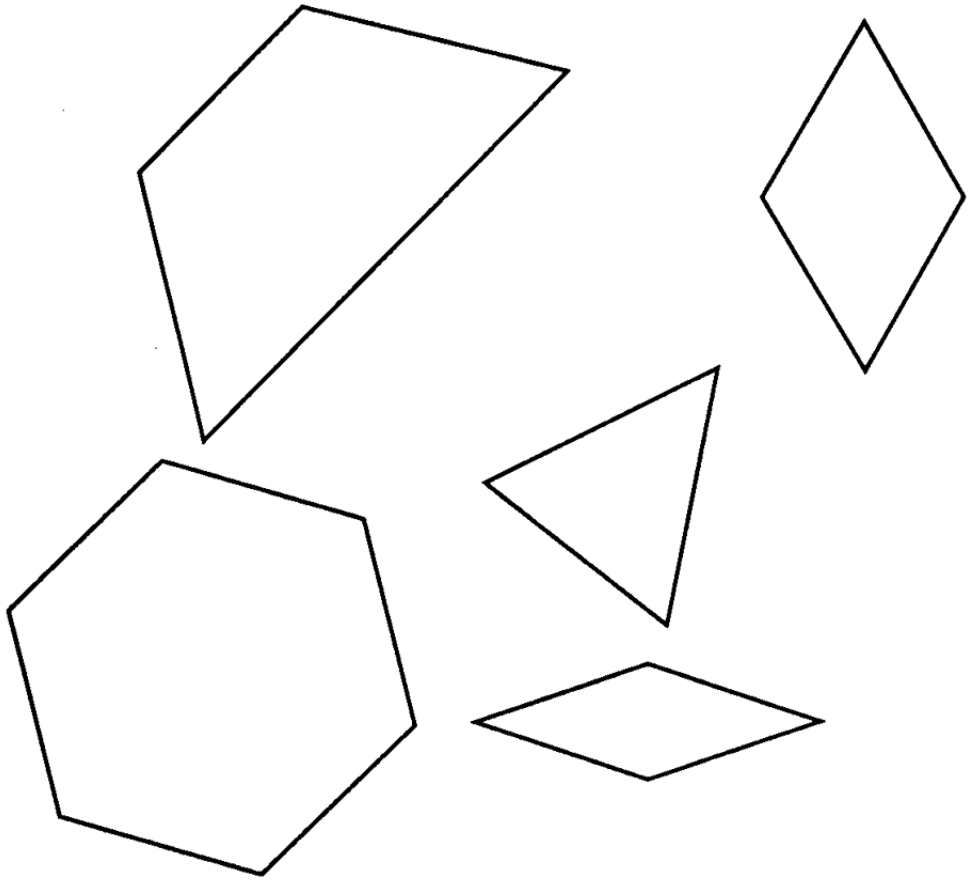
Paleontologist

On a fossil dig, I recovered these items:



How could I put them in order?

Please be specific, show all your solutions and explain how you solved the problem.

Grade Levels Pre-K-2

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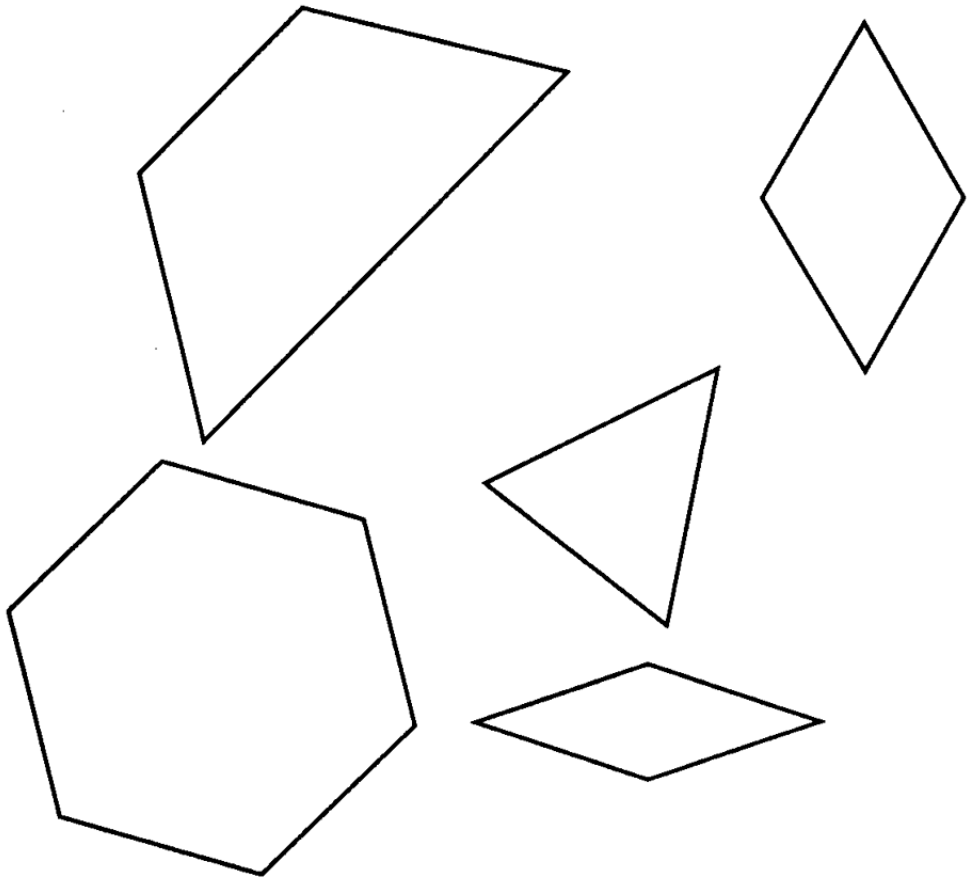

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Context

While studying dinosaurs, the students dug "fossils" of wooden dinosaur puzzle pieces that were embedded in sand. It was difficult for the students to organize, categorize and order the pieces because of their irregular shapes. This task requires students to systematically categorize and order the pieces (of familiar objects-pattern blocks), based on specific attributes and criteria.

What This Task Accomplishes

This task allows children to use their logical thinking and problem-solving skills to determine an order for the pattern blocks. Students have the opportunity to demonstrate their knowledge of attributes including size, length, shape, color, weight, etc.

What the Student Will Do

Most students will physically arrange the blocks on their paper and trace the blocks using some form of order of size. The children will eagerly look for additional solutions and try to find new ideas. Some will ask for rulers and some may ask for balance scales.

Time Required for Task

45 minutes

Interdisciplinary Links

This task works well with a social studies unit on archeology, or a science unit on dinosaurs, rocks, shells, leaves, apples or anything that can be classified and ordered.

Teaching Tips

Set the stage for this activity with students. Talk about being a paleontologist and digging for fossils. Scientists often discover items that do not fit into neat classification and must think of a way to put their objects in order. Talk about ways order is used in the classroom. Sometimes children line up in size order, while words are put in alphabetical order. Clarify the difference between putting in order and grouping.

In this activity children need to think of different ways to put five pattern blocks in order. Instruct them that they will be faced with many choices and must decide what to do. For example, what if two or more pieces are the same height? Which side is really the longest side?

Encourage the child to explain how the problem was solved. If the child is able to express him/herself in writing, then the child is to do so independently and the paper stands by itself. If the child is unable to write his/her own thinking, then the teacher (or other "scribe") must elicit the child's thinking without coaching.

Suggested Materials

- Pattern blocks
- Rulers
- Scales
- Crayons

- Pencils
- Paper

Possible Solutions

This task is open-ended. There are many possible solutions.

Benchmark Descriptors

Novice
A Novice may draw the shapes in random order and neglect to label them. The Novice solution may be unclear and mathematical reasoning may be lacking or incorrect.

Apprentice
An Apprentice solution may not be complete. The student may demonstrate some understanding of the problem, knowing that they need to find an order, but the solution may contain errors and demonstrate some incorrect reasoning for part of the problem.

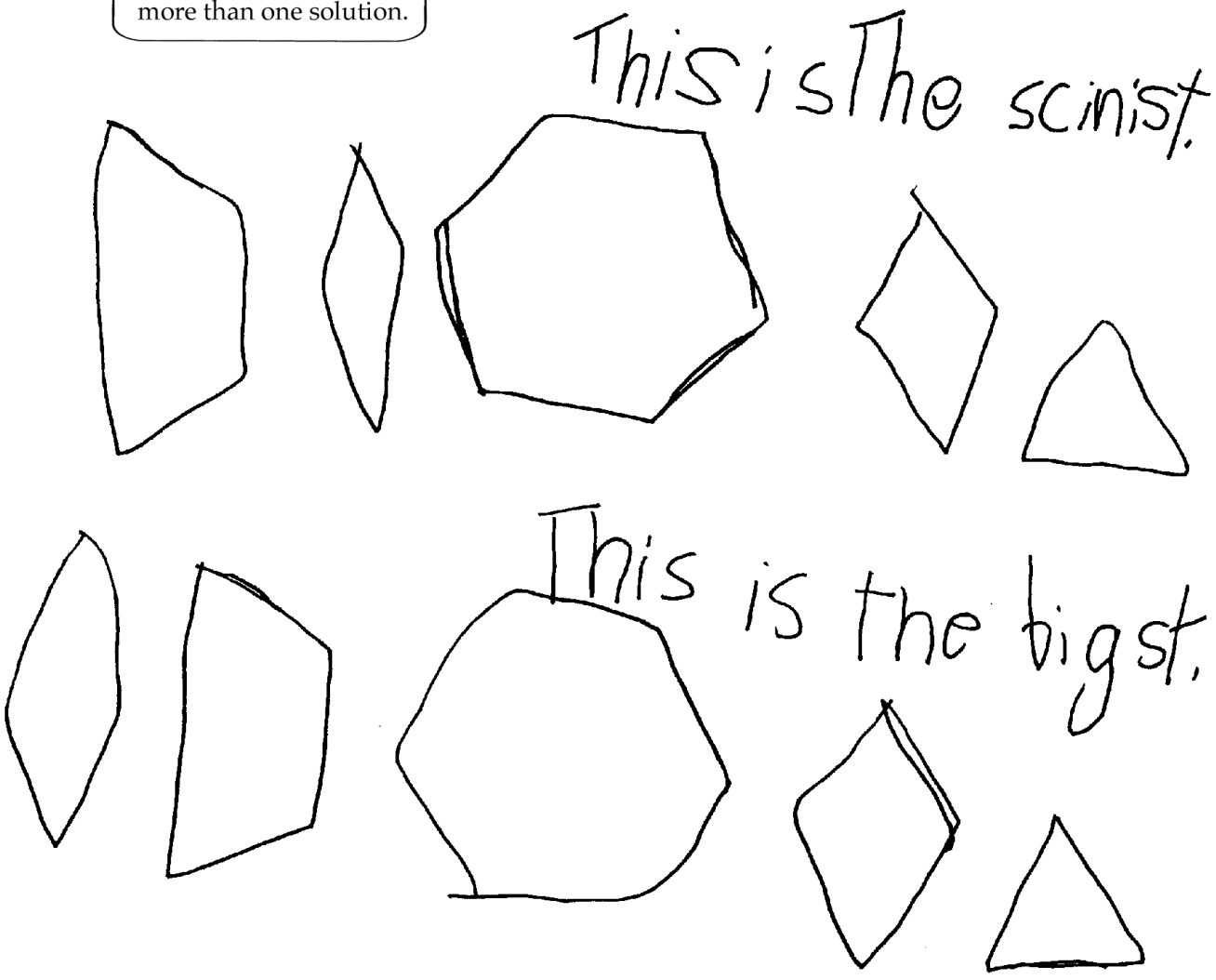
Practitioner
A Practitioner's solution demonstrates understanding of the major concepts needed to order the pieces. The student uses effective reasoning that leads to a solution. The student attempts to communicate his/her reasoning and begins to use basic terminology of geometry and measurement.

Expert
An Expert demonstrates deep understanding of the problem by obtaining multiple correct solutions. The student communicates his/her correct reasoning and uses geometric and measurement terms to communicate. The student's work is well labeled and it is clear how the student obtained his/her solution.

Novice

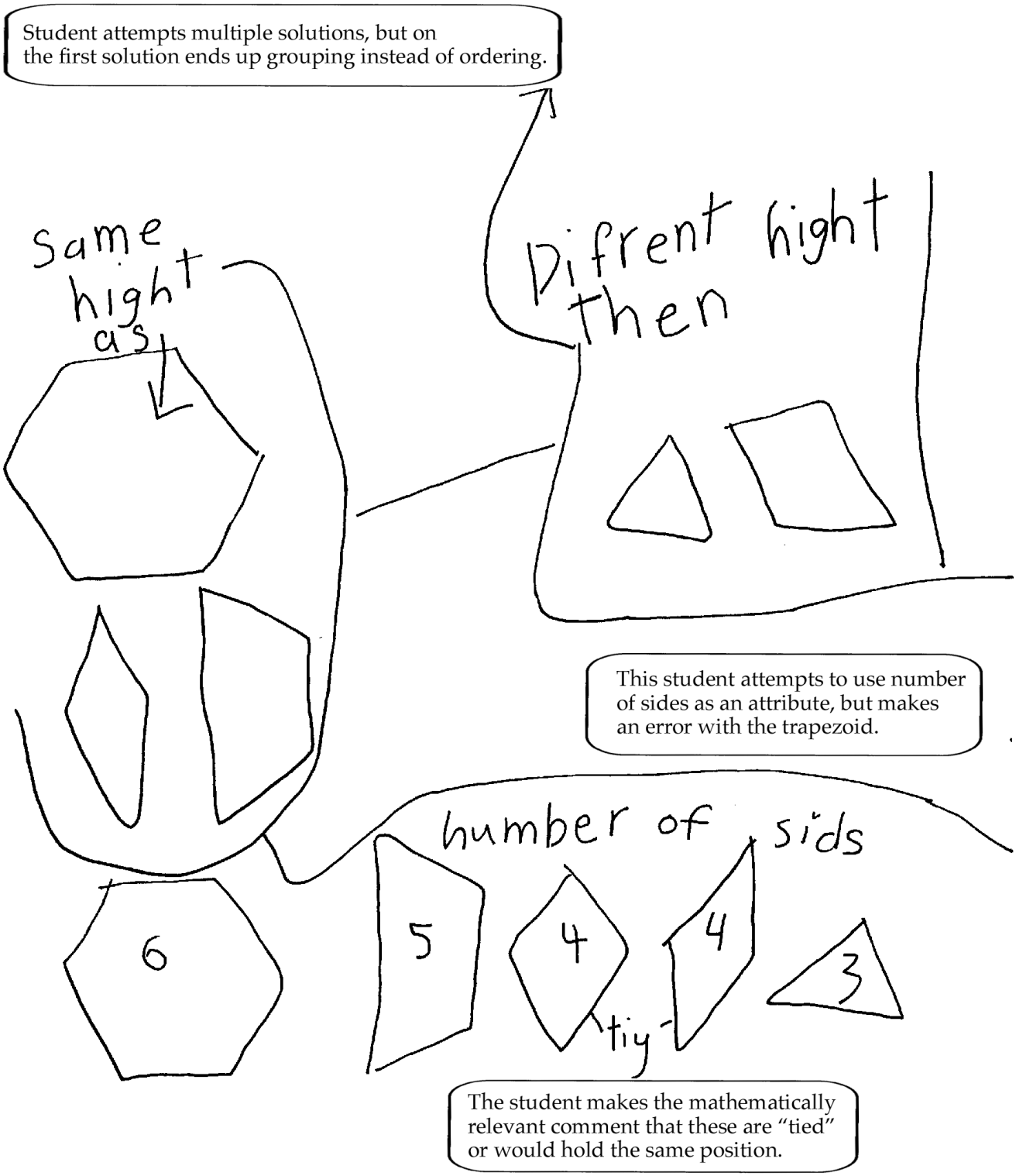
The student attempts a diagram to represent his/her solution.

The student attempts more than one solution.



The student does not define the term "biggest" and the student's work does not reflect this.

Apprentice



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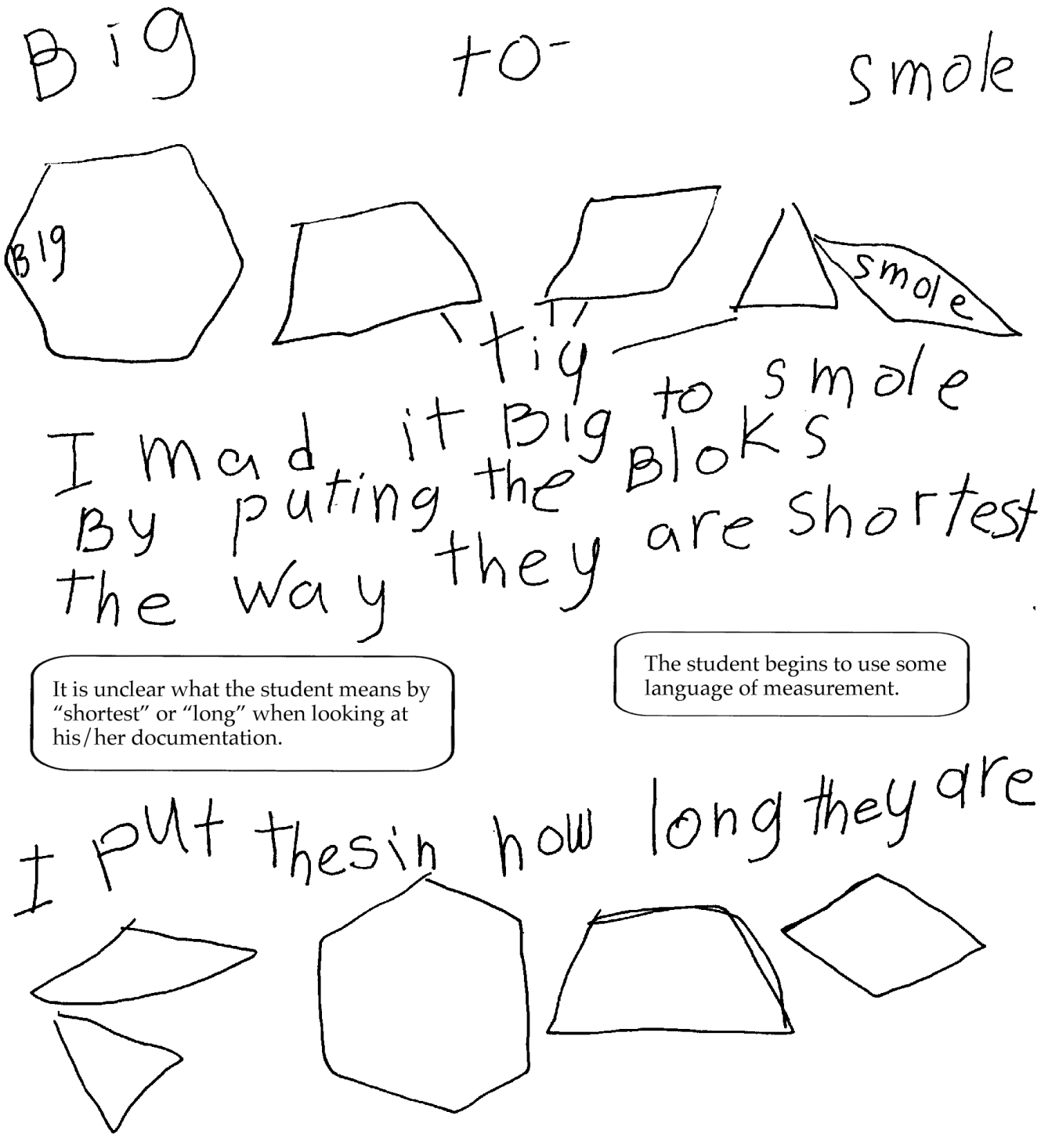
Apprentice



It is unclear what the student means by "shortest" or "long" when looking at his/her documentation.

The student begins to use some language of measurement.

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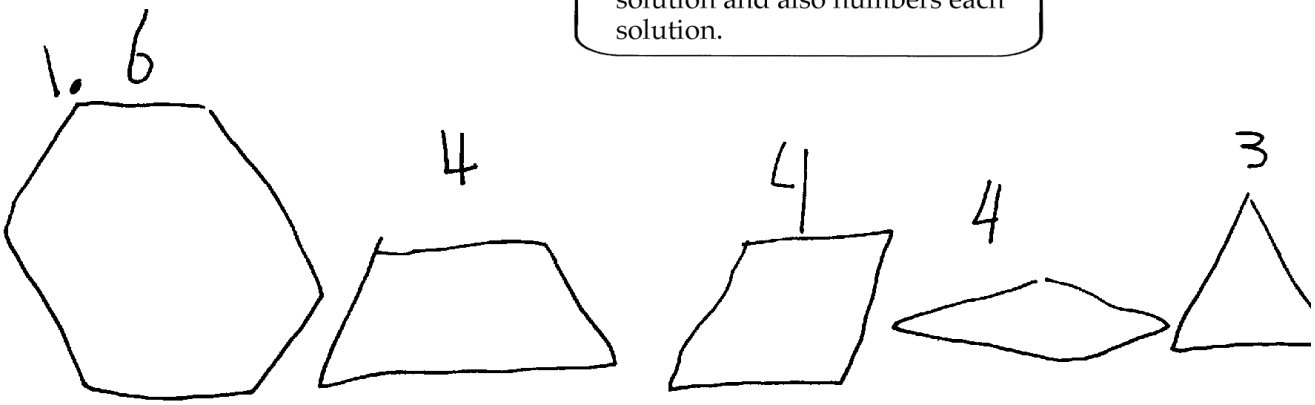
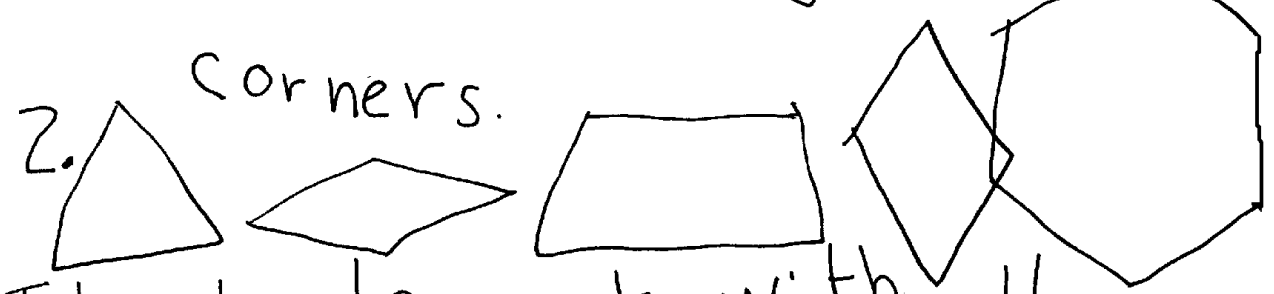
Practitioner

The student explains his/her solution and also numbers each solution.



It starts from the bigiest number of sides going to the loe
est.



It starts out with the
smallest number of corners
to the biggest

The student uses basic language of geometry and measurement.

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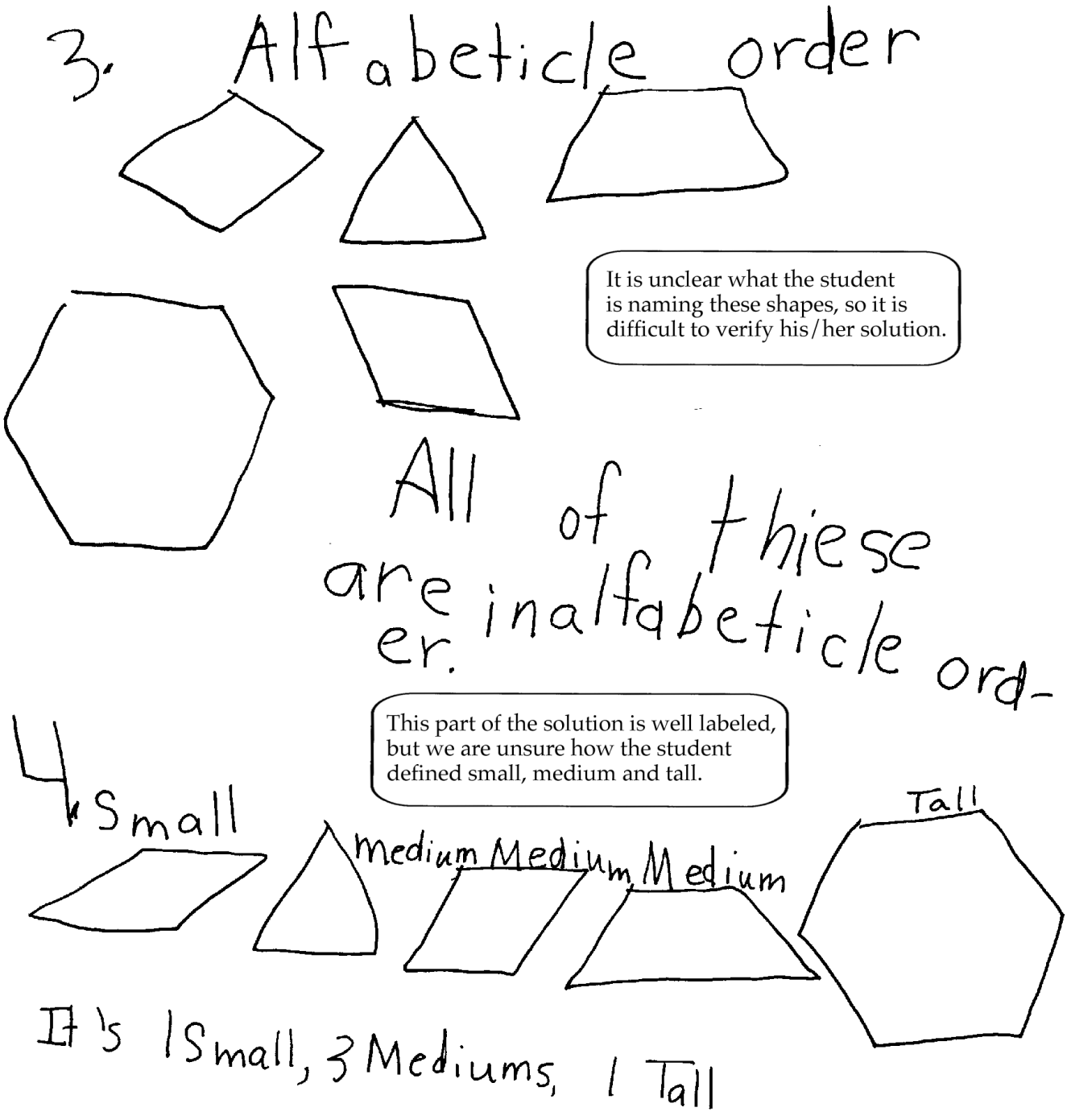
Practitioner



It is unclear what the student is naming these shapes, so it is difficult to verify his/her solution.

This part of the solution is well labeled, but we are unsure how the student defined small, medium and tall.

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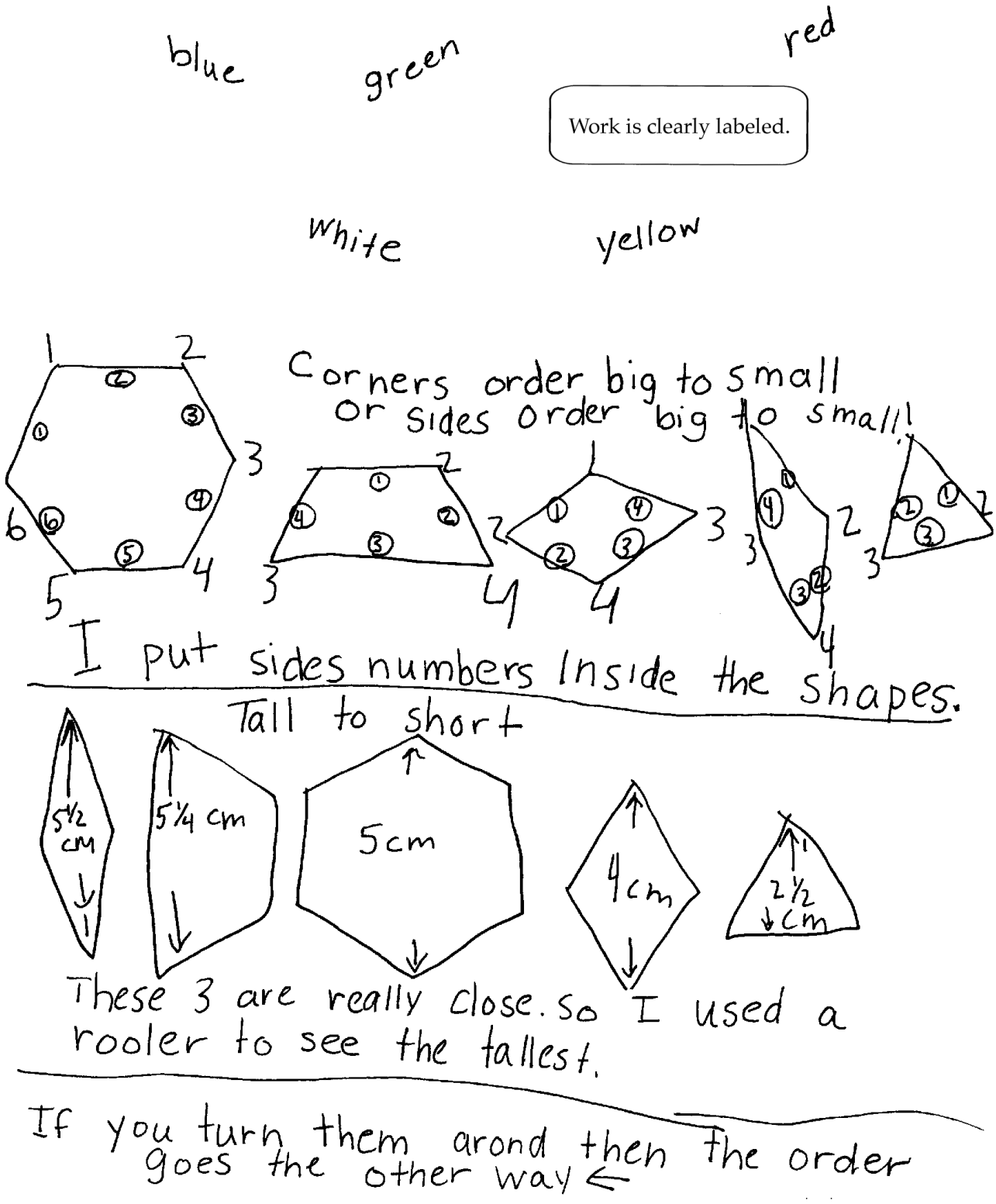
Expert



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Expert

Alphebatical Order for colors is

blue
green
red
white
yellow

(Look at the colors of the blocks on the front.)

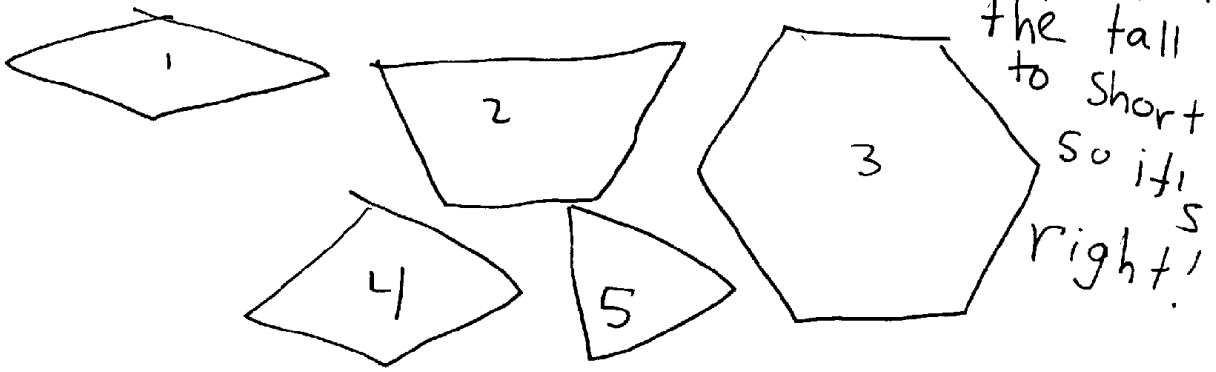
Alphebatical by Shape name

dimend - dimend
hexigon
trapizoyd (I think) -- the one that looks like 
triangol.

Student finds multiple solutions.

There is evidence of mathematical reasoning.

Wide to narro



I layd down the tall to short so it is right!

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