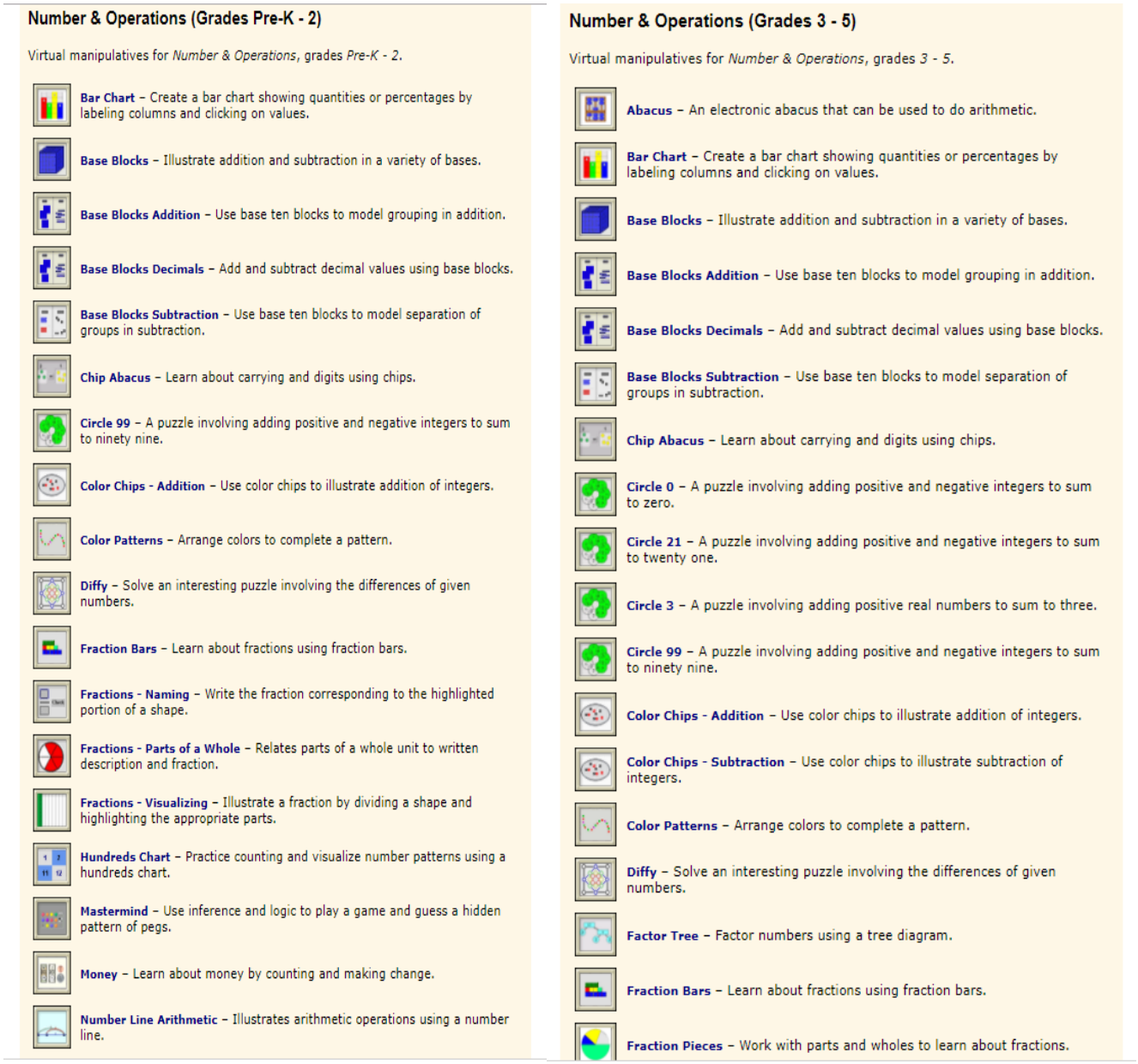
Online Resources

National Library of Virtual Manipulatives

http://nlvm.usu.edu/en/nav/vlibrary.html

This site is a virtual library of manipulatives using the Java applet. There are a variety of manipulatives K-12 for number and operations, algebra, geometry, measurement, data analysis and probability.

The following screen shot provides a sample of all of the FREE manipulatives available.



Number & Operations (Grades Pre-K - 2)

Virtual manipulatives for *Number & Operations*, grades *Pre-K - 2*.

- **Bar Chart** – Create a bar chart showing quantities or percentages by labeling columns and clicking on values.
- **Base Blocks** – Illustrate addition and subtraction in a variety of bases.
- **Base Blocks Addition** – Use base ten blocks to model grouping in addition.
- **Base Blocks Decimals** – Add and subtract decimal values using base blocks.
- **Base Blocks Subtraction** – Use base ten blocks to model separation of groups in subtraction.
- **Chip Abacus** – Learn about carrying and digits using chips.
- **Circle 99** – A puzzle involving adding positive and negative integers to sum to ninety nine.
- **Color Chips - Addition** – Use color chips to illustrate addition of integers.
- **Color Patterns** – Arrange colors to complete a pattern.
- **Diffy** – Solve an interesting puzzle involving the differences of given numbers.
- **Fraction Bars** – Learn about fractions using fraction bars.
- **Fractions - Naming** – Write the fraction corresponding to the highlighted portion of a shape.
- **Fractions - Parts of a Whole** – Relates parts of a whole unit to written description and fraction.
- **Fractions - Visualizing** – Illustrate a fraction by dividing a shape and highlighting the appropriate parts.
- **Hundreds Chart** – Practice counting and visualize number patterns using a hundreds chart.
- **Mastermind** – Use inference and logic to play a game and guess a hidden pattern of pegs.
- **Money** – Learn about money by counting and making change.
- **Number Line Arithmetic** – Illustrates arithmetic operations using a number line.

Number & Operations (Grades 3 - 5)

Virtual manipulatives for *Number & Operations*, grades *3 - 5*.

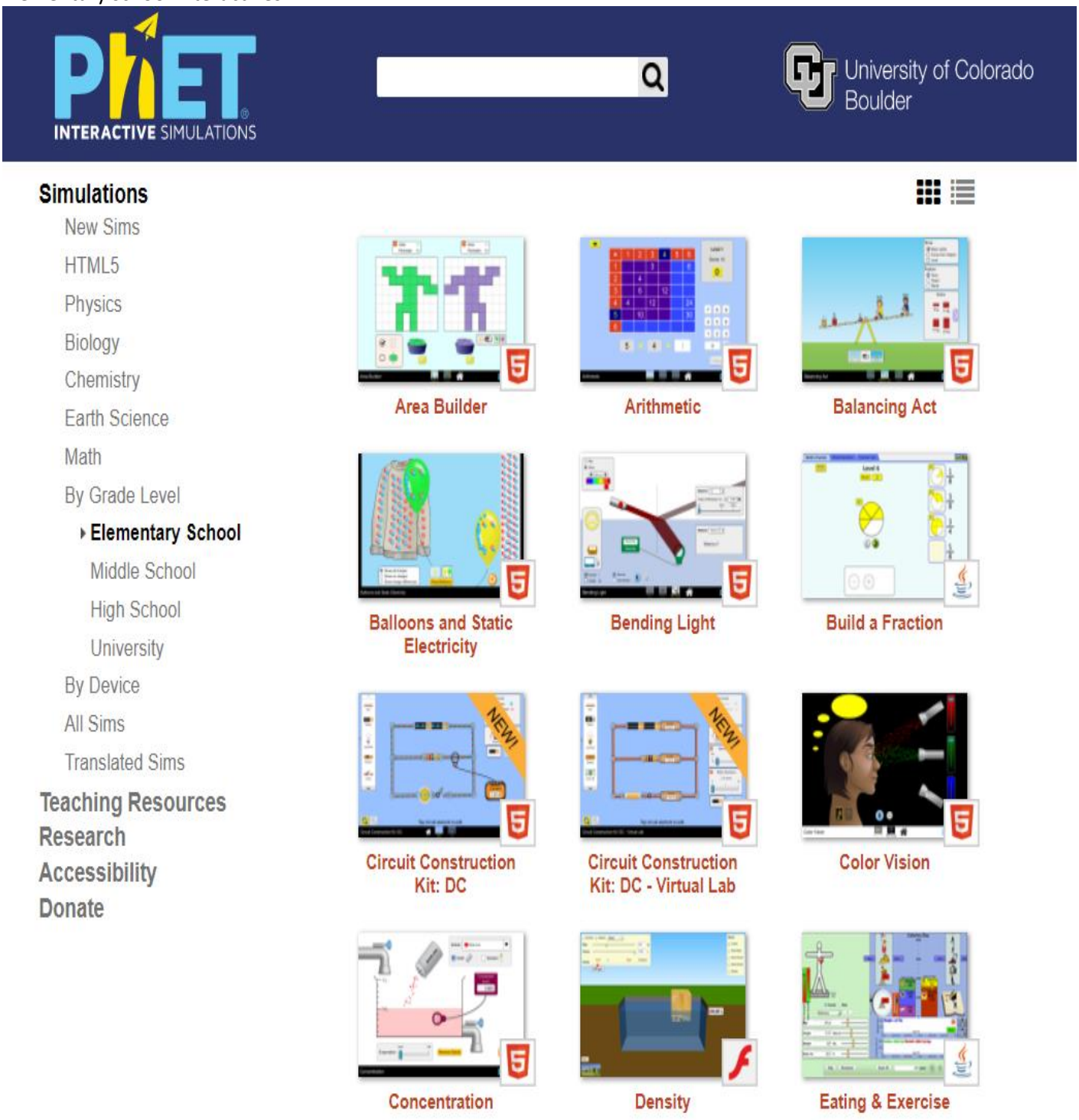
- **Abacus** – An electronic abacus that can be used to do arithmetic.
- **Bar Chart** – Create a bar chart showing quantities or percentages by labeling columns and clicking on values.
- **Base Blocks** – Illustrate addition and subtraction in a variety of bases.
- **Base Blocks Addition** – Use base ten blocks to model grouping in addition.
- **Base Blocks Decimals** – Add and subtract decimal values using base blocks.
- **Base Blocks Subtraction** – Use base ten blocks to model separation of groups in subtraction.
- **Chip Abacus** – Learn about carrying and digits using chips.
- **Circle 0** – A puzzle involving adding positive and negative integers to sum to zero.
- **Circle 21** – A puzzle involving adding positive and negative integers to sum to twenty one.
- **Circle 3** – A puzzle involving adding positive real numbers to sum to three.
- **Circle 99** – A puzzle involving adding positive and negative integers to sum to ninety nine.
- **Color Chips - Addition** – Use color chips to illustrate addition of integers.
- **Color Chips - Subtraction** – Use color chips to illustrate subtraction of integers.
- **Color Patterns** – Arrange colors to complete a pattern.
- **Diffy** – Solve an interesting puzzle involving the differences of given numbers.
- **Factor Tree** – Factor numbers using a tree diagram.
- **Fraction Bars** – Learn about fractions using fraction bars.
- **Fraction Pieces** – Work with parts and wholes to learn about fractions.

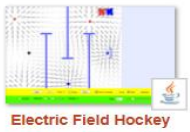
Phet.colorado

http://phet.colorado.edu

This site provides FREE interactive programs for all grade levels. Go to the site and click on “Play with Simulations.” Then, go to “By Grade Level” and “Elementary School.” Once you locate an interactive you want to use, you can download it. Or, click on the red shield in the lower right (if that interactive has a shield).

Elementary school interactives:



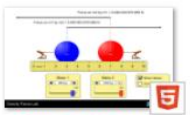

Electric Field Hockey


Energy Forms and Changes

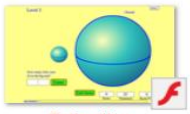

Energy Skate Park


Glaciers


Gravity And Orbits


Gravity Force Lab

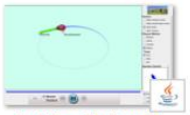

Energy Skate Park: Basics


Estimation

Expression Exchange


The Greenhouse Effect


John Travoltage

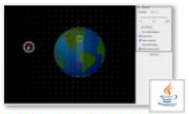

Ladybug Motion 2D


Faraday's Electromagnetic Lab


Forces and Motion: Basics

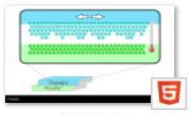

Fraction Matcher


Lunar Lander


Magnet and Compass

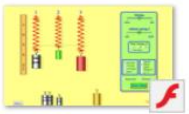

Magnets and Electromagnets

Fractions Intro


Friction


Function Builder

Make a Ten


Masses & Springs

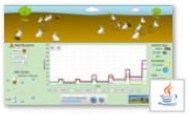

Maze Game

Function Builder: Basics

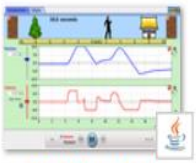

Gas Properties


Generator


The Moving Man


Natural Selection

Pendulum Lab


The Moving Man


Natural Selection

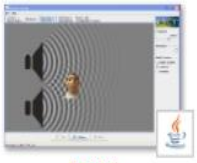
Pendulum Lab

Projectile Motion

Proportion Playground


Salts & Solubility


Signal Circuit


Sound


States of Matter: Basics


Sugar and Salt Solutions

Unit Rates

Wave Interference

A digital copy of this document can be found at http://carolwooten.weebly.com under the "NC Association of Elementary Educators (NCAEE) Conference" tab

National Science Foundation (NSF)

http://www/nsf.gov

If you are looking for a plethora of FREE K-12 science videos created by NSF, you have found the site!
- Click on “News” in the horizontal toolbar. Then, click on “Special Reports.”
- Scroll down to find the exciting videos for science.
- Disclaimer: Because the videos are K-12, watch and cue the video(s) in advance.

Samples of popular videos: The Science of Speed (NASCAR), Science of NFL Football, Science of the Olympic Winter Games, Science of NHL Hockey, and MANY more…

The Science of Speed, produced for the National Science Foundation (NSF) and written and hosted by Diandra Leslie-Pelecky, explains the scientific principles that are so essential to the NASCAR experience. Viewers learn how science makes cars powerful, agile, fast and safe--and how these same principles affect their own cars.

You can't win NASCAR races without getting the science right. NASCAR teams push science to its limits to eke out the tenths or hundredths of a second that separate the winner from the also-rans. This video series uses the elements of NASCAR to show that a racecar really is a science experiment on wheels.

Episode 1. Drag & Drafting

Engine power is constrained at superspeedways like Daytona and Talladega, so teams use aerodynamics to gain an advantage. Teams adjust their cars to minimize drag, but then it's up to the drivers to find 'the draft' and to trust the drivers behind them to literally "bump" them into Victory Lane.

View video (5:29 min.)

Episode 2. Car Safety

Conservation of energy explains how NASCAR's new car helped driver Michael McDowell walk away from a scary crash at Texas Motor Speedway in 2008.

View video (5:29 min.)

Episode 3. Friction & Heat

Friction always creates heat. Brakes and tires depend on friction to work, but more friction isn't always better. In the engine, friction is never good and engine builders use everything from oil to high-tech coatings to get a little extra horsepower.

View video (5:527 min.)

Episode 4. Grip

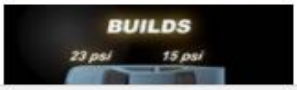
There's one thing every driver always want more of: Grip. Grip is the frictional force that holds the tires on the track, but crew chiefs like Steve Letarte describe it as a 'warm and fuzzy feeling' when you have it. Whether mechanical or aerodynamic, more is always better.

View video (5:02 min.)

Episode 5. Sound

"Loud is fast" Brian Vickers tells us, and speed is one reason racecars don't have mufflers. Experiencing a NASCAR race means feeling the roar of the engines as well as hearing them. It's all good--as long as you've got your ear protection.

View video (4:46 min.)



Episode 6. Tires & Pressure

NASCAR tires don't have "air pressure" because they're filled with nitrogen. The culprit responsible for increasing tire pressure during a race is friction. Using dry nitrogen gas helps the team predict how hot the tire will get and how much the pressure will

UNC-W Games

www.uncw.edu/Edgames

1. Go to the website and click on “Show All Games”.
2. These games are like virtual game boards. You just need questions and answers.
3. In addition to games, you can also get Bingo card generators printable board games, and online timers. The free games are great.

The chart below (from “Show All Games”) shows examples of many available games.

Sports Based Games & Resources

- March Mayhem (Basketball)
- Football Themed Resources
- Soccer Goal Kick
- Baseball Home Run Day
- Simple Bowling

Holiday Based Games & Resources

- Winter Holidays-Christmas
- Thanksgiving
- Halloween
- Valentines
- Independence Day - July 4th

Bingo Card Generators

- 3x3 Board
- 4x4 Board
- 5x5 Board
- 3x3 Board for Pictures
- 4x4 Board for Pictures
- 5x5 Board for Pictures

Whole Class Review Games

- Align Stars- (Plays like Connect Four Game)
- Behind the Box
- Car Race
- Horse Race
- Sunken Treasure
- The Big Wheel
- Ladder Climber
- Mountain Climber
- Star Bomba
- Horse Race w/Questions
- Finders Keepers Mine
- Dart Toss
- Car Race w/Questions

Customizable Board Games

- Four Colors Game
- One Color Game
- Patterns Game
- Red Arrows Game
- Fall Example
- Car Race Example
- Circles
- Dots
- Circles – Quick Game
- Race – Quick Game
- The Jump
- The Mountain
- Question Card Template
- Question Card Template- No Dice

TV Game Shows

- Big Board (Plays like Jeopardy Game)
- Guess Louie (Plays like Pyramid Game)
- Robie Knows (Play like Family Feud)
- Open that Door (Plays like Let's Make Deal)
- Open Door – No Questions
- Open Door – Elementary Level

Drill & Practice For Individual Student Games

- Space Decoder
- The Maze
- Space Rescue
- Fire Rescue
- Buttons
- Blaze Training
- Space Tac
- Break the Code

Scrambled Word Games

- Scrambled Word - Webdings (Easy)
- Scrambled Word - Wingdings (Medium)
- Scrambled Word - Wingdings2 (Medium)
- Scrambled Word - Symbol (Hard)

PowerPoint Timers

- Countdown Clock (Basic Timer)
- Customizable Winter Timer
- Basketball Scoreboard
- Football Scoreboard
- Stop Watch
- Holiday Timers