FIGURE THIS!

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Getting to the Point of Promoting Quality Student Work

Source: *Mathematics Assessment – A Practical Handbook*, NCTM, 2000, p.72 - 75

HOW CAN I PROMOTE QUALITY WORK IN MATHEMATICS FROM MY STUDENTS?

When assessing students, we would like to see their best performance on tasks. Communicating to them our requirements for quality work in mathematics is one way to accomplish this. This strategy will let them see precisely the kind of work we would like them to produce. The "Tips from Teachers" contain some strategies collected from teachers who have successfully promoted quality work from their students.

TIPS FROM TEACHERS

- Lead class discussions and brainstorm about what good mathematics work should include. Keep the brainstormed list posted.
- The list below was developed by a seventh grade ESL class:

  1. The answer has to be accurate and reasonable.
  2. The writing shows details so that someone who is not in the class can understand it.
  3. There are complete sentences. The writing isn't necessarily long.
  4. The person uses examples.
  5. The person has a lot of ideas about the problem.
  6. There is more than just one answer.
  7. The paper should be clean.
  8. The person followed all the directions.

- Share student work that represents good mathematics work. Remove students' names to make it anonymous. On occasion, borrow work from another class or teacher. Ask the class to analyze what makes the work strong.
- **SOMETHING TO THINK ABOUT:** Some teachers believe that sharing expectations with students will "Let the cat out of the bag". That is, students will learn what to do through the expectations. What do you think about this practice?
- Ask students to choose good examples of work that meet each criterion for a specific task. Discuss the work with the students.

- Break up a task into smaller parts and discuss the parts.
- Have students create a rubric about what good work should contain. Have the class add to the rubric as the year progresses and as they get better with assessment.

An eighth-grade class developed the following rubric:

4: Accurate answer
Has a lot of ideas about the problem
Includes details
More than one answer or way of getting answer

3: Close to perfect answer but missed something
Not as much detail as a 4

2: Does not have the right answer but has an idea of what he or she is doing
Left things out or didn't finish

1: Didn't follow directions
Answer not complete
Needs improvement in explaining

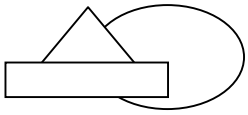
- Have students look at work from each grade level below and above, around the same type or topic of the task.
- Keep good work samples from previous years or different classes to show to students.

Use an easy task and have students create papers of fictitious students with a score of l, 2, 3, and 4 each. Eighth-grade students in Kentucky created the fictitious papers in

Figure 1

Student Sample of Fictitious 4, 3, 2, 1, Work

TASK: Today your teacher put this figure on the chalkboard and asked the students to copy it into their math journals.



Your friend, Raul, is sick today. After school you decide to call him and describe the figure so that he can draw it in his math journal. In your student response booklet, write how you would describe the figure to Raul over the phone.

Sample responses:

4	If I had to describe the figure to Raul over the phone, I would tell him to draw a circle. Then, I would tell him to draw a rectangle but that half of it is inside the circle on the circle's left side. Next I would tell him to draw a triangle directly centered on top of the rectangle but that the right corner of the triangle would be inside the circle. Last I would tell him to erase any lines of the circle that are inside another shape.
3	First make a medium triangle so that the point is facing up Draw a rectangle under the triangle so that the rectangle is on its side and touching the triangle. Then draw a large circle to the right halfway in the rectangle and about an inch in the triangle. Erase the line going through the triangle and rectangle.
2	There's a big circle behind all of the shapes. There's a small triangle on the curve close to the top. There's a long rectangle right under the triangle. The rectangle is halfway in front of the circle.
1	First you will make a big circle, and next you will make a rectangle and last you will make a triangle. And then you will have your thing done in your journal.

Common Scoring Errors for the District Mathematics Assessments

Several errors have been occurring when scoring student work on the District Mathematics Assessments. Below are a few errors that teachers need to be aware of so they do not repeat them for the spring scoring of the math assessments.

Misidentifying the Expert: Papers have been assessed as being 'expert' student work, when in fact the student work is 'proficient'. Teachers need to get out of the habit of comparing student work to other student work in the class. The best paper in the class is not necessarily an expert paper, it depends on how the work compares to the math standards. About 2% of student work will be expert for the entire district, which means approximately 60 total papers per grade level. An expert paper will go beyond the expected mathematics concepts at the intended grade level.

Every Paper the Same: Every student's paper in a class should not look exactly the same. Teachers should not use the math task as a guided lesson to demonstrate strategies, that is best done before or after the district math assessments are administered to help students develop the concepts. Students must do individual work on the district math tasks.