<table>
<thead>
<tr>
<th><strong>Title</strong></th>
<th>Eye Spy Math</th>
</tr>
</thead>
</table>
| **Subject area/ Grade Level** | Mathematics – 7th Grade  
Pre-Algebra |
| **Investigative Question** | What examples of math terms can you come up that we have discussed throughout the year? - Make a list on your white boards. |
| **PA Academic Standards and/or Common Core Standards** | Subject Area: Mathematics  
Grade: 7th  
M7.C.1.1 - Define and/or apply basic properties of two- and three-dimensional geometric shapes.  
Subject Area: Reading, Writing, Speaking, and Listening  
Grade: 7th  
1.4.7.B - Write paragraph informational pieces (e.g., letters, descriptions, reports, instructions, essays, articles, interviews)  
Use relevant graphics (e.g., maps, charts, graphs, tables, illustrations, photographs).  
Select and use primary and secondary sources, as appropriate, to task. |
| **Learning Objectives** | As a result of this lesson, students will be able to:  
● Name different math terms that could be used as search terms  
● Locate “math” items in a photograph  
● Create their own Eye Spy Math Book |
| **Duration** | 3 - 4 Class Periods |
| **Materials & Citation of Resources** | Materials:  
● Individual white boards  
● Photographs (from LOC, cited below) |
- Worksheet with clues
- Construction Paper
- Plain printer paper
- Ribbon
- Scissors

**LOC Primary Resources:**

<http://www.loc.gov/pictures/resource/fsa.8a20939/>


Inquiry Based Instruction

- Reflect on own learning
- Ask new questions
- Connect to self, previous knowledge
- Gain background and context
- Develop questions
- Make predictions, hypothesis
- Find and evaluate information to answer questions, test hypotheses
- Think about information to illuminate new questions and hypotheses
- Apply understandings to a new context, new situation
- Express new ideas to share learning with others
- Construct new understandings connected to previous knowledge
- Draw conclusions about questions and hypotheses

Stripling Model of Inquiry
**Connect** – Brainstorm math words that we have discussed throughout the year, to use as potential search terms.

**Wonder** – The teacher will pass out the pictures from the LOC to each student. Each student will be responsible for developing their own “Eye Spy” clue that corresponds to their photograph.

**Investigate** – On day two, the students will be given a list of all the clues that their classmates have written. The teacher will then send half the class into the hallway to search for the picture that corresponds with the clues.

**Construct & Express** – On day three/four, the teacher will then put the students in small groups, where they will be expected to make an “Eye Spy” book by combining their clues.

**Reflect** – The students will be writing a short reflection paragraph on the activity performed as to what they liked/disliked about it.

<table>
<thead>
<tr>
<th>Description of Procedures</th>
<th>*This lesson will be completed towards the end of the year as a way to review terms and topics that have been discussed throughout the year.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Day 1</strong></td>
<td></td>
</tr>
<tr>
<td>1. At the beginning of the first day, I will begin by having the student’s brainstorm as many math terms that can be used in a search using their individual white boards. This will be an independent brainstorm. (I will not tell the students about the “Eye Spy” game until we have the appropriate search terms.) <em>(10 minutes)</em></td>
<td></td>
</tr>
</tbody>
</table>
square), large numbers (thousand, million), measurement devices
(abacus, ruler, scale, calculator), and mathematical terms (intersect,
parallel, circumference, diameter).

3. Once the students have finished their brainstorming, we will
discuss their math terms as a class to determine which terms would
work the best when searching for a certain item. \textit{(10 minutes)}

4. Next, I will pass out photographs from the LOC as well as the
Internet. Each student will be given their own photograph to study.
Once they have their own photograph, I will explain to them that we
are going to use these photographs to play an Eye Spy Game. The
students will be expected to write their own clue for the photograph,
using math terms. Before having the students write their own, we
will do one or two together as a class. \textit{(5-7 minutes)}

5. For the remainder of the first class period, the students will be
working on creating their own “Eye Spy” question/clue based on
their particular picture. At the end of the class, the students will be
required to turn in their picture along with their question/clue.
\textit{(15 minutes)}

*At the end of the day, I will then put the pictures on the walls in the
hallway, with its corresponding number. In addition, I will type each
one of their clues and put them on one sheet of paper, to use as a handout for the students.

**Day 2**

1. At the start of the second day, I will pass out the handout with the entire student written clues. At this point, I will explain to the students that half of them will be going into the hallway at a time. Once they find the correct picture that matches up with the corresponding clue, they are to write the appropriate number of the picture with the clue. Once they have completed the task, they are to bring me the handout to be checked. Once they are completely finished, they will return to the classroom. At this point, the second half of the class will be allowed into the hallway to complete their handout. (20-30 minutes)

2. For the remainder of the second day, we will discuss the photographs, as a class, that they found and what is happening in the photographs. If time permits, we will look at a few of the photographs and see if we can come up with any other “Eye Spy” clues.

**Day 3 - 4**

1. On the third and possibly into the fourth day, the students will be
put into pre-chosen groups of about three. They will be provided with construction paper, tape, scissors, markers, and string. They will be expected to create their own eye spy books. Depending on how well the students work, it may take 2 days to completely make the books. Once the books are completed, we will put them on display, either in the classroom or in the hallway.

* The students will be assessed with the attached rubric, based on how well they worked while creating their book. It is a Performance Based Rubric.

2. The final part of the lesson is having the students write a short reflection on the activity, explaining what they liked and disliked.
# Performance Task General Rubric

<table>
<thead>
<tr>
<th>Understanding</th>
<th>Planning and Execution</th>
<th>Communication</th>
<th>Persistence</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Shows complete understanding of the required mathematical/scientific knowledge.</td>
<td>Uses only the important elements of the task.</td>
<td>There is a clear, effective explanation of the solution. All steps are included so the reader does not have to infer how the task was completed.</td>
</tr>
<tr>
<td></td>
<td>The solution completely addresses all mathematical/scientific components presented in the task.</td>
<td>Uses an appropriate and complete strategy for solving the problem.</td>
<td>Mathematical/scientific representation is actively used as a means of communicating ideas.</td>
</tr>
<tr>
<td></td>
<td>Shows nearly complete understanding of required mathematical/scientific knowledge.</td>
<td>Uses only relevant information.</td>
<td>There is precise and appropriate mathematical/scientific terminology and notation.</td>
</tr>
<tr>
<td></td>
<td>The solution addresses almost all of the mathematical/scientific components presented in the task. There may be minor errors.</td>
<td>Uses clear and effective diagrams, tables, charts and graphs.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Shows some understanding of the required mathematical/scientific knowledge</td>
<td>Uses an inappropriate strategy or application of strategy is unclear.</td>
<td>There is a clear explanation.</td>
</tr>
<tr>
<td></td>
<td>The solution addresses some, but not all the mathematical/scientific components presented in the task.</td>
<td>Uses most of the relevant data.</td>
<td>There is appropriate use of accurate mathematical/scientific representation.</td>
</tr>
<tr>
<td>2</td>
<td>Shows limited or no understanding of the problem, perhaps only re-copying the given data.</td>
<td>Appropriate but incomplete use of diagrams, tables, charts and graphs.</td>
<td>There is effective use of mathematical/scientific terminology and notation.</td>
</tr>
<tr>
<td></td>
<td>The solution addresses none of the mathematical/scientific components required to solve the task.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Uses none of the important elements of the task.</td>
<td>There is no explanation of the solution. The explanation cannot be understood, or is unrelated to the task.</td>
<td>Needs help, even for the very simple tasks.</td>
</tr>
<tr>
<td></td>
<td>Works haphazardly with no particular strategy for solving the problem.</td>
<td>There is no use or inappropriate use of mathematical/scientific representations.</td>
<td>Gives up quickly, often just wanting someone to give the answer.</td>
</tr>
<tr>
<td></td>
<td>Uses irrelevant data.</td>
<td>There is no use, or mostly inappropriate use, of mathematical/scientific terminology and notation.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Does not show use of diagrams, tables, charts or graphs.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>