Name:_____

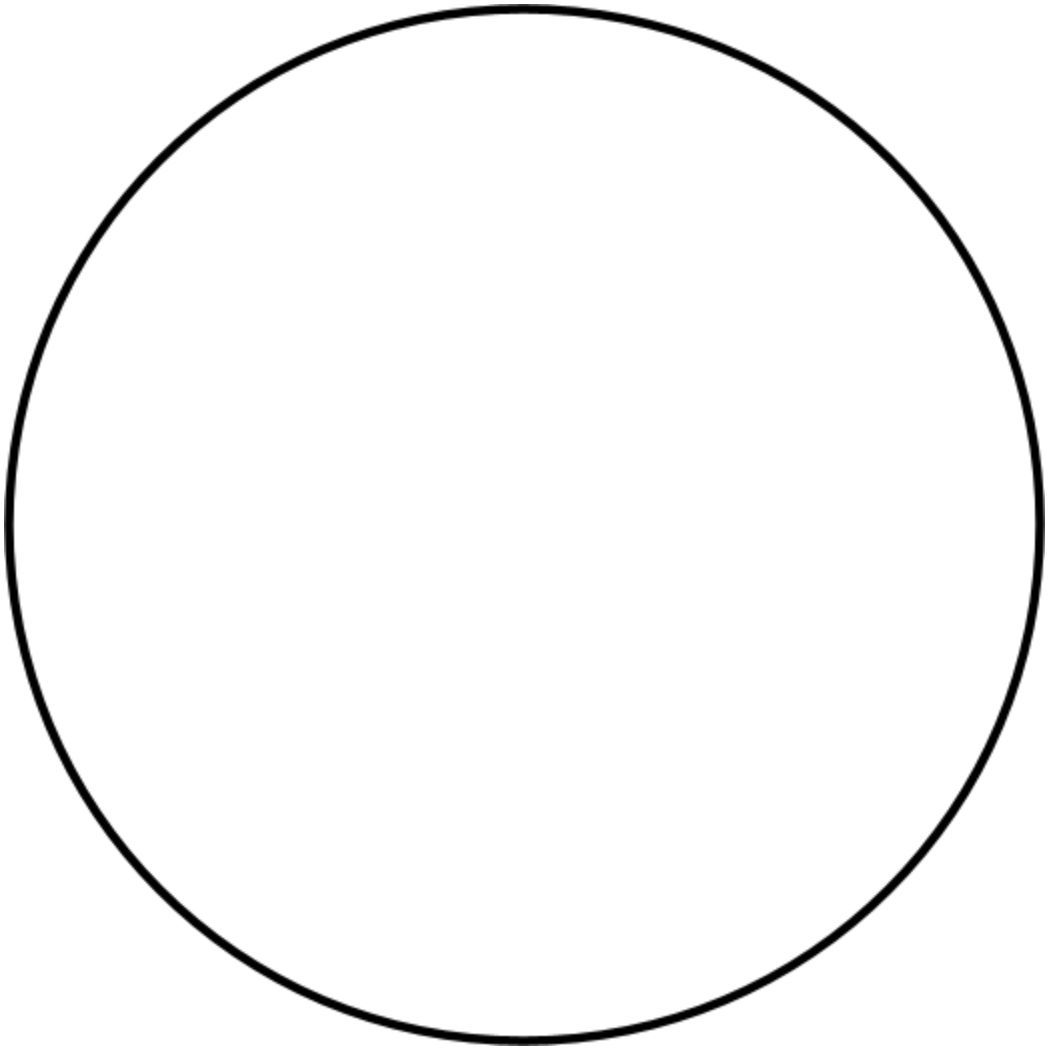
All About Pi (π)

Pi (not pie) is essential in math. Its symbol is π. It appears everywhere in places like circles, angles, and physics. Today is also Pi Day as it is 3/14, which reflects π's first three numbers, 3.14. Interestingly enough, Albert Einstein was also born on March 14th. Thus on 3/14, mathematicians will celebrate both Pi Day and Albert Einstein's birthday!

Now what is pi? Pi is a number that is a circle's circumference divided by its diameter. It works the same for all circles! Let's find Pi!

For the circle below:

1. Measure the circle's circumference
2. Measure the circle's diameter
3. Divide the circumference by its diameter to get π!



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So what did you get for pi?

$\pi =$

Pi is also what we call an "*irrational number*." This basically means that the number is a number that goes infinitely without any pattern; irrational numbers cannot be written in fraction form. This means that it is impossible for someone to know exactly what the value of π is. However, we can calculate many, many digits of π (Google has gone to over 100 trillion digits!).

Below are the first 100 digits of pi:
3.14159265358979323846264338327950288419716939937510582097494459230781640628620899862803482534211706 79

However, most people just memorize π as 3.14. People also use fractions to approximate π.

1. What is 22 divided by 7? (round to 4 decimal places)

2. How many digits does $22 \div 7$ get right?

3. What is 333 divided by 106? (round to 6 decimal places)

4. How many digits does $333 \div 106$ get right?

It was mentioned before that π was featured prominently in circles.
Do you remember any formulas that have π in it? What were the formulas?

Formula for the circumference of a circle: $C =$

Formula for _____ of a circle: $A = \pi r^2$

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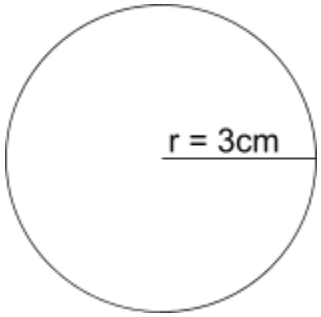
Formula for volume of a sphere: $V =$

Formula for _____ area of a sphere: $4\pi r^2$

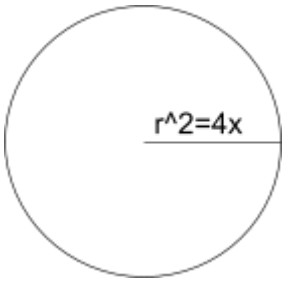
Now let's use π to solve some problems! Assume $\pi = 3.14$. Give an exact answer in terms of pi, then do the multiplication with 3.14!

1.



$C =$

2.

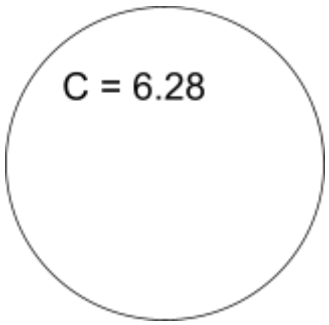


$r =$

Challenge: what is the circumference when $x = 9$

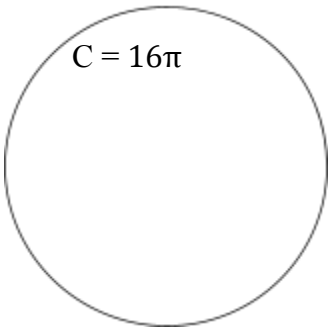
$C =$

3.



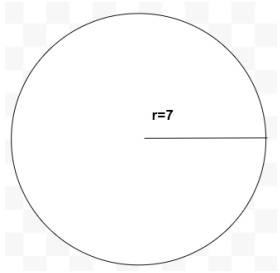
$d =$

4.



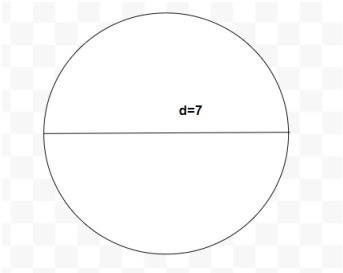
$r =$

5.



$A =$

6.



$A =$

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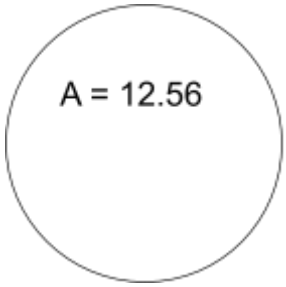
7.

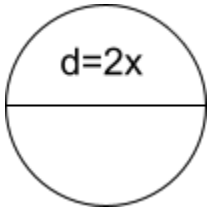


$r =$

8.

$C =$

9. $C_{of\ circle} = 4\boldsymbol{\pi}$

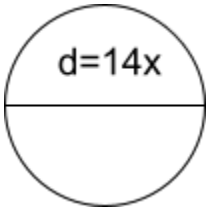


$r =$

$x =$

$A_{of\ circle} =$

10. $A_{of\ circle} = 441\boldsymbol{\pi}$

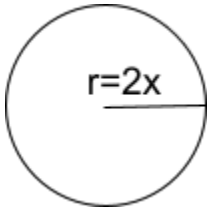


$r =$

$x =$

$C_{of\ circle} =$

11. $C_{of\ circle} = 64\boldsymbol{\pi}$



$x =$

$A_{of\ circle} =$

12. $C_{of\ circle} = 4\boldsymbol{\pi}$

$x =$

$A_{of\ circle} =$