

# Math 5 - Act. 13: Math Stations for Pattern Review

## Summary

This activity has students working at a variety of math stations to practice skills, complete projects and reinforce mathematical concepts.

## Materials

Paper and pencil  
Station Log  
Pattern blocks  
In/Out function cards (prepare ahead of time)  
Word problems with variables  
Equation practice problem sheets

## Additional Resources

*Family Math: the Middle School Years* by Virginia Thompson and Karen Mayfield-Ingram  
*Cooperative Learning and Mathematics* by Beth Andrini  
*Challenge Math for the Elementary and Middle School Student* by Edward Zaccaro  
*Lessons for Algebraic Thinking* by Maryann Wickett, Katharine Kharas, and Marilyn Burns  
*Teaching Gifted Kids in the Regular Classroom* by Susan Winebrenner  
*The Differentiated Classroom: Responding to the Needs of All Learners* by Carol Ann Tomlinson

## Background for Teachers

Math stations serve many purposes. Not only do they provide opportunities to differentiate curriculum according to student needs, but they also give the teacher a chance to work with smaller groups and better assess progress and understanding. This not only benefits gifted and talented students, but students who are struggling as well, because planning is well thought out to help each group achieve. Before beginning, the teacher should put students into four different groups according to their needs and level of understanding (e.g., one advanced group, two medium groups, and one group with students who need more instruction and practice). I put students names on business card magnets (so I can use and rearrange them all year) and put them on the board under the station that they will be starting at. The following stations can be used as four rotations in one day or two one day and two the next.

Also, stations should be generally be self-correcting so that the teacher is freed up to work with the teacher team station. Answer sheets could be made available so that when students are finished, they can check their own work. This requires a high-level of trust and an independent-working classroom atmosphere that must be established prior to doing stations.

## Intended Learning Outcomes

2. Become mathematical problem solvers.
6. Represent mathematical situations.

## Instructional Procedures

### Invitation to Learn

Review with students the procedures of how to rotate among the stations, how to record information in their logs, and what to do if they finish one station early.

### Instructional Procedures

#### 1. *Teacher team:*

At this station, students work with the teacher and do several word problems that involve one-

step equations and variables. The teacher serves as a guide and can watch individuals as they go through their thinking process to solve the problems. The level and type of problems can vary according to each group. Students who are struggling can receive more instruction and guided practice with simple problems as the teacher corrects any mistakes or misunderstandings; students who have mastered word and real-life problems can be introduced to two-step problems or problems using larger numbers. Have your lowest group start here so you can re-teach and give them more help before they move to the other stations. Use "Find the Missing Addend" worksheet for this station.

2. *Practice:*

At this station, students work on solving a variety of simple one-step equations with single variables. These are not word problems but lists of equations for the students to solve. Use the "Equation Mysteries" worksheet for this station. Problems 11-15 have simultaneous equations with two variables. This will be a challenge but some students could be ready for it.

3. *Project:*

Here students may complete a project that could possibly extend over a few days. This station usually involves building or making something that directly relates with the subject matter previously taught. At this station, students will be able to freely explore with pattern blocks to create designs, patterns, and tessellations. If the pattern blocks are cut from paper, the students could glue down their design for display. If they are working with pattern block sets, then the students could continue to create designs as time allows.

4. *Proof:*

This station usually involves doing a few problems with emphasis on having students explain how they came to a solution. Here students will use "in/out" cards, decide what the rule is for each card, and write the rule in an algebraic sentence. Students can start on different cards, but make them aware that the rules do become more complex as the card number increases.

Manipulatives like beans or counters should be available for the students to use if wanted.

### Curriculum Integration

A fifth station could be added that focuses on Science. Students work with their group to look for patterns in the Science or Social Studies topic that you are discussing at that time. For example, during the "Earth's Features" unit, students could look for patterns of earthquakes or volcanic eruptions. Students could describe patterns in landforms and how future patterns could be predicted according to erosion and weathering. Students could look at patterns created by magnets and iron shavings during the "Magnet" unit.

Many patterns emerge in history and students could look for patterns and make connections in their study of America. This could lead to written reports or graphic organizers showing the repeating patterns.

### Extensions

#### Possible Extensions/Adaptations

As mentioned, adaptations can be made with each group of students. If one group needs addition practice with equations, you could have them do that for two station rotations. Or, if one group doesn't need you as the teacher to guide them at the teacher team station, you could let them work independently while you assisted other groups. Stations allow for differentiation of curriculum and of teaching processes.

### Assessment Plan

Students use a "station log" to record what activities they worked on, whether the activity was completed or not, what they learned while working, and how they scored (if applicable). This log should be kept in a journal/folder that could also hold any worksheets they worked on and lined paper

to show any work done.

If stations are used frequently, students could then turn in their logs to you every week or every other week for you to look over and evaluate. The best assessment often comes from the actual “working out” of the problems and the notes taken while completing the various station requirements.

Authors

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