



# Instructional Approaches and Strategies to Foster Critical Thinking

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The Common Core State Standards will require more critical thinking from students. This session provides concrete teaching strategies to help students acquire a deeper understanding of the content and the skills they need to apply their knowledge. This packet includes resources for developing critical thinking and tools for analyzing and enhancing instructional practices.

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# Instructional Approaches and Strategies to Foster Critical Thinking

## Warm Up Activity

A puzzle was given to you at the start of this session. Can you solve it before the answer is provided?

## Think-Pair-Share Activity

What words come to mind for critical thinking? Write them in the space provided.

## Connecting Critical Thinking to the MCCSC

The Maryland Common Core State Curriculum requires students to critically think. Using the sample of the Reading Literature Standard (see page 3), identify the words that indicate critical thinking.

## Using Bloom's Taxonomy

Using Bloom's Taxonomy, identify the level of question.

1. Where did Cinderella first meet the Prince?  
Answer: \_\_\_\_\_
2. Was Cinderella right to deceive the Prince about her true identity? Support your answer.  
Answer: \_\_\_\_\_
3. What would have happened to Cinderella if the Prince had not returned to her home with the missing glass slipper?  
Answer: \_\_\_\_\_

## Using Costa's Levels of Questioning

Using Costa's Level of Questioning, write Level 1, 2, and 3 questions that correspond to *Cinderella*.

Level 1 Gathering Information	Level 2 Processing Information	Level 3 Applying Information
What are the names of the three stepsisters?	Compare and contrast Cinderella to one of her stepsisters.	Justify the reasons why Cinderella's stepsisters are so undesirable to the prince.

## 3 – 2 – 1 Processing Activity

**3** List three ways to foster critical thinking.



**2** Name two “ah-ha’s” you had today.

**1** What is one way you will apply what you learned?

## Connecting Critical Thinking and the Maryland Common Core State Curriculum

**Directions:** Use this sample from the MCCSC and highlight, circle, or underline the words that indicate critical thinking processes.

<b>Common Core State Standards English Language Arts</b>					
<b>Reading Literature (RL)</b>					
<b>Cluster: Key Ideas and Details</b>					
<b>RL 1 CCR Anchor Standard</b>					
Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.					
<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
With prompting and support, ask and answer questions about key details in a text.	Ask and answer questions about key details in a text.	Ask and answer such questions as <i>who, what, where, when, why,</i> and <i>how</i> to demonstrate understanding of key details in a text.	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.	Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	Quote accurately from the text when explaining what the text says explicitly and when drawing inferences from the text.

## Using Bloom's Taxonomy to Foster Critical Thinking

Cognitive Domain	Description and Skill Focus	Key Words to Consider in Questions or Task Prompts	Sample Items	Possible Tasks
<p>Knowledge <i>Remembering</i></p>	<p>Can the student recall or remember facts, terms, concepts, definitions, or principles?</p> <p>Skill focus: knowledge of dates, events, places, and major ideas</p>	<p>tell, list, define, label, recite, state, memorize, repeat, find, name, record, fill in, recall, describe, reproduce, research, restate, retell, review, who, what, where, when, which</p>	<p>Who/What is...? When/Where did...? Where did...? Find the definition of.... Can you recall...? Can you select...? Can you list the three...? What characters were in the story? Summarize... Can you label...? Can you outline....? What happened after...? How many...?</p>	<p>Make a list of the main events. Make a timeline of events. Make a facts chart. Write a list of any pieces of information you can remember. List all the .... in the story. Make a chart showing... Make a story map. Show and tell. Recite the story or poem. Use grid paper to explain 2.36 added to 2.64.</p>
<p>Comprehension <i>Understanding</i></p>	<p>Can the student explain ideas or concepts?</p> <p>Skill Focus: the ability to explain ideas or concepts; translate knowledge into new context; make predictions; interpret facts, compare, contrast</p>	<p>explain, summarize, identify, account for, report, discuss, review, predict, translate, convert, paraphrase, restate, retell, show, outline, rewrite, estimate, classify, compare contrast, extend</p>	<p>What facts or ideas show...? Can you explain...? Can you give examples of....? How would you explain...? Can you write a brief outline...? How would you classify the type of . . . ? How would you compare . . . ? Who do you think...? Can you clarify...? Describe using your own words... What can you say about . . . ? Which is the best answer . . . ?</p>	<p>Create a cartoon/ booklet/ flow chart showing the sequence of events. Write and perform a skit. Retell the story or event in your own words. Paint a picture of some aspect you like. Cut out or draw pictures to show a particular event. Illustrate what you think the main idea was.</p>
<p>Application <i>Applying</i></p>	<p>Can the student use the information in a new way?</p> <p>Skill focus: using methods, concepts, theories in new situations; solving problems using acquired skills or knowledge</p>	<p>demonstrate, construct, record, use, diagram, revise, reformat, illustrate, interpret, dramatize, practice, organize, translate, manipulate, convert, adapt, research, calculate, operate, model, order, display, use, implement, sequence, model, integrate, utilize, identify</p>	<p>What would result if....? How would you use...? What elements would you change...? What facts do you think show...? How would you plan to...? How would you organize...to show . . . ? What approach would you use to . . . ? What questions would you ask in an interview with . . . ?</p>	<p>Construct a model to show how it would work. Make a game using key information from the unit. Design a market strategy for... Develop instructions for... Use a protractor to determine angles.</p>

<p>Analysis <i>Analyzing</i></p>	<p>Can the student distinguish between the different parts?</p> <p>Skill focus: seeing patterns or organization of parts; recognition of hidden meanings; identification of components</p>	<p>analyze, compare, contrast, classify, arrange, critique, categorize, solve, deduce, examine, differentiate, appraise, distinguish, experiment, question, investigate, categorize, infer, order</p>	<p>What inference can you make...? What is the relationship between...? What things justify...? Why do you think...? What is the theme...? What motive is there...? Can you list the parts...? How is...similar to...? How is... related to . . . ? What do you see as other possible outcomes? Explain what must have happened when... Make a distinction between . . . What is the function of . . . ?</p>	<p>Conduct an investigation to produce information to support a view. Make a flow chart to show the critical stages. Construct a graph to illustrate selected information. Given a problem, determine the strategies that would be necessary to solve it. Analyze the impact of America at war on the American economy by describing how different effects of the war work together to influence the economy.</p>
<p>Evaluation <i>Evaluating</i></p>	<p>Can the student justify a view or a decision?</p> <p>Skill focus: assess value of ideas, theories, concepts; make choices based on reasoned argument; verify value of evidence; recognize subjectivity</p>	<p>critique, judge, predict, recommend, verify, assess, justify, rate, rank, prioritize, determine, select, decide, value, choose, forecast, estimate, prove, disprove, debate, deduct, defend</p>	<p>Which would be better...? How could you prove...? How would you prioritize...? Do you agree with the outcome...? What is most important...? What are the consequences if...? How effective are...? What are the pros and cons of...? What information would you use to support your view? What are the limitations of...?</p>	<p>Prepare a list of criteria to judge... Conduct a debate on... Write a persuasive speech arguing for/against... Form a panel to discuss viewpoints on... Write a letter to the editor. Evaluate the character's actions. Analyze your own or a peer's essay in terms of the principles discussed in class.</p>
<p>Synthesis <i>Creating</i></p>	<p>Can the student create a new product or propose alternatives?</p> <p>Skill focus: using old ideas to create new ideas; relating knowledge from other areas</p>	<p>arrange, assemble, collect, compose, construct, compile, devise, propose, plan, invent, hypothesize, design, create, formulate, form, develop, refine, produce, transform, generate</p>	<p>What could be changed to improve..? How would you test...? What outcome would you predict if...? What may happen if you combined...? What solutions would you suggest..? How many ways can you...? Can you create new uses for...? Can you formulate a theory for . . . ? What would you cite to defend...?</p>	<p>Design a record, book, or magazine cover for...? Compose new words to a song. Apply the strategies learned in class in an organized manner to solve a problem. Write a poem about... Apply and integrate several strategies to solve a problem.</p>

## Using Costa's Levels of Questioning to Foster Critical Thinking

Levels	Description and Skill Focus	Key Words to Consider in Questions or Task Prompts	Sample Items
One  Gathering information	Can the student recall or remember facts, terms, concepts, definitions, or principles?  Skill focus: Emphasizes concrete thinking; Utilizes explicit questions about dates, events, places, and major ideas	define, repeat, name, list, state, describe, recall, label, memorize, match, identify, complete, count, spell, find	What is....? When did....? Which one...? How would you show? Who was...? What facts...? List the... What is the definition of...? How many..? Who are the main characters in...?
Two  Processing information	Can the student make sense of information and draw conclusions?  Skill Focus: Utilizes implicit questions; Involves examining in detail, analyzing motives or causes, making inferences, finding information to support generalizations or decision making	analyze, compare, contrast, classify, arrange, critique, categorize, solve, deduce, examine, differentiate, appraise, distinguish, develop, experiment, question, investigate, categorize, infer, order, synthesize, sequence	How is ___ similar /related to ___? What might we infer from....? How would you categorize/classify....? What is the function of....? What conclusions can you draw? Why do you think...? How would you summarize...? What do ___ and ___ have in common?
Three  Applying information	Can the student create new information?  Skill Focus: Moves to abstract thinking; Gives opinions about issues, judges the validity of ideas or other products and justifies opinions and ideas	apply, evaluate, speculate, hypothesize, imagine, judge, predict, invent, create, forecast	What judgment could be made about.....? What would you predict if.....? How would you prioritize.....? Why was ___ better than ___? How could you prove or disprove___? What evidence supports ___?

## Steps and Questions for Teaching Problem Solving

### Step 1: Identifying the Nature of an Open-Ended Problem and Relevant Information

- A. What information and evidence might be useful in thinking about this problem?
- B. Do people disagree about the best solution? If so, what general reasons lead them to disagree?
- C. What factors contribute to uncertainties about the available information?

### Step 2: Framing an Open-Ended Problem

- D. What is your initial point of view about this problem? What experiences, assumptions, or preferences might be affecting your point of view?
- E. What are the general arguments for and against each solution option?
- F. What assumptions and preferences are related to each point of view?
- G. How might the same pieces of evidence be interpreted differently or used to support different points of view?
- H. What are the strengths and weaknesses of the pieces of information?
- I. How might you organize the available information to help you better understand the complexities of the problem and reach a reasonable conclusion?

### Steps 3: Resolving an Open-Ended Problem

- J. What guidelines or principles will you use to judge as objectively as possible among the various options? How will you prioritize the strengths and weaknesses of the solution options?
- K. Based on your analyses, what is the best solution for this problem? Given your setting and audience, how can you best communicate the basis for your conclusion?
- L. How would you respond to arguments that support other options?

### Step 4: Re-Addressing an Open-Ended Problem

- M. What are the limitations, weaknesses, or unknown aspects related to your proposed solution?
- N. What are the implications of those limitations?
- O. What new information or changes in conditions might lead you to re-address the problem?
- P. What strategies could be implemented to monitor the results of your conclusions and help you revise your approach as needed?

From: Lynch, C. L., Wolcott, S. K., & Huber, G. E. (2001). *Steps for Better Thinking: A Developmental Problem Solving Process [On-line]*.

Free resources and teaching materials are available at [www.wolcottlynch.com](http://www.wolcottlynch.com)

# Task Prompts for Teaching Problem Solving

Steps for Better Thinking (Turn Upside-Down)	Task Prompts That Address These Skills
<p><b>Foundation: Knowledge and Skills</b> (lowest cognitive complexity tasks)</p> <ul style="list-style-type: none"> <li>repeat or paraphrase information from textbooks, notes, etc.</li> <li>reason to single "correct" solution, perform computations, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Calculate _____.</li> <li>Define _____.</li> <li>Define in your own words _____.</li> <li>List the elements of _____.</li> <li>Describe _____.</li> <li>List the pieces of information contained in _____ (specific narrative/paragraph/text).</li> <li>Recite the arguments about _____ (assuming arguments are explicitly provided in textbook, notes, etc.)</li> </ul>
<p><b>Step 1: Identify the Problem, Relevant Information, and Uncertainties</b> (low cognitive complexity tasks)</p> <ul style="list-style-type: none"> <li>identify problem and acknowledge reasons for enduring uncertainty and absence of single "correct" solution</li> <li>identify relevant information and uncertainties embedded in the information (may include "stacking up" relevant reasons and evidence to support some solution or conclusion)</li> </ul>	<ul style="list-style-type: none"> <li>Explain why people disagree about _____.</li> <li>Explain why _____ can't be known with certainty.</li> <li>Identify aspects of _____ in which uncertainty is a major factor.</li> <li>Explain why even an expert about _____ can't predict with certainty what will happen when _____.</li> <li>Create a list of information that might be useful in thinking about _____.</li> <li>Consult experts and explore literature or other resources to:               <ul style="list-style-type: none"> <li>Create a list of issues related to _____.</li> <li>Create of list of different points of view related to _____.</li> </ul> </li> <li>Identify a range of possible solutions to _____.</li> <li>Sort pieces of information to identify reasons and evidence that support a given solution to _____.</li> </ul>
<p><b>Step 2: Explore Interpretations and Connections</b> (moderate cognitive complexity tasks)</p> <ul style="list-style-type: none"> <li>interpret information               <ul style="list-style-type: none"> <li>recognize and control for own biases</li> <li>articulate assumptions and reasoning associated with alternative points of view</li> <li>qualitatively interpret evidence from a variety of points of view</li> </ul> </li> <li>organize information in meaningful ways to encompass problem complexities</li> </ul>	<ul style="list-style-type: none"> <li>Discuss the strengths and weaknesses of a particular piece of evidence related to _____.</li> <li>Interpret and discuss the quality of evidence related to _____.</li> <li>Interpret and evaluate the quality of the same body of evidence related to _____ from different points of view.</li> <li>Compare and contrast the arguments related to two or more solutions to _____.</li> <li>Identify and discuss the implications of assumptions and preferences related to one or more points of view about _____.</li> <li>Identify and discuss the implications of your own experiences and preferences for how you think about _____.</li> <li>Develop one or more ways to organize information and analyses to help you think more thoroughly about _____.</li> </ul>
<p><b>Step 3: Prioritize Alternatives and Communicate Conclusions</b> (high cognitive complexity tasks)</p> <ul style="list-style-type: none"> <li>after thorough analysis, develop and use reasonable guidelines for prioritizing factors to consider and choosing among solution options</li> <li>communicate appropriately for a given audience and setting</li> </ul>	<ul style="list-style-type: none"> <li>Prepare and defend a solution to _____.</li> <li>Identify which issues you weighed more heavily than other issues in arriving at your conclusion about _____.</li> <li>Explain how you prioritized issues in reaching a solution to _____.</li> <li>Describe how the solution to _____ might change, given different priorities on important issues.</li> <li>Explain how you would respond to arguments that support other reasonable solutions to _____.</li> <li>Identify the most important information needs of the audience for communicating your recommendation about _____.</li> <li>Explain how you designed your memo/presentation/_____ to effectively communicate to your audience.</li> <li>Describe how you would communicate differently about _____ in different settings.</li> </ul>
<p><b>Step 4: Integrate, Monitor, and Refine Strategies for Re-addressing the Problem</b> (highest cognitive complexity tasks)</p> <ul style="list-style-type: none"> <li>acknowledge and explain limitations of endorsed solution</li> <li>integrate skills in on-going process for generating and using information to monitor strategies and make reasonable modifications</li> </ul>	<ul style="list-style-type: none"> <li>Describe the limitations of your proposed solution to _____.</li> <li>Explain the implications of limitations to your proposed solution to _____.</li> <li>Describe conditions under which you would reconsider your solution to _____.</li> <li>Explain how conditions might change in the future, resulting in a possible change in the most reasonable solution to _____.</li> <li>Develop strategies for generating new information about _____.</li> <li>Establish a plan for monitoring the performance of your recommended solution to _____.</li> <li>Establish a plan for addressing the problem strategically over time.</li> </ul>

©2001, Susan K. Wolcott and Cindy L. Lynch. **Permission is granted to reproduce this information for noncommercial purposes.** Please cite this source: Wolcott, S. K., & Lynch, C. L. (2001). *Task Prompts for Different Levels in Steps for Better Thinking* [On-line]. Available: <http://www.WolcottLynch.com>. Steps for Better Thinking evolved from ideas presented in King and Kitchener's (1994) reflective judgment model of cognitive development and Fischer's (Fischer & Bidell, 1998) dynamic skill theory.

# Question Analysis Tool

Use this tool to determine what question level you typically use during instruction or on tests.

**Name:**

**Date:**

**Subject:**

**Time:**

Category	Description
<b>Knowledge</b> <i>Remembering</i>	Recalling/remembering facts, terms, concepts, definitions, principles. Activity: <i>tell, list, define, label, recite, state, memorize, repeat, find, name, record, fill in, recall, describe</i>
<b>Comprehension</b> <i>Comprehending</i>	Demonstrating understanding of facts and ideas; Explaining/interpreting meaning. Activity: <i>locate, explain, summarize, identify, account for, report, discuss, review, predict, translate, paraphrase, restate, retell, show, outline, rewrite</i>
<b>Application</b> <i>Applying</i>	Using a concept or principle to solve a problem; Applying information to produce some result. Activity: <i>demonstrate, construct, record, use, diagram, revise, reformat, illustrate, interpret, dramatize, practice, organize, translate, manipulate, convert, adapt, research, calculate, operate, model, order, display, implement, sequence, integrate</i>
<b>Analysis</b> <i>Analyzing</i>	Subdividing something to show how it is put together; Examine and break information. Activity: <i>compare, contrast, classify, critique, categorize, solve, deduce, examine, differentiate, appraise, distinguish, experiment, question, investigate, categorize, infer</i>
<b>Evaluation</b> <i>Evaluating</i>	Making judgment based on criteria; Defending opinions about information, validity of ideas or quality of work. Activity: <i>judge, predict, recommend, verify, assess, justify, rate, prioritize, determine, discriminate, select, decide, value, choose, forecast, estimate, rank</i>
<b>Synthesis</b> <i>Creating</i>	Producing something new or original from component parts; Compiling information in different way; Proposing alternative solutions. Activity: <i>create, design, combine, make, plan, devise, construct, produce, invent, compile, blend, formulate, integrate, model, adopt, portray, synthesize, reorganize, detect, develop, imagine, modify, rearrange, substitute</i>

Question Category	Total	Percent
<b>Knowledge</b>		
<b>Comprehension</b>		
<b>Application</b>		
<b>Analysis</b>		
<b>Evaluation</b>		
<b>Synthesis</b>		
<b>Total Questions Asked</b>		

# Planning Matrix for Fostering Critical Thinking

Use this tool as a model to design lessons that incorporate different levels of thinking and learning styles to promote students' critical thinking.

(SAMPLE) Unit/Theme: Ocean Biosphere

**Unit Questions:** What are the characteristics of oceans? What plants and animals live in oceans? What food chains link ocean plants with ocean animals? How does the geography of oceans affect human beings? How have human beings affected oceans?

Costa's Levels of Inquiry	Level 1: Gather Information		Level 2: Process Information		Level 3: Apply Information	
Bloom's Taxonomy	Knowledge / Remembering	Comprehension / Understanding	Application / Applying	Analysis / Analyzing	Evaluation / Evaluating	Synthesis / Creating
<b>Learning Style</b>	<i>tell, list, define, label, recite, memorize, repeat, find, name, record, fill in, recall, relate</i>	<i>locate, explain, summarize, identify, describe, report, discuss, review, paraphrase, restate, retell, show, outline, rewrite</i>	<i>demonstrate, construct, record, use, diagram, revise, reformat, illustrate, interpret, dramatize, practice, organize, translate, manipulate, convert, adapt, research, calculate, operate, model, order, display, implement, sequence, integrate</i>	<i>compare, contrast, classify, critique, categorize, solve, deduce, examine, differentiate, appraise, distinguish, experiment, question, investigate, categorize, infer</i>	<i>judge, predict, verify, assess, justify, rate, prioritize, determine, select, decide, value, choose, forecast, estimate</i>	<i>arrange, assemble, collect, compose, construct, propose, plan, hypothesize, design, formulate, create, invent, develop, refine, produce, transform</i>
<b>Visual involves the use of seen or observed things: diagrams, charts, timelines, demonstrations, agendas, note taking, written directions, displays, handouts, films, flip-charts, graphs, checklists, drawings, models, posters, photographs, board games, storyboards, illustration,</b>	List animals and plants that live in the ocean.  Research the migratory routes of gray, blue, right, or humpback whales, or of bottlenose dolphins. Locate and plot your animal's route on a map, labeling its summer and winter habitats.	Complete the chart using facts from your text showing the differences between an ocean and a lake in terms of smells, tastes, sounds, and appearance.  Identify common characteristics of land and sea mammals. Outline the adaptations each kind of animal has made, based on habitat. Summarize your conclusions.	Pretend you are interviewing a marine biologist and a politician who makes laws involving pollution. What questions would you ask each person?	Examine the similarities and differences between land and sea geography. Present your comparisons in a Venn diagram.  Given the problem of ocean pollution, create a flow chart of the strategies that would be necessary to solve it.	Collect and analyze articles from magazines and newspapers about current problems and issues related to ocean life. Create an ocean scrapbook and share it with the class.	Draw a picture of a new ocean animal incorporating at least three characteristics of existing animals. Label and describe each characteristic, explaining your reasons for selecting it.
<b>Auditory involves the transfer of information through listening: debriefing, buzz groups, discussion, brainstorming, speech, lecture, debate, recite, storytelling, powerpoint games (e.g., Race Car, Jeopardy), jingle, roundtable, song, rap, lyrics, melody, interview, conversation</b>	Recite the names of the oceans and seas.	Get with a partner and explain how the ocean food chain works.	Select a fable, myth, or tale of the sea. Present it to the class through storytelling.  Make a powerpoint game using key information from the unit.	Give a short speech conveying your viewpoint and feelings about an environmental issue related to oceans, such as oil spills or offshore drilling.	Write a poem to share with the class about what you predicts will happen to whales as the climate changes.  Conduct a debate about whether offshore drilling should be allowed.	Create lyrics for a song about a sea adventure, or create a rap to teach facts about the ocean.  In teams, brainstorm what the world would be like if there was not tides.
<b>Kinesthetic involves actively exploring the physical world - touching, feeling, holding, doing, practical hands-on experiences: manipulatives, field trips, role playing, skits, pantomime, dance, lab, invention, improvisation, classification, collection, investigation, simulation</b>	Research ocean plants and ocean animals. Make and arrange drawings to illustrate food chains.  Create life-sized drawings of at least five sea animals. Show and discuss size comparisons.	Draw pictures to show an ocean food chain.  Using the large world map, use post-it notes to show the location of the Red Sea, Mediterranean Sea, Persian Gulf, Black Sea, Adriatic Sea, Caspian Sea and Indian Ocean	In a collaborative group, illustrate the animals and plants that live at various depths of the ocean by designing a cut-paper mural.	Provide a demonstration of actions that humans can take to help keep the ocean clean.	Identify the positives and negatives of living in either a coastal state or an inland state. Role play a commercial convincing others to move to your state.	Develop a skit to show how humans have both positively and negatively affected oceans.

# Resources for Fostering Critical Thinking

## Flash Card Ideas

### **Around the World**

Around the World is a popular game that works well in any group setting. All of the players sit in a circle, either on chairs or on the floor, so everyone can see the flash cards easily. One person starts as the challenger. He stands behind one of the seated players in the circle. A flash card is displayed. The first of those two players to answer the question on the flash card is the winner of that round. If the challenger wins, he moves on to the next person in the circle and challenges her on the next question. If the sitting child wins, she switches places and becomes the new challenger, starting with the next person in the circle. The goal is to make it all the way around the circle as the challenger without anyone beating you to the correct answer.

### **Basketball**

A small basketball hoop in the classroom is used for this game. You can also use pieces of crumpled paper for the ball and the trash can for the basket. The first player must answer the flash card correctly before shooting a basket. If she answers incorrectly, she doesn't get a chance to shoot. To earn a point, the player must make the basket.

### **Concept Mapping**

A concept map is a way of illustrating the connections that exist between concepts covered in course material; students construct concept maps by connecting individual concepts by lines (using string or yarn) which indicate the relationship between each set of connected terms. Most of the concepts have multiple connections. Developing a concept map requires the students to identify and organize information and to establish meaningful relationships between the pieces of information.

### **Flashcard Lying Game**

Hold up a flashcard, say something true or false about it and get the students to respond appropriately.

### **Memory or Concentration**

The classic matching game where the cards are turned upside-down, with the players taking turns flipping over two cards at a time. The goal is to find the flash card and its answer.

### **Tic Tac Toe**

Place 9 flashcards (representing words, phrases, questions, etc.) face down and numbered (or letters of alphabet) on a large taped grid on the floor. Students call out number or letter to see flashcard. Student or team with correct response claims that space with an X or O.

### **Tic Tac Toe Bean Bag Toss**

Materials needed: 9 note flash cards, a bean bag to toss.

Set up: Place 9 note flash cards face up or face down on the floor in a tic tac toe grid fashion.

Directions: The student stands at a distance and tosses the bean bag to the grid of cards. Whichever card the bean bag lands on is the one the student must name (or play on the piano). If correct, turn the card over. If incorrect, remove the card. Continue, having the student toss, trying to win a 3 in a row, or until all cards have been landed on and named/played.

### **Word Shuffle:**

Purpose: The purpose of this activity is to provide students with a structure for showing the relationship among key concepts in a given unit of study.

Description: This technique is excellent for assessing the student's understanding of related concepts in a content area. The teacher identifies nine important terms or concepts that have been taught on a topic and requires the student to write each of these down on a file card – one idea per card. The student then shuffles the cards and lays them out with three cards across and three cards down so that there are three cards vertically, horizontally, and diagonally. The student is then told to write a single statement for each group of three cards across, down, and diagonally showing the relationship of the cards.

*See website for more flash card ideas:* <http://www.eslkidstuff.com/flashcardgamesframe.htm>

## Other Game Ideas

### **Crossword Puzzle**

Design a crossword puzzle with questions that require students to analyze data, solve problems, or evaluate scenarios in order to determine each answer.

### **Jigsaw**

Groups of students are set up. Each group member is assigned some unique material to learn and then to teach to his group members. To help in the learning students across the class working on the same subsection get together to decide what is important and how to teach it. After practice in these "expert" groups the original groups reform and students teach each other. Tests or assessment follows.

### **I Have – Who Has?**

Description: This game is a round robin of math questions and answers with each person playing each card he or she holds.

Materials: A deck of "Who Has" cards.

Directions:

- Distribute ALL the cards in the deck to members of the group or class except to the teacher or leader who is running the game at the overhead projector.
- Group members place the cards on the desk or hold them so that the printed side may be read.
- The leader places the list of all words on all cards on the overhead and covers all the words.
- The leader reveals the first line and reads aloud the first line asking, "Who has ...?"
- The group member who has the requested number, the member who holds the card which says "I have ...," answers aloud reading the entire card, saying, "I have .... Who has ...?"
- The group member who has the requested number, reads aloud the entire card saying, "I have ... Who has ...?" and play continues to the next group member. The leader reveals that line of the list so that a group member might listen to the question being read and might read it for him or herself off the overhead screen.
- Play ends when the first group member to read, reads the first card again, in answer to another member's question.

See websites for more math review games:

<http://www.mathwire.com/whohas/whohas.html>

<http://www.mathnstuff.com/papers/games/whohas/whointr.htm>

### **PowerPoint Games**

A variety of games are created in PowerPoint. You can download the templates and modify the games to fit curriculum needs.

<http://jc-schools.net/tutorials/ppt-games/>

[http://people.uncw.edu/ertzbergerj/ppt\\_games.html](http://people.uncw.edu/ertzbergerj/ppt_games.html)

## Websites for Brainteasers and Other Critical Thinking Activities

<http://www.brainbashers.com/>

<http://www.mathplayground.com/>

[http://www.teach-nology.com/worksheets/critical\\_thinking/](http://www.teach-nology.com/worksheets/critical_thinking/)

## Choice Boards

Choice boards are organizers that contain a variety of activities from which students make selections. Students have the responsibility to decide what they will do to satisfy class requirements. Teachers guide students in their choice so that they are *challenged* but not *frustrated*. Choice boards can be used as a follow-up activity to a lesson, a culminating activity at the end of a unit, an anchoring activity, a learning center for enrichment or extension, or as an independent activity. Kennedy Krieger School Programs presented on this topic at MAG in 2010 and the information can be found at: [http://www.magonline.org/ChoiceBoardPacket\\_11.19.2010.pdf](http://www.magonline.org/ChoiceBoardPacket_11.19.2010.pdf).