Warmup created by mr. Lischwe This is week 1! 3/ (\#of days of spring break) 2
***Turn in your unused restroom passes from the last 9 weeks***

1) Get your $3^{\text {rd }} 9$ weeks goal down from the \#goals cabinet. (Also, get a calculator while you're up there.) Write down what your goal was, how successful you were with that goal, and why.
2) Write about your spring break. Things you did, places you went, etc. Be interesting. Don't be lame and write something basic like "slept more."

## Pythagorean Theorem Quizzes

- They went in on the last 9 weeks...sorry, no way to retake!
Averages
- 2nd: $88 \%$
- 3rd: $86 \%$
- $5^{\text {th }}: 93 \%$
- $6^{\text {th }}: 83 \%$


## Last 9 Weeks Plan

- 2 WEEKS: 3D Volume Unit
- 1 WEEK: Two-variable Data Unit
- 2 WEEKS: TNReady Review
- AFTER TNReady: Activities \& Projects \& stuff


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## Review: Circles

## Objective:

- Find the area \& circumference of circles
- Solve real-world problems involving circles


# Can anyone tell me... 

- The mathematical definition of a circle?

Circle: "The set of all points that are the same distance away from a central point"

## What makes circles special...

- Even though they have only 3 sides, triangles can be pretty complicated. They come in all different shapes. And shapes with more sides are even more complicated.
- However, literally ALL circles look exactly the same.
- This is because triangles have lots of different measurements and angles that can vary a lot.
- Circles have only ONE measurement that matters - the radius.
- If you know the radius, you know EXACTLY what the circle will look like. So all circles with a radius of 5 cm are exactly the same.


## Circles

- A circle is completely defined by the length of its radius.



## Circles

- The diameter is twice the length of the radius.

Q: Does the

diameter HAVE to go through the center???

A: YES. (If it doesn't, it is called a "chord")

## Fitting the "diameter" around the edge of a circle

= 1 diameter, curved around the outside


## Circles

- The diameter of a circle will ALWAYS fit approximately 3.14 times around the outside of the circle.
- So, the diameter times pi equals the circumference.
- Circumference of a Circle:

○ $C=\pi d$ or $C=2 \pi r$

## Once again...

- Pi is not just a random magical number! Pi is the number of "diameters" that exactly fit around the circumference of any circle, big or small.



## Area of a circle

- https://www.youtube.com/watch?.v=|Za3 12pEcTw



## Area of a circle

## - Area of a Circle:

○ $A=\pi r^{2}$


## Examples

- Find the area and circumference. Round to the nearest tenth:



## ADVICE:

- Unless the problem specifically says "Use 3.14 for pi", then you should always use the pi button instead of $\mathbf{3 . 1 4}$. It is more exact!!!


## Be sure to use order of operations!!!

- When doing area, the exponent must be squared BEFORE it is multiplied by pi.
- (Calculators know the order of operations, so if you type it in all at once the correct way, you should be fine. But it can be easy to make a mistake when typing in an entire formula. Especially when we get to the longer ones)


## Exact answers...

- Math people often dislike rounded answers because they are not exact.
- How might we write these answers exactly?
- To write an exact answer, multiply everything else out but just leave the "pi" in the expression.

(EXACT ANSWER | $A=\pi r^{2}$ |
| :--- |
| $A=\pi \cdot 9^{2}$ |
| $A=81 \pi$ |
| $A \approx 254.5$ in $^{2}$ |
| ROUNDED ANSWER |

## ROUNDING:

- Unless specified otherwise, we will round final answers to the nearest tenth.
- However, decimals in the middle of the problem should not be rounded. This is more important in this unit because we will often be multiplying by big numbers, which also multiplies the little bit you rounded.
- If you have more steps to do, you should either:
- Write down as many of the decimals as you can, OR
- Leave the super-long decimal in the calculator for the next step, OR
- Leave it as an exact expression with pi in it


## Examples: Working backwards

- If the circumference of a circle is 10 inches, find the radius.

$$
\begin{aligned}
C & =2 \pi r \\
10 & =2 \pi r \quad \text { (divide both sides by } 2 \text { ) } \\
5 & =\pi r \quad \text { (divide both sides by } \pi \text { ) } \\
1.6 & \approx r
\end{aligned} \quad \text { ( }
$$

- If the area of a circle is $30 \mathrm{in}^{2}$, find the diameter.

$$
\begin{aligned}
& A=\pi r^{2} \\
& 30=\pi r^{2} \\
& 9.549 \approx r^{2} \quad \text { (divide both sides by } \pi \text { ) } \\
& 3.1 \approx r \quad \text { (square root!) } \\
& 6.2 \approx d
\end{aligned}
$$

