# Warmup 3/(Maximum \# of right angles in a triangle) Created by Mr. Lischwe 

1) Solve:

***Make sure you have a calculator***
2) Your friend set up the problem like $\mathbf{7}^{2}+17^{2}=x^{2}$. What would you say to help your friend understand what to do instead?
3) Remembering the $\mathbf{1 8 0}$ rule for triangles...why don't the three numbers from the problem in \#1 add up to 180 ?

## One more (don't need to write)

- Which of these is a reasonable estimate for the third side?
A. 19

B. 30
C. 49
D. 62


## TURN IN WARMUPS

## Video

- You are going to watch a video: https://www.youtube.com/watch?v=CAkMUdeB06o
- Your job will be: figure out HOW the contraption illustrates the Pythagorean Theorem

Understanding the Pyth. Thm. visually... In each figure below, the sides of three squares form a right triangle.

Triangle 1
Triangle 2
Triangle 3


| Triangle | Area of Green <br> Square | Area of Blue <br> Square | Area of Yellow <br> Square |
| :---: | :---: | :---: | :---: |
| 1 | 1 | 1 | 2 |
| 2 |  |  |  |
| 3 |  |  |  |



## Let's look at...

- Some real world situations that use the Pythagorean Theorem (there are several!)


## Application: TV's

- Carly bought a 32 inch TV.

- However, when she measured the length, she found that it was only 28 inches.
-What's the deal???


## Application: TV's

- TV's are actually measured by the length of their diagonal.
- If Carly's 32-inch TV was only 28 inches long, how tall was it?

$$
\approx 15.5 \mathrm{in}
$$

- Steven also bought a 32-inch TV, but his was only 25.6 inches long. How tall was his?

$$
19.2 \text { in }
$$

- Whose TV has a greater AREA?

Carly: $\approx 433.8$ in² $^{2}$
Steven: $=491.52$ in² $^{2}$


TOTAL AREA $25.6 \times 19.2=491.52$ square inches


TOTAL AREA $28 \times 15.7=439.6$ square inches

## CHALLENGE: Pythagorean Triples

- There are some well-known sets of three whole numbers that can form the sides of a right triangle.
- First person/pair to figure them all out will win!


## Back to your notes from Yesterday...

## Common Pythagorean Triples

-3, 4, 5
-5, 12, 13
-8, 15, 17
-7, 24, 25
-9, 40, 41

- MEMORIZE THESE!!! (It will pay off!)


## If $3,4,5$ works...

- What can you do with the numbers to create a similar triangle? (Different size but same angles)

$\cdot 3,4,5 \longrightarrow 6,8,10$
$\cdot 3,4,5 \longrightarrow 9,12,15$
-3,4,5 $5 \longrightarrow 18,24,30$
$\cdot 3,4,5 \longrightarrow$ x100 $300,400,500$


## Common Pythagorean Triples

-3, 4, 5
-5, 12, 13
-8, 15, 17
-7, 24, 25
-9, 40, 41

-     + Any multiple of these!!!
-For example: $(6,8,10)$ or $(50,120,130)$


## Homework:

## "Measuring Your TV" Sheet

- Go home and find out what size TV you have. Hopefully, your parents will remember, or you can find the box or something.
- Measure the length and width of the TV, then check the math to see if you get the right diagonal length.
-     + ALEKS

