Success Criteria for Solving Math Problems

Success Criteria: Forming Our Assessment for Similar Triangles & the Pythagorean Theorem

<u>Knowledge & Understanding</u>

- How can you tell if someone has a good understanding of the concept of similar triangles?
    - Can list the ratios of corresponding sides
    - Can determine the scale factor
    - Knows what is meant by "similarity"
    - Can prove similarity
        - Showing that 3 pairs of corresponding angles are equal and/or
        - Showing that 3 pairs of ratios of corresponding sides are equal

- How can you tell if someone has a good understanding of the concept of the Pythagorean Theorem?
    - Knows when it can be used
        - Right triangles; two of 3 sides given
    - Knows how to use the formula for finding the hypotenuse
        - Adds the squares of the two, shorter side lengths
    - Knows how to use the formula for finding the length of a shorter side
        - Subtracts the square of a given short side from the square of the longest side

<u>Communication</u>

- **General:** What does good written, mathematical communication include?
    - Key terms, appropriate symbols, and units (where appropriate)
    - Neatly-labeled diagrams and graphs
    - Organized, thinking is clear (reasons given for steps in the process)
    - A conclusion to word problems

- **Specific:** What does good written, mathematical communication for similar triangles and the Pythagorean Theorem include?
    - Similar triangles: lists the ratios of corresponding sides, sets up a proportion to solve for a missing side length (substitute known values), shows steps in solving, provides neatly-labelled diagrams (where necessary), and provides a conclusion to word problems
    - Pythagorean Theorem: lists the formula to be used, shows substitution of given values, shows steps in solving the problem, provides neatly-labelled diagrams (where necessary), and provides a conclusion to word problems

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<u>Application</u>

- How can you tell if someone is able to apply their understanding of similar triangles to a problem?
    - Understands, without being directed, when problems involve similar triangles
    - Can demonstrate the procedure for solving for missing side lengths using the scale factor or a proportion

- How can you tell if someone is able to apply their understanding of the Pythagorean Theorem to a problem?
    - Understands, without being directed, when problems involve the Pythagorean Theorem
    - Can demonstrate the procedure for solving for missing side lengths

<u>Thinking, Inquiry and Problem Solving</u>

- What do *you* do BEFORE solving a complex math problem (i.e., not your 'everyday', routine-type of problem)?
    - Read and try to restate the problem in my own words (i.e., generally, in my head). It helps to talk about the problem with others.
    - Identify given information and information that needs to be found
    - Make a plan for solving the problem
        - Have I solved a similar problem before?
        - What are some of the possible strategies for solving these problems? Which one(s) might be best? (It helps to talk about the problem to clarify which strategies might be best.)

- What do *you* do DURING the solving of a complex math problem?
    - Use the strategy I've chosen
    - Perform calculations
    - Change my plan or revise my work if the strategy doesn't seem to be working
    - Draw diagrams, use key words, and symbols to help communicate my solution

- What do *you* do AFTER you have solved a complex math problem?
    - Check to see if my answer makes sense. It helps to describe how you got to the answer—i.e., as if you were going to explain it to someone else
    - If I'm asked to *justify* my answer, is there another way that I can approach the problem?