

Middle School Canstruction

Driving Question: How can I construct a better world?

- **Learning Goals:**
- **Vision:** Inspire others to transform the world by donating cans to Central Texas Food Bank to help our community.
- **Integrity:** We will work with integrity, practicing honesty, respect, kindness, and compassion.
- **Tikkun Olam:** Strive to improve the welfare of society in our Central Texas community.
- **Empowerment:** We will strive to reach our full potential and will lead and teach elementary classes so they can help with the Canstruction builds.
- **STEM Learning Goal:** Use ratio, proportions, areas, Geometry, computer aided designs, creative and engineering skills to create a structure made out of cans.

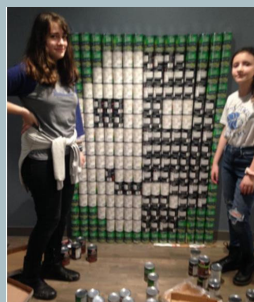


Thank you to these synagogues for donations to purchase cans!



Canstruction PBL Project Description, Products, Deliverables

1. Attendance at Central Texas Souper Bowl of Caring Kickoff Media Event
2. One paragraph description of structure and copy of flier you will present to elementary class:
3. PowerPoint Presentation—Email this to relatives, neighbors, and friends to help with donations
4. Design Concept—present computer aided drawings of your design/shape in 3 sizes (small, medium, large).
5. Grade Appropriate Math Lesson/Script—Write a detailed lesson plan, using the 5E format.
6. Display Sign/Board, List of specific types of cans collected, price, total number, List of donors to thank.
7. Judge evaluations—Judges will score each project using these criteria: structural ingenuity, creativity, best use of cans/labels, best design idea and execution, best meal (nutritional value), number of cans, judge's favorite.
8. Elementary Classroom Teacher evaluation/rating: Leadership/initiative of math student; Taught grade appropriate math (5E plan, math terms); Effectiveness of math student on build day(s).
9. Student Reflection - What obstacles did you encounter? What would you do differently for a future Canstruction project?
10. Algebra/Geometry Teacher Evaluation—Followed directions? Was everything completed on time?



Middle School Pi Day

Driving Question: What is Pi? How is Pi related to circles? What can we create to celebrate Pi Day in a fun way on 3.14?



Learning Goals:

- Middle school students created a variety of station activities where they teach facts about Pi, circles, and math vocabulary to younger elementary students.
- Middle school students learned and taught how to find an approximation of Pi, the digits of Pi, and how Pi is used in the area and circumference formulas for circles.
- Elementary students will learn about Pi and other Math facts through station activities, ranging from arts and crafts, games, writing Piku poems, finding the value of Pi by measuring circumference and diameter, and music.

$\pi = 3.1415926535897932384626433...$

Pi Day Stations and Description

Students will work with a partner to research and create a station activity to present to their peers for practice, and then to all elementary students at AJA to celebrate Pi Day, on March 14. (3 . 1 4)
Middle school students will create a poster to identify their activity, the appropriate grades to attend their station, and to list mathematical terms, pictures, vocabulary, formulas, and other math concepts.



Stations created and chosen for Pi Day 2019 include:

- Using Lego blocks to build a model of Pi—Build stacks of similar colors to form “Pi” (K, 1, 2)
- Teach the first 26 digits of Pi using the YouTube video Pi song and Pi Canvas (All grade levels)
- Pi Day paper chain—Create chain using different colors of paper for different digits of Pi (K, 1, 2)
- String a Bracelet—Students put number of beads for each digit of Pi to make a bracelet. (K, 1, 2)
- Pi Word Challenge—Challenge students to write as many words as they can that start with the letters “ π ”
- Pi in the Sky Painting—Students will paint the sky in the background of the graph of the digits of π
- Write Pi-ku poems, using the digits of π : 1st line: 3 syllables; 2nd line = 1 syllable; 3rd line = 4 syllables. . .
- Pi Day Board Game—like Candyland, but with questions about π and Math vocabulary, circles, Pi (grades 1-5)
- Discover π with circles & string—Measure and calculate circumference divided by diameter, to estimate π
- Inscribing a right triangle in a circle and using the Pythagorean Theorem; teach lots of circle vocabulary
- Show students how to use π to calculate the area and circumference of different size circles. (grades 3-5)
- Two series formulas for “How do mathematicians calculate more digits of π ?” (grades 3-5)

