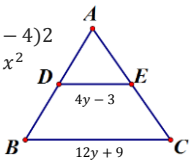
Tuesday, January 22, 2013

Agenda:

- TISK & 2 MM
- Review HW answers
- Lesson 7-6 (part 1)
- Homework: Work on §7-6 problems in packet

TISK Problems

1) Evaluate: $6 - 315 \div (7^2 - 4)2$
2) Factor completely: $81 - x^2$
3) Find the value of *y*:



Homework Check

9) Plan for Proof: Using the reflexive property and corresponding angles, you can show two congruent angles in ΔSUV and ΔSTR. Then, by the definition of similar triangles, you have $\frac{SV}{VU} = \frac{SR}{RT}$. Next, you can use AI angles and angle bisectors to prove $\angle VUR \cong \angle VRU$, then use the isos. triangle th. to prove opp. sides $\cong$ and replace the values in the proportion.

Homework Check

10) Plan for Proof: Prove ΔEKF and ΔGJF similar using AA (corresponding angles, vertical angles, AI angles, and the transitive property). Then, the proportion follows from that statement.

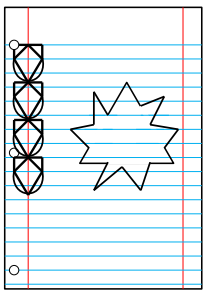
11) Plan for Proof: use the def. of altitudes and perpendicular lines to prove right angles exist (and are congruent). Then use the angles that are congruent based on the given triangle similarity statements to prove the smaller triangles are similar. Then the proportion follows from that statement.

Homework Check

12) Use the reflexive property and the givens to prove the triangles similar. Then the proportion follows from that statement.

§7-6 Fractals & Self-Similarity

- Have you ever doodled on the margins of your paper?
- Humans are addicted to fractals!



§7-6 Fractals & Self-Similarity

- A key to fractals is that they exhibit ***self-similarity***
  - A shape is self-similar if smaller and smaller details of the shape have the same geometrical characteristics as the original, larger form.

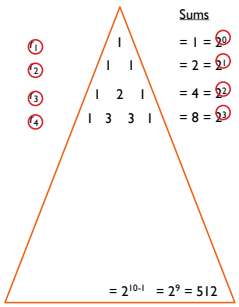
§7-6 Fractals & Self-Similarity

- Sierpinski
  - Waclaw Sierpinski
    - Polish mathematician
    - Created a "Sierpinski triangle" which is a type of fractal shape created using ***iteration***.

- A figure is ***strictly self-similar*** if any of its parts, no matter where they are located or what size is selected, contain the same figure as the whole.
  - The Sierpinski triangle is strictly self-similar.

§7-6 Fractals & Self-Similarity

- Pascal
  - Blaise Pascal
  - a French mathematician, physicist, inventor, writer and Christian philosopher
  - Created Pascal's Triangle:
    - The first number in the initial row is 1.
    - The number in each successive row is the sum of the two numbers above it.
- How can you find the sum of the values in the tenth row?



§7-6 Fractals & Self-Similarity

- Koch
  - Helge Von Koch
  - Swedish Mathematician
  - Created the Koch Snowflake:

§7-6 Fractals & Self-Similarity

- Mandelbrot
  - Benoit Mandelbrot
  - Polish-born, French and American Mathematician
    - Did the most to formalize study of fractals
    - Dr. Mandelbrot felt that "pure" mathematics was too strict to describe real phenomena in nature.
    - "Clouds are not spheres, mountains are not cones, coastlines are not circles, bark is not smooth, and lightning does not travel in a straight line." – Benoit Mandelbrot
    - By using fractals, he was able to show much more natural shapes!

§7-6 Fractals & Self-Similarity

- Another look into why fractals are just so cool…
  - http://www.youtube.com/watch?v=DK5Z709J2eo&list=PLF7CBA45AEBAD18B8

§7-6 Fractals & Self-Similarity

- Make your own!
  1. Start with a single geometric shape (pentagon, square, rectangle, kite, triangle, etc.).
  2. Modify it along one edge in some way.
  3. Repeat the modification along each edge.
  4. Continue making smaller versions of this shape using similarity rules to guide your placements.
  5. Name your figure.