Computer Science & Design Thinking

STEM Education at Montague School

STEM: Science, Technology , Engineering and Mathematics, penetrates every aspect of our daily lives. The implementation of a course which integrates content areas through an exploratory, investigative manner allows people to understand and address real life issues and solve problems and challenges. Students begin, through a hands-on manner, to not only explore, but to apply the roles and responsibilities of STEM career professions. Students will understand how problems, issues, and challenges are identified, problem solved and solutions implemented, revised and tried again. The STEM classroom is a place in which the word "FAIL" stands for the "First Attempt In Learning".

During STEM at Montague School, K - 8 students will apply, assimilate and master schemas which include but are not limited to:

- Principles of Engineering
- Engineering Design Process
- Grand Challenges in Engineering,
- Observation, Testing, Evaluation, Recording Data, Drawing Conclusions from Data, Ethics
- Constraints, Criteria
- Coding
- Exploring natural world
- Exploring man-made world
- Biomimicry
- Properties of materials
- Properties of design
- Forces
- Friction
- Gravity
- Energy
- Renewable Sources, Wind, Solar, Hydro
- Electricity
- Hydraulics
- Gears and Gear Ratios
- Friction & Speed
- Distance & Work
- Making Predictions
- Innovations
- Virtual Reality
- Z-Space
- Green Screen and Media Technology
- Electronic Building Blocks
- Electric Circuits

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Formative, Summative and Benchmark Assessment Philosophy for STEM at Montague School

It is essential that STEM education provides students with the most authentic, real world learning experiences. Assessments for these authentic experiences take place in a variety of formats including observations, discussion and solution based in the form of problem- or project based learning and assessment.

Considerations for assessment include the following as supported by Anne Jolly in a March 2016 Education Week article (https://www.edweek.org/tm/articles/2016/03/14/designing-useful-stem-classroom-assessments.html)

Observations and discussions around authentic experiences in which students:

- Focus attention on identifying and solving real problems.
- Apply specific grade-level science and math concepts.
- Observe whether students understand how to apply science and mathematics to solve a problem.
- Do students actually understand how math and science work together to create solutions for problems.
- Use an engineering-design process to guide their thinking and problem-solving.
- Create and test prototypes (technologies) as solutions.

Another essential 21st Century workplace skill for assessment purposes in a STEM classroom is teamwork progress. One element assessment is the consideration of students' progress in working as productive team members.

- Come up with several different possible solutions for a problem.
- Combine materials and ideas in clever and imaginative ways to create a solution.
- Design a prototype and test it to see if this device solves the problem.
- Successfully evaluate their testing results, and analyze and interpret their data.
- Recognize things they can do to change and improve the design of the prototype.
- Communicate ideas in new and innovative ways.
- Feel "safe" in expressing out-of-the-box imaginative ideas.
- Believe that it's safe to fail, and then use failure as an opportunity to improve
- Suggest increasingly creative ideas for solving a problem.
- Show increased persistence in sticking with finding solutions for a problem.
- Take ownership of their projects and learning.
- Express increasing curiosity and ask more questions.
- Transfer STEM practices to other subject areas.

Assessment for STEM may include but are not limited to:

- Observations

- Discussions
- Benchmarks (What is Technology?)
- Gear Ratio Math
- Electrical Circuits
- Pascal's Principle
- "Do Now" Science and Math
- Google Docs
- Google Slides
- Google Classroom

Month September

Pacing Week	1	2	3	4	Materials	Standards https://www.nj.gov/education/cccs/
See Appendix for Modifications and Adaptations						
1st	Introduction to STEM Pre Assessment	Tin Foil Boat Challenge http://sp.mdot.ms.gov/Public%20Affairs/Documents/Sample%20Lesson%20Plan%20(Design%20A%20Boat).pdf Pre Assessment A5 Bar Graph	Tin Foil Boat Challenge http://sp.mdot.ms.gov/Public%20Affairs/Documents/Sample%20Lesson%20Plan%20(Design%20A%20Boat).pdf Assessment A6 Powerpoint	Make a Flinker Discovery Education Assessment Word Processing	Tin foil Metal washer Packing Peanuts Paper clips Clear tank Rectangular pool Tubing	1. Technology : 8.2.2.A.5 8.2.2.A.1 2. Engineering Design: K-2-ETS1-3 K-2 ETS1-2 3. Mathematics: 1.MD.A.2 1.MD.A.1(1-PS4-4) 1.MD.C.4(1-ESS1-2) 21st Century: **CRP2 CRP4 CRP5 CRP6 CRP8**
2nd	Introduction to STEM Pre Assessment	Tin Foil Boat Challenge http://sp.mdot.ms.gov/Public%20Affairs/Documents/Sample%20Lesson%20Plan%20(Design%20A%20Boat).pdf Pre Assessment A5 Bar Graph	Tin Foil Boat Challenge http://sp.mdot.ms.gov/Public%20Affairs/Documents/Sample%20Lesson%20Plan%20(Design%20A%20Boat).pdf Assessment A6 Powerpoint	Make a Flinker Discovery Education Assessment Word Processing	Tin foil Metal washer Packing Peanuts Paper clips Clear tank Rectangular pool Tubing	1. Technology : 8.2.2.A.5 8.2.2.A.1 2. Engineering Design: K-2-ETS1-3 K-2 ETS1-2 3. Mathematics: 2.MD.D.10 2.MD.A.1 21st Century: **CRP2 CRP4 CRP5 CRP6 CRP8**
3rd	Introduction to STEM	Cleaning Oil Spill	Cleaning Oil Spill	Cleaning Oil Spill	Boston Museum kit (double)	**Technology**

	Pre Assessment	EiE Boston Museum Report 8.1.5.D.1- 8.1.5.D.2 (3-4) 8.1,5,E.1 (3-5) 8.1.5.F.1 (3-5)	Science Unit 6 3-LS2-1 3-LS4-3		(Pre ordered) /curriculum clear plastic tanks storage container	**8.1.5.D.1** **8.1.5.D.2** **8.1.5.D.2** **8.1.E.1** **8.1.5.E.1** **8.2.5.A.1** **8.2.5.1.2** **8.2.5.A.5** **Engineering Design** **8.2.5.C.4**
4th	Introduction to STEM Pre Assessment	Cleaning Oil Spill	Cleaning Oil Spill	Cleaning Oil Spill	Boston Museum kit (double) (Pre ordered) /curriculum clear plastic tanks storage container	**8.2.5.A.2** Social Studies 6.1.4.C.12 6.1.4.C.13 6.1.4.C.16

Month October

Week	1	2	3	4	Materials	NJ Standards
K	Crystals Write name with crystals Enter name in word processing document 8.1.2 A.1 8.1.2 A.2	Shapes-eggs http://www.playdoughtoplato.com/kids-science-experiment-walking-eggs/ Jack and the beanstalk/humpty dumpty extension Curved and triangles Make newspaper strong enough to shape 8.2.2A.1-8.2.2.A.5	Shapes-strength & purpose Examine protection for seeds file:///C:/Users/User/Downloads/activity_Why%20So%20Yummy_pdf protection	Design a shelter using a strong shape and offers protection (three little pigs extension)	Index cards, tape, clay, plastic, popsicle sticks	8.2.2.A.5
1st	Leaf Scavenger Hunt Science 1 Unit 3 www.Siemensscience.com	Leaf extension	Build Rain Gutters Engineering Design Process 8.2.2.A.1 8.2.2.A.2 8.2.2.A.3 8.2.2.A.4 8.2.2.A.5 8.2.2.C.1 8.2.2.C.2 8.2.2.C.3 8.2.2.C.4 8.2.2.C.5 8.2.2.C.6	Test Rain Gutters	Sugar cubes Popsicle sticks Straight straws Bendy straws Model magic Gallon zip lock bags	Science:1-LS3-1 1-LS1-1 Technology : 8.2.2.A.1 8.2.2.A.2 8.2.2.A.3 8.2.2.A.4 8.2.2.A.5 8.2.2.C.1 8.2.2.C.2 8.2.2.C.3 8.2.2.C.4 8.2.2.C.5 8.2.2.C.6 Engineering: K-2-ETS1-1 K-2-ETS-2 21st Century: **CRP2 CRP4**

						CRP5 CRP6 CRP8
2nd	Leaf Scavenger Hunt Science 1 Unit 3 www.Siemensscience.com	Leaf extension	Build Rain Gutters Engineering Design Process 8.2.2.A.1- 8.2.2.A.5 8.2.2.C.1 8.2.2.C.2 8.2.2.C.3 8.2.2.C.4 8.2.2.C.5 8.2.2.C.6	Test Rain Gutters	Sugar cubes Popsicle sticks Straight straws Bendy straws Model magic Gallon zip lock bags	Science:1-LS3-1 1-LS1-1 Technology : 8.2.2.A.1- 8.2.2.A.5 8.2.2.C.1 8.2.2.C.2 8.2.2.C.3 8.2.2.C.4 8.2.2.C.5 8.2.2.C.6 Engineering: K-2-ETS1-1 K-2-ETS-2 21st Century: **CRP2 CRP4 CRP5 CRP6 CRP8**
3rd	Design Ramp Overcome gravity, friction, safe - Student design experiment Engineering Design Process Problem/Brain-Storm solutions http://sciencenetlinks.com/lessons/ramps-1-let-it-roll/	Design Ramp Overcome gravity, friction, safe - Student design experiment Build & Test	Design Ramp Overcome gravity, friction, safe - Student design experiment Evaluate /Improve	Design Ramp Overcome gravity, friction, safe - Student design experiment Graph results	Matchbox cars Stop watches meter/yard stick thin, stiff, wooden or plastic board, 8-12 inches wide and 12-16 inches long ping-pong balls, marbles, ball bearings,	Science: 3-PS2-1, 3-PS-2, Engineering: 3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3 Technology : 8.2.5.A.4, 8.1.5.A.1 8.1.5.A.3

	http://sciencenetlinks.com/lessons/ramps-2-ramp-builder/				baseballs carpet samples pink foam foam wrap wood plywood rubber treads PVC-white PVC-black brick masking tape gutter	
4th	Design Ramp Overcome gravity, friction, safe - Student design experiment Engineering Design Process Problem/Brain-Storm solutions 4-PS3-1 4-PS 3-3 8.2.5.1 8.2.5.2 http://sciencenetlinks.com/lessons/ramps-1-let-it-roll/ http://sciencenetlinks.com/lessons/ramps-2-ramp-build	Design Ramp Overcome gravity, friction, safe - Student design experiment Build & Test	Design Ramp Overcome gravity, friction, safe - Student design experiment Evaluate /Improve	Design Ramp Overcome gravity, friction, safe - Student design experiment Graph results	Matchbox cars Stop watches meter/yard stick thin, stiff, wooden or plastic board, 8-12 inches wide and 12-16 inches long ping-pong balls, marbles, ball bearings, baseballs carpet samples pink foam foam wrap wood plywood	Science: 3-PS2-1, 3-PS-2, Engineering: 3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3 Technology : 8.2.5.A.4, 8.1.5.A.1 8.1.5.A.3

	er/				rubber treads PVC-white PVC-black brick masking tape gutter	

Month November

Week	1	2	3	4	Materials	NJ Standards
1st	Pre assessment Part 2 Biomimicry Tails and Roots Used in Nature 1-LS1-1 K-2-ETS1-2 8.2.2.C.1 8.2.2.C.2 8.2.2.C.3 8.2.2.C.4 8.2.2.C.5	Use tails and roots principle in engineering for stability - explore nature Build table, coat rack, picture frame, etc.	Use animal tails design to make a connection to invent playground equipment	Use animal tails design to make a connection to invent playground equipment	Popsicle sticks, pipe cleaners, model magic	Science: 1-LS1-1 Engineering Design: K-2-ETS1-3 K-2 ETS1-2 21st Century: **CRP2 CRP4 CRP5 CRP6 CRP8**
2nd	Pre assessment part 2 Biomimicry Tails and Roots Used in Nature Balancing video PBS kids Design Squad	Use tails and roots principle in engineering for stability - explore nature Build table, coat rack, picture frame, etc.	Use animal tails to make a connection to invent playground equipment	Use animal tails to make a connection to invent playground equipment	Popsicle sticks, pipe cleaners, model magic	Science: 1-LS1-1 Engineering Design: K-2-ETS1-3 K-2 ETS1-2 21st Century: **CRP2 CRP4 CRP5 CRP6 CRP8**
3rd	Designing Knee Brace Boston Museum 8.2.5.C.1 8.2.5.C.2 8.2.5.C.3 8.2.5.C.4 8.2.5.C.5 8.2.5.C.6 8.2.5.C.7	Designing Knee Brace	Designing Knee Brace	Designing Knee Brace	Knee Brace kit from Boston Museum (1)	Technology : 8.2.5.C.1 8.2.5.C.2 8.2.5.C.3 8.2.5.C.4 8.2.5.C.5 8.2.5.C.6 8.2.5.C.7

4th	Designing Knee Brace	Designing Knee Brace	Designing Knee Brace	Designing Knee Brace	Knee Brace kit from Boston Museum (2)	Technology : 8.2.5.C.1 8.2.5.C.2 8.2.5.C.3 8.2.5.C.4 8.2.5.C.5 8.2.5.C.6 8.2.5.C.7

Month December

Week	1	2	3	4	Materials	NJ Standards
Alternate plan for biomimicry	Shape Design - Purpose - Bird Beaks Siemens - Birds of a Feather file://C:/Users/User/Downloads/activity_Birds%20of%20a%20Feather.pdf	Research birds in Montague Graph bird species and beaks. https://www.uen.org/lessonplan/view/11402	Design and make a bird feeder for a Montague bird.	No School	Plastic spoons, plastic salad tongs, thin straws. Graph paper, crayons, bird books	K-2-ETS1-1. K-2-ETS1-2.. K-2-ETS1-3.
1st	Code.org Hour of Code 8.2.2.E.1 8.2.2.E.2 8.2.2.E.3 8.2.2.E.4 8.2.2.E.5 (K-2)	Shape Design - Purpose - Bird Beaks Siemens - Birds of a Feather file:///C:/Users/User/Downloads/activity_Birds%20of%20a%20Feather.pdf	Research birds in Montague Graph bird species and beaks. https://www.uen.org/lessonplan/view/11402	No School	Plastic spoons, Tongs, ladle,	SCIENCE: 1-LS3-1 ELA: W.1.8 MATH: 1.MD.A.1 21st Century: **CRP2 CRP4 CRP5 CRP6 CRP8**
2nd	Code.org Hour of Code	Coding	Coding	No School	www.code.org	Technology 8.1.2.A.4 8.1.2.A.1 21st Century: **CRP2 CRP4 CRP5 CRP6 CRP8**
3rd	Code.org Hour of Code	Designing Knee Brace	Designing Knee Brace	No School	Purchased kit from Boston	Technology 8.2.5.A.1-

	8.2.5.E.1 8.2.5.E.2 8.2.5.E.3 8.2.5.E.4 (3-5)	8.2.5.A.1- 8.2.5.A.5 8.2.5.C.1 8.2.5.C.2 8.2.5.C.3 8.2.5.C.4 8.2.5.C.5 8.2.5.C.6 8.2.5.C.7 (3-5)			Museum	8.2.5.A.5 8.2.5.C.1 8.2.5.C.2 8.2.5.C.3 8.2.5.C.4 8.2.5.C.5 8.2.5.C.6 8.2.5.C.7 (3-5)
4th	Globe Gather Data 5-ESS2-2 5-ESS#-1 8.1.5.A.1- 8.1.5.A.6 zSpace clouds	Globe MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales MS-ESS3-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century. 8.1.5.F.1 Apply digital tools to collect, organize, and analyze data that support a scientific finding. [	Globe Gather Data	No School	IRT thermometers Clipboards Watches 9 Volt Batteries	5-ESS2-2 5-ESS3-1 8.1.5.A.1 8.1.5.A.6 Social Studies: 6.3.4.A.4 6.3.4.B.1 6.1.4.C.12 6.1.4.C.13 6.1.4.C.16

Month January

Week	1	2	3	4	Materials	NJ Standards
K	Coding Spheros 8.2.2.E.1 8.2.2.E.2 8.2.2.E.3 8.2.2.E.4 8.2.2.E.5 (K-2)	Assessment	Coding Spheros 8.2.2.E.1 8.2.2.E.2 8.2.2.E.3 8.2.2.E.4 8.2.2.E.5 (K-2)	Coding Spheros 8.2.2.E.1 8.2.2.E.2 8.2.2.E.3 8.2.2.E.4 8.2.2.E.5 (K-2)	Ipad/kindle/or samsung tablet (24 tablets) For control	8.2.2.E.1 8.2.2.E.2 8.2.2.E.3 8.2.2.E.4 8.2.2.E.5 (K-2)
1st	Coding Spheros 8.2.2.E.1 8.2.2.E.2 8.2.2.E.3 8.2.2.E.4 8.2.2.E.5(K-2)	Assessment	Coding Spheros 8.2.2.E.1 8.2.2.E.2 8.2.2.E.3 8.2.2.E.4 8.2.2.E.5 (K-2)	Coding Spheros 8.2.2.E.1 8.2.2.E.2 8.2.2.E.3 8.2.2.E.4 8.2.2.E.5 (K-2)	Ipad/kindle/or samsung tablet (24 tablets) For control	8.2.2.E.1 8.2.2.E.2 8.2.2.E.3 8.2.2.E.4 8.2.2.E.5 (K-2) 21st Century: **CRP2 CRP4 CRP5 CRP6 CRP8**
2nd	Coding Spheros 8.2.2.E.1 8.2.2.E.2	Assessment	Coding Spheros 8.2.2.E.1 8.2.2.E.2	Coding Spheros 8.2.2.E.1 8.2.2.E.2	Ipad/kindle/or samsung tablet (24 tablets) For control	8.2.2.E.1 8.2.2.E.2 8.2.2.E.3 8.2.2.E.4

	8.2.2.E.3 8.2.2.E.4 8.2.2.E.5 (K-2)		8.2.2.E.3 8.2.2.E.4 8.2.2.E.5 (K-2)	8.2.2.E.3 8.2.2.E.4 8.2.2.E.5(K-2)		8.2.2.E.5(K-2) 21st Century: **CRP2 CRP4 CRP5 CRP6 CRP8**
3rd	Designing Model Knee Brace EiE Boston Museum 8.2.5.A.1- 8.2.5.A.4	Assessment	Designing Model Knee Brace	Designing Model Knee Brace	Boston Museum Teacher's Guide, Consumable Kit	**3-5-ETS1-1.** **3-5-ETS1-2.** **3-5-ETS1-3.**
4th	Globe Surface Temp. Globe.gov 8.1.5.A.4- 8.1.5.A.6 8.1.5.C.1 8.1.8E.1 Asking questions about data Forming hypothesis	Assessment	Globe Surface Temp. Globe.gov 8.1.5.A.4- 8.1.5.A.6 8.1.5.C.1 8.1.8E.1 Designing Model Membranes EiE Boston Museum	Globe Surface Temp. Globe.gov 8.1.5.A.4- 8.1.5.A.6 8.1.5.C.1 8.1.8E.1 Designing Model Membranes	Globe website data, student data sheets, Google sheets	8.1.5.A.4- 8.1.5.A.6 8.1.5.C.1 8.1.8E.1 Social Studies: 6.3.4.A.4 6.3.4.B.1

Month February

Week	1	2	3	4	Materials	Standards
K	Engineering Week Discovery Ed					8.2.2.B.1 8.2.2.B.4
1st	Rapunzel's Tower	Rapunzel's Tower - Design #2 Compare designs	Engineering Week Discovery Ed	Rapunzel's Tower - act out with their tower and present why the design is improved	Index cards, tape, toothpicks, paper, Rapunzel story, puppet template, popsicle sticks	8.2.2.D.1 8.2.2.D.2 8.2.2.D.3 8.2.2.D.4 21st Century: **CRP2 CRP4 CRP5 CRP6 CRP8**
2nd	Jack and the Beanstalk Structure of Eggs	Plant Beans	Engineering Week Discovery Ed	Egg Drop	Beans, recyclables, Cotton, paper, cups, soil, ziplock bags.	8.2.2.D.1 8.2.2.D.2 8.2.2.D.3 8.2.2.D.4 21st Century: **CRP2 CRP4 CRP5 CRP6 CRP8**
3rd	Designing Model Membranes	Designing Model Membranes	Engineering Week Discovery Ed	Designing Model Membranes	Pre ordered kits	**3-5-ETS1-1 3-5-ETS1-2. 3-5-ETS1-3.**
4th	Designing Model Membranes	Designing Model Membranes	Engineering Week Discovery Ed	Designing Model Membranes	Pre ordered kits	**3-5-ETS1-1 3-5-ETS1-2. 3-5-ETS1-3.**

Month March

Week	1	2	3	4	Materials	Standards
K	Wind Create windsock Record Data K-ESS2-1 K-ESS3-2 K-2ETS1-1 8.2.2.C.1 8.2.2.C.2 8.2.2.C.3 8.2.2.C.4 8.2.2.C.5	Identify problems with wind -	Design solutions to a wind problem. Ex. picnic table items	How can wind help us - Make sail boats & race	Construction paper, streamers, crayons, glue, Stapler, stickers, fan Wind sailboats purchased from Pitsco	K-ESS2-1 K-ESS3-2 K-2ETS1-1 8.2.2.C.1 8.2.2.C.2 8.2.2.C.3 8.2.2.C.4 8.2.2.C.5
1st	Wind Create Windsock Record Data K-ESS2-1 K-ESS3-2 K-2ETS1-1 8.2.2.C.1 8.2.2.C.2 8.2.2.C.3 8.2.2.C.4 8.2.2.C.5	Identify problems with wind - https://web.wpi.edu/Images/CMS/PIEE/1b1.pdf	Design solutions to a wind problem. Ex. picnic table items	How can wind help us - Make sail boats & race	Construction paper, streamers, crayons, glue, Stapler, stickers, fan Wind sailboats purchased from Pitsco	K-ESS2-1 K-ESS3-2 K-2ETS1-1 Technology 8.2.2.C.1 8.2.2.C.2 8.2.2.C.3 8.2.2.C.4 8.2.2.C.5 21st Century: **CRP2 CRP4 CRP5 CRP6 CRP8**
2nd	Wind as an energy source PBS lesson	Challenge: Students design and build, and test a windmill	Challenge: Students design and build, and test a windmill	Challenge: Students design and build, and test a windmill	https://nj.pbslearningmedia.org/resource/phy03.sci.engin.design.lp_windmill/windmills-putting-wind-energ	K-2ETS1-1 Technology 8.2.2.C.1 8.2.2.C.2 8.2.2.C.3 8.2.2.C.4

					y-to-work/ Template, cup, straw, paper, rubber bands, string, hole punch Windmill kits for demo	8.2.2.C.5 21st Century: **CRP2 CRP4 CRP5 CRP6 CRP8**
3rd	Disaster relief buildings	Disaster relief buildings	Disaster relief buildings	Disaster relief buildings	Current event resources, Engineering Design Process worksheets, recyclables, craft resources	**3-5-ETS1-1 3-5-ETS1-2. 3-5-ETS1-3.**
4th	TREP$ Create your own invention	TREP$ Create your own invention	TREP$ Create your own invention	TREP$ Create your own invention	Teacher manual & student manual Materials for creation of student products	21st Century Skills - creativity and entrepreneurship

Link
Wind Energy
https://nj.pbslearningmedia.org/resource/phy03.sci.engin.design.lp_windmill/windmills-putting-wind-energy-to-work/?#.W3HiJNJKi00

Month April

Week	1	2	3	4	Materials	Standards
K	Weather - Data Rain Observation Collect and pictograph K-ESS2-1 K-ESS3-2 K-2ETS1-1 8.2.2.C.1 8.2.2.C.2 8.2.2.C.3 8.2.2.C.4 8.2.2.C.5	Identify problems - roads, shelters, outside activities Engineer solutions	No School	Test solutions Evaluate solutions	Various craft supplies	K-ESS2-1 K-ESS3-2 K-2ETS1-1 8.2.2.C.1 8.2.2.C.2 8.2.2.C.3 8.2.2.C.4 8.2.2.C.5
1st	Assessment	Experimenting with sound, making musical instruments	No School	Experimenting with sound, making musical instruments	Recyclables, string, rubber bands, straws, paper	Science 1PS4-1 1PS4-4
2nd	Assessment	Experimenting with sound, making musical instruments	No School	Experimenting with sound, making musical instruments	Recyclables, string, rubber bands, straws, paper	Science 1PS4-1 1PS4-4
3rd	Assessment	Designing a frog trap Boston Museum EiE Engineering Adventures 3-LS2-1 3-LS4-3 8.2.5.C.1 8.2.5.C.2 8.2.5.C.3 8.2.5.C.4 8.2.5.C.5 8.2.5.C.6 8.2.5.C.7	No School	Designing a frog trap Boston Museum EiE Engineering Adventures 3-LS2-1 3-LS4-3 8.2.5.C.1 8.2.5.C.2 8.2.5.C.3 8.2.5.C.4 8.2.5.C.5 8.2.5.C.6 8.2.5.C.7	Recyclables, string, rubber bands, straws, paper	**3-5-ETS1-1** **3-5-ETS1-2.** **3-5-ETS1-3.**
4th	Assessment	Asteroid	No School	Asteroid	Various sized balls, sand	**3-5-ETS1-1**

		https://www.teachengineering.org/activities/view/csm_asteroid_lesson1_activity1_tg		https://www.teachengineering.org/activities/view/csm_asteroid_lesson1_activity1_tg	or flour, handouts, videos from Teach Enginging website	**3-5-ETS1-2.** **3-5-ETS1-3.**

Month May

Week	1	2	3	4	Materials	Standards
K	Growing things What do plants need to grow? Jack & Beanstalk - Plant Beans K-LS1-1 K-ESS3-1 K-ESS2-2	Design a tool to help in gardening 8.2.2.C.1- 8.2.2.C.3	Record height of bean plants Evaluate data what can we improve? 8.1.2.A.7	With pictures and words create a digital story about their bean plant 8.1.2.A.1 8.1.2.A.2 8.1.2.A.3	Rulers, bean seeds, soil, cups, craft items for designing tool, graph paper, Google Slides	K-LS1-1 K-ESS3-1 K-ESS2-2 8.2.2.C.1- 8.2.2.C. 38.1.2.A.1 8.1.2.A.2 8.1.2.A.3 8.1.2.A.7
1st	Growing things What do plants need to grow? Jack & Beanstalk - Plant Beans K-LS1-1 K-ESS3-1 K-ESS2-2	Design a tool to help in gardening 8.2.2.C.1- 8.2.2.C.3	Record height of bean plants Evaluate data what can we improve? 8.1.2.A.7	With pictures and words create a digital story about their bean plant 8.1.2.A.1 8.1.2.A.2 8.1.2.A.3	Rulers, bean seeds, soil, cups, craft items for designing tool, graph paper, Google Slides	K-LS1-1 K-ESS3-1 K-ESS2-2 8.2.2.C.1- 8.2.2.C. 38.1.2.A.1 8.1.2.A.2 8.1.2.A.3 8.1.2.A.7
2nd	Growing things What do plants need to grow? Jack & Beanstalk - Plant Beans K-LS1-1 K-ESS3-1	Design a tool to help in gardening 8.2.2.C.1- 8.2.2.C.3	Record height of bean plants Evaluate data what can we improve?	With pictures and words create a digital story about their bean plant 8.1.2.A.1 8.1.2.A.2 8.1.2.A.3	Rulers, bean seeds, soil, cups, craft items for designing tool, graph paper, Google Slides	K-LS1-1 K-ESS3-1 K-ESS2-2 8.2.2.C.1- 8.2.2.C. 38.1.2.A.1

	K-ESS2-2		8.1.2.A.7			8.1.2.A.2 8.1.2.A.3 8.1.2.A.7
3rd	Designing a frog trap Boston Museum EiE Engineering Adventures 3-LS2-1 3-LS4-3 8.2.5.C.1 8.2.5.C.2 8.2.5.C.3 8.2.5.C.4 8.2.5.C.5 8.2.5.C.6 8.2.5.C.7	Designing a frog trap Boston Museum EiE Engineering Adventures 3-LS2-1 3-LS4-3 8.2.5.C.1 8.2.5.C.2 8.2.5.C.3 8.2.5.C.4 8.2.5.C.5 8.2.5.C.6 8.2.5.C.7	Designing a frog trap Boston Museum EiE Engineering Adventures 3-LS2-1 3-LS4-3 8.2.5.C.1 8.2.5.C.2 8.2.5.C.3 8.2.5.C.4 8.2.5.C.5 8.2.5.C.6 8.2.5.C.7	Designing a frog trap Boston Museum EiE Engineering Adventures 3-LS2-1 3-LS4-3 8.2.5.C.1 8.2.5.C.2 8.2.5.C.3 8.2.5.C.4 8.2.5.C.5 8.2.5.C.6 8.2.5.C.7	Materials in Boston Museum EiE Engineering Adventures	**3-5-ETS1-1** **3-5-ETS1-2.** **3-5-ETS1-3.** 3-LS2-1 3-LS4-3 8.2.5.C.1 8.2.5.C.2 8.2.5.C.3 8.2.5.C.4 8.2.5.C.5 8.2.5.C.6 8.2.5.C.7
4th	Designing a frog trap Boston Museum EiE Engineering Adventures 3-LS2-1 3-LS4-3 8.2.5.C.1 8.2.5.C.2 8.2.5.C.3 8.2.5.C.4 8.2.5.C.5 8.2.5.C.6 8.2.5.C.7	Designing a frog trap Boston Museum EiE Engineering Adventures 3-LS2-1 3-LS4-3 8.2.5.C.1 8.2.5.C.2 8.2.5.C.3 8.2.5.C.4 8.2.5.C.5 8.2.5.C.6 8.2.5.C.7	Designing a frog trap Boston Museum EiE Engineering Adventures 3-LS2-1 3-LS4-3 8.2.5.C.1 8.2.5.C.2 8.2.5.C.3 8.2.5.C.4 8.2.5.C.5 8.2.5.C.6	Designing a frog trap Boston Museum EiE Engineering Adventures 3-LS2-1 3-LS4-3 8.2.5.C.1 8.2.5.C.2 8.2.5.C.3 8.2.5.C.4 8.2.5.C.5 8.2.5.C.6 8.2.5.C.7	Materials in Boston Museum EiE Engineering Adventures	**3-5-ETS1-1** **3-5-ETS1-2.** **3-5-ETS1-3** .3-LS2-1 3-LS4-3 8.2.5.C.1 8.2.5.C.2 8.2.5.C.3 8.2.5.C.4 8.2.5.C.5 8.2.5.C.6 8.2.5.C.7

			8.2.5.C.7			

Month June

Week	1	2	3	4	Materials	Standards
K	Needs of Humans https://www.state.nj.us/education/modelcurriculum/sci/ku5.pdf Explore Water					
1st	Dot and Dash Coding	Dot and Dash Coding	Dot and Dash Coding	Dot and Dash Coding	Dot and Dash robots Wonder Curriculum	8.2.2.E.1 8.2.2.E.2 8.2.2.E.3 8.2.2.E.4 8.2.2.E.5 (K-2)
2nd	Dot and Dash Coding	Dot and Dash Coding	Dot and Dash Coding	Dot and Dash Coding	Dot and Dash robots Wonder Curriculum	8.2.2.E.1 8.2.2.E.2 8.2.2.E.3 8.2.2.E.4 8.2.2.E.5(K-2)
3rd	Stomp Rockets VR	Stomp Rockets	Stomp Rockets	Stomp Rockets	Kit from Boston Museum	
4th	Stomp Rockets VR	Stomp Rockets	Stomp Rockets	Stomp Rockets	Kit From Boston Museum	Social Studies 6.1.4.C.12 6.1.4.C.13 6.1.4.C.16

Appendix

Standards in Action

Montague Township School District believes in offering an interdisciplinary approach to teaching and learning because students are able to make connections and relationships by bringing together separate content disciplines, skills and knowledge around common themes, issues, or problems. The NJ Department of Education mandates the following be identified as areas of study beneficial to integration into all grade levels and content areas.

Please click the hyperlink for further information on each area:

Career Readiness, Life Literacies, and Key Skills
Climate Change Education
Contributions of Disabled and LGBT Individuals
Holocaust Education
Amistad Commission
Social and Emotional Learning
Diversity, Equity and Inclusion
Asian American Pacific Islander

Types of Assessments

Students will be assessed across the units and year in a variety of ways. The link below indicates resources for developing assessments and general examples of assessments that teachers may utilize across all of the content areas.

Formative, Summative, Alternative, and Benchmark Assessments

Accommodations & Modifications for Special Education, ELL, G&T, 504 Plans and At Risk:

Modifications and Accommodations