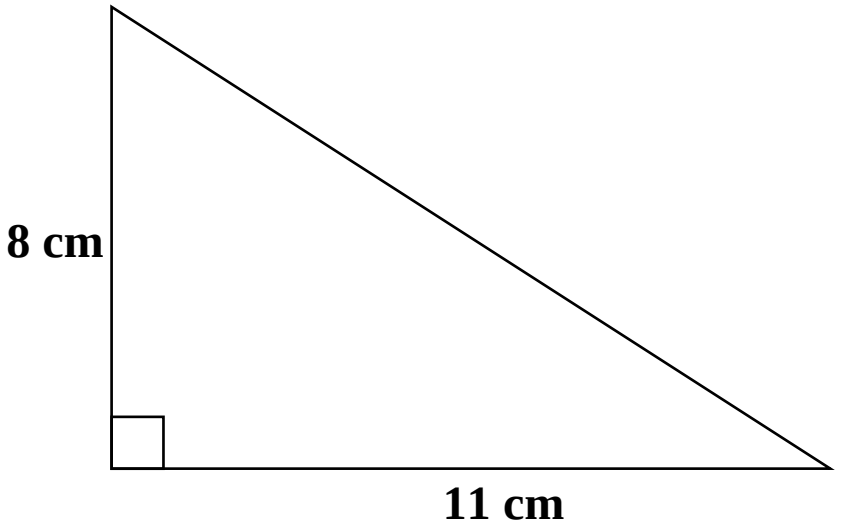
The area of the triangle is half the area of the parallelogram.

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

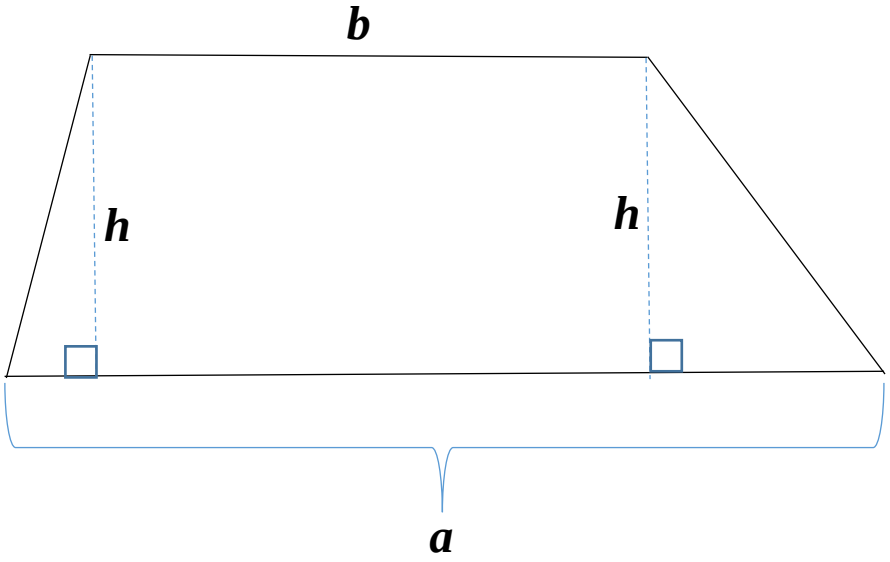


Area is 17.5 ft^2

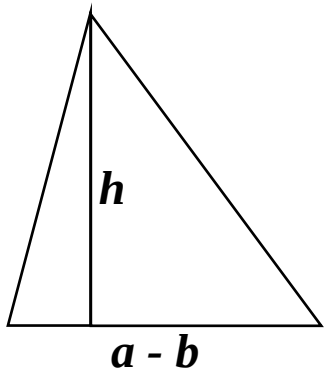
Area is 44 cm^2



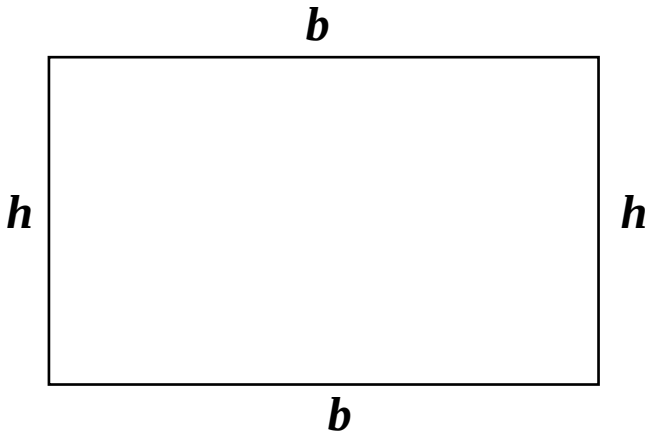
Area of a Trapezoid:



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

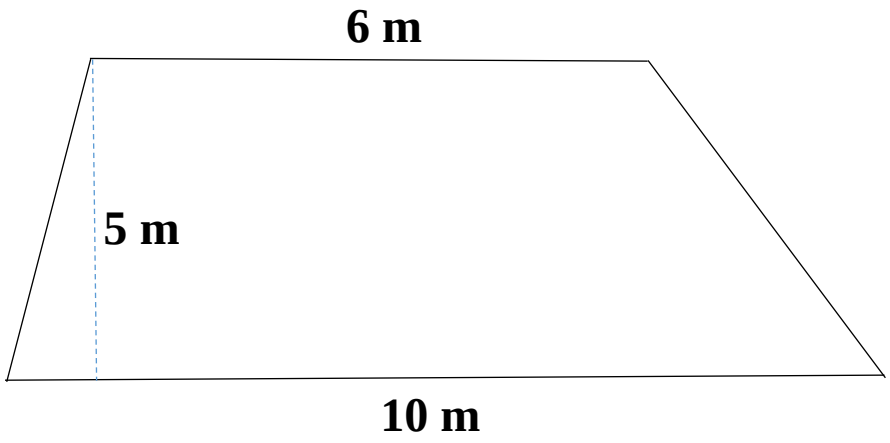


Here's the rectangle that's left behind.

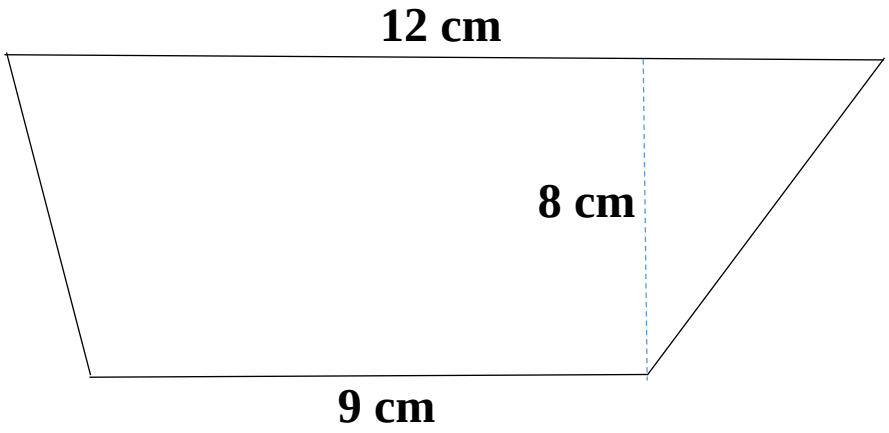


The area of the trapezoid is the sum of the areas of the rectangle and the triangle.

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



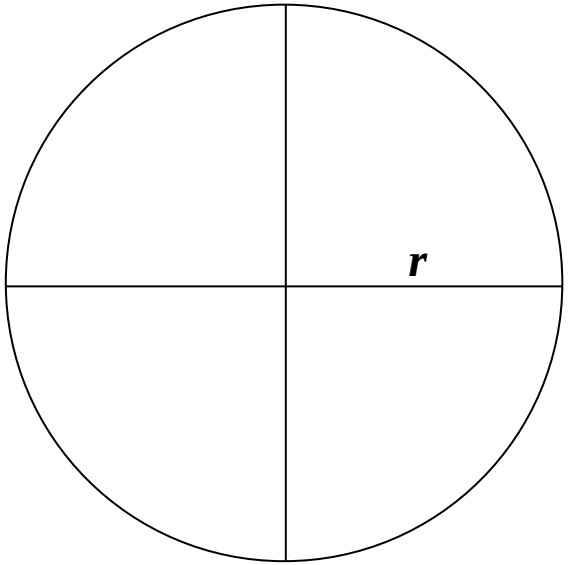
Area is 40 m^2

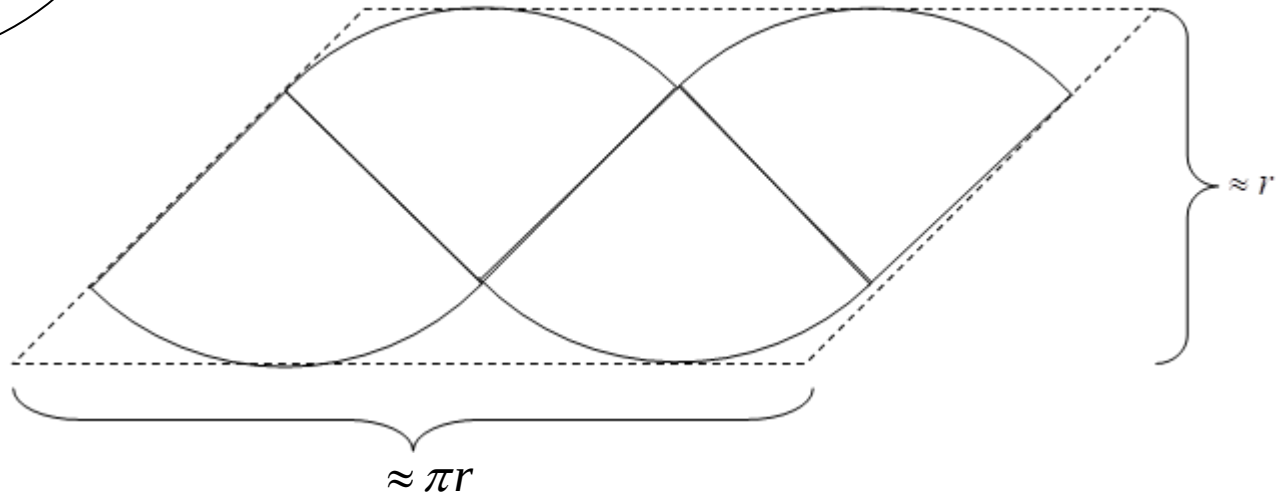


Area is 84 cm^2

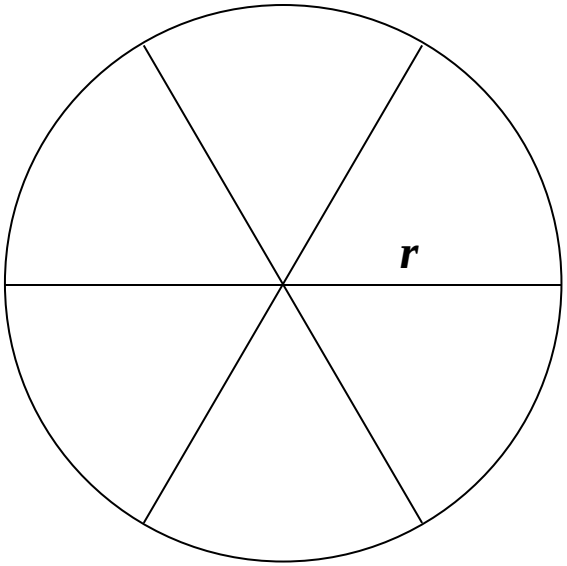
Let's find a formula for the area of a circle by cutting it into equal sectors, and then assembling them into a parallelogram-like shape.

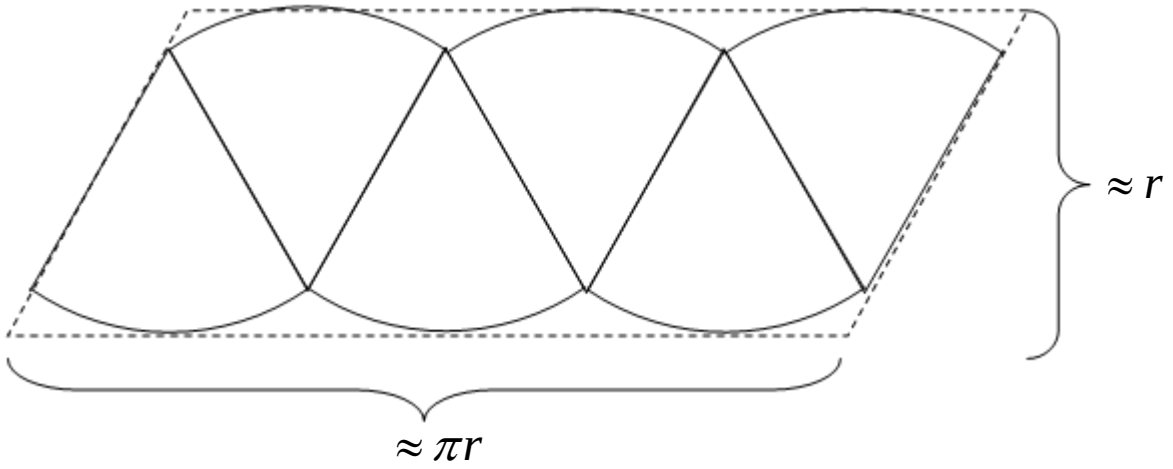
4 sectors

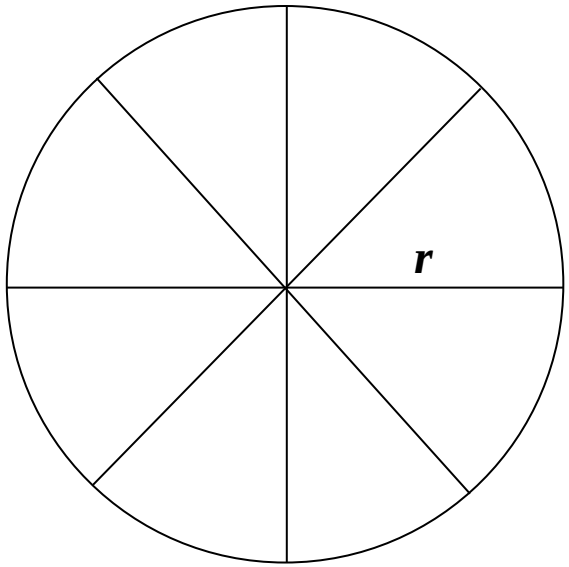




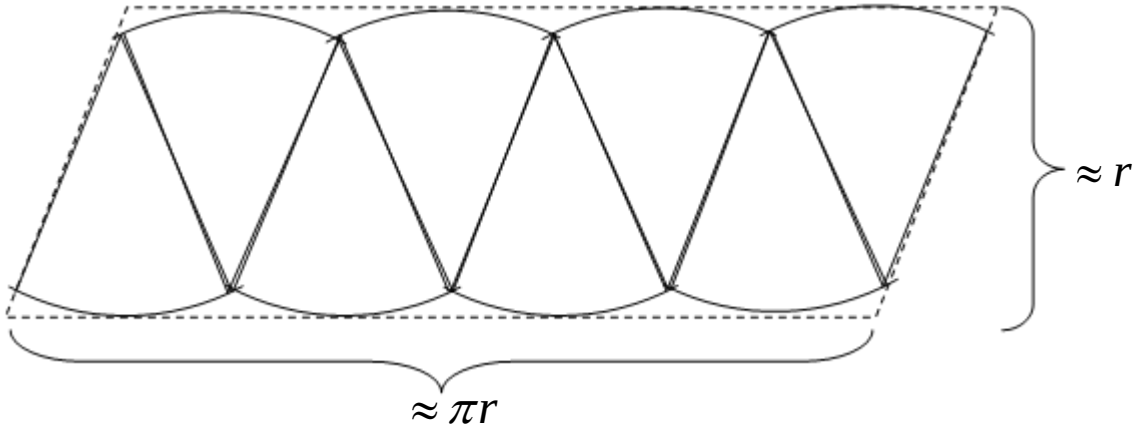
6 sectors





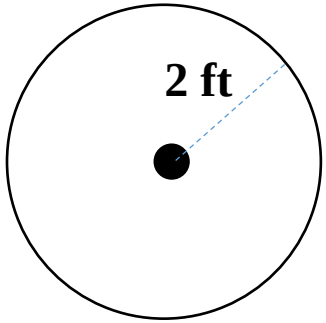


8 sectors



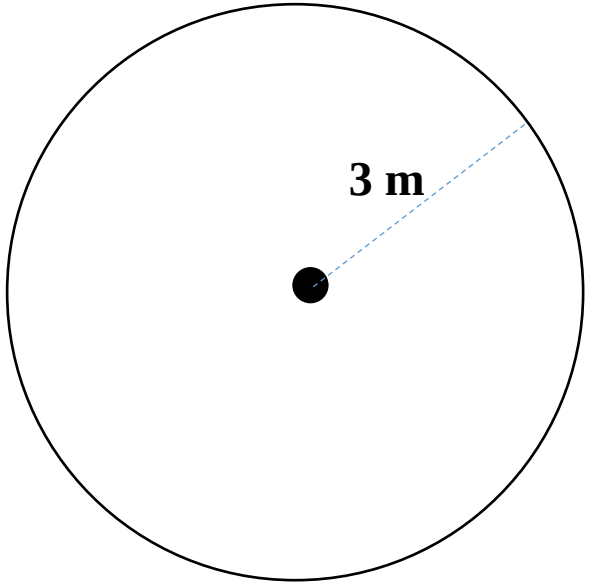
As the number of sectors increases, the assemble shape gets closer to a parallelogram with base of πr and a height of *r*, whose area is πr^2.

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

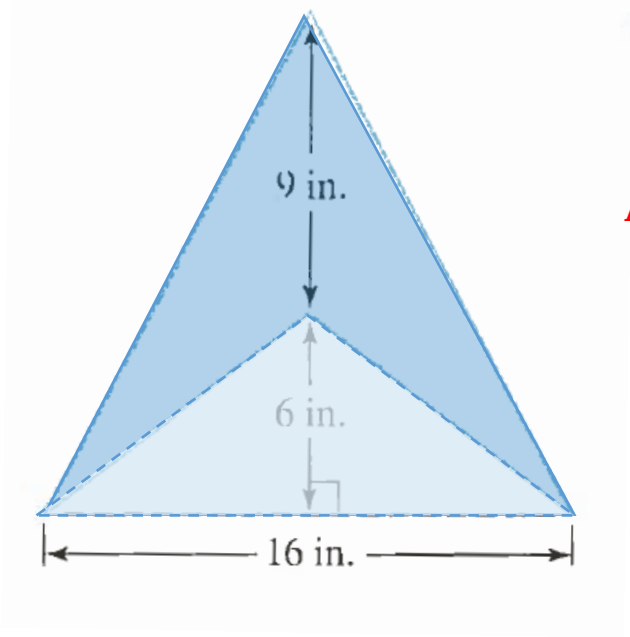


Area is 4π ft^2

Area is 9π m^2

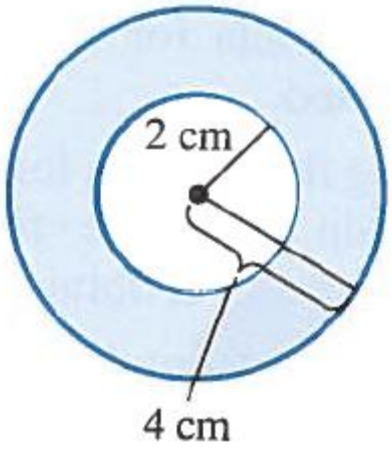


Find the area of the shaded regions.



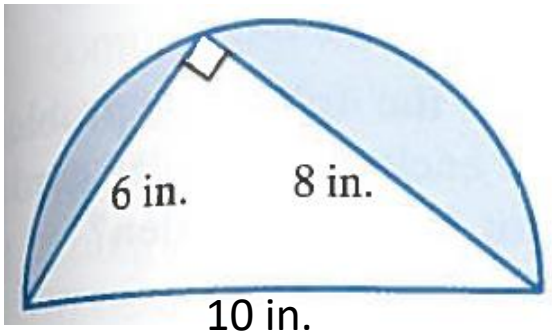
Area = Area of large triangle – Area of small triangle

= 120 in^2 – 48 in^2 = 72 in^2



Area = Area of large circle – Area of small circle

$= 16\pi\, cm^2 - 4\pi\, cm^2 = 12\pi\, cm^2$



Area = Area of semi-circle – Area of triangle

$= 25\pi\, in^2 - 24 in^2 = \left(25\pi - 24\right) in^2$