This graphic represents opportunities for the development of the whole child. Each circle represents an essential component of a student’s learning. Out-of-school time presents an opportunity to expose students to each of these essential components. The arrows represent the interconnectedness of each. All components are equally essential in the development of a student. The extent to which any program focuses on a specific component(s) will be driven by the program’s mission and vision. For further information on social emotional, health/wellness, and the arts, please see the Resources page (page 60).
It is with great enthusiasm that we present to Ohio’s out-of-school time providers the **Ohio K-12 Standards Resource Guide**, developed to assist and support professionals with the implementation of Ohio’s K – 12 learning standards.

Ohio’s newly adopted standards are more demanding for students in English Language Arts, Math, Science, and Social Studies. The individuals working in out-of-school time programs possess a variety of skills and knowledge at different levels, and this guide has been designed to help professionals at all levels understand what is essential for students to know and be able to master, at each grade level, in an easily understood format.

The resource guide provides clarification to the field on which standards are important to use and defines difficult to understand terminology in basic terms. Further, it provides helpful, developmentally appropriate research based instructional strategies and activities, to help struggling students achieve at higher levels on the most important standards. The guide also offers Something to Think About... and Tips From the Trade provided by experienced afterschool trainers and instructors. Included in different areas of the document you will find Notes sections where afterschool professionals can record new ideas, activities that worked or additional resources to support them in their work with school age children.

Users of this document should find it easily adaptable, whether you are a school or community based organization offering multiple types of programs. It provides high quality hands-on examples in each of the core subject areas, spanning grades K-8, and integrates social emotional standards to make afterschool a safe and exciting learning environment for all students.

Additionally, this guide supports a program’s participation in Step up To Quality (SUTQ) and maintains the integrity of the SUTQ program standards. These program standards include Learning and Development, Administration and Leadership Practices, Staff Qualification and Professional Development, and Family and Community Partnerships.

The development of the **Ohio K-12 Standards Resource Guide** was the vision of many professionals working in tandem with the Ohio Department of Education, the Ohio Department of Job and Family Services, Ohio Child Care Resource and Referral Association (OCCRRA), Ohio’s network of Child Care Resource and Referral Agencies and the Ohio Afterschool Network (OAN). Together with public and private partners, the workgroup willingly embraced the opportunity of creating the **Ohio K-12 Standards Resource Guide**.

We are pleased to share this document with out-of-school time professionals in an effort to support the implementation of Ohio’s new academic standards, ensuring that all students receive the necessary supports to be successful in school, life, and career.

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**Note regarding websites:**

Website addresses may change. If a website cannot be found, search for the keyword(s) you are trying to find. For example, you cannot find the website that was given for Dolch words. Try utilizing a search engine such as Google, Safari, Yahoo, Bing, etc. and enter the keywords "Dolch words".
**Reading Standards for Literature [Fiction] Grades K-2**

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**Tips from the Trade**

Always read the book at least once before reading it aloud to children. For example, if the book you chose has a grandparent in the story and one of your students just lost a grandparent and is having difficulty coping with the loss, this is probably not the right time to read this story.

Divide students into 3 groups and have one group draw a picture of the beginning of the story, another group the middle of the story and the last group the end of the story.

Have “Mystery or VIP Readers” come to read aloud to the students. Students can ask who, what and where types of questions to try and guess who the mystery reader is. [This is a great opportunity for family, community, and political leaders to be involved].

Divide students into groups. Give each group a large piece of butcher paper that you have written a line or two from the story at the top. Have students create their own pictures about what was written at the top.

Have students form a circle. Ask each student to show different emotion words like: show me a sad face, happy face, pouty face and so on.

---

**What is essential [most important] for students to know and be able to do to master this standard?**

- Identify details and key ideas in text.
- Recognize and use text structures to support understanding.
- Recognize and use illustrations to support understanding.
- Actively engage with various types of age-appropriate literature.

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**Strategies and activities that will help students meet this standard.**

**Ask students to:**

1. Ask and/or answer who, what, where or when questions.
2. Retell or sequence events in a story.
3. Identify/describe characters, setting or events in the story.
4. Identify sensory words [touch, taste, feel, smell, hear] in a story, poem or song.
5. Identify emotion words [such as: mad, angry, happy, sad] in a story, poem or song.
6. Recognize common types of text such as storybooks, poems, and songs.
7. Identify the point of view or attitude [is the main character nice, mean, kind and so on] of the main character.
8. Use illustrations, concrete objects or text to identify details, characters, setting or events from a story.
9. Match similarities of characters or events in two versions of a story.

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**Something to think about…**

**Sequencing a story usually asks students to know 3 things:** What happened in the beginning, what happened in the middle and what happened in the end?

Ask questions before, during and after reading aloud to students. It is important to plan these questions ahead of time.

- Show students the book cover, read the title and ask: What do you think the story will be about?
- Right before a suspenseful event happens in the story, stop and ask: Who do you think will save the day?
- After the story, ask students: Who was your favorite character in the story?
Reading Standards for Literature [Fiction] Grades 3-5

Tips from the Trade

Have a child retell the story from a different character's point of view. Resource: The True Story of the Three Little Pigs is from the wolf’s point of view.

Have students work in small groups of 2, 3, or 4 to make a timeline of the events in the story.

Have students sit in a circle and give them the beginning of a story. Each child will use their imagination to add another event in the story. After each child shares, you can add a transition word to help students. Use words and then the...and the girl was covered with...and the... saved the day by....

Divide students into groups and have them act out the story. Each student will be a different character.

Add your own tips here:

What is essential [most important] for students to know and be able to do to master this standard?

- Understand key events, details and ideas from text.
- Understand the meaning of words and phrases in text.
- Use story elements to understand text.
- Demonstrate understanding of text while actively engaged in reading.

Strategies and activities that will help students meet this standard.

Ask students to:

1. Answer factual questions based on details from the text.
2. Retell a story including the point of the story and key details.
3. Describe story elements [characters, settings or events] in stories, poems or songs.
4. Identify the meaning of words based on how they are used in a story, song or poem.
5. Identify common elements in a story, song or poem (e.g., stanzas or rhythm in a poem, problem or solution in a story)
6. Compare their personal point of view to that of a character in a story.
7. Match text to specific illustrations.
8. Identify similarities or differences between characters or events in two folktales, fairytales and/or myths.

Something to think about...

Folktales are stories or legends originating from oral stories told by people of all cultures. Folktales are often based upon superstitions.

Fairytales may star characters such as fairies, goblins, elves, trolls, witches, giants, and talking animals and include enchantments [spells] often involving a far-fetched sequence of events.

Myths are stories about the early history of a people or they explain some natural or social phenomenon [Example: how a leopard got its spots], and usually include supernatural beings or events.

Parts of a story, play or poem: Refer to or have students identify a chapter, scene, stanza, and so on in different reading materials. Explain or ask students to explain why these are important. They are important because they help them follow the progress of the story, its theme and ideas.

Notes:
Reading Standards for Literature [Fiction] Grades 6-8

Tips from the Trade

You’re the Director:

Print out the You’re the Director worksheet from readwritethink website. Once on the readwritethink website, search You’re the Director and it will take you to the lesson and all of the handouts. Share the printout and explain that it’s a way of pulling apart a scene to see its different parts. It’s kind of like ingredients in a recipe. Start with an example scene, such as in The Wizard of Oz, when Dorothy’s house lands on the Wicked Witch. Who are the characters, the setting, objects (props)? Where was the camera to capture the action? Talk about how a movie scene fits together like a puzzle. Change one piece, like the setting or the music, and it changes the whole picture. For instance, what if Dorothy’s home landed not in Oz, but in New York City? Help the child experiment with removing or changing an element in the scene.

What is essential [most important] for students to know and be able to do to master this standard?

- Use text to understand key ideas, characters, theme and events.
- Use word choice and structure to support meaning.
- Compare ideas and themes across literature text.
- Demonstrate understanding of text while actively engaged in reading.

Strategies and activities that will help students meet this standard. Ask students to:

1. Locate text to support answers to factual questions and answers that are inferred by the text.
2. Identify the theme or central idea of a text and support it with main events and details. A text may have more than one theme.
3. Describe a story’s plot and how the events lead to a solution.
4. Identify the meaning of words or phrases based on how they are used in a text.
5. Identify structures within stories, poems, plays or songs that contribute to the overall meaning of text.
6. Identify who is telling the story and describe his/her role in the story.
7. Describe the key similarities or differences between print and multimedia/live productions of the same story, drama or poem.
8. Describe similar events from two different types of stories such as: myths, science fiction, historical fiction, folktales and fairytales.
9. Describe a fictional account of a historical event.

Something to think about...

Structures are the parts of a story, play or poem. Refer to or have students identify a chapter, scene, stanza, and so on in different reading materials. Explain or ask students to explain why these are important. They are important because they help them follow the progress of the story, its theme and ideas.
**Reading Standards for Informational Text [Nonfiction] Grades K-2**

**Tips from the Trade**

Divide students into pairs. Ask them to find text features such as: headings, table of contents, glossary and so on.

Find a simple recipe and have groups of students follow all of the steps.

Readwritethink website has great lesson plans for afterschool activities. Plans include worksheets, descriptions, the amount of time needed and can be sorted by grade level. Suggested books to use are also included. Two nonfiction topics I searched had fun ideas: gardening and weather.

Using a Weekly Reader news article, have students work in pairs to find out the 5W’s—Who, What, Where, When and Why—of the story.

Have students bring their science or social studies book to the afterschool program. [Make sure the books have a glossary beforehand.] Give students words you know are in the glossary and have students do a scavenger hunt looking for words them.

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**What is essential [most important] for students to know and be able to do to master this standard?**

- Identify key details and ideas from text.
- Recognize and use text structures to support understanding.
- Recognize and use illustrations/images to support understanding.
- Actively read various types of age-appropriate informational text.

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**Strategies and activities that will help students meet this standard. Ask students to:**

1. Ask and answer who, what, where and when questions to demonstrate understanding of text.
2. Identify the main topic, and retell key details of a text.
3. Describe two events, ideas, individuals or steps in a process from a text.
4. Identify the meaning of words based on how they are used in a text.
5. Identify text features (e.g., headings, table of contents, glossaries) used in informational text.
6. Identify pictures or words in an informational text that provide an idea or information.
7. Identify ideas found in illustrations and those found in text.
8. Identify key points in a text.
9. Identify the similarities in two texts that address the same topic.

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**Something to think about…**

Before reading: Explain words that students may not know before reading aloud.

While reading: Ask questions of children so you know if they understand what you are reading.

After reading: Ask students what they learned. Listen for answers that show you they understood what was read to them.

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**Notes:**
Tips from the Trade

When reading a fiction or nonfiction story, identify the location that the story is talking about on a map.

Students enjoy drawing pictures that show the literal [factual] meaning of sayings like, “It’s raining, cats and dogs.”

Divide students into groups of 5-7. Whisper a sentence into one student’s ear and have them whisper it into the next student’s and so on. The last student shares what they thought they heard. Most often it is nothing like the original sentence. This shows how secondhand accounts can be inaccurate.

Have students work in pairs to research a current news story from two different sources, such as a newspaper or a report on a TV station’s website. Have them compare what facts the stories have in common and what are different. As a group, discuss their results.

What is essential [most important] for students to know and be able to do to master this standard?
- Use key details and ideas to understand text.
- Use key words and structures of text to support understanding.
- Acquire information from multiple sources.
- Demonstrate understanding of informational text during and after reading while actively engaged in reading.

Strategies and activities that will help students meet this standard. Ask students to:

1. Answer literal [factual] questions using specific details from text to support those answers.
2. Retell a text including main idea and key details.
3. Identify a connection between two events, ideas, individuals or steps in procedures in historical, scientific or technical text.
4. Identify the meaning of words as they are used in grade-level/age-appropriate informational or procedural text.
5. Use text features (e.g. key words, chapter, heading, bold print) or search tools to locate information in a text.
6. Identify whether an informational text is a firsthand or secondhand account.
7. Identify illustrations (e.g., maps, charts, photographs) that contribute to meaning within the text.
8. Identify important and irrelevant information in a text.
9. Compare information on the same topic from two different informational texts.

Something to think about…

Examples of connections between events, ideas or individuals or steps in a process:

- Historical: What is the connection between Abraham Lincoln and Andrew Jackson? They were both Presidents.
- Scientific: How are a person and a plant connected? They both have life cycles.
- Technical: How are baking a pie and baking a cake connected? They both use recipes with specific steps and they both need an oven.

Firsthand and secondhand accounts: Think of secondhand accounts like gossip. If you hear a story from someone other than the person involved it is likely that something was left out, changed, or added. The accuracy of secondhand accounts could be in question.

Notes:

What is essential [most important] for students to know and be able to do to master this standard?
- Use key details and ideas to understand text.
- Use key words and structures of text to support understanding.
- Acquire information from multiple sources.
- Demonstrate understanding of informational text during and after reading while actively engaged in reading.

Strategies and activities that will help students meet this standard. Ask students to:

1. Answer literal [factual] questions using specific details from text to support those answers.
2. Retell a text including main idea and key details.
3. Identify a connection between two events, ideas, individuals or steps in procedures in historical, scientific or technical text.
4. Identify the meaning of words as they are used in grade-level/age-appropriate informational or procedural text.
5. Use text features (e.g. key words, chapter, heading, bold print) or search tools to locate information in a text.
6. Identify whether an informational text is a firsthand or secondhand account.
7. Identify illustrations (e.g., maps, charts, photographs) that contribute to meaning within the text.
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9. Compare information on the same topic from two different informational texts.

Something to think about…

Examples of connections between events, ideas or individuals or steps in a process:

- Historical: What is the connection between Abraham Lincoln and Andrew Jackson? They were both Presidents.
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- Technical: How are baking a pie and baking a cake connected? They both use recipes with specific steps and they both need an oven.

Firsthand and secondhand accounts: Think of secondhand accounts like gossip. If you hear a story from someone other than the person involved it is likely that something was left out, changed, or added. The accuracy of secondhand accounts could be in question.

Notes:
Tips from the Trade

Most local public librarians will pull sets of books for you to check out for a period of time. You could ask for a variety of books or just one type such as historical fiction.

From a set of books on historical fiction, create slips of paper that describe an event such as Paul Revere’s ride or Rosa Parks story. Put the events in a hat or container so students draw out one slip of paper. Students then select the book that tells about the event, reads it and shares a summary with the group.

Have pairs of books available on site that are biographies or autobiographies of the same person. Have students individually or in pairs compare and contrast the facts in the two accounts about the same person. (Hint: use the Venn diagram below to help students make the comparison).

Something to think about…

Make sure your program has a variety of different types of books available for kids to read independently. Include: fiction, historical fiction, myths, science fiction, folktales and fairytales.

An example for comparing Airplanes and Trains would be:

**Airplane:** Moves in the air.
**Train:** Moves on tracks.

**Same:** Form of transportation
**Tips from the Trade**

Substitute beginning and ending letters to create words both real and made up.

**Alphabet Books:**
- *Eating the Alphabet* by Lois Ehlert
- *Chicka, Chicka, Boom, Boom* by Bill Martin [Ask your older students to make a rap of this and perform it for your younger students.]
- *Alphabet City* by Stephen Johnson
- *B is for Buckeye* by Marcia Shonberg [This is for the Buckeye fans!]

Most local public librarians will pull sets of books for you to check out for a period of time. They will pull by author, type of book such as beginning reader, picture books, and so on.

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**Reading Standards Functional Skills: Grades K-2**

**What is essential [most important] for students to know and be able to do to master this standard?**
- Understand concepts of print
- Recognize sounds in spoken words.
- Use letter sound knowledge to decode words.
- Read with accuracy and fluency.

**Strategies and activities that will help students meet this standard. Ask students to:**

1. Track words from left to right, top to bottom, and know correct page direction.
2. Identify the ending sound of a word.
3. Match letters to consonant sounds.

**Notes:**

**Something to think about…**

**Remember:**
- Children that identify signs in their world, such as fast food chains and stop signs, are beginning to understand that print [words] have meaning.
- In dramatic play, when children use telephone notepad or pretend that are taking food orders they understand the print has a purpose.
- Talk about the roles of the author and illustrator. This helps readers know the difference between pictures and words. It also helps students understand that both pictures and words add meaning to the story. This is an important building block for students to comprehend what they hear or read themselves.

**Fluency** is the ability to read accurately, quickly and with proper expression. Students who do not have to sound out every word are able to concentrate on what the words/pictures mean. Fluent readers do much better comprehending the story.
Reading Standards Functional Skills: Grades 3-5

Tips from the Trade

Use play scripts to develop fluency. These Reader's Theatre websites have some good examples.

- janbrett.com
- thebestclass.org/rtscripts.html
- teachingheart.net/readerstheater.htm

Other websites for Dolch Words.

- janbrett.com/games/jan_brett_dolch_word_list_main.htm
- kidzone.ws/dolch/
- k12reader.com/dolch-word-list

What is essential [most important] for students to know and be able to do to master this standard?

- Use letter sound knowledge to decode words.
- Read with accuracy and fluency.

Strategies and activities that will help students meet this standard. Ask students to:

1. Apply letter-sound knowledge to read words:
2. Decode regularly spelled words.
3. Decode [sound out] words following basic sound patterns.
4. Read high-frequency words (e.g., Dolch word lists 1 and 2)

Note: www.bogglesworldesl.com/dolch is a great website to find Dolch words [most common sight words]. It includes pre-primer [pre-school], primer [kindergarten] and grades one, two, and three. There are printable crosswords, word searches, flash cards and assessment sheets.

Something to think about…

Fluency is the ability to read accurately, quickly and with proper expression. Students who do not have to sound out every word are able to concentrate on what the words/pictures mean. Fluent readers do much better comprehending the story.

Decode is the ability to sound out words and then say them correctly.
Tips from the Trade

Create classroom books. Each student writes/draws a picture on a page. Once completed you can put them together with a ring for students to look at and/or read.

Sample starters are:
My favorite food is……
If I were in charge of the world I would…..
When I grow up I want to be a ……
This summer I ………

Best writing handbook of ideas for writing for grades 2 and above.
If You’re Trying to Teach Kids How to Write…..You Gotta Have This Book by Marjorie Frank

What is essential [most important] for students to know and be able to do to master this standard?

- Write on selected topics. [at these grade levels the word “write” includes dictation, drawing and approximated spelling.]
- Revise and publish writing with support.
- Use digital tools to write.
- Participate in shared research.

Strategies and activities that will help students meet this standard. Ask students to:

1. Write their opinion on a topic that is age appropriate.
2. Write at least one fact about a topic.
3. Arrange pictures or text to communicate a sequence of events that tell a story.
4. [With help and adult support] Add one or more details to improve writing.
5. [With guidance and support] Use technology to create and publish [display] writing.
6. Participate in shared research and add details to shared writing experiences. Example: Share a number of “how-to” books on a given topic and have students use what they have learned to write a list of instructions in the correct order).
7. [With guidance and support from adults] Recall information from an experience or from information provided to write an answer to a question.

Notes:

Something to think about…

Great resource for reading and writing:
www.readwritethink.org/classroom-resources/student-interactives
cyberkids.com
www.readwritethink.org [search for interactive cube creator]
Writing Standards Grades 3-5

Tips from the Trade

Have students create their own audio books.

Best writing handbook of ideas for writing for grades 2 and above.

If You’re Trying to Teach Kids How to Write….You Gotta Have This Book by Marjorie Frank

Readwritethink has a number of activities and lessons on writing opinions which they call persuasive writing.

Students at this age have strong opinions. Have each student write about something they have a strong opinion about. After they write the narrative, have them find facts to support their opinion. Students may also work in pairs. [Hint: When students share their work have them practice good speaking and listening skills.]

What is essential [most important] for students to know and be able to do to master this standard?

- Write for multiple purposes.
- Revise and publish writing.
- Gather information from multiple sources.
- Write routinely.

Strategies and activities that will help students meet this standard. Ask students to:

1. Write an opinion giving reasons that support your belief.
2. Write several factual sentences on a topic.
3. Write a personal narrative that includes characters and events.
4. [With guidance and support] Create a written text that matches the purpose for which it is designed (persuasive, informative or narrative task).
5. [With guidance and support] Identify and add one or more details to improve writing.
6. [With guidance and support] Use technology to create two or more sentences.
7. Research and collect information from one or more sources to build knowledge on a topic.
8. Recall and categorize information from personal experiences, print or digital sources.
9. Gather information from grade-level/age-appropriate literary or informational materials to support understanding.

Notes:

What is essential [most important] for students to know and be able to do to master this standard?

- Write for multiple purposes.
- Revise and publish writing.
- Gather information from multiple sources.
- Write routinely.

Strategies and activities that will help students meet this standard. Ask students to:

- Write an opinion giving reasons that support your belief.
- Write several factual sentences on a topic.
- Write a personal narrative that includes characters and events.
- [With guidance and support] Create a written text that matches the purpose for which it is designed (persuasive, informative or narrative task).
- [With guidance and support] Identify and add one or more details to improve writing.
- [With guidance and support] Use technology to create two or more sentences.
- Research and collect information from one or more sources to build knowledge on a topic.
- Recall and categorize information from personal experiences, print or digital sources.
- Gather information from grade-level/age-appropriate literary or informational materials to support understanding.

Great websites for reading and writing:
readwritethink.org
cyberkids.com
pbskids.org/itsmylife/body/solosports/create_story.html
Tips from the Trade

Best writing handbook of ideas for writing for grades 2 and above. My copy was used so much it literally fell apart.

If You’re Trying to Teach Kids How to Write….You Gotta Have This Book by Marjorie Frank

Have students write, practice and perform skits on bullying and teasing.

Have students use the Persuasion Map to create arguments for persuasive essays. The map can be found at:

readwritethink.org/files/resources/interactives/persuasion_map

Have students write a narrative of their choice or select a topic from a list you provide them. After they are finished with their first draft, have students pair up and edit each other’s work. Use an editing guide from the teacher or there are samples on the web. Search for: writing rubrics. [A rubric is a scoring guide that can be used for many subjects.]

Writing Standards Grades 6-8

What is essential [most important] for students to know and be able to do to master this standard?

- Use supporting information in writing.
- Revise and publish own writing.
- Use technology to produce writing.
- Gather and report information in writing.
- Write regularly for multiple purposes.

Strategies and activities that will help students meet this standard. Ask students to:

1. Create a writing that uses reasons and relevant facts that support an opinion.
2. Write several factual sentences, on a topic, including a topic sentence and concluding sentence.
3. Write a narrative [story] that includes characters, a logical sequence of events and descriptive details.
4. [With guidance and support] Create a writing that is persuasive or informative.
5. [With guidance and support] Edit and revise writing.
6. [With guidance and support] Use technology, to create multiple sentences.
7. Research and collect information from a source to answer a question.
8. Generate multiple sentences to summarize information from print and digital sources and name the source.
9. Gather and organize information from (grade-level/age-appropriate literary or informational materials.

Notes:

Something to think about…

Narrative writing is telling a story. See Resources for a sample story map to help students plan writing a story.

In persuasive writing, the goal is to try and convince people to agree with you. It is important to understand that persuasive writing relies heavily on facts- not opinions. Note: A great resource is www.readwritethink. It has graphic organizers, a power point on persuasive writing and students can create their organizers online. See Resources for a sample student handout.

The goal of informative writing is not to present your opinion, but to inform or educate your reader on a given topic. See Resources for samples of student organizers for informative writing.
Speaking and Listening Standards Grades K-2

Tips from the Trade
Ask students to be the day’s reporter and share: What’s in the news? What’s the weather? What’s happening? What’s for dinner? Who is the next guest reader?

During National Pet Week [first week of May] have children bring in a stuffed animal and pretend it’s real. Children will tell information about their pet and answer questions from the group.

Younger students often forget that as the seasons change they need to wear different types of clothing. Have students talk about what clothing they wear in the fall, winter, spring, and summer. Early fall and early spring are the worst times for students to forget to wear a jacket or socks or they wear a heavy coat and boots when it is too hot.

What is essential [most important] for students to know and be able to do to master this standard?
- Participate in collaborative conversation.
- Ask and answer questions to gather information.
- Communicate to tell a story or experience.
- Communicate to express ideas, thoughts or feelings.

Strategies and activities that will help students meet this standard. Ask students to:

1. Actively participate in supported conversations about grade-level/age-appropriate topics and text.
2. Follow agreed upon rules (e.g., gaining attention, listening to others, turn-taking)
3. Continue a conversation through multiple exchanges.
4. Ask or answer questions about key ideas from text read aloud or information presented orally.
5. Ask or answer questions about a familiar topic.
6. Describe a person, place, thing, or event from a personal experience.
7. Add visuals or audio to enhance a story or description of a personal experience.
8. Communicate thoughts, feelings and ideas through multi-word responses.

Something to think about…
Communicating thoughts, feelings and ideas is also a part of Character Development in the Social and Emotional guidelines, which are forthcoming. Group meetings are a great way to communicate information to students and help them develop listening skills. Skills include: understand that group meetings are a time to listen and share, understand they need to listen to the teacher as well as to the other children, learn to chose appropriate thoughts to share and respect the thoughts of others.
**Tips from the Trade**

Divide children into groups of 3 or 4. Each group will create a banner or flag that tells something about each member of the group. One person from the group will share what the banner/flag says and the other members show the banner/flag. This is a great beginning of the year or summer activity.

After reading a story to the students, ask the 5 W questions: who, what, when, where and why.

After reading a story aloud, ask students to tell what happened in the beginning, the middle and the end.

Pick a current event and have the group of students discuss their thoughts and opinions. Praise students who use good listening and speaking skills.

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**What is essential [most important] for students to know and be able to do to master this standard?**

- Engage in collaborative discussions.
- Communicate to summarize key ideas and details.
- Report on a topic or text.

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**Strategies and activities that will help students meet this standard. Ask students to:**

1. Participate in discussions about grade-level age-appropriate topics and text.
2. Follow agreed upon rules (e.g., gaining attention, listening to others, turn-taking).
3. Answer questions to contribute to the discussion.
4. Communicate the main idea and details of text read aloud or presented in diverse formats.
5. Ask or answer questions about key points from a speaker’s presentation.
6. Communicate about a topic or event in the appropriate sequence.
7. Add visual or audio displays to enhance a presentation.
8. Communicate information specific to the purpose or audience.

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**Notes:**
Tips from the Trade

Have students create the rules of discussion. [With your guidance]

Table Topics:
Divide students into small groups. Each table will create a 3-4 minute conversation based on the topic they are given. Students should include an opening which says what their topic is about, the important parts of the conversation with supporting details and a conclusion. Each table could have the same topic or a different topic. Tables will share their conversation with the group.

Topic Ideas:
- What is your favorite family tradition?
- Who is the best NFL, NHL, NBA, team in the country?
- How can you stop bullying and teasing?

Hint: Before you start a discussion, remind students to use the rules of discussion or review the rules with them. If students consistently break rules, ask them what rules were broken during the discussion and how could they fix the problem. If only one or two students are having difficulty, pull them aside later and ask them what rules they think they broke.

What is essential [most important] for students to know and be able to do to master this standard?
- Effectively engage in collaborative discussions.
- Present information.

Strategies and activities that will help students meet this standard. Ask students to:
1. Participate in discussions about grade-level age-appropriate topics and text.
2. Follow rules of discussion.
3. Ask or answer questions to contribute to the discussion.
4. Communicate the main ideas and supporting details of information presented in diverse formats.
   1. Describe a speaker’s point of view or purpose.
   2. Communicate effectively to present information sequentially about a selected topic.
   3. Add multimedia components to enhance a presentation.
   4. Communicate multiple ideas or information specific to the purpose or audience.

Something to think about...

The purpose of a good discussion is to work with others to come up with the best set of ideas or ways to deal with a situation. Examples of some rules for discussion.

1. Think before you speak.
2. Listen carefully to what others have to say.
3. Do not interrupt when someone else is speaking.
4. Make use of what others have to say when it is your turn to speak.
5. Only say what you truly believe.
6. Do not remain silent. Make sure to contribute to the discussion.
7. Let other people speak. Do not hog the discussion. Once you are done speaking, let at least two other people talk before you speak again.
8. Support good ideas that other people have, even if they are different from your own.
9. Search for the best solution even if it is different from the way that you thought at first.
Language Standards Grades K-2

Tips from the Trade

Write a few sentences on chart paper that have errors in capitalization and punctuation. Let students use boo-boo tape [correction tape] to cover the mistake and write the correction on the tape. Young students love boo-boo tape.

Homographs are words that are spelled the same, but have different meanings and may have different pronunciations. Some examples are:

- does and does
  He does like to run.
  Does are female deer.

- wind and wind
  I can feel the wind in my hair.
  Wind up the string before it gets tangled.

- well and well
  Sam doesn't feel well today.
  Our neighbors are digging a new well.

Google Learning Press for more ideas.

What is essential [most important] for students to know and be able to do to master this standard?

- Demonstrate conventions of grammar when speaking or writing.
- Demonstrate conventions of capitalization, punctuation and spelling when writing.
- Acquire and use new vocabulary.

Strategies and activities that will help students meet this standard. Ask students to:

1. Use correct grammar in writing or speaking including:
   a. Upper- and lower-case letters
   b. Common nouns, verbs and pronouns
   c. Question words
   d. Adjectives
   e. Simple sentences
2. Identify capitalization and ending punctuation within a written sentence.
3. Use context to identify new meanings of familiar words (e.g., go to the fair or play fair) books that are read aloud and individual reading on the appropriate reading level.
4. Sort words into categories or one or more characteristics. [Example: swans and ducks are birds]
5. Use words learned through conversations when speaking.

Notes:

What is essential [most important] for students to know and be able to do to master this standard?

- Demonstrate conventions of grammar when speaking or writing.
- Demonstrate conventions of capitalization, punctuation and spelling when writing.
- Acquire and use new vocabulary.

Strategies and activities that will help students meet this standard. Ask students to:

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   c. Question words
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4. Sort words into categories or one or more characteristics. [Example: swans and ducks are birds]
5. Use words learned through conversations when speaking.

Something to think about…

At this age students do not need to know the word homograph [see Tips from the Trade]. It is only important they know words can be spelled the same, have different meanings, and may be pronounced differently.
Language Standards Grades 3-5

Tips from the Trade

To help students understand non-literal language, give them examples of figurative language and have them draw a picture of what the phrase would look like if taken literally and have them define what it means non-literally [figuratively].

Examples:
- It’s raining cats and dogs
- A chip on your shoulder
- A dime a dozen
- A drop in the bucket
- A slap on the wrist
- A piece of cake

For more visit: www.idioms.com

For help with grammar rules visit: www.grammar-monster.com

What is essential [most important] for students to know and be able to do to master this standard?
- Demonstrate conventions of grammar when speaking or writing.
- Demonstrate conventions of capitalization, punctuation and spelling when writing.
- Use knowledge of language when writing, speaking, reading or listening.
- Acquire and use new vocabulary.

Strategies and activities that will help students meet this standard. Ask students to:

1. Use correct grammar in writing or speaking including:
   a. Upper- and lower-case letters
   b. Common nouns, verbs and pronouns
   c. Question words
   d. Adjectives and adverbs (e.g., quickly, always
   e. Simple and compound sentences.
2. Identify capitalization and ending punctuation within a written sentence; spell familiar words phonetically. [how they sound]
3. When speaking and writing use words and phrases to convey an idea.
4. Use context to determine the meaning of unknown words or phrases.
5. Identify the difference between literal and non-literal meanings of words/phrases. (e.g., pretty as a picture).
6. Use grade-level/age-appropriate, content-specific words.

Something to think about…

A compound sentence has at least two independent clauses. An independent clause can stand alone as a sentence. Examples:
- Simple Sentence: He is kind.
- Compound Sentence: He is kind, and he is a good student.

Dictionary definitions are written in literal terms. For example, ‘It is time to feed the cats and dogs.’ This phrase ‘cats and dogs’ is used in a literal sense, for the animals are hungry and it is time to eat.

Non-literal or figurative language paints word pictures and allows us to ‘see’ a point. For example: ‘It is raining cats and dogs!’ Cats and dogs do not really fall from the sky like rain.
Language Standards Grades 6-8

Tips from the Trade

To help students understand non-literal language, give them examples of figurative language and have them draw a picture of what the phrase would look like if taken literally and have them define what it means non-literally [figuratively].

Examples:
- A slap on the wrist
- A dime a dozen
- A chip on your shoulder
- It's raining cats and dogs

For help with grammar rules visit: www.grammar-monster.com

For more visit: www.idioms.com

What is essential [most important] for students to know and be able to do to master this standard?

- Demonstrate conventions of grammar when speaking or writing.
- Demonstrate conventions of capitalization, punctuation and spelling when writing.
- Use knowledge of language when writing, speaking, reading or listening.
- Acquire and use new vocabulary.

Strategies and activities that will help students meet this standard.

Ask students to:

1. When writing and speaking, use correct grammar including:
   a. Common nouns, verbs and pronouns
   b. Prepositions (e.g., between, among)
   c. Adjectives and adverbs (e.g., quickly, always)
   d. Simple and compound sentences
2. Generate a simple sentence with beginning capitalization and ending punctuation; spell familiar words.
3. Use conventions of language to write or speak simple sentences.
4. Use sentences or paragraphs to determine the meaning of unknown words or phrases.
5. Explain the difference between literal and non-literal meanings of words/phrases.
6. Use grade-level/age-appropriate academic and content specific words and phrases in conversations.

Something to think about...

Conventions of language are the mechanics, usage, and sentence formation used in writing. Mechanics include spelling, punctuation, capitalization, and paragraphs.

Usage refers to word order, verb tense, and subject-verb agreement. Ex. She did her homework is the correct subject-verb agreement. An incorrect example is: She done her homework.

Sentence formation refers to how sentences are put together. Sentences have a subject, verb, and a predicate. Ex. She went to the store. She is the subject; went is the verb and to the store is the predicate.

Dictionary definitions are written in literal terms. For example, 'It is time to feed the cats and dogs.' This phrase 'cats and dogs' is used in a literal sense, for the animals are hungry and it is time to eat.

Non-literal or figurative language paints word pictures and allows us to 'see' a point. For example: 'It is raining cats and dogs!' Cats and dogs do not really fall from the sky like rain.
Tips from the Trade

Younger students often struggle with one-to-one correspondence. Try sitting across from the students and have them count the objects as you count them. Make sure students touch the object, say the number, and then go to the next object. This is best done in a group of 1-2 children so you can watch them carefully.

When students start to compare which number is greater or less than, it is easier for them to see it when using objects. Example: Have 2 piles of blocks. One pile may have 2 blocks and the other 8 blocks. Have which is greater [bigger] than and which is less [smaller] than. Once students can correctly compare the piles have them put the correct written number by the pile.

Math Standards: Counting and Cardinal Numbers Grades K-2 [only]

What is essential [most important] for students to know and be able to do to master this standard?
- Counting
- Count up from a given number.
- Represent objects with written numerals.
- One-to-one correspondence and concept of one more.
- Count to answer “how many?”
- Compare groups of objects.
- Compare written numerals.

Strategies and activities that will help students meet this standard. Ask students to:
1. Count up to 20 by 1s using a picture of 20 things or objects such as blocks.
2. Count forward beginning from any given number between 1 and 20.
3. Write a number (within a range of 1-15) to represent a number of objects.
4. Match the correct written number to objects up to 15.
5. Be able to answer, “What is the total number of objects?” up to 10.
6. Compare two numbers between 1 and 10 decide which number is “greater than” or which is “less than.”

Something to think about…

Cardinal numbers (or cardinals) are numbers that say how many of something there are, such as one, two, three, four, five.

Matching number names to objects
To know if students can use one-to-one correspondence, ask students to count a set of objects such as blocks, sticks, or pebbles you have placed in a pile in front of them. Children who do not understand one-to-one correspondence will not co-ordinate saying the number names with taking the objects one by one. Some will say more than one number per object; others will take more than one object per number.
Math Standards: Operations and Algebraic Thinking Grades K-2

Tips from the Trade

When using objects such as blocks to help young students learn to add and subtract, it is important to use different objects. Sometimes students think the object you are using is the only thing that has a number and can be counted. Use paperclips, pencils, crayons and so on so students learn that all objects can be added and subtracted.

Math is Fun is a great website with easy to understand definitions and examples of all types of math vocabulary and problem solving.

What is essential [most important] for students to know and be able to do to master this standard?

- Solve problems involving addition and subtraction. Add and subtract.
- Pair objects to determine odd or even.
- Find the total number of objects using repeated addition.

Strategies and activities that will help students meet this standard. Ask students to:

1. Solve addition and subtraction word problems up to a sum of 10 that ask students to: “add to,” “take from,” “put together” and “take apart”. Students may use objects such as blocks or cubes to solve the problems.
2. Add or subtract up to a sum of 10, with or without models or objects
3. Determine whether an equality statement is true or false using objects and/or numerals.
4. Determine the unknown number that makes an addition equation true up to a sum of 10.
5. Identify the number of objects in a group (of up to 10) as odd or even.
6. Add the number of objects in an array with up to 3 rows and 3 columns.

Notes:

Something to think about…

Equality statement example: 6+4 = 7+3; 1 + 3 = 2 + 2

An array is a systematic arrangement of objects, usually in rows and columns.
What is essential [most important] for students to know and be able to do to master this standard?
- Use grouping symbols to evaluate expressions.
- Interpret numerical expressions using grouping symbols.
- Generate patterns.

Strategies and activities that will help students meet this standard. Ask students to:
1. Represent products of whole numbers up to 5 × 5 using arrays.
2. Represent quotients of whole numbers up to 50 using partitions (groupings) (e.g., divide a set of objects into equal groups).
3. Solve word problems in situations involving equal groups and arrays for quantities up to 50. Ex. Use drawings and equations with a symbol [X] for the unknown number to represent the problem.
4. Apply the commutative and associative properties as strategies to multiply.
5. Solve multiplication and division number sentences within 50 [e.g., solve: 8 × 5 or 12 ÷ 3 ]
6. Know from memory all products [multiplication tables] up to 7 × 7.
7. Solve for the unknown whole number in multiplication and division number sentences up to 50 [e.g., identify the unknown number that makes the number sentence true in 4 × ? = 20].
8. Represent a 2-step problem using an equation with a letter standing for the unknown and solve.
9. Identify arithmetic patterns in number chart, and addition and multiplication tables. [Ex. Odd or even numbers, counting by 5, 10 and so on.]
10. Use order of operations to solve addition and subtraction expressions.
11. Extend a shape or visual pattern [Ex. abcabcabca….. Patterns should become increasingly more difficult.]

Something to think about...

An array is a systematic arrangement of objects, usually in rows and columns.

Quotient is number that is the result of dividing one number by another. Ex. 6 ÷ 2 = 3. 3 is the quotient.

Commutative Property— Is a process used only in addition and multiplication.
Examples are: 8 + 9 = 9 + 8. or 6 × 4 = 4 × 6

Associative Property— Is a process used only in addition and multiplication.
Examples are: 2 + (3 + 4) = (2 + 3) + 4 or 3 × (2 × 5) = (3 × 2) × 5

Order of Operations— This is the order that add, subtract, multiply, and divide is done in a multiple step problem. Remember PEMDAS:

P Parentheses first Ex. 6 × (5 + 3) = ? Add 5+3 and then multiply by 6 which is 6 × 8 = 48

E Exponents (ie Powers and Square Roots, etc.) Ex. 5 × 2² = ? The little ² means to multiply 2 times itself or 2 × 2 = 4. Then you multiply 5 × 4 so the answer is 20.

MD Multiplication and Division (left-to-right) Ex. If there are not parentheses multiply or divide before you add or subtract. Always move from left to right. 2 + 5 × 3 = ?. Multiply 5 × 3 first which equals 15 then add 2 so the answer is 17. If the problem is all multiplication and division and there are not parentheses, always go left to right. Ex. 30 ÷ 5 × 3 = ? Divide 30 by 5 which equals 6. Then multiply 6 times 3 which equals 18.

AS Addition and Subtraction (left-to-right) Ex. If there are not parentheses and you need to add and subtract, always go left to right. Ex. 6—2 +5 = ? Subtract first, 6—2 = 4 then add 5 so the answer is 9.

Smile you'll get the hang of it! Try the Math Is Fun website—easy definitions and examples.
Math Standards: Numbers and Operations in Base 10 Grades K-2

Tips from the Trade

Students need lots of practice composing and decomposing numbers, drawing pictures of numbers, and showing place value. Create a template [shown below] where students can use a variety of objects to practice these skills. Objects could be: baby carrots, grapes, paperclips, crayons, match box cars, and once in awhile M & M's. Of course the food items are meant to be eaten when they are finished.

<table>
<thead>
<tr>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What is essential [most important] for students to know and be able to do to master this standard?

- Add and subtract.
- Place value
- Skip counting
- Number representations
- Compare number values.
- Add two-digit numbers
- Line up digits according to place value to add or subtract.
- Mentally add or subtract 10 or 100 to/from a given number.
- Addition and subtraction strategies

Strategies and activities that will help students meet this standard. Ask students to:

1. **Compose** [put together] and/or **decompose** [break apart] a two-digit number.
2. Count by 10s to 100.
3. **Identify** the correct, **expanded form** given a model or object representation of a two-digit number.
4. **Compare** 2 two-digit numbers using "more than," "less than" or the "same as" based on their place value.
5. **Add and subtract** up to the sum of 20 using strategies based on **place value**.
6. **Add and subtract** 2 two-digit numbers [multiples of 10] using at least one strategy [Ex. **Drawing a picture** to show 1 ten and 5 ones or using objects like blocks or cubes.]
7. **Identify** or create a model that can be used to solve an addition problem.

Something to think about...

**Compose Numbers:** Example: 25 = 

<table>
<thead>
<tr>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

**Decompose Numbers:** Example: = 38 

<table>
<thead>
<tr>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>8</td>
</tr>
</tbody>
</table>

**Expanded Form:** Write numbers out using words. Example: 15 would be 1 ten and 5 ones

**Place Value** includes ones, tens, hundreds, thousands and so on.

**Drawing a Picture** of 15

Notes:
Math Standards: Numbers and Operations in Base 10 Grades 3-5

What is essential [most important] for students to know and be able to do to master this standard?

- Place value
- Decimal place value
- Rounding decimals
- Multiply whole numbers
- Divide whole numbers
- Decimal operations

Strategies and activities that will help students meet this standard. Ask students to:

1. Identify whether a number is closer to 0 or 10.
2. Multiply one-digit whole numbers by 5. Ex. 6 × 5
3. Decompose multi-digit whole numbers by their place values and expanded form using 1s, 10s, and 100s cubes (Example 57 = 5 tens, 7 ones or fifty-seven = 50 + 7).
4. Change between two-digit whole numbers and words.
5. Compare two-digit numbers using >, =, and < symbols and concrete objects.
6. Add and subtract within 50 with ease using strategies and algorithms based on place value, the order of operations, and/or the relationship between addition and subtraction (the focus is on the use of strategies - (no calculator)).
7. Multiply multiples of 10 by a one-digit whole number, using strategies based on place value and the order of operations.
8. Divide multiples of ten by a one-digit whole number using strategies based on place value, relationship between multiplication and division and the properties of operations (no remainders) (e.g., 60 divided by 5 = 12).
9. Match visual or tactile representations of tenths and hundredths to their equivalent decimal numeral (e.g., 13 out of 100 can be written as 0.13, 13/100, or 1 dime and 3 pennies: 10 out of 100 = 0.10 = 1/10 = one dime).
10. Compare two decimal models to the tenths place using >, = and < symbols.
11. Round decimals in tenths to the nearest whole number.
12. Multiply 2-digit by 2-digit whole numbers and divide 2-digit by 1-digit whole numbers. (e.g., 15 × 10 = 150).
13. Add and subtract decimals to hundredths using concrete models or drawings.

Something to think about...

Order of Operations/Properties of Operations/Algorithms— This is the order that add, subtract, multiply, and divide is done in an equation. Remember PEMDAS:

P Parentheses first Ex. 6 × (5 + 3) = ? Add 5+3 and then multiply by 6 which is 6 × 8 = 48
E Exponents (ie Powers and Square Roots, etc.) Ex. 5 × 2² = ? The little ² means to multiply 2 times itself or 2 × 2 = 4. Then you multiply 5 × 4 so the answer is 20.
MD Multiplication and Division (left-to-right) Ex. If there no parentheses multiply or divide before you add or subtract. Always move from left to right. 2 + 5 × 3 = ? Multiply 5 × 3 first which equals 15 then add 2 so the answer is 17. If the problem is all multiplication and division and there are not parentheses, always go left to right. Ex. 30 ÷ 5 × 3 = ? Divide 30 by 5 which equals 6. Then multiply 6 times 3 which equals 18.
AS Addition and Subtraction (left-to-right) Ex. If there no parentheses and you need to add and subtract, always go left to right. Ex. 6—2 +5 = ? Subtract first, 6—2 = 4 then add 5 so the answer is 9.
Math Standards: Measurement & Data Grades K-2

Tips from the Trade

Give students a small pile of various coins. First have them count the number of coins. In the example below, the number of coins would be 12. Next have students separate the coins by what they are. Then on the chart they write the name of the coin, how many they have of that coin, and the value. Then they total the value of all of the coins. You can modify this to meet the needs of younger students by giving them only one or two types of coins and limiting the value so they can add by 5’s or 10’s.

Note: Math is Fun is a good website for definitions and easy to understand examples. This idea is on their website.

What is essential [most important] for students to know and be able to do to master this standard?
- Measure length with an appropriate tool.
- Compare different units of measure.
- Estimate length.
- Compare length of objects.
- Solve for an unknown length in a word problem.
- Represent whole numbers on a number line and use to add or subtract.
- Tell time.
- Solve word problems involving money.
- Gather and represent measurement data using a line plot.

Strategies and activities that will help students meet this standard. Ask students to:

1. Measure an object using non-standards units. (e.g., same length pencils, paperclips).
2. Measure and compare two objects with a standard [ruler] or non-standard tool [paperclips]
3. Estimate length using non-standard units.
4. Measure to determine how much longer one object is than another using a non-standard unit.
5. Solve addition word problems involving length.
6. Demonstrate that moving forward is addition and moving backwards is subtraction on a number line.
7. Tell time to the nearest hour on digital and analog clocks. [clock with numbers and hands]
8. Identify coins/bills and match to their values and corresponding symbol ($, ¢). [Use only dollar bills, quarters, dimes, nickels and pennies]
9. Select the correct coins and/or bills to match a given amount.
10. Graph given measurement data on a line plot.
11. Create a picture graph, using data that is given to you and answer questions about the graph.

<table>
<thead>
<tr>
<th>Coin</th>
<th>How Many</th>
<th>Value [Amount]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quarter</td>
<td>2</td>
<td>50¢</td>
</tr>
<tr>
<td>Penny</td>
<td>5</td>
<td>5¢</td>
</tr>
<tr>
<td>Nickel</td>
<td>5</td>
<td>15¢</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>70¢</td>
</tr>
</tbody>
</table>

Something to think about...

Non-standard unit: The answer will not be in inches. It would be the number of pencils, paperclips or whatever the student is using as a measurement tool.
What is essential [most important] for students to know and be able to do to master this standard?

- Tell time.
- Solve real world problems involving time and money.
- Equivalent measurement
- Organize and represent data.
- Properties of volume
- Measure volume.
- Relate volume to addition and multiplication.

Strategies and activities that will help students meet this standard. Ask students to:

1. Tell time to the nearest 30 minutes.
2. Solve word problems involving addition of time intervals in 30 minutes.
3. Measure liquid volumes and masses of objects using standard units of measure (e.g., measuring cup, scale).
4. Solve addition and subtraction 1-step, real-world word problems involving mass, volume or money (e.g., weight of a book bag before and after a library book is removed).
5. Solve measurement word problems using the four operations involving distances, mass and money.
6. Identify whether a measurement is “larger than,” “less than” or “same as” another measurement within the same system of units (e.g., 1.5 kg is larger than 500 g).
7. Create scaled bar graphs from given or collected data sets and interpret the graph, including solving 1-step and 2-step “how many more” and “how many less” problems.
8. Find the area of rectangles and triangles by counting unit squares and understand that a square with a side length of 1 unit is called a “unit square.”
9. Find the perimeter of polygons drawn on graphing paper by counting the length of the sides.
10. Identify 30, 45, 60 and 90 degree angles.

Something to think about…

Volumes are liquid measurements so a measuring tool could be a measuring cup
Masses of objects are solid objects so a measuring tool could be a scale
Four Operations are addition, subtraction, multiplication and division
Area of a Rectangle is width times height
Area of a Triangle is 1/2 the base of the triangle times the height
Polygon are 2-dimensional shapes. They are made of straight lines, and the shape is “closed” (all the lines connect up).

This is a polygon

This is not a polygon because it has curves

This is not a polygon because it is not closed

Perimeter of a Polygon is the sum of all of it’s lines or sides.
Math Standards: Geometry Grades: K-2

Tips from the Trade

Give students a small pile of shapes. [The Math is Fun website has shapes that you can print out in color or on colored paper and cut out. Google: Math is Fun—select geometry—scroll down to Activity Sorting Shapes, it has 2 hands beside it.] Have younger students sort the shapes by color, by size, and then in an AB pattern. An example of an AB pattern is circle, square, circle, square and so on. You can use any 2 shapes. Older students can have more complicated patterns. Example: ABBBCAB which could be square, circle, circle, triangle, square, circle. The trick to a pattern is each letter of the alphabet stands for only 1 shape in any given pattern. So A could be a circle in one pattern and could be a triangle in the next.

Note: You don’t need to name the patterns AB, AB, and so on, just have students practice making simple patterns.

What is essential [most important] for students to know and be able to do to master this standard?

- Identify shapes.
- A rectangle can be partitioned into same-size squares.
- A whole can be partitioned into sets of equal parts.

Strategies and activities that will help students meet this standard. Ask students to:

1. Sort shapes by non-defining attributes (size, color, orientation).
2. Sort objects in the environment by their shape. Ex. A window could be round, square, a rectangle and so on.
3. Describe the position of objects using terms such as “above”, “below”, “beside”, and “next to”.
4. Identify three-dimensional shapes in the environment.
5. Partition circles into two or four equal parts; identify the parts as “halves,” “quarters,” “half of,” “a third of” or “a quarter of;” and identify the whole as “two halves,” “three thirds,” “four fourths” or “four quarters.”

Toy blocks are examples of a cube.

Something to think about…

A 2-dimensional shape is flat. A circle drawn on paper is 2-dimensional.

A 3-dimensional shape is solid. A window in the shape of a circle is 3-dimensional.
Math Standards: Geometry Grades: 3-5

Tips from the Trade
Students like to practice plotting points on a coordinate plane. Give students a sheet of graph paper and have them draw the X and Y axis. You can use the middle horizontal line for the X axis and the middle vertical line for the Y axis. Then give them a short list of plots to find. Students can work in pairs or independently. Students who get the most plots correct could earn a prize or extra time doing an activity they enjoy.

What is essential [most important] for students to know and be able to do to master this standard?

- Plot coordinates on a graph.
- Categories of shapes have similar attributes.
- Classify shapes.

Strategies and activities that will help students meet this standard. Ask students to:

1. Identify and plot points on a coordinate plane (all quadrants).
2. Sort quadrilaterals and triangles.
3. Identify points, lines, line segments and rays.
4. Partition circles into two or four equal parts, identify the parts as “halves,” “quarters,” “half of,” “a third of” or “a quarter of,” and identify the whole as “two halves,” “three thirds,” “four fourths” or “four quarters.”
5. Identify the line of symmetry of a figure.
6. Sort objects in the environment by their shape.
7. Describe the positions of objects using terms such as “above,” “below,” “beside” and “next to.”
8. Identify three-dimensional shapes in the environment.

Something to think about...

This is a coordinate plane: x is the horizontal line [axis] and y is the vertical line [axis]. Each square is numbered 1, 2, 3, and so on. Numbers to the left of 0 or below 0 are negative numbers, e.g. -1, -2, -3 and so on. Finding the plot of (2, 3) would be to go 2 spaces on the x axis and up 3 spaces on the y axis. Place a dot where these points cross.

Quadrilaterals are shapes with 4 straight sides. These are all examples of quadrilaterals.

Line segments have definite starting and ending points. Segment is important because a line normally goes both directions without an end.

Ray is a line with a starting point and no ending point; it goes on without end.

Line of Symmetry is the imaginary line where you could fold a picture or shape in half and have both halves match exactly.
Math Standards: Geometry Grades: 6-8

What is essential [most important] for students to know and be able to do to master this standard?

- Demonstrate rotations (turns), reflections (flips), and translations (slides).
- Properties of shapes stay the same regardless of orientation or size.
- Describe the manipulation or resizing of geometric figures.
- Properties of angles
- Pythagorean Theorem is a formula that only applies to right triangles.
- Pythagorean Theorem
- Volume of cones, cylinders and spheres

Strategies and activities that will help students meet this standard. Ask students to:

1. Demonstrate that the area of all rectangles is length \( \times \) width (e.g., multiply side lengths to find the area of rectangles with whole-number side lengths).
2. Find the area of rectilinear figures by decomposing them into non-overlapping parts and using the length \( \times \) width formula to find the areas and then sum together to find the total area of the figure.

3. Identify the polygon in a coordinate plane when given the coordinates of the vertices or where the lines meet.
4. Represent three-dimensional figures using nets.

5. Demonstrate that unit cubes can be used to build figures that have volume and determine the volume of a figure.
6. Identify the scaled drawing of a geometric figure (e.g., which shape is twice the size of another shape).
7. Solve real-world problems involving the area of figures involving rectangles and right triangles.
8. Sort angles by type (right, acute, obtuse, straight, reflex).
9. Identify the radius, diameter and center of a circle.
10. Determine whether a rotation, a reflection or a translation is needed to make a figure congruent to another.
11. Describe the effect of rotation (turn), reflection (flip) and translation (slide).
12. Match shapes in different orientations and sizes.
13. Identify the parts of a right triangle (right angle, legs, hypotenuse).
14. Identify a right triangle when drawn on a coordinate plane.

Something to think about…

See the next page for definitions and examples of figures.

Note: The Math Is Fun website is an excellent resource that provides easy to understand definitions of terms and examples of all of the angles, spheres, cones etc.  www.mathisfun.com
Rectilinear is a figure made up of straight lines.

Decompose is to take a figure apart to find the area of each of the shapes separately. Then you add the areas together to get the total area of the original figure.

A Polygon is two-dimensional shape with straight sides. Ex. triangles, octagons, rectangle.

Coordinate Plane is the figure that shows the x and y axis [graph]. Example:

A vertex (plural: vertices) is a point where two or more straight lines meet.

A unit cube, is a cube whose sides are 1 unit long. The volume of one 3-dimensional unit cube is 1 cubic unit.

Volume is length x width x height. It doesn't really matter which one is length, width or height, so long as you multiply all three together.

Types of angles:

Radius is the distance from the center of the circle to the outside edge. Is is 1/2 of the diameter.

Diameter is a straight line going through the center of a circle.

Congruent means same size and shape. Two shapes are congruent if you can turn [rotate], flip [reflect] and/or slide one so it fits exactly on the other.

Parts of a Right Triangle: A right triangle is a triangle that has one right angle. The side across from the right angle is called the hypotenuse and the other two sides are called the legs.
**Math Standards: Ratios and Proportional Relationships Grades: 6-8**

**Tips from the Trade**

Most students need a lot of practice solving unit rate problems. Typically they are word problem and students have difficulty figuring out what formula to use.

You can make up your own problems by using the Math is Fun website. The Ohio Resource Center website offers lessons, videos, and activities to help students. The following will help you locate an introduction to ratios and beyond. Search www.orc.org when the site is open under search. Type "math ratios". When it opens, look to the right and click on "Modify Your Search" - Click the following areas: math, grades 6, 7, & 8, and content supports. Click "Search". Several lessons will appear that you can select from. The introductory lesson is a video that students or you could view.

**Notes:**

What is essential [most important] for students to know and be able to do to master this standard?

- Create and solve ratios.
- Represent proportional relationships.
- Use ratios to solve real-world problems.
- Ratios and proportional relationships can be used to determine unknown quantities.

Strategies and activities that will help students meet this standard. Ask students to:

1. Identify the ratio that describes a relationship between quantities (e.g., for every vote candidate A received, candidate C received nearly three votes).
2. Solve for unit rate (e.g., It took James 2 hours to drive 40 miles, on average. How fast did he drive?).
3. Write a percent as a rate per one-hundred (e.g., 30 out of 100 is 30% is 30/100).
4. Use proportional reasoning to find the whole when given both the part and the percent. (50% = 20 out of x)
5. Recognize the part as a whole when given both the part and the percent.
6. Given a visual model or manipulative, identify ratios involving whole numbers.
7. Given coordinate pairs involving whole numbers, identify the rule.
8. Given a ratio table involving whole numbers, identify the ratio.

**Something to think about…**

A ratio says how much of one thing there is compared to another thing. There are 3 blue squares to 1 yellow square. Ratios can be written as 3:1, or 3 to 1 or as a fraction 3/1.

- What is the ratio of apples to oranges? ___ to ___
- What is the ratio of oranges to apples? ___ to ___
- What is the ratio of apples to all fruits? ___ to ___
- What is the ratio of oranges to all fruits? ___ to ___

Ratio Table Example:

<table>
<thead>
<tr>
<th>Fruit</th>
<th>Apples</th>
<th>Oranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Formula for solving unit rate problems. In this example, distance [d] equals 495 miles and rate [r] equals 55 miles per hour.

\[
\text{rate} = \frac{\text{distance}}{\text{time}}, \quad r = \frac{d}{t}
\]

This formula can be rewritten to solve for distance: \( d = rt \), or time, which is what we're looking for.

\[
\frac{d}{r} = \frac{495}{55} = 9 \text{ hours}
\]
**Math Standards: Numbers & Operations—Fractions Grades: 3-5**

**Tips from the Trade**

If you have pizza one evening in your program, play a game with fractions. [Make sure the pizza is cut into triangles as show below.] Example: If you order 3 pizzas, ask the students how many halves that would be; how many 1/3’s and so on. You can also tell them that half of each pizza has to be eaten before the second half of any pizza can be eaten. If you have a large group of students you may want to divide the pizzas and students into teams.

**What is essential [most important] for students to know and be able to do to master this standard?**

- Add and subtract fractions.
- Fraction word problems
- Fractions represent division problems.
- Multiply fractions.
- Multiplying by a whole number produces a bigger product; multiplying by a fraction produces a smaller product.
- Multiplication word problems involving fractions.
- Divide whole numbers by fractions.

**Strategies and activities that will help students meet this standard. Ask students to:**

1. Recognize that 1/b is the fraction created when a number line running from 0 to 1 is partitioned into b equal parts, up to 10 (e.g., when b = 3, 1/3 means dividing the whole into 3 equal parts with each part representing 1/3).
2. Identify equivalent fractions by comparing their relative size using a number line (e.g., 2/5 on a number line partitioned into 5 equal parts is equivalent to 4/10 on a number line partitioned into 10 equal parts). Note: Use the same spot on the number line for each fraction to help students see how they are equal.
3. Compare two fractions with same denominator using >, < or = symbols.
4. Add and subtract fractions with different denominators using models.
5. Solve addition and subtraction word problems involving fractions with different denominators using models.
6. Recognize that multiplying a fraction by a whole number is similar to taking a fraction of each whole piece and summing them together (e.g., 4 × 1/5 = 1/5 + 1/5 + 1/5 + 1/5 = 4/5).
7. Recognize that multiplying by a fraction is similar to creating a model of the first fraction then scaling each part by the other fraction (e.g., 1/2 × 1/3 is similar to dividing a whole rectangle into two equal parts and then dividing each equal part into three equal parts to arrive at 1/6).

**Notes:**

**Something to think about…**

Denominator is the bottom number in a fraction. It says how many parts something is divided into. The top number [numerator] says how many pieces you have of the parts. So 3/4 means something is divided into 4 parts and you have 3 of them.

**Math Model adding fractions with different denominators.**

To add fractions with different denominators you must make the denominators the same. Since 6 is twice as big as 3 you multiply the top and bottom number of the fraction 1/3 times 2 which equals 2/6. Now you can add 2/6 + 1/6 that equals 3/6. And it can be reduced to 1/2.
Math Standards: The Number System Grades: 6-8

Tips from the Trade

Fractions are often difficult for students to grasp so they need a lot of practice. The Ohio Resource Center website offers lessons, videos, and activities to help students. The following will help you locate problems, puzzles, and other activities that use fractions. Search www orc org when the site is open under search. Type "fractions". When it opens look to the right and click on "Modify Your Search" - Click the following areas: math, grades 6, 7, & 8, and content supports. Click "Search". Several lessons will appear that you can select from.

Also try Illuminations nctm org for other lesson ideas.

Notes:

What is essential [most important] for students to know and be able to do to master this standard?

- Identify rational and irrational numbers.
- Estimate the values of numbers.
- Completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers.

Strategies and activities that will help students meet this standard. Ask students to:

1. Recognize that dividing a whole number by a fraction is separating the whole into the required fractional parts and counting how many parts are in the total (e.g., 1 divided by 1/3 means divide the whole into 3 equal pieces and count the parts to arrive at 3).
2. Divide multi-digit whole numbers up to three-digit whole numbers by one or two digit numbers.
3. Add, subtract and multiply multi-digit decimals using models.
4. Solve problems involving positive and negative numbers using a number line (e.g., temperatures, distances from a fixed point).
5. Recognize that the absolute value of a rational number is how far it is from 0 on the number line (i.e., plot a number and its opposite on a number line and recognize that they are equidistant from zero).
6. Add and subtract fractions with different denominators using models.
7. Solve addition and subtraction word problems involving fractions with different denominators using models.
8. Recognize that multiplying a fraction by a whole number is similar to taking a fraction of each whole piece and summing them together (e.g., 4 \times \frac{1}{5} = \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \frac{4}{5}).
9. Recognize that multiplying a fraction by a fraction is similar to creating a model of the first fraction and then scaling each part by the other fraction (e.g., \frac{1}{2} \times \frac{1}{3} is similar to dividing a whole rectangle into 2 equal parts and then dividing each equal part into 3 equal parts to arrive at \frac{1}{6}).

Something to think about...

Absolute value means how far a number is from 0. For example: "6" is 6 away from zero, and "−6" is also 6 away from zero. So the absolute value of 6 is 6, and the absolute value of −6 is also 6.

Rational Number is any number that can be written as a ration or simple fraction. Example: 1.5 is rational, because it can be written as the ratio [or fraction] 3/2.
Math Standards: Expressions & Equations Grades: 6-8

What is essential [most important] for students to know and be able to do to master this standard?

- Know how to evaluate numerical expressions that contain exponents.
- Evaluate square root and cube root of perfect squares and cubes.
- Understand the powers of 10.
- Scientific notation
- Graph and compare slope.

Strategies and activities that will help students meet this standard. Ask students to:

1. Apply properties of operations to generate equivalent expressions (e.g., \(3(2 + x) = 6 + 3x; y + y + y = 3y\)).
2. Represent a real-world situation using an algebraic expression involving a variable (e.g., \(8 + a = 10\) models; I start with 8 apples and now have 10).
3. Solve an algebraic expression involving variables.
4. Create a representation of a perfect square
5. Determine whether a line has a positive, a negative, or no slope.
6. Identify the operation needed to solve a given 1-step linear equation (the inverse operation).
7. Locate the point where two lines intersect [meet].

Something to think about…

Properties of Operations is the order in which you solve an equation.
Step 1: Solve what is in the parenthesis first. Ex.: \(6 \times (5+3) = 6 \times 8 = 48\)
Step 2: Multiply or divide before you add or subtract. Ex. \(2 + 5 \times 3 = 2 + 15 = 13\)
Step 3: Always start from the left and go right on problems that contain multiplication and division or addition and subtraction and no parenthesis. Ex: \(30 + 5 \times 3 = 6 \times 3 = 18\) or \(6 - 4 + 8 = 2 + 8 = 10\)

Perfect square is a number made by squaring a whole number. Ex. \(4^2 = 4 \times 4 = 16\). So, 16 is a perfect square.

A one step linear equation, only has one variable \([x]\). Ex: \(3x + 2 = 11\). The operation to solve this equation is the inverse operation which has the opposite effect. Example: \(10 - 6 = 4\) can be “undone” by adding \(6 + 4 = 10\). To solve the equation of \(3x + 2 = 11\) looks as follows:

Step 1: \(3x = 11 - 2\) [Inverse operation because when a number is moved from one side of the = sign to the other, the opposite operation must be done. Since the operation was to add, the inverse on the other side of the = sign would be to subtract 2]
Step 2: \(3x = 9\)
Step 3: \(x = 9/3\) [Inverse operation since x was multiplied by 3, then 9 must be divided by 3]
Answer is \(x = 3\)

The slope of a straight line shows how steep it is. A positive slope is when the left end of the line goes up and to the right. A negative slope is when the left end goes down and to the right. No slope is when a horizontal line stays straight. Examples.

Positive Slope because the line goes up 4 squares and to the right 2 squares. So the slope is calculated as \(4/2\). Reducing the fraction gives a slope of 2.

Negative Slope because the line goes down 4 squares and to the right 2 squares. So the slope is calculated as \(-4/2\). Reducing the fraction gives a slope of \(-2\).
Math Standards: Functions Grades: 6-8

What is essential [most important] for students to know and be able to do to master this standard?

- Specific input will yield specific output.
- Compare/contrast two different input/output relationships.
- Equations of linear and non-linear functions
- Construct a linear graph using a table or equation
- Construct a linear graph as described verbally.

Strategies and activities that will help students meet this standard. Ask students to:

1. Classify graphs of functions as linear or non-linear.

2. Match a function to its graph.
3. Determine the x and y intercept points for a linear graph.

Something to think about…

Linear function: \(2x + y - z = 4\)  Non-linear function \(2x + y^2 - z = 4\) [The exponent 2 causes the equation to be non-linear.]

<table>
<thead>
<tr>
<th>Linear Function</th>
<th>Square Function</th>
<th>Cube Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>(f(x) = mx + b)</td>
<td>(f(x) = x^2)</td>
<td>(f(x) = x^3)</td>
</tr>
</tbody>
</table>

Note: See Math Is Fun website. Search Common Functions Reference
Math Standards: Statistics & Probability Grades: 6-8

What is essential [most important] for students to know and be able to do to master this standard?

- Describe patterns on a graph.
- Describe patterns on a graph using a line of best fit.
- Describe patterns on a graph using slope and intercept.
- Construct a two-way table and interpret association between the two variables.

Strategies and activities that will help students meet this standard. Ask students to:

1. Compute the median and the mode of a data set involving numbers less than 50 (e.g., summer days over 90 degrees).
2. Construct and analyze a line plot from a given or collected data set.
3. Determine the probability of an event occurring as likely, unlikely, certain or impossible.
4. Determine whether patterns on a scatter plot are positive, negative or have no correlation.

Something to think about...

Median means in the middle. To find the Median, place the numbers you are given in order of their value and find the middle number.

Ex. 

\[
\begin{array}{ccccccc}
10 & 11 & 13 & 15 & 16 & 23 & 26 \\
\end{array}
\]

Mode is the number which appears most often in a set of numbers. Ex. (6, 3, 9, 6, 6, 5, 9, 3) 6 is the mode because it occurs most frequently.

Line Plot is the x and y coordinates that you put on a graph to show the beginning and ending points on a line. The coordinates are written with x first then y. You start counting at the center of the graph.

Probability is the change that something will happen.

Scatter Plot is a graph of plotted points that show the relationships between 2 sets of data. Examples of correlations.
**Science Standards: Earth and Space Grades: K-2**

**Tips from the Trade**

This is a fun demonstration to show what happens when air gets warmer. What you want students to learn is that air needs more room when it gets warmer.

You will need:
- An empty bottle, such as a 2 liter soda bottle
- A balloon
- A pot of hot water—not boiling

Stretch the balloon over the top of the bottle. Set it in the hot water and watch what happens.

The balloon should expand to show that warm air needs more space than cooler air.

[Note: This is a demonstration and students should watch and guess why the balloon expands. Keep students safely away from the hot water.]

Science For Kids is a good website to find experiments in all areas of science. The experiment above came from their website.

<table>
<thead>
<tr>
<th>What is essential [most important] for students to know and be able to do to master this standard?</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Daily and seasonal changes in weather</td>
</tr>
<tr>
<td>- Sun as a source of energy</td>
</tr>
<tr>
<td>- Changes in physical properties of water</td>
</tr>
<tr>
<td>- Atmospheric properties</td>
</tr>
<tr>
<td>- Sun, moon and stars</td>
</tr>
</tbody>
</table>

**Strategies and activities that will help students meet this standard. Ask students to:**

1. Indicate which objects are found in the sky during the day and at night. [sun, moon, stars]
2. Describe types of weather changes. [rain, snow, cloudy, sunny]
3. Know that the sun warms an object.
4. Predict what happens when ice is put in a heated environment or when water is put into a cold environment. [ice melts and water freezes when in the freezer]
5. Know that air can be moved such as when a fan blows air.
6. Identify forms of water in the air (examples: clouds, rain, snow, humidity).

**Notes:**

*Science Standards: Earth and Space*
### Science Standards: Earth and Space Grades: 3-5

#### Tips from the Trade

The Soil and Water Conservation District in your area can provide you with activities or information on soil composition. Also, check out 4-H projects that focus on soil, rocks, and the solar system. Their materials are inexpensive and provide easy to use lessons and experiments.

### What is essential [most important] for students to know and be able to do to master this standard?

- Properties of the Earth’s resources
- Changes that occur to the surface of Earth and the impact of those changes
- Cycles and patterns in the Solar System

### Strategies and activities that will help students meet this standard. Ask students to:

1. Identify a resource as renewable or nonrenewable.
2. Match soil composition and where it can be found.
3. Sort rocks with similar characteristics (e.g., texture, color).
4. Identify that Earth’s surface consists of land (e.g., mountains, beaches, valleys, deserts) and water (e.g., salt water, frozen water, fresh water).
5. Compare or contrast the sun, planets, and moons that are found in the solar system.
6. Recognize that properties of the sun are the same properties that stars have.
7. Recognize that the Earth revolves around the sun while it rotates on its axis.

### Something to think about…

**Renewable Resources:** water, wind, sun  
**Nonrenewable Resources:** coal, oil  
**Soil composition** comes from the actions of weather on rock, and some from living sources. The material that comes from rock includes stones, sand, silt and clay and once-living plants and animals. **Axis** is an imaginary straight line that something (such as the Earth) turns around.
Science Standards: Earth and Space Grades: 6-8

What is essential [most important] for students to know and be able to do to master this standard?

- Rocks, minerals and types of soil
- Cycles and patterns of Earth and the moon
- Physical attributes of the Earth’s surface

Strategies and activities that will help students meet this standard. Ask students to:

1. Identify an object as a mineral or a rock.
2. Identify the properties of igneous (e.g., granite, basalt) or metamorphic (e.g., marble, quartzite) rocks.
3. Identify components of a rock cycle.
4. Identify evaporation, condensation, precipitation or transpiration (plants giving off water).
5. Recognize different stages in the lunar cycle (e.g., full moon, new moon).
6. Describe the difference between climate and weather.
7. Identify a gas that is naturally present in our atmosphere (oxygen, nitrogen, carbon).
8. Identify Earth’s core, mantle and crust.
9. Identify destructive and constructive processes that change Earth’s surface.
10. Explain how fossils indicate Earth’s history, environment changes and life on Earth.
11. Recognize that the crust is broken into plates that move.

Something to think about…

A mineral is an element that is normally crystalline and that has been formed as a result of geological processes. Examples: gold, silver, diamonds, nickel. Igneous, sedimentary and metamorphic rocks are the three main types of rock and the differences among them have to do with how they are formed.

Sedimentary rocks are formed from particles of sand, shells, pebbles, and other fragments of material. Metamorphic rocks are formed under the surface of the earth from the metamorphosis (change) that occurs due to intense heat and pressure (squeezing). Igneous rocks are formed when magma (molten rock deep within the earth) cools and hardens.

Fossils are physical traces of living things preserved in rock.

The earth’s crust is the outermost and thinnest layer of the earth. It is only a few miles thick under the oceans and averages 20 miles thick under land. The earth’s mantle the next layer and is very dense. This layer is made of hot, semisolid rock and is located directly below the crust. It is about 1,800 miles thick.

The earth’s core is innermost layer of the earth. It is an extremely hot, solid sphere of mostly iron and nickel. The inner core is 3,200 to 3,960 miles below the surface and about 750 miles thick.

The earth’s continents are constantly moving due to the motions of the plates. Movement of these plates causes volcanic eruptions and earthquakes and so on.

Evaporation occurs as transpiration through plants: water is taken up through roots and evaporates through the leaves as the plant takes in carbon dioxide.

Weather is the mix of events that happen each day in our atmosphere including temperature, rainfall and humidity.

Climate is the average weather pattern in a place over many years.

Constructive forces include volcanic eruption, and deposits of sediment, while destructive forces include weathering and erosion.

Note: a good website is: www.learner.org
**Science Standards: Life Science**  
**Grades: K-2**

**Tips from the Trade**
Create a chart like below and have students draw pictures or write the names of living and nonliving things.

<table>
<thead>
<tr>
<th>Living</th>
<th>Nonliving</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Make your own Fossils!**
There is a great video and step by step instructions on how to make fossils. There are also tips on what objects to use and where to find them. Follow the trail: www.homegrownfun.com—select “School”—scroll down to “Homemade Fossils Made Easy”.

**What is essential [most important] for students to know and be able to do to master this standard?**
- Living things have specific characteristics.
- Living things have basic needs.
- Living things meet their needs within their environments.
- Living things impact and interact with their environment in a variety of ways.

**Strategies and activities that will help students meet this standard. Ask students to:**

1. Identify a living thing and a nonliving thing.
2. Match function with identified body part, such as your mouth is for eating and your nose is for smelling. Identify the basic needs of plants and animals.
3. Match environmental resources needed for a specific living thing. [Ex. food, water, shelter]
4. Identify how an animal has changed an environment.
5. Recognize that fossils are physical traces of living things preserved in rock.

**Notes:**
Science Standards: Life Science Grades: 3-5

What is essential [most important] for students to know and be able to do to master this standard?
- Parents and offspring have many similarities.
- Plants and animals have life cycles that affect their ability to survive and reproduce in their environment.
- Plants and animals have traits and behaviors that impact their survival.
- Environmental changes may impact the survival of an organism.
- Fossils provide a point of comparison between the types of organisms that lived long ago and those existing today.
- All organisms require energy and can be categorized by their methods of energy acquisition.
- Food webs can be used to identify the relationships among producers, consumers and decomposers in an ecosystem.

Strategies and activities that will help students meet this standard. Ask students to:
1. Given a physical trait, match the trait to its specific function (e.g., birds have wings to fly).
2. Recognize one survival behavior a parent teaches his or her offspring.
3. Sequence the stages of an animal or plant life cycle from egg to adult.
4. Determine reasons for migration of animals. [Ex. A drought and there is no water.]
5. Identify environmental changes that occur suddenly or gradually.
6. Match fossils with a representation of the organism.
7. Identify predator/prey relationships in a food chain.
8. Recognize that plants use the sun’s energy.

Notes:

Something to think about...

Plant Life Cycle

Animal Life Cycle
Science Standards: Life Science Grades: 6-8

What is essential [most important] for students to know and be able to do to master this standard?
- All living things are composed of cells, and those cells carry on specific functions that sustain life.
- Matter cycles between organisms and between organisms and the environment to promote sustainability.
- The number, growth and survival of organisms and populations depend on the living and nonliving factors in the environment.
- Earth has many different environments that support a variety of organisms.

Strategies and activities that will help students meet this standard. Ask students to:
1. Recognize that cells can reproduce or divide.
2. Identify a plant and animal cell.
3. Identify various organelles in a cell.
4. Identify the term “photosynthesis” as the process by which plants make their own food.
5. Explain that the process that plants use to produce food is what produces oxygen for animals to breathe. Focus is on the interaction of organisms.
6. Identify what is required for cellular respiration (oxygen or sugar).
7. Explain how an animal population changes if resources become scarce.
8. Match a given ecosystem with its characteristics.
9. Match eggs to females and sperm cells to males.
10. Identify DNA as the source of traits.
11. Match animals to traits that help them survive in their environment.

Something to think about…

Organelles are the parts of a cell.

Diagram of Photosynthesis

An ecosystem or ecology is formed by a community of living organisms interacting with the environment in which they live. Ecosystems do not have any particular size. They can vary from being as small as an empty plot of land or as vast as an ocean. Read more at Buzzle: http://www.buzzle.com/articles/ecosystem-activities.html. This is a good website for your planning. Some topics are too complicated for students who are not in high school.

Personality traits are what define individuals. No two people can have the same combination of traits. Read more at Buzzle: http://www.buzzle.com/articles/personality-traits-list.html. Buzzle includes a huge list of traits that are both good and not so good. These would be great conversation starters, writing prompts, or as part of a social and emotional conversation about character.
Science Standards: Physical Science Grades: K-2

Tips from the Trade

Science for Kids has a great game to show students how force can change the motion of an object. You will need a computer and a way to project the image on a blank wall or screen so students can see the game or have students log on and play the game themselves. The site is: Science for Kids—select “Games”—scroll down to “Physical Processes”—select “Forces in Action” and start the game. You will need to play the game yourself before having students try it. There is a chart you can use or print to have students keep track of the truck’s distance. [Hint: if you decide to have students play the game on the computer yourselves you should have their computer set to where the game starts.] Option: If you have a track and small cars you could measure points such as 1 inch, 2 inches, and so on and have students work in pairs to send the car down the track and mark distances on a chart. Small items such as buttons could be taped to the car top to increase weight. To create a drag like the parachute, try tying a button to the back of the car so it drags on the ground. To change the gradient of the track, put a book or books under the track at the starting line.

What is essential [most important] for students to know and be able to do to master this standard?

- Properties of everyday objects and materials
- Motions of objects and how changes in motion can occur (force).

Strategies and activities that will help students meet this standard. Ask students to:

1. List properties of an object.
2. Identify at least one way to produce a sound from an object.
3. Identify a process that could change an object (e.g., a cup and a crushed cup).
4. Identify a force (push or pull) that changes the motion of an object.
5. Explain what can be done to make an object stop or move.

Something to think about…

Properties of an object that does not produce a new substance are defined as the physical properties. Changes in an object, like color, smell, crushing a can, melting an ice cube, or even breaking a bottle are some examples of physical properties. Read more at Buzzle: http://www.buzzle.com/articles/physical-properties-of-matter.html.
Science Standards: Physical Science Grades: 3-5

Tips from the Trade
Science Kids has a fun game for students to play involving circuits. If you have the ability to project the game on a blank wall, the game could be played as a group with different students answering each question. The website trail is: www.sciencekids.co.nz—select “Physics”—scroll down to “Games” and select “Electricity Circuits”.

What is essential [most important] for students to know and be able to do to master this standard?

- All objects are made of matter.
- There are different states of matter.
- The amount of matter stays constant.
- There are many forms of energy.
- Energy can be transformed or transferred.
- Sound and light are forms of energy that behave in predictable ways.
- Forces change the movement of an object.

Strategies and activities that will help students meet this standard. Ask students to:

1. Identify properties of solids, liquids and gases.
2. Identify forms of energy (e.g., heat, light, sound, electrical, magnetic).
3. Identify ways objects can be heated.
4. Recognize that the weight of an object remains the same before and after a property of the object has been changed.
5. Add an element to expand an existing circuit (e.g., switch, battery, speaker, fan, motor, light bulb).
6. Identify ways the speed of an object can be changed.
7. Match objects/tools/instruments to examples of sounds of various pitch.
8. Use a tool or object to create a reflection. [Think of things other than a mirror e.g. a window or a shiny car.]

Notes:

Something to think about...

A solid is rigid and has a distinct shape.
A liquid state does not have a defined shape; rather, its shape is defined by that of its container.
Gases lack a definite shape even when in a container.

Basic Circuit

![Basic Circuit Diagram]

Expanded Circuit

![Expanded Circuit Diagram]
Science Standards: Physical Science Grades: 6-8

Tips from the Trade
This experiment talks about molecules. Molecules are 2 or more atoms joined together. The experiment is to determine if molecules move faster in hot or cold water. Students can work in pairs. Each pair will need: a cup of cold water, a cup of hot water from the tap, one color of food coloring, and an eye dropper if the food coloring cannot be squeezed into the water at a drop at a time. Have students put a drop in each container as quickly as possible and watch what happens. If they watch closely they will notice that the food coloring spreads faster throughout the hot water than in the cold. The molecules in the hot water move at a faster rate, spreading the food coloring faster than the cold water molecules which move slower.

What is essential [most important] for students to know and be able to do to master this standard?

- All matter is composed of atoms.
- There are two categories of energy: kinetic and potential.
- The motion of an object can be described by its speed and the direction in which it is moving.
- The properties of matter are determined by the arrangement of atoms.
- Energy can be transformed or transferred in a variety of ways, but is never lost.
- Forces have magnitude and direction.

Strategies and activities that will help students meet this standard. Ask students to:
1. Recognize that the potential energy of an object changes based on its height.
2. Identify the speed and direction of a moving object.
3. Recognize that the kinetic energy.
4. Identify one or more common compounds (e.g., water, salt).
5. Identify the components of a given mixture.
6. Identify common elements (e.g., oxygen, hydrogen, iron, helium, calcium, carbon) found on the Periodic Table of the Elements [See page 45 for the Periodic Table and the elements given].
7. Describe what happens to an object as it loses energy (e.g., pendulum swings less, toy car slows down).
8. Determine the type of interaction between objects (e.g., static, electrical, magnetic or gravitational).
9. Identify the direction of the different forces acting on an object.
10. Conduct an experiment to show how force on an object can change direction.

Something to think about…
Matter has weight and takes up space [Ex. cup, book, basketball]. Atoms are the basic building blocks of matter.

Energy makes change possible such as cars moving down a road. It is defined as the ability to do work. Energy comes in two forms either potential or kinetic. Potential energy comes in forms that are stored including — chemical, gravitational, mechanical, and nuclear. Kinetic energy forms are doing work — like electrical, heat, light, motion, and sound. www.eia.gov/kids is a good website for lessons and activities to do with students around energy. Compounds are made of two or more elements or ingredients. Example: Water = H₂O is 2 elements of hydrogen + 1 element of oxygen. wwwchem4kids is a great website for you and the students. Static, electrical, magnetic and gravitational are different types of forces that create movement in objects. See www.physics4kids.com for definitions that are easy to understand for you and the students.
# Physical Science: Grades: 6-8 Continued

## Periodic Table of the Elements

Courtesy of the Los Alamos National Laboratory

<table>
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<tr>
<th>Period</th>
<th>Group 1 (IA)</th>
<th>Group 2 (IIA)</th>
<th>Group 3 (IIIA)</th>
<th>Group 4 (IVA)</th>
<th>Group 5 (VA)</th>
<th>Group 6 (VIA)</th>
<th>Group 7 (VIIA)</th>
<th>Group 8 (VA)</th>
<th>Group 9 (IA)</th>
<th>Group 10 ( VIA)</th>
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**Lanthanide Series**

| 57 | La | 138.91
| 58 | Ce | 140.12
| 59 | Pr | 140.91
| 60 | Nd | 144.24
| 61 | Pm | 145.00
| 62 | Sm | 150.36
| 63 | Eu | 151.96
| 64 | Gd | 157.25
| 65 | Tb | 158.93
| 66 | Dy | 162.50
| 67 | Ho | 164.93
| 68 | Er | 167.26
| 69 | Tm | 168.93
| 70 | Yb | 173.04
| 71 | Lu | 174.97

**Actinide Series**

| 89 | Ac | 227.03
| 90 | Th | 232.04
| 91 | Pa | 231.04
| 92 | U  | 238.03
| 93 | Np | 237.05
| 94 | Pu | 244.06
| 95 | Am | 243.06
| 96 | Cm | 247.07
| 97 | Bk | 247.08
| 98 | Cf | 251.07
| 99 | Es | 252.08
| 100| Fm | 257.04
| 101| Md | 262.01
| 102| No | 269.07
| 103| Lr | 267.06

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Social Studies: History  Grades: K-2

Tips from the Trade

Invite families to come in and share their backgrounds and childhoods.

Have students create a timeline of important events that they remember in their life.

Jog their memories with ideas such as: when they first learned to ride a bicycle, lost their first tooth, first day of school, or a special birthday celebration.

What is essential [most important] for students to know and be able to do to master this standard?

Historical Thinking and Skills

- Then and now (changes over time)
- Heritage
  - Traditions and customs of the family and country
  - Food and shelter
  - People who lived in the past affect today.
  - Everyday technology

Strategies and activities that will help students meet this standard. Ask students to:

1. Place a series of personal events in chronological order.
2. Identify today, tomorrow and yesterday on a calendar.
3. Share and communicate about personal pictures/experiences over time.
4. Identify a family tradition.
5. Identify things you need (human needs).
6. Provide information about a family member’s life or past.
7. Describe the functions of various technologies (e.g., washing machine for cleaning clothes, computer for doing homework).

Something to think about…

Chronological—arranged in order according to time.

www.kids.usa.gov is a good website for all types of historical information for students, information for teachers and videos.
Social Studies: History Grades: 3-5

Tips from the Trade

www.kids.usa.gov is a good website for all types of historical information for students, information for teachers and videos.

Have students create a timeline of their life with pictures and important objects.

In pairs, have students research the background or history of their town or state.

Ask students to work in small groups and compare and contrast tools used in farming in the 1800’s with tools used today.

What is essential [most important] for students to know and be able to do to master this standard?

Historical Thinking and Skills
• Communities, states and countries change over time.

Heritage
• Societies in the past influenced each other and still influence our society today:
  ◦ cultural practices
  ◦ products.

Early Civilizations
• Every civilization (society) has systems or structures (government, social structures, religions, technology, agricultural products and practices).

Strategies and activities that will help students meet this standard. Ask students to:

1. Sequence a series of events in Ohio history showing the years.
2. Create a personal history narrative, including photographs and personal artifacts.
3. Describe changes in the local community (e.g., new stores, houses and other constructions).
4. Identify or recognize groups of people that have lived in Ohio in the past (Adena/Hopewell Indians, settlers, Amish, immigrants, etc.).
5. Identify or recognize different groups that explored and colonized America.
6. Identify similarities between life today and life in the past (e.g., farming, government, use of language, recreation/games).

Something to think about...

Adena/Hopewell Indians: The Hopewell Indians existed in Ohio from about 100 B.C. to A.D. 500. The major Hopewell sites are geometric and hilltop enclosures along with burial mounds. For the most part, these sites are found in the river valleys of central and southern Ohio.

Amish groups seek to be separated from the non-Amish (English) world. There is generally a heavy emphasis on church and family relationships. They typically operate their own one-room schools and discontinue formal education at grade eight (age 13/14). They value rural life, manual labor and humility.
Social Studies: History Grades: 6-8

What is essential [most important] for students to know and be able to do to master this standard?

Historical Thinking and Skills
- Events over an expanded span of time can be secured.
- A historical event or period can be viewed from different perspectives.

Early Civilizations
- Ideas (government, economics, social structures, etc.) and practices (culture, art, architecture, etc.) have shaped civilization today.
- Development of civilizations was influenced by geography (location, on water for trade, etc.).
- Today's cultures were influenced by these past cultures.

Feudalism and Transitions
- Radical new ideas can lead to major cultural changes.

First Global Age
- As cultures and civilizations expand, they change and change those they come in contact with.
- These changes that happened in the past still affect us today.

Colonization to Independence
- Dissatisfaction with the way things are (economic, religious, government, etc.) can lead to change

A New Nation
- When changes occur, dissatisfaction with the change can lead to more changes (political, social, economic relationships, power and control).
- Sometimes dissatisfied groups can unite for a common cause (attack by a foreign invasion).

Expansion
- When people want or need more than they have (land and resources), it leads to expansion (to acquire land and resources for their own use).

Civil War and Reconstruction
- When disputes occur, there are always two or more sides that believe they are right.
- When the disputes end, there are no clear “winners.” Nobody gets everything they want.
- Dissatisfaction over the results leads to more change.
- These results and changes have both positive and negative effects.

Strategies and activities that will help students meet this standard. Ask students to:
1. Sequence a series of events in history over an extended time period.
2. Identify key physical and human features of societies (e.g., houses, rivers, mountains, roads, buildings).
3. Identify why or how things change in the home, school or community.
4. Identify places you have never been or would like to go.
5. Identify how you would change something.
6. Explain or demonstrate why something makes you or others dissatisfied. (e.g., Why were the colonists dissatisfied?)
7. Identify and explain why a community expands (e.g., more jobs, better roads).
8. Distinguish between examples of agreement and disagreement based on a given situation.
9. Explain the meaning of compromise.

Note: www.kids.usa.gov is a good website for all types of historical information for students, information for teachers and videos.
Social Studies: Geography Grades: K-2

Tips from the Trade
National Geographic has numerous map activities for all ages of students. This activity will help students learn basic features on a map and identify land and water animals. There is a video lesson and worksheets that can be downloaded and copied for students to use. The trail is: education.nationalgeographic.com—select “Collections”—scroll to “K-5” & select “Maps”—Under “Filter your results” further select “Grades” & “Age” and click “K-2”—scroll down to “Land, Water and Animals”

Notes:

What is essential [most important] for students to know and be able to do to master this standard?

Spatial Thinking and Skills
• All maps contain basic visual or tactile information and basic symbols (e.g., legend, compass).

Human Systems (This has a cultural element, which is more about their development and how one can influence another if they live in proximity than about beliefs.)
• Where we live determines how we live (use of natural resources, dress for different weather; locations – e.g., church, school, city, farm, play; learn from other cultures).
○ How we live changes over time (once used horses to work fields, now tractors).

Places and Regions
• Natural structures (lakes, forests, islands) vs. human structures (houses, skyscrapers).
• This includes how a place influences the number of people who live there (city) and the type of work they do (don’t farm in the city).

Strategies and activities that will help students meet this standard. Ask students to:
1. Locate basic features on a map (e.g., ocean, land).
2. Identify things that people build.
3. Match activities to the appropriate physical and human environment.
4. Identify ways in which people in different cultures are both similar and different (e.g., cultures might have different foods, clothing and customs).

Something to think about...

Map Features: www.ducksters.com has lots of maps that you can enlarge to show what a legend looks like and other features. This is only one of many definitions of the 5 basic features of a map.
1. Orientation - What way is up and usually north on the page.
2. Legend - Explanation of the symbols used to show airports, hospitals, lakes, and so on
3. Title - Tells you what the map is of
4. Scale line - How the map scale is given and how it can be worked out. Ex. 1/2 inch may equal 50 miles. [K-2 students will not use this but it is good for them to know this is another way of measuring.]
5. Latitude and Longitude scales - How latitude and longitude are shown on the map, and where the prime meridian lies. [This is not something K-2 students will need to know.]
Social Studies: Geography Grades: 3-5

What is essential [most important] for students to know and be able to do to master this standard?

Spatial Thinking and Skills
- Identify and use maps and map tools.

Places and Regions
- Where you live (available natural resources, economic resources, cultural resources) influences how you live.
- This is true for communities, states, regions, countries.

Human Systems
- Humans affect their environments in unique ways.
- This has been happening since prehistoric times.
- As our needs change, we change the environment to meet those needs (tear down buildings to build parks, reduce pesticides to make the ground water safe).
- These changes have both positive and negative consequences on the climate, culture, transportation (types needed in specific regions or to move products to markets), people (move where jobs are, immigration from other countries) and expansion.

Strategies and activities that will help students meet this standard. Ask students to:

1. Use a map and map tools (e.g., legend, alphanumeric grid lines) to locate familiar landmarks, streets and other features.
2. Recognize the difference between man-made and natural features on a map.
3. Identify physical characteristics on a map or globe (e.g., land, water, mountains).
4. Identify the natural resources in Ohio.
5. Identify different regions of the United States (e.g., North, South, East, West).
6. Identify the results of using tools to modify the environment (e.g., buildings, parking lots, water pipes, railroads, roads, bridges).
8. Identify different groups that have historically lived in or settled in the Ohio region (e.g., Native Americans, European immigrants).

Something to think about…

Alphanumeric grid lines on a map is the combination of numbers and letters used to locate cities or other landmarks. The red star shows the alphanumeric grid lines of E5.
Social Studies: Geography Grades: 6-8

Tips from the Trade

National Geographic has a large selection of maps that show migration, climate, and so on. Use this trail: education.nationalgeographic.com—under “Teacher Resources” select “Activities”. Under “Filter your results” further select grades 6-8. There are 13 pages of different activities dealing with maps. Each activity can be downloaded and then copied.

Sample Climate Map for a Tropical Storm

What is essential [most important] for students to know and be able to do to master this standard?

Spatial Thinking and Skills
- Maps and globes are used to identify a wide range of human and natural geographic features.

Places and Regions
- Places and regions can be described (temperature, languages spoken, climate, physical environment – mountains, plains, natural resources, products, income, industrial versus agricultural).

Human Systems
- Where you live influences how you live (cold climates have fewer people; living on or near water may influence shipping and transportation).
- Geographic factors influence how you live (surrounded by mountains may make travel difficult).
- Factors may cause people to leave one area for another (lack of jobs, war, famine, discrimination.)
- Movement of people influences change (cultural, transportation, technology, communication).
- Movement and expansion has had positive and negative consequences.

Strategies and activities that will help students meet this standard. Ask students to:

1. Use the appropriate map to locate various places or information.
2. Recognize that maps of the same location can look different depending on the purpose.
3. Locate the major features and landforms on a globe in relation to the equator and prime meridian.
4. Draw/trace the route between two given locations on a map.
5. Identify physical characteristics of Ohio.
6. Identify transportation and communication technologies from the past (e.g., horses, stagecoach, Pony Express, telegraph).
7. Describe reasons why people move away from or to an area.

Notes:
Social Studies: Government Grades: K-2

Tips from the Trade

Have students brainstorm a list of rules for the afterschool program. Discuss the fairness of each rule and the consequences for not following the rule.

Have students make a list of activities that work better as a group or individually. Discuss why the activity works better as a group or individually.

Examples:

Group: football, school projects, choir, band, basketball

Individually: golf, tennis, taking a test, playing a solo, playing the piano

What is essential [most important] for students to know and be able to do to master this standard?

Civic Responsibility and Skills
• Identification of group activities.
• Elements of group activities.

Rules and Laws
• Purpose of rules.
• Different places all have rules, but they may not be the same:
  ◦ based on fairness
  ◦ have consequences.

Strategies and activities that will help students meet this standard. Ask students to:

1. Identify group activities that are done in groups (e.g., playground game, circle time).
2. Identify a group (e.g., a group kids playing checkers, a photograph/illustration of a cooperative activity).
3. Distinguish common school rules from common rules at home (e.g., listen to the teacher, bedtime).

Notes:
Social Studies: Government Grades: 3-5

Tips from the Trade

In small groups of 2 or 3 have students research different laws either locally, in the state, or nationally. [You could assign a group as local, another as state, and another as national.] In their groups, ask them to discuss if a law seems outdated or silly. Then ask them to think why the law was made and why it might be outdated. Have groups share what they have discovered.

Have students make diagrams showing the three branches of government: Executive, Legislative and Judicial. In the diagram students should include what each branch’s responsibilities are. Once the activity is complete, discuss how each branch oversees or checks in on the work of the other branches. The system is one of “checks and balances.” An excellent resource for government is kids.gov. There is lots of information you can copy for kids to use for this project. Follow this trail: kids.gov—select “K-5”—select “Government”—select “About our Government”—select “Branches of Government”.

What is essential [most important] for students to know and be able to do to master this standard?

Civic Responsibility and Skills
- In the United States, all people have certain rights and responsibilities.
- Civic participation involves understanding community issues and taking individual action.

Rules and Laws
- Laws tell us how we are expected to behave.
- Laws benefit society.
- There are local laws, state laws and national laws.
- National laws apply to everyone.

Roles and Systems of Government
- Identify and explain the purpose of common authority figures.
- Different types of governments (democracies, monarchies, dictatorships) have different kinds of laws and power.

Strategies and activities that will help students meet this standard. Ask students to:

1. Recognize that individual rights and responsibilities may have consequences that affect others or groups.
2. Identify steps of a problem-solving process to make an informed decision.
3. Identify the purpose of laws.
4. Identify basic rights of U.S. citizens.
5. Identify the powers of central authority figures (e.g., principal in charge of the school, president in charge of the military).
6. Identify the person or group that represents the different branches of government (e.g., president/governor – executive; Congress – legislative; judges – judicial). [Note: Terms executive, legislative and judicial do not need to be used in instruction in this grade band.]

Notes:
Social Studies: Government Grades: 6-8

Tips from the Trade
www.congressforkids.com has lots of interesting resources for you and for the students to explore.

Students in this age band like to persuade others to believe the way they do. Have students work in pairs or trios to research the different types of government: monarchies, dictatorships, or democracies. Each group should create a commercial trying to “sell” their type of government. [Note: a commercial is an example of persuasive writing which you may want to review with them. Students can get passionate about what they are “selling” so a review of good speaking and listening habits may be a good idea.]

What is essential [most important] for students to know and be able to do to master this standard?
Civic Responsibility and Skills
• Individual and group opinions are communicated through a variety of mediums (e.g., verbally, media).
Roles and Systems of Government
• Different types of governments (monarchies, dictatorships, democracies) can be described based on how much freedom and responsibility the citizens have and how much power the government has.
• Our form of government was influenced by governments of the past.
• Our government and Constitution gives and limits power (checks and balances).

Strategies and activities that will help students meet this standard. Ask students to:
1. Understand that differences of opinion on an issue can exist between and within individuals and groups.
2. Identify traits of monarchs and elected leaders where they would rule.
3. Identify a power of each branch of government (e.g., Congress makes laws, courts interpret laws)

Something to think about…
Monarchy is a government where power is held by one person Forms of monarchy differ widely based on the level of legal authority the monarch holds in governance, the method of selection of the monarch, and any predetermined limits on the length of their tenure. England is ruled by a constitutional monarchy.
Dictatorship is a government where political authority is monopolized by a single person or political entity and uses oppressive measures to control the people. Adolf Hitler was a dictator in Germany during WWII.
Democracy is a government where all eligible citizens are meant to participate equally – either directly or, through elected representatives, indirectly – in the proposal, development and establishment of the laws by which their society is run.

Notes:
**Social Studies: Economics Grades: K-2**

**Tips from the Trade**

Students at this age have a lot of difficulty understanding the difference between what they need and what they want. Explain the difference between a want and a need. A good resource for this is Social Studies for Kids. It gives descriptions that kids will understand and a quiz you can give orally to check for understanding before starting the project. Use the trail provided at the end of the project description.

**Project:** Give each student a piece of drawing paper that you have drawn a line down the middle [use the landscape position]. Demonstrate where to label one side as want and the other side as need. Have students draw pictures or write the names of things that are wants and needs. As a group, discuss what they have drawn or written. Resource trail: socialstudiesforkids—select “Economics” on the left side—in the drop down list click “want vs. need”—click on the option “Easy to Read Articles”, Click “here”—select “Want vs. Need Basic Economics”.

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**What is essential [most important] for students to know and be able to do to master this standard?**

**Economic Decision-Making and Skills**

- People can measure how much of something exists through various methods.
- Scarcity
- We have to decide among “wants”:
  - Supplies (and resources) are limited.
  - What we choose affects what others can have.

**Production and Consumption**

- Goods are what we want.
- Services are what people do to satisfy our wants (plumber, grocery clerk).
- People produce (by working—in factories, on farms) and consume goods and services

**Markets**

- People trade or use money to buy and sell.

**Financial Literacy**

- It takes money to buy things.
- We work to earn money.

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**Strategies and activities that will help students meet this standard. Ask students to:**

1. Compare amounts using a frequency table (e.g., tally chart).
2. Explain what you need to do to get what you want.
3. Make a choice.
4. Identify where you can buy something.
5. Identify appropriate places to spend money.
6. Identify something a person gets as a result of completing a job or chore (e.g., money, stickers, candy).

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**Notes:**
Social Studies: Economics Grades: 3-5

What is essential [most important] for students to know and be able to do to master this standard?
Economic Decision-Making and Skills
- Economic data can be displayed and organized by using various types of charts, tables, and graphs.
Scarcity
- We make choices between our wants and our needs. The more of one thing we decide to buy, the less of something else we can buy/have.
- When resources are scarce, communities/states specialize, which leads to trade (cities do not have resources to grow crops/food, so they trade with farmers who do).
Production and Consumption
- We are producers when we make or provide goods and services.
- We are consumers when we use goods and services.
- We can only produce what we have the resources (natural, human, etc.) and the ability (capability and capacity) to produce.
- Businesses must weigh the risks to the benefits of producing goods and services (refer to cost benefit analysis – Would enough people buy it? Would it cost more to make than people would pay for it? Would another McDonalds be able to make a profit here? Are there enough trained workers in the area to make this product?)
Markets
- A market is where people buy and sell products (local farmers’ market, grocery, restaurants)
- When one area specializes, they trade with other areas for what they need
- (See “Scarcity”; farmers produce vegetables then grocers buy them to sell to consumers.) They depend on each other for variety of goods and services.
Financial Literacy
- People learn about occupational tasks through a variety of methods.
- Income is money that individuals earn, and expenses represent the money that individuals spend.
- Budgets allow people to better understand their finances.
- We can earn more money by learning more so we can get better jobs.

Strategies and activities that will help students meet this standard. Ask students to:

1. Create a simple graph or a chart that displays basic data (e.g., circle graph representing slices of pizza, bar graph comparing how many books different students checked out from the library).
2. Identify what you gained as a result of a purchasing decision.
3. Identify traits of producers and consumers (e.g., producers make goods/provide services, consumers buy goods).
4. Describe the different things you can do in a market (e.g. buy products, ask questions, look at different products, make returns).
5. Identify items that are not produced in the local community.
6. Identify examples of income (money you make) and expenses (what you spend money on).
Read Aloud: Lunch Money by Andrew Clements— Synopsis: Greg Kenton has two obsessions — making money and his long-standing competition with his annoying neighbor, Maura Shaw. So when Greg discovers that Maura is cutting into his booming Chunky Comics business with her own original illustrated minibooks, he’s ready to declare war.

The problem is, Greg has to admit that Maura’s books are good, and soon the longtime enemies become unlikely business partners. But their budding partnership is threatened when the principal bans the sale of their comics in school. Suddenly, the two former rivals find themselves united against an adversary tougher than they ever were to each other. Will their enterprise — and their friendship — prevail? Student Reading Level: ages 8-12. 222 pages.

Tips from the Trade

Learn about Banking

Financial institutions in the local community. Ask a local banker to explain the local needs that a bank serves.

Use a compounding calculator to see what will happen if you save on a regular basis. [Note: There are free compounding calculator on the internet. You can use them to see how much will happen to your savings or how much interest you will have to pay if you pay only the minimum amount. You will need to know the rate of interest you will earn or have to pay for the compounding calculator to make the calculations.]

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Social Studies: Economics Grades: 6-8

What is essential [most important] for students to know and be able to do to master this standard?

Economic Decision-Making and Skills

- Rational economic decisions are made by comparing costs with benefits.

Scarcity

- Every decision about goods and services is about what to produce (product/goods), how to produce and for whom (consumer).
- The amount and kinds of resources a region/country has, the more they can produce or the more they specialize.

Production and Consumption

- Efficiency can lead to lower production costs, lower prices, which increase consumer demand and increase producers who want to enter the market

Markets

- The price of market goods are determined by the interaction of supply and demand.
- Markets far from consumers made money necessary (instead of trading/bartering).
- Governments make rules that affect the production of goods and services.

Financial Literacy

- We can get the most for our money by comparing cost and quality of goods and services before we buy.
- Learning about banking and credit can help us manage our money.

Strategies and activities that will help students meet this standard. Ask students to:

1. Understand that an economic decision is informed.
2. Make an informed economic choice (e.g., purchasing a good based on the amount of money available).
3. Identify different methods of production for given goods
4. Identify examples of goods made in factories or by machines.
5. Identify goods that are hard to find and not readily available in the local community.
6. Identify different ways to get price information on the same items (e.g., sale ads, store signs).
7. Identify what services financial institutions provide.

Notes:
Resources

Social Emotional:

- **Center on the Social and Emotional Foundations for Early Learning (CSEFEL):** The Center on the Social and Emotional Foundations for Early Learning (CSEFEL) is focused on promoting the social emotional development and school readiness of young children birth to age 5. CSEFEL is a national resource center funded by the Office of Head Start and Child Care Bureau for disseminating research and evidence-based practices to early childhood programs across the country. CSEFEL offers a wealth of materials and training opportunities that can be utilized by out of school time providers.
  Website: [http://csefel.vanderbilt.edu/index.html](http://csefel.vanderbilt.edu/index.html)

- **Guiding Young Children’s Behavior by Supporting Social and Emotional Development: A Core Knowledge Early Childhood Field Guide:** This resource is intended for those working with infants through young schoolagers in programs addressing the needs of the whole child. The field guide was created for Ohio’s early childhood professionals as a tool in understanding the important connections between children’s behavior and their social and emotional development and in building daily practices that reflect that understanding.

Health/Wellness:

- **Ohio Kids on the Move: Physical Activity Guidelines for Afterschool Programs:** Ohio Kids on the Move: Physical Activity Guidelines for Afterschool Programs is a collaboration between the Ohio Afterschool Network (OAN) and the Ohio Department of Health (ODH). These guidelines are not requirements, but rather recommendations to support afterschool programs with activities and resources to increase the physical activities of their children.

- **Ohio’s Academic Content Standards in Physical Education:** Ohio’s physical education academic content standards provide clear, rigorous expectations for all students in kindergarten through 12th grade. Physical education is a critical component of a complete education. Beyond the physical benefits, quality physical education has been linked to cognitive, affective, and quality of life benefits for students at elementary, middle, and high school levels. The six National Association for Sport and Physical Education (NASPE) standards were adopted by the State Board of Education in December 2007.
  Website: [http://education.ohio.gov/Topics/Ohio-s-New-Learning-Standards/Physical-Education](http://education.ohio.gov/Topics/Ohio-s-New-Learning-Standards/Physical-Education)

The Arts:

- **Ohio’s New Learning Standards (in dance, drama/theatre, music, and visual art):** The Ohio Department of Education encourages visual and performing arts educators to use the standards to help develop the creative imagination, skills, and dispositions that students need to reach their highest potential and participate in our global community as innovative and valued citizens. The 2012 updated Ohio arts learning standards display a revised framework that reorganizes the content of the five 2003 standard goals under process goals fundamental to learning and emphasized in the arts. These are perceiving/knowing/creating, producing/performing, and responding/reflecting. The re-visioned document reflects a more streamlined version of the current arts standards for dance, drama/theatre, music, and visual art– while promoting content most valued in arts education.
  Website: [http://education.ohio.gov/Topics/Ohio-s-New-Learning-Standards/Fine-Arts](http://education.ohio.gov/Topics/Ohio-s-New-Learning-Standards/Fine-Arts)