

Cubing (Elementary)
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What is “cubing”?

- Cubing is an instructional strategy that asks students to consider a concept from a variety of different perspectives.
- The cubes are six-sided figures that have a different activity on each side of the cube.

Using Cubing to Hone Thinking Skills

- Cubing originally was created to have students use a variety of thinking skills to consider a single concept.
- When used this way, each side of the cube has a different prompt, such as: describe it, compare it, associate it, analyze it, apply it, evaluate it. This is especially helpful when you have mixed readiness groups working together.

<u>Describe it:</u> Look at the subject closely (perhaps with your senses as well as your mind)	<u>Compare it:</u> What is it similar to? What is it different from?	<u>Associate it:</u> What does it make you think of? What comes to your mind when you think of it? Perhaps people? Places? Things? Feelings? Let your mind go and see what feelings you have for the subject.
<u>Analyze it:</u> Tell how it is made? What are its traits and attributes?	<u>Apply it:</u> Tell what you can do with it. How can it be used?	<u>Argue for it or against it:</u> Take a stand. Use any kind of reasoning you want – logical, silly, anywhere in between.

Other good verbs:.

- Rearrange it
- Illustrate it
- Question it
- Satirize it
- Evaluate it
- Connect it
- Cartoon it
- Change it
- Solve it
- Etc.

Ideas for Kinesthetic Cube Cues

- Arrange _____ into a 3-D collage to show _____
- Make a body sculpture to show _____
- Create a dance to show_
- Do a mime to help us understand
- Present an interior monologue with dramatic movement that _____
- Build/construct a representation of _____
- Make a living mobile that shows and balances the elements of _____
- Create authentic sound effects to accompany a reading of _____
- Show the principle of _____ with a rhythm pattern you create. Explain to us how that works.

Ideas for Cubing in Math

- Describe how you would solve _____
- Analyze how this problem helps us use mathematical thinking and problem solving
- Compare and contrast this problem to one on page _____.
- Demonstrate how a professional (or just a regular person) could apply this kink or problem to their work or life.
- Change one or more numbers, elements, or signs in the problem. Give a rule for what that change does.

- Create an interesting and challenging word problem from the number problem. (Show us how to solve it too.
- Diagram or illustrate the solution to the problem. Interpret the visual so we understand it.

What is the Point?

- Cubing gives students who like to use their hands and move around a chance to feel like they are “playing” while learning.
- Cubing gives students a chance to look at a concept from a series of different perspectives.
- Cubing can be useful as a processing activity, a review before assessment or even as an assessment.

How it works:

- Cubing can be done by individual students working alone, in pairs, or in small groups.
- Most common: In pairs or small groups, each student takes a turn rolling the cube and doing the activity that comes up. Students sometimes have the choice to roll again once if they don't like the activity that turns up.
- Students each roll the cube a certain number of times, depending on the magnitude of the assignments.
- But there are many variations – you decide what would work best for a particular cubing activity.

How can cubing be differentiated?

- You can differentiate a single cube according to readiness, learning profile, or interest so that various faces appeal to different needs
- Or you can devise different sets of cubes and assign students to the appropriate cube according to need.
- Cubing allows the teacher to differentiate for readiness in a very un-obvious way. Since all students are working with cubes, students are not aware that their neighbors might be doing something a little different.

Creating a Cubing Exercise

Start by deciding which part of your unit lends itself to this type of activity. Will you make one cube that everyone will use? Is it possible for you to make 3 cubes for 3 different interests, levels, or topics?

First Step: (use one of the cubes)

- Write 6 questions that ask for information, analysis, opinion, etc. on the selected unit.
- You might use your 6 levels of Bloom, intelligence levels, or any of the cubing statements to design questions.
- Make questions that probe the specifics of your unit or topic

Second Step: (use other cubes)

- If you want to differentiate for readiness, use the first cube as your “average” cube, create 2 more using one as a lower level and one as a higher level.
- Remember all cubes need to cover the same type of questions, just geared to the level, don’t water down or make too busy!
- Label your cubes so you know which level of readiness you are addressing.
- It is a good idea to have an “easier” problem on each cube and a “harder” one regardless of the levels.
- Sometimes it makes sense to have the same prompt on one face – no matter which level it is designed to match.
- Take similar steps to differentiate for interest or learning profile.

Third Step:

- Color code the cubes for easy identification.
- Decide on the rules: Will the students be asked to do all 6 sides? Roll and do any 4 sides? Do any two questions on each of the 3 cubes?

Places to get questions:

- Old quizzes, worksheets, textbook-study problems, student-generated questions, etc.

ThinkDOTS is a variation on cubing devised by Kay Brimijoin, 1999

Each student is given a set of activity cards on a ring, a die, and an activity sheet. Each student rolls the die and completes the activity on the card that corresponds to the dots thrown on the die. Each student then completes the activity on the activity sheet.

Construction:

1. For each readiness level, six activities should be created.
2. On an 8 ½ x 11 inch page divided into six sections (this can be done easily on the computer by creating a 2 x 3 cell table and saving it as a template), the activities should be written or typed in each section.
3. On the back of each page, dots corresponding to the dots on the faces of a die should be either drawn or affixed (you can use Avery adhesive dots) on each of the six sections of the page.
4. The pages should be laminated for durability.
5. Then each page should be cut into the six sections.
6. Use a hole punch to make holes in one corner or in the top of each activity card.
7. Use a metal or plastic ring to hold each set of six cards together (you can get 100 metal rings from Office Suppliers in Roanoke for \$9.00)
8. Create an Activity Sheet to correspond to the lesson for easy recording and management.

Suggestions:

1. Use colored paper and/or colored dots to indicate different readiness levels, interests or learning styles.
2. Have students work in pairs.
3. Let students choose which activities – for example: roll the die and choose any three; create complex activities and have students choose just one to work on over a number of days.
4. After students have worked on activity cards individually, have them come together in groups by levels, interest or learning style to synthesize

KUD and CUBING

If you have more than one version of your cube, be sure each cube leads to the same KUD. As with the RAFT strategy, sometimes your KUD is only entirely met once students have shared their work on all sides of the cube.

Sample CUBES and THINKDOTS**SOCIAL STUDIES**

Economics Unit: Interdependence - Debbie Cooper & Kay Brimijoin, Amherst County Schools, 2003

KNOW	UNDERSTAND	BE ABLE TO DO
Unit vocabulary Interdependence Economic Specialization Government Services Taxation or Taxes Opportunity Cost Scarcity Price Savings Investments Goods and services produced and traded in Rome, Greece, and Mali today and in the past.	All countries devise ways of providing the goods and services that its citizens need. Taxes are one means that a government uses to pay for the services it provides the people. Countries are dependent on one another	Define and use vocabulary terms correctly Research past and present goods & services in Ancient Greece, Rome, and Mali Compare the goods and services of Ancient Greece, Rome, and Mali Demonstrate how goods are traded between these countries today Show how goods and services play a role in our lives today

ADVANCED

<p>Create an ad for a good that Ancient Greece and Rome did <u>not</u> trade with West Africa. Make your ad convincing enough that a West African will want to buy your good.</p>	<p>Illustrate, explain, video, or record definitions for (in your own words): Interdependence Economic Specialization Government Services Taxation or Taxes Opportunity Cost Scarcity Price Savings Investments</p>	<p>Could you live without goods, services, or money? Defend your position.</p>
<p>Research goods and services in Greece, Rome, and Mali today. Compare and contrast with goods and services in those places long ago.</p>	<p>Create a map of southern Europe and Mali that illustrates the concept of interdependence between Greece, Rome, and Mali. Be sure to include a key for any symbols used.</p>	<p>Pretend you are running for office. Defend raising taxes for a government service of your choice.</p>

(On-Grade)

<p>Research what goods are traded between Greece and Rome and Mali today. Compare and contrast with goods that were traded long ago.</p>	<p>Illustrate, explain, video or record the definitions for (in your own words): Interdependence Economic Specialization Government Services Taxation or Taxes Opportunity Cost Scarcity Price Savings Investments</p>	<p>What kinds of choices do you and your family make based on goods, services, and savings? Why?</p>
<p>Using a Venn diagram, compare and contrast goods and services produced in Greece, Rome, or Mali. Choose two places to compare.</p>	<p>Use a storyboard to create a story about what happens to a barrel of peanuts and a case of peanut oil when they leave the farmlands of Mali and head for Europe. Explain what happens and why. Create 3 fib game cards listing government services paid for by taxes. Add a question on each card asking why the fib is a fib and why taxes wouldn't be used to pay for it.</p>	<p>Create 3 fib game cards listing government services paid for by taxes. Add a question on each card asking why the fib is a fib and why taxes wouldn't be used to pay for it.</p>

Struggling

What goods did Ancient Greece and Rome trade? Find out whether they traded with Mali. Illustrate each good and label. Explain why each good was traded.	Record or write a story about a Roman cloth maker, a Greek olive oil maker, and a farmer from Mali. Tell how they depend on each other.	Name two goods and services that you depend on today. How do you get them?
On a chart, list the goods and services produced in Greece, Rome, and Mali long ago and today.	Illustrate, explain, video or record these definitions (in your own words): Interdependence Economic Specialization Government Services Taxation or Taxes Opportunity Cost Scarcity Price Savings Investments	Using pictures from magazines, create a collage of government services that you would be willing to pay taxes for.

Social Studies -Erin Adams

KNOW

- Identify the following famous Americans (George Washington, Abraham Lincoln, Susan B. Anthony, Helen Keller, Jackie Robinson, and Martin Luther King, Jr).

UNDERSTAND

- People from long ago can still have an influence on life today.

DO

- Students will show their understanding of the above learning goals through varied products such as writing, drawing, comparing, etc.

Explanation:

- This activity is differentiated by readiness. Students have to do the same skills (analyze, describe, etc), but the level of difficulty varies between the 2 cubes (blue-high, yellow-low). During this unit, they will have already studied each of these famous Americans, so I'll be using this activity as an application piece and form of assessment.
- Each cube has 3 star activities and 3 circle activities. The star activities target the big understanding, while the circle activities focus more on the know objective.

Procedure: The teacher will explain the activity to the whole class, going over the direction sheet step-by-step (making sure to re-emphasize the big understanding from this unit).

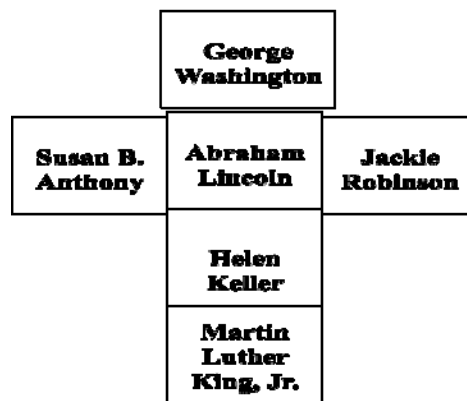
- Students will be seated at tables with students who are working with the same color cube. They will do their work independently, but may ask others in their group for help if they get stuck.
- After students have completed at least 3 activities, the teacher will mix up the groups so students have a chance to share what they did with their classmates. Depending on the teachers objectives, she may form these sharing groups by similar or dissimilar topics or activities.

Directions:

- Roll each cube.
- The 1st cube will give you the topic (a famous American).
- The second will tell you what activity to do with that person.
- You must complete a minimum of 3 activities.
- One activity must be from the star group
- One activity must be from the circle group
- Each activity must be from a different category using a different person
- If time permits, you may choose a fourth activity and person to do (you don't have to roll the cubes this time, just pick your favorite activity and person)

Don't Forget....

- If you get stuck, you must ask 2 other people in your group for help, before raising your hand to ask me!
- You may use any of the books or materials from this unit to help remind you of facts/information.
- Remember our big understanding from this unit as you complete your tasks. In your products, I need to see evidence that you understand this big concept!
- People from long ago can still have an influence on life today.



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Basic

<p>PRETEND Pretend you are this famous American. Write a diary entry as if you were this person.</p>	<p>ANALYZE IT How did this famous Americans contributions improve the lives of Americans today? List a minimum of 3 ways.</p>	<p>COMPARE IT Compare this famous American to another one we studied. Use a Venn Diagram to show how they are similar and different.</p>
<p>DESCRIBE IT Describe this famous American in 3-5 sentences. Use at least 5 different adjectives.</p>	<p>APPLY IT This famous American has received an award for most influential American of their time. Write their acceptance speech for this award.</p>	<p>ARGUE IT How would history be different if this person hadn't been alive?</p>

Advanced

<p>PRETEND Pretend this person is still living. Write a letter to them. What have they done that's impressed you? What questions do you have for them?</p>	<p>COMPARE IT Compare yourself to this famous American. Use a Venn Diagram to tell me why this person is similar and different from you.</p>	<p>DESCRIBE IT Describe this famous American in pictures and words.</p>
<p>ANALYZE IT How did this famous Americans contributions improve the lives of other Americans? Make a list of the top 3 ways.</p>	<p>ARGUE IT Do you think this person was a hero? Why or why not? What did they do that changed our lives?</p>	<p>APPLY IT This person is receiving an award for most influential American of their time. Design a poster advertising this event. People may not know who this person is, so be sure to tell them why he/she is important.</p>

Social Studies- on grade

You are a reporter. Write a news story on the Boston Tea Party. Include photos in your story	Compare and contrast the Stamp Act and Boston Tea Party.	Choose a prominent colonist and explain their involvement in one of the 4 acts. Stamp, Townsend, Quartering, Tea Party.
Write a poem about one of the acts. Include two facts and an illustration. Stamp, Townsend, Quartering, Tea Party.	Compare and contrast the Townsend Act and Quartering Act.	Create a quilt with a square for the Townsend, Stamp, Quartering and Tea Party. Include a definition and neat illustration.

Above Grade

Chose two events Stamp, Townsend, Quartering, Tea Party and create a Venn diagram to compare and contrast them.	You are a Torrie. Defend your belief that King George is justified in issuing the Stamp Act.	You are a colonist. Choose one of the acts: Stamp, Townsend, Quartering, Tea Party and write a speech speaking out against King George.
Pretend you are a young boy or girl in colonial times. Write a story about one of the events going on in the 13 colonies, and how it affects you.	You are a Torrie. Defend your belief that King George is justified in issuing the Townsend Act.	Write a poem about one of the four acts. Include two facts and an illustration.

Below Grade

Define the Quartering Act. Include the date, prominent people, and what the outcome was. Place your product on a story board.	Define the Stamp Act. Include the date, prominent people, and what the outcome was. Place your product on a story board.	Define the Boston Tea Party. Include the date, prominent people and what the outcome was. Place your product on a story board.
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Create and illustrate a timeline of the Stamp Act, Townsend Act, Boston Tea Party, Quartering Act.	Define the Townsend Act. Include the date, prominent people, and what the outcome was. Place your product on a story board.	Write a poem about one of these Acts, Stamp, Townsend, Quartering Act, Boston Tea Party. Include two facts and an illustration
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Social Studies- Third Grade Southwest Unit; Family Pictures by Carmen Lomas Garza. Adapted from a lesson by Joy Peters, Nebraska

Big Idea: To understand basic connections that all people have regardless of their culture in order to function in the real world

Red Cube (Advanced)

<p>Justify</p> <p>The story describes a family that speaks a different language and come from a different culture. Justify why it is important to meet people who speak a different language and have a different culture.</p>	<p>Describe</p> <p>Your favorite picture in the story <u>Family Pictures</u>. Tell why you picked that one.</p>	<p>Analyze</p> <p>The favorite things in the story by understanding why these might be traditions in the culture. If you were a researcher asked about the important things in the Mexican culture, what would you say.</p>
<p>Compare</p> <p>Your favorite picture in the story <u>Family Pictures</u> to a similar activity in your life. You may use words and/or pictures</p>	<p>List</p> <p>Words that describe your feelings about the Mexican culture as you look at each picture in the story.</p>	<p>Chart</p> <p>Using a Venn diagram, show your favorite things and compare to the favorite things you found in the story. Find common areas that you and the story share.</p>

Orange Cube (Basic)

<p>Dance</p> <p>Choreograph a dance or mime to represent three main ideas that you learned about the Mexican culture.</p>	<p>Describe</p> <p>The Mexican culture using at least three sentences with three describing words in each sentence.</p>	<p>Create</p> <p>Make your own family album by drawing at least five special activities your family shares</p>
<p>Compare</p> <p>Use the Compare/Contrast graphic organizer and look at areas of food, shelter, traditions, family life, fun</p>	<p>Pretend</p> <p>That you are a child from Mexico. Tell me about your day. What would your chores be? What would you eat? How would you spend your free time? Would you take naps? Tell me why.</p>	<p>Critique</p> <p>Find another story to read at the reading center. Compare it to <u>Family Pictures</u> and discuss elements you liked and did not like of either.</p>

CONCEPT: Culture

GENERALIZATIONS: Culture is...

- created by people
- passed on to others
- a major factor in our lives
- something that defines who we are

DIRECTIONS: Assign small groups of students to expert groups in which they will complete the activities on one or two sides of the cube. Jigsaw students into new groups that include students from each expert group so they can share their new perspectives on culture.

Describe It – Make a list of specific examples of culture in your home and at school	Compare It – Develop a list of items/things that are not culture-specific. Be sure you can justify the items on your list. Why do you think these things are not culture-specific?	Associate It – With a partner, describe 2 situations where culture made you feel happy and 2 where it made you feel sad – talk about elements of culture that triggered these feelings in you
Analyze It – Who and what are the most important creators of culture? Why? How do cultures grow? Why might they stagnate?	Apply It – How can culture be used to build better understanding between people?	Argue for or Against one (or both) of these statements– <ul style="list-style-type: none"> ○ A thorough knowledge of cultures of the world is the best way to ensure world peace. Agree or disagree and support your position. ○ Prejudice and discrimination result from a lack of appreciation for other people's cultures. Agree or disagree. Support your position.

SCIENCE: Space ThinkDOTS 3rd - 4th Multiage; Judy Rex, Scottsdale, AZ**KNOW:**

- Key vocabulary – astronomer, atmosphere, axis, constellation, gravity, moon, orbit, phase, planet, revolution, rotation, solar system, star (X Factor: crater, eclipse, flare, galaxy, meteorite, nebula, sunspot)
- Components of solar system
- Physical characteristics of the Sun, moon, and Earth
- Four seasons and their characteristics
- Objects that move in the sky

UNDERSTAND:

The parts of the solar system influence one another and appear to be a unified whole.

- The Sun, Moon and Earth have different physical characteristics and regular movements that result in daily, monthly, and yearly patterns.
- Scientific investigation of the solar system has an impact on human activity and the environment and is a result of the contributions of many people.

DO:

- Identify the solar system and the planets in relationship to the sun
- Describe and compare the physical characteristics of the Sun, Moon, and Earth
- Identify objects that move in the sky
- Describe patterns of change visible in the sky over time
- Observe and record phases of the moon, position of constellations
- Identify the seasons and their characteristics
- Distinguish between revolution and rotation and demonstrate the difference
- Use a variety of resources, including the internet, to complete research
- Work cooperatively in a group
- Plan, design, conduct, and report on the conclusions of basic experiments
- Set goals and evaluate progress
- Organize and present information

Below Grade

Build a model of the solar system and label its parts. Show why it is a system.	Create a mobile to show the 4 major phases of the moon. Be sure to put them in the order in which they occur.	Use words, pictures, and color to complete attribute webs for the Sun, the Moon, and the Earth. List the similarities and differences you find.
Illustrate the key vocabulary for our space study. Write the word under each picture. Be sure to check your spelling.	Plan a skit that will show you understand the characteristics of the four seasons and when they happen. Be ready to answer questions from the audience.	You are an astronomer and have discovered another planet in our solar system. Describe the planet's location and attributes. Draw a picture and name your planet.

On grade

Draw and label a map of our solar system to scale. Describe why it is considered to be a system.	Demonstrate that you know all the phases of the moon and why they occur.	You are from another galaxy and are going to explore the solar system's Sun, Earth, and Moon. What will you take with you? What will you find there? What useful information will you take back to your galaxy? Share your findings with the earthlings in our class.
Create an illustrated glossary for a book about how the objects in our solar system move in space and are related to one another. Use the Key Vocabulary from our space study. Be sure to check your spelling.	Prove why we have seasons. Create a way to show us what would happen without the rotation and revolution of the Earth.	You are an astronomer and have discovered another space system. Find a way to tell us all about it.

Advanced

Develop a way to categorize the planets in our solar system and their relationship to the sun. Why is it considered to be a system?	Demonstrate that you know all the phases of the moon and why they occur. How does the Earth's moon compare to the moons of other planets?	You are an intergalactic travel agent. Create a travel brochure for our solar system's Sun, Moon, and Earth. Be sure to include all important information about these destinations.
If you were going to teach a unit on space, what key vocabulary would you want your students to understand? List the words, their meanings, and how you would teach each one.	Compare and contrast the movement in space that causes day and night to the movement that creates the seasons.	If you were an astronomer, predict what your job would be like during the next 10 years. What might you discover?

Weather

- Grade 3 Weather Watch

	<p>1. Define the following terms:</p> <ul style="list-style-type: none"> a. tornado b. "tornado watch" c. funnel d. spin e. counterclockwise f. twister g. nonfiction 	<p><i>Key</i> <i>Bloom's Taxonomy</i></p> <ol style="list-style-type: none"> 1. Knowledge 2. Comprehension 3. Application 4. Analysis 5. Synthesis 6. Evaluation
<p>2. Make a three-part drawing that shows a town before, during and after a tornado. Use labels to explain what is happening.</p>	<p>3. Tornadoes are one of the most powerful forces in nature. Nature's power can also be seen in waterfalls, ocean waves, thunderstorms, and even breezes. Write a paragraph describing some force you have observed in nature. Use vivid adjectives to best describe the power of nature in your example.</p>	<p>4. Compare a tornado with a hurricane. Use these categories to report what you found:</p> <ul style="list-style-type: none"> • Where is each usually found? • How strong are the winds? • What kind of damage does each one cause? <p>Report results on a chart.</p>
	<p>5. Working with the powerful forces of nature can be dangerous. Which of the following jobs do you think is most dangerous? Which is the least dangerous? Why?</p> <ul style="list-style-type: none"> • Forest firefighter • Park Ranger • Tornado Watcher • "On-the-scene" weather reporter 	
	<p>6. Write an adventure story about a tornado. You may make it appear to be very real with people doing things that would appear to be normal. Or, you could create a story where the characters are different than life – like a talking cat or a character like Superman.</p>	<p>Aligned with Grade 3 Weather Watch Unit Houghton Mifflin by T. Giles November 8, 2000</p>

Grade 3 – Weather Watch

	<p>1. Answer the following questions:</p> <p>a. What the signs that a tornado is coming?</p> <p>b. What causes tornados?</p> <p>c. What dangerous effects can a tornado have?</p> <p>d. What should you do if a tornado is coming?</p>	<p><i>Key</i></p> <p><i>Bloom's Taxonomy</i></p> <p>1. <i>Knowledge</i></p> <p>2. <i>Comprehension</i></p> <p>3. <i>Application</i></p> <p>4. <i>Analysis</i></p> <p>5. <i>Synthesis</i></p> <p>6. <i>Evaluation</i></p>
<p>2. Create a web, diagram or drawing that shows the basic features of a tornado. Include how it is formed, its' make-up, speed, path, and lifespan.</p>	<p>3. Your school is located in a potential tornado area. Develop a set of directions for what your class should do in case of a tornado warning.</p>	<p>4. Create four to six questions a reporter could ask observers or victims of a tornado. The questions must get people to talk about what happened – not answered in “YES” or “NO” responses. Act out the interview with a friend.</p>
	<p>5. Design a scale for evaluating tornados. Describe how your scale would work.</p>	
	<p>6. You are a tornado. Write a story (or poem) about your life, feelings, and thoughts.</p>	<p>Aligned with Grade 3 Weather Watch Unit Houghton Mifflin by T. Giles November 8, 2000</p>

Grade 3 Weather Watch

1. What are the seven states that have the most tornados?

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

Key
Bloom's Taxonomy

1. Knowledge
2. Comprehension
3. Application
4. Analysis
5. Synthesis
6. Evaluation

2. Draw a picture of a tornado. With arrows, labels on the picture and words describe how the tornado is formed.

3. If you were "Mother Nature" and wanted to cook-up a tornado, what ingredients would you mix together and in what order.

4. What are the differences between a tornado and a thunderstorm? What is the same?

What are the differences between a tornado and a blizzard? What is the same?

5. What are the duties of a 'tornado watcher'? Is it a dangerous job? Would you like to be one? Why or why not?

6. Trace on a map the path of an average tornado starting five miles west of your home and traveling east. What would be destroyed? How many people might be hurt?

Aligned with Grade 3 Weather Watch
Unit Houghton Mifflin by T. Giles
November 8, 2000

Plants

- Work with 3 partners to complete the whole plant cube.
Roll the die to see who does each part of the cube
Share your work with your partners. Get their “stamp of approval” showing your work is correct.

List and define the parts of a plant. Check your spelling. Write in sentences.	Draw and label a plant and all its parts. Tell the job of each part.	Compare each part of the plant to something it is like in your body to show how all living things are alike.
Re-design a plant to make sure all its needs are met, but in a “new and better” way. Use words to explain your design.	Prove that every part of a plant is necessary for the plant to survive. Use words and pictures to show what would happen if any part of the plant got sick and couldn't do its job.	Build a plant and show how its parts provide for all 5 of its needs.

As closure to the lesson, ask, “What did we learn about why a plant is built the way it is?”

ENGLISH LANGUAGE ARTS

Generic Story Element Cube: Kindergarten or 1st Grade K. Brimijoin, 2003

Tell a teacher about the setting of this story or write about it. Draw pictures to show us the setting.	Choose a character that you would like to be. Do a 4-Square to help us see why you chose the one you did.	Draw a picture of what would happen next if you could change the ending of the story.
Use one of the Story Maps to show what happens first, second, next in the STORY	Act out the solution to the problem in the story	Use the chart to show how parts of the story are make-believe or true.

Gregory, The Terrible Eater - Adapted from Mitchell Sharmat On grade-level

Analyze List 10 “people foods” mentioned in the story. Tell which food group each belongs to.	Imagine If you could interview Gregory, what three questions would you ask him?	Create Illustrate the beginning, middle, and end of the story. Write a sentence or two describing each picture.
Compare Make a Venn diagram that shows “people-like” and “animal-like” actions of the goats	Evaluate Gregory is a terrible eater. Do you agree or disagree? Tell why.	Synthesize Tell about your own diet. Name at least 3 ways you could improve it.

Above grade-level

Analyze Draw a food pyramid. Choose 10 “people foods” from the story and place them correctly on the pyramid	Imagine Write a different ending for the story.	Create Plan a balanced meal for Gregory. Include foods that he likes and those his parents want him to eat.
Evaluate Gregory is a terrible eater. Do you agree or disagree? Tell why.	Identify List the story elements: theme, main characters, setting, problem and solution	Compare Make a Venn diagram that shows “people-like” and “animal-like” actions of the goats

(Below grade-level)

<p>Comprehend Why did Gregory's parents take him to see Dr. Ram?</p>	<p>Imagine What do you think would happen to your body if you had to live on "goat food?" Write or draw what would happen</p>	<p>Create Illustrate the beginning, middle, and end of the story.</p>
<p>Evaluate Gregory is a terrible eater. Do you agree or disagree? Tell why.</p>	<p>Identify Who are the 3 main characters in the story? Draw each of them.</p>	<p>Compare Name or draw 3 of Gregory's favorite and least favorite foods. List 3 of your favorite foods and 3 of your least favorite foods. Do you have any of the same favorites?</p>

Cubing with *Charlotte's Web*

Basic Cube

Draw Charlotte as you think she looks.	Use a Venn diagram and compare Charlotte and Fern.	Shut your eyes and describe the barn. Jot down your ideas.
Use a comic strip to tell what happened in this chapter.	Predict what will happen in the next chapter using symbols.	In your opinion, why is Charlotte a good friend?

Abstract Cube

Use a graphics program on the computer and create a character web for Wilbur.	Use symbols on a Venn diagram to compare Wilbur and Charlotte.	Draw the farm and label the items, people, and buildings.
Use a storyboard to show the progress of the plot to this point.	What is the message that you think the writer wants people to remember? Draw a symbol that illustrates your ideas.	When you think of the title, do you agree or disagree that it is a good choice? Why or why not?

Story Cube: *Voting for Duck* from *Applying Differentiation Strategies K-2; Shell Education 2007*

Questioning—Voting for Duck

Student Reproducibles

Name _____

Bloom's Taxonomy Activities

Directions: Your teacher will help you choose an activity from this page. Use another sheet of paper to complete your activity.

Knowledge

Draw three pictures that tell what happened in this story.

Comprehension

Find a picture in a magazine that shows people working. Glue the picture to a piece of construction paper. Would Duck like a job in this picture? Write or tell about it.

Application

If Duck was a teacher, what would he have to do? Make a to-do list for Duck's first day as a teacher.

Analysis

Why did Duck not like his new jobs as farmer, governor, and president? Make a list of five reasons.

Synthesis

If there was another book written after this book, what would it be about? Draw a picture that shows the story of the new book.

Evaluation

Advice is when someone tells another person what he or she should do. What advice would you give to Duck about his job?

SARAH PLAIN & TALL

Purple Group (Mid)

Level I (Knowledge) What did Sarah miss after she came to live with Papa?	Level II (Comprehension) Why did the children think that Sarah might not return from her trip into town?	Level III (Application) Why would it be difficult to get to know and like a new mom? Create a list of reasons for each of these two categories.
Level IV (Analysis) Make a booklet of at least four things that the family did for recreation. What do you notice about all the activities in your booklet? Write an analysis of the types of activities that the Witting Family enjoyed.	Level V (Synthesis) Describe a vacation back to Maine. Create a brochure or a collage that clearly communicates what Sarah would do with her new family.	Level VI (Evaluation) Evaluate the Witting lifestyle. Write a paragraph or acrostic poem that clearly describes your thoughts or feelings about how the Wittings lived.

Magenta Group (High)

Level I (Knowledge) What did Papa teach Sarah to do?	Level II (Comprehension) Describe what Papa and the children liked to do.	Level III (Application) How is Sarah like your mom? Create a Venn Diagram to outline your thoughts.
Level IV (Analysis) Analyze Sarah's personality. Think of at least four characteristics that you learned about Sarah in your reading. Use those characteristics to complete a character web for Sarah. Write a paragraph that reports your findings.	Level V (Synthesis) Suppose Sarah had been unfriendly. How would the family have reacted? Create a storyboard of at least 8 frames that reflects your ideas.	Level VI (Evaluation) Predict how Sarah and the family will get along in the future. Write the next chapter for the book. Please show evidence that you have participated in each of the five steps of the writing process. I am available for help at any time.

Lavender Group (Lower)

Level I (Knowledge) How did Papa contact Sarah and where did she come from?	Level II (Comprehension) Describe what Sarah looked like when she arrived at the farm.	Level III (Application) How do you think Jacob would have found a new wife if the story took place today? Make a flow chart that clearly shows a process from beginning to end.
Level IV (Analysis) Compare your home to the Witting home. Complete a Venn Diagram to outline your ideas.	Level V (Synthesis) How would the story be different if it took place in a large city? Create a storyboard of at least 8 frames that depicts a scene in the setting of a large city.	Level VI (Evaluation) Describe what you learned from this story. Create a collage or tri-fold that clearly communicates something that you learned as result of reading <u>Sarah, Plain and Tall</u> .

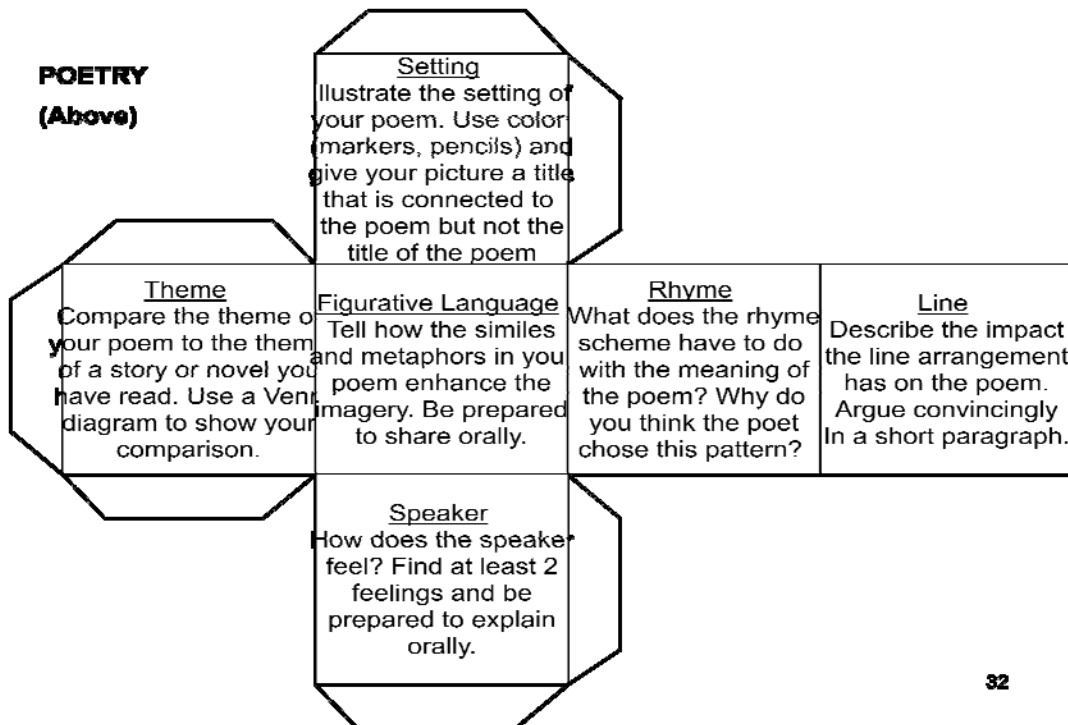
Performance Rubric for Cubing Activity with Sarah, Plain and Tall

4: The student uses his/her time wisely. The responses to the questions are correct. Lists and graphic organizers show that the student tried to think of many ideas that come from the text. Collages and brochures are neat and appealing and show that the student can apply what was read. They make people want to look at them. Writing is neat and the ideas are creative. The student used his/her imagination to create something new and unique as well as demonstrate an excellent understanding of the novel, Sarah, Plain and Tall. All six activities are completed in a timely fashion due to effort and commitment.

3: The student uses his/her time wisely most of the time. The responses to the questions are correct. Lists and graphic organizers show that the student thought of several ideas that come from the text. Collages and brochures are neat, and so is the writing. The student has shown the ability to apply what was read. The ideas are creative and demonstrate a good understanding of the novel, Sarah, Plain and Tall. All six activities are completed.

2: The student only spends some of his/her time working on the cubing exercise. The responses to the questions do not show that the student took the time to read carefully or look back at the text to find an answer. Lists and graphic organizers only have a couple of ideas that come from the text. Collages and brochures have not been completed in an acceptable manner. Not all of the activities on the cube have been completed, but there is some evidence that the student read and understood the book.

1: The student doesn't use his/her time in class in a productive way. The activities do not reflect effort or thoughtfulness. The student hasn't completed his/her cubing. There is little evidence that the student read or understood the book.



5th Grade Poetry (Basic) Eric Soskil, Conway School, St. Louis, MO

<p>Visit: www.emule.com/poetry/ and click on the link for the top ten poems. Read several poems and select one that you really like. Print out the poem and write a short explanation on why you enjoyed this poem. Look up unfamiliar words. Explain what you believe the poem to mean.</p>	<p>Make a great big list (30 or more) of pairs of words that rhyme. Write a poem using one of the pair of words you have chosen. You can use any form of poetry you desire</p>	<p>Remember a quatrain is a poem written in four verses with different rhyme patters. There are many ways to write a quatrain: a,a,b,b; a,a,a,a; a,b,c,b; or a,b,a,b. Your task is to write two quatrains. Be creative and as always try to place meaning into your poetry</p>
<p>Poetry is a lot of fun! One of the craziest and funniest forms of poetry is a limerick. Edward Lear is credited for popularizing this form of poetry. Now lets see how you can do. Remember that lines 1, 2, and 5 rhyme and lines 3 and 4 rhyme. Go to it!</p>	<p>A skill of some of the best writers is to use metaphor to add description to a story. Remember that metaphor is used to compare two dissimilar objects that are alike in some way. Example: Music is the honey of the human spirit. Find several examples of metaphor using classroom books and write three examples of your own.</p>	<p>Now it is time to play free style poetry. Use this opportunity to write a poem about a topic of your choice using free style poetry. Here are some topic ideas: Emotions School Friendship</p>

advanced

<p>Make a great big list (30 or more) of possible topics you could write a poem about. Choose one topic to write a poem using any style of poetry you wish.</p>	<p>Alliteration is a fun and creative style of writing. Remember that alliteration is the repetition of the first consonant or vowel sound. Example: Franky's family is frantic about frogs. Your task is to write a short story using alliteration. Try to see how long you can write using alliteration. Work hard to make your story make sense.</p>	<p>A couplet is made up or two lines that rhyme. A complete idea may be expressed in a couplet or a long poem may be made up of many couplets. Your task is to find 2 examples of good couplets and then to write an original couplet. You may use reference materials in the classroom or search the Internet. The emphasis is on meaning not humor.</p>
<p>Visit: www.nesbitt.com/poetry and click on the link for poems. Read several poems and select one that you really like. Print out the poem and write a short explanation on why you enjoyed this poem. Would you recommend others read the poem? Why?</p>	<p>Write an autobiographical poem about yourself. Ask your teacher for a copy of the outline and share a little about your self. Who knows? You may learn something about yourself</p>	<p>Ask your teacher for a copy of the poem "Alone" by Walter de la Mare. Read the poem carefully and write a reflection based on your feelings about the poem. Do you think this poem is sad? Why or why not?</p>

Cubing for Description and Communication

Choose one of the following items and complete the activities on your assigned cube

- Swing set
- Wading pool
- Double jump rope
- Your own idea

Below grade level

Draw the item or act out playing with the item	Compare the item to another playground object	What or who does the item make you think of?
Tell what the item is made of and how it is made	Tell how the item is used	Argue for or against having this item on our playground.

At grade level

Describe the item in detail	Compare the object to a kind of food	What does the object make you feel like? Why?
How do you think people got the idea for this item?	Tell another (unusual) way the item could be used	Do you think inventing this item was a good idea? Why?

Above grade level

Describe the item using each of your senses.	Connect the item to something from the past	What problem could you solve with item?
How could this item be improved?	Cartoon the item – exaggerate one of its features	Should this item exist? What would happen if we no longer had this item?

Example: Onomatopoeia

Side One Find an example of onomatopoeia in a poem from our anthology	Side Two Make a list of all the examples of onomatopoeia that you can think of in two minutes. Have your partner time you.	Side Three Write a letter to Webster's Dictionary from onomatopoeia on the topic, "We are words, too! Include us!"
Side Four Write a limerick, concrete poem, or haiku using at least one example of onomatopoeia	Side Five Why do you think writers use onomatopoeia? What purpose does it serve?	Side Six Research the origin of the word "onomatopoeia." Where does it come from? What do its parts mean?

MATH

Example: Fractions

<p><u>Side One: Locate It</u> In two minutes, make a list of all of the places in which we find fractions in every day life. Have your partner time you.</p>	<p><u>Side Two: Define It</u> What is a fraction? How would you explain what a fraction is to a first grader?</p>	<p><u>Side Three: Solve It</u> Complete fraction problems 1-10 on page 65. Have your partner check your work.</p>
<p><u>Side Four: Analyze It</u> What are the parts of a fraction? Define each part and describe their relationships to one another.</p>	<p><u>Side Five: Think About It</u> When dividing fractions, why do we have to “invert and multiply”? Show your thinking on paper.</p>	<p><u>Side Six: Illustrate It</u> Create a children’s picture book about fractions. Use “Give Me Half!” as an example.</p>

Fractions: Use fraction dice at varied levels of complexity to differentiate the activity for readiness. (Nanci Smith)

<p>Susan has ___ of a pizza and Jayni has ___ of a pizza. (Roll the fraction die to determine the fractional amounts that each girl has.) How much pizza do they have all together? Is this less than, equal to or more than a whole pizza?</p>	<p>Explain why you need a common denominator when adding fractions.</p>	<p>Model the fraction ___ in three different ways. (Roll the fraction die to determine which fraction to model.)</p>
<p>Explain the difference between a numerator and a denominator</p>	<p>Demonstrate how to find a common denominator for the fractions ___ and ___. Roll the fraction die to determine which fractions to use.</p>	<p>Which fraction is larger: ___ or ___? (Roll the fraction die to determine which fractions to compare.) Use a model to prove you are correct.</p>

Still Another: Fractions-Lynne Beauprey - Illinois

- Each student at a table rolls two dice a designated number of times. The 1st die tells students what to do with a fraction;
- The 2nd die contains the fraction which can vary in complexity based on student number readiness.

Order/compare all fractions from the smallest to the largest.	Add 2 rolled fractions	Subtract 2 rolled fractions
Multiply 2 rolled fractions	Divide 2 rolled fractions	Model fractions using circles or bars of paper

Multiplication

Think About It! It is said that multiplication is "repeated addition." Using 4×5 , tell what this is as repeated addition.	Picture This! Make a picture of the fact 4×6 and also write the answer	Words, Words! Create a word story for 2×6 . Include the answer in your story.
Let's Skip Count! Using skip counting with the 3s. List the first 10 numbers you would say.	Draw It! Draw 3×8 as an array and write the answer in the middle of it.	Analyze it! In a multiplication sentence, the parts are called factors and product. Using $2 \times 9 = 18$, which is the product and what are the factors?

Advanced


Think About It! It is said that multiplication is "repeated addition." Explain, by words and example, why this is.	Picture This! Make a picture of the fact 4×6 and also write the answer	Words, Words! Create a word story for 2×6 . Include the answer in your story.
Factor This! Find as many factors as you can for the number 12.	Draw It! Draw 3×8 as an array and write the answer in the middle of it.	Analyze it! What are the parts called in a multiplication number sentence? Using the fact $2 \times 9 = 18$, what are the 2 & 9 called? What is 18 called?

*Beginning group***KINDERGARTEN CUBE**

These are students who are just being introduced to numerals, what they look like and how to draw them. This cubing activity can happen often, each day focusing on a different number. The whole group will practice the same number, so that the teacher can assess students based on the same skill. For consistency, this group will utilize the number one.

It looks like...	What does the number one look like? Draw it in the air. Trace it on sandpaper.
It is like/ it is not like...	Are there any objects you see or can think of that look like the number one? (Ex. tree, pencil). What is not like? (curvy, circle, etc.)
It makes me think of...	What does the number one make you think of?
It is made of...	Is it made of straight lines or curvy lines or both? How many lines?
Draw It.	Draw your number in the air. Draw it in shaving cream. Now draw it with a pencil.
Find It.	Look around the room for the number 1. Where did you find it?

Nanci Smith	Describe how you would solve _____ or roll the die to determine your own fractions.	Explain the difference between adding and multiplying fractions,
	Compare and contrast these two problems: $\frac{\quad}{\quad} + \frac{\quad}{\quad}$ and to fractions.)	Create a word problem that can be (Or roll the fraction die to determine your
	Describe how people use fractions every day. fractions	Model the problem $\frac{\quad}{\quad} + \frac{\quad}{\quad}$ Roll the fraction die to determine which



Nanci Smith

Susan has ___ of a pizza and Jayni has ___ of a pizza. How much pizza do they have together? Is this less, equal to or more than a whole pizza? Roll the fraction die to determine the fractional amounts Susan and Jayni have.


Explain why you need a common denominator when adding fractions.

Model the fraction ___ in three different ways. Roll the fraction die to determine the fraction to be modeled.

Explain the difference between a numerator and a denominator.

Demonstrate how to find a common denominator for the fractions ___ and ___. Roll the fraction die to determine which fractions to use.

Which fraction is larger: ___ or ___? Use a model to prove you are correct. Roll the fraction die to determine which fractions to use.



Nanci Smith

Describe how you would solve $\frac{2}{13} + \frac{3}{7} + \frac{1}{91}$ or roll the die to determine your own fractions.

denominators

Compare and contrast these two problems: $\frac{1}{3} + \frac{1}{2}$ and $\frac{3}{7} + \frac{1}{7}$

A carpet-layer has 2 yards of carpet. He needs 4 feet of carpet. What fraction of his carpet will he use? How do you know you are correct?

Explain why you need a common denominator when adding fractions, But not when multiplying. Can common denominators ever be used when dividing fractions?

Create an interesting and challenging word problem that can be solved by ___ + ___ - ___.

Roll the fraction die to determine your fractions.

Diagram and explain the solution to ___ + ___ + ___.

Roll the fraction die to determine your fractions.

Number Theory ThinkDots

Each activity below is on one of the six cards.

1. Play “Greatest Common Factor (GCF) Bingo.” You may work alone or with a partner. [Two spinner boards randomly select composite numbers. Players identify GCF and give proof with prime factorizations.] (Childs, Choate, and Hill 1999, 29)
2. Complete at least one of the “Number Explorations: 1, 2, 3, 4, 5, or 6.” [Each exploration reinforces basic number theory concepts with ten challenges plus an extension.] (Childs, Choate, and Hill 1999, 34–36).
3. Complete “Prime Target” using three (1–6) number cubes and one (4–9) number cube. Be sure to record the number sentences you use to find the 25 prime numbers. You may work alone or with a partner. [Use two or more of the rolled numbers to create an expression equal to a prime number. Reinforces prime recognition between 1 and 100.] (Childs, Choate, and Hill 1999, 40)
4. Do the “Common Factors Practice” puzzles or the “Common Factors Practice Challenge.” [A set of numbers must be placed in grid so that all adjacent cells share common factors. Strengthen recognition of common factors.] (Childs, Choate, and Hill 1999, 44–5)
5. Complete Using LCM and GCF to Check Multiplication. [The multiplication of two 2-digit numbers is checked by multiplying their Least Common Multiple (LCM) and GCF. Builds and extends conceptual understanding of LCM and GCF relationships.] (Childs, Choate, and Hill 1999, 46)
6. Select a number from the “Challenge Bag” and follow the directions: show the prime factorization, all factors of the number, and prime factorizations for each factor. Use exponential notation whenever possible.

Foreign Language (or ESL) Cubing – Vocabulary; “Roll the cube and do what it tells you.”

Version A

<p><u>Describe it</u> Choose an object from the box. Describe the object, choosing adjectives from the given list. Be sure to make the adjective agree with noun. (For struggling learners, could provide correct form of adjective.) Be sure to use at least 5 adjectives to describe the object. <grand, petit, jaune, rouge, large, etc...></p>	<p><u>Compare it</u> Choose another object from the box. Compare one object to the other. Follow the example given. <Le crayon est plus/moins/aussi long que le stylo.></p>	<p><u>Associate it</u> What person, place or thing does the object make you think of? Tell why. Follow the example given. (For struggling learners, give them a list of likely objects for comparison.) <Ça me fait penser à une giraffe parce qu’une giraffe a un cou long et jaune.></p>
<p><u>Analyze it</u> Tell what the object is made of OR how it is made. Follow the example, using the vocabulary lists given</p>	<p><u>Apply it</u> Think of at least three things you could use the object for. Refer to the vocabulary lists of you need help.</p>	<p><u>Argue for or against it</u> Tell why you should be allowed to keep this object. (Follow the examples given.)</p>

On grade

<p><u>Describe it</u> Choose an object from the box. Use at least 5 adjectives to describe the object.</p>	<p><u>Compare it</u> Choose another object from the box. Compare one object to the other.</p>	<p><u>Associate it</u> What person, place or thing does the object make you think of?</p>
<p><u>Analyze it</u> Tell what the object is made of OR how it is made.</p>	<p><u>Apply it</u> Think of at least three things you could use the object for.</p>	<p><u>Argue for or against it</u> Tell why you should be allowed to keep this object.</p>

Advanced

<p><u>Describe it</u> Choose an object from the box. Describe the object in as much detail as possible.</p>	<p><u>Compare it</u> Compare the object to yourself or to a famous person.</p>	<p><u>Associate it</u> What abstract noun does the object make you think of and why?</p>
<p><u>Analyze it</u> Tell how the object could be improved to better fulfill its original purpose.</p>	<p><u>Apply it</u> Tell what you can do with the object to solve a world problem.</p>	<p><u>Argue for or against it</u> Convince your audience that this object must continue to exist.</p>

Soccer – on grade

<p>Passing drill: A. Pass in a circle, square or triangle. B. Put one person in circle and try to pass to others in the circle without the middle player intercepting the ball</p>	<p>Shooting drill: Try to kick the ball into the goal without the goalie intercepting it. Start with the ball at rest and then move to ball thrown in. Increase the distance of the shot over time.</p>	<p>Stopping the ball: Player runs to stop the ball passed to them by the coach before shooting.</p>
<p>Throwing in: Practice throwing in the ball correctly with and without defenders.</p>	<p>Dribbling: Dribble around an obstacle course of cones. Repeat with a defensive player trying to intercept you.</p>	<p>Goal Keeping: Practice blocking a variety of shots.</p>

Soccer – above

<p>Passing drill: A. Pass in a circle, square or triangle at increasingly long distances or with goal of getting the ball off the ground. B. At least 5 players in a star pattern pass amongst themselves with the goal of getting the middle person to shoot. Rotate positions.</p>	<p>Shooting drill: Shoot from the side and using your less comfortable foot while the goalie defends. (Can add second goalie for increased complexity, although this does not mirror the real game.)</p>	<p>Trapping the ball: Intercept the ball by various means and make it “stop” in front of you.</p>
<p>Throwing in: Place targets on the field, adjusting the length and direction of the throw ins. Use offensive and defensive players to defend and block targets.</p>	<p>Dribbling: Dribble around an obstacle course. (Position cones closer together for increased difficulty.) Repeat with one, two, or three defenders.</p>	<p>Goal Keeping: Practice blocking a variety of shots, from a variety of players in different positions, one right after the other.</p>

ART: Choose a painting (or other artwork) from the appropriate folder. Base your answers to the questions on that painting.

Describe the artwork in as much detail as possible. Consider form, line, shape, color, texture, space and value.	Using at least three of the elements listed below, compare the artwork to another of your choice: form, line, shape, color, texture, space and/or value.	What does the artwork make you think of? What comes to your mind when you think of it? Perhaps people? Places? Things? Feelings? Let your mind go and see what feelings you have.
Analyze the artist's skill in at least one of the following principles: emphasis, balance, harmony, and/or variety.	Tell how this work could be used to illustrate one of the following principles: movement, rhythm, proportion, and/or unity. If it cannot be used for any of those things, explain why.	Argue for it or against it: Should this artwork be included in the exhibition: Best works of the ___th century? Explain your thinking.

Tiered Differentiation: Vary the complexity of the artwork included in each folder.

Interest Differentiation: vary the type of artwork, the school or art, or the time period, based on student interest.

Computers

DESCRIBE the processing cycle and explain what happens at each stage.	EXPLAIN how a computer system works using the processing cycle as a guide	DEFINE hardware and give 3 examples of each type (input, output, and storage)
DEFINE software and give 2 examples each for system and application	DRAW a computer system and label the hardware as input, output, processing, or storage devices	COMPARE & CONTRAST a computer system and a student (a person)