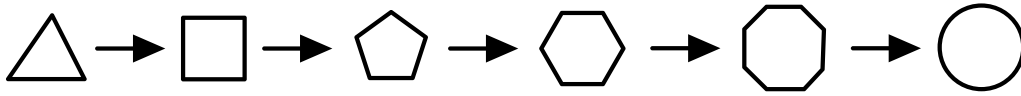
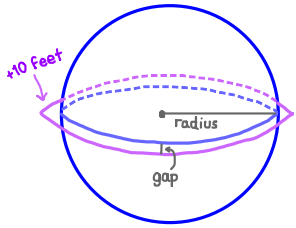


# WMW #6: How to memorize the digits of pi? (all) (In order?)



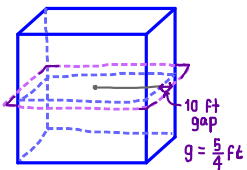
Let's start by drawing the Earth.



Then, solve for  $g$ .

$$\begin{aligned} \text{Equation: } 2\pi(r+g) \\ 2\pi r + 2\pi g &= 2\pi r + 10 \\ 2\pi g &= 10 \\ \text{So } g &= \frac{10}{2\pi} = \frac{5}{\pi} \text{ (Gap: 1.592 Ft)} \end{aligned}$$

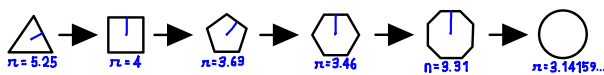
What if the Earth were to be a cube?



What are the digits of pi? (The value of pi for regular polygon)

Remember these formulas?  
 $C = 2\pi r$  and  $A = \pi r^2$   
 $C = 2(4)r$       $A = 4r^2$   
 Is  $\pi_{\text{square}} = 4$ ?

Different values of pi apply to each polygon.

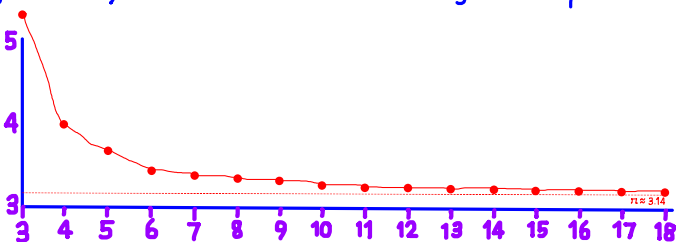


Use the short radius

For any n-sided polygon, use this formula:

$$\pi_n = n \tan\left(\frac{180}{n}\right)$$

Certainly, you can't memorize all the digits of pi, but you can use regular polygons to gradually memorize the first digits of pi.



You can take limits to approach the value of pi.

$$\lim_{n \rightarrow \infty} n \tan\left(\frac{180}{n}\right)$$

| $n$ | $f(n)$      | $n$       | $f(n)$          |
|-----|-------------|-----------|-----------------|
| 3   | 5.196152423 | 100       | 3.142626604     |
| 4   | 4.000000000 | 200       | 3.141851065     |
| 5   | 3.632712640 | 500       | 3.141633996     |
| 6   | 3.464101615 | 1,000     | 3.141601195     |
| 8   | 3.313708499 | 2,000     | 3.141595237     |
| 10  | 3.249196962 | 5,000     | 3.141593067     |
| 15  | 3.188348425 | 10,000    | 3.141592757     |
| 20  | 3.167688806 | 100,000   | 3.141592655     |
| 50  | 3.145733363 | 1,000,000 | 3.1415926536... |

If you absolutely want the digits of pi (of a circle), they are here (in blocks).

3.1415 92653 58979 32384 62643  
 38327 95028 84197 16939  
 93751 05820 97494 45923

For more digits of pi, visit: [piday.org/million](http://piday.org/million)