



WELCOME TO KANJAM MINI ACADEMY

KanJam Mini Academy is a comprehensive, teaching and learning system that centers around the fun and engaging disc tossing game KanJam Mini. KanJam Mini Academy's lesson plans are constructed to follow the current teaching standards for grades K-5.

KanJam Mini Academy consists of 3 major areas of subject matter including:

1. MATHEMATICS

KanJam Mini by the numbers:

Adding, Subtracting, Multiplying, Division, Percentages and Measuring.

2. SCIENCE

Learn the science behind the game through:

Physics, Chemistry, Graphing and Engineering.

3. ELA

Exploring the "Story of KanJam" through:

Comprehension, Vocabulary, Themes, Writing Skills.

Children will engage in each of the major subjects (each of which contain multiple lesson plans) by exploring various aspects of the game, it's rules, it's design and it's history.

Each KanJam Mini Academy School Unit contains a booklet containing the rules of the game, "The Story of KanJam" booklet, unit lesson plans and associated diagrams. All teaching materials can be found in PDF format by clicking the KanJam Academy link at KanJam.com.

KanJam Academy combines the fun indoor/outdoor game KanJam Mini and the standards of the Common Core into a comprehensive learning system that is sure to keep children active, engaged and entertained.

SCIENCE

LESSON 1. MOTION AND STABILITY

RATIONALE

The students will understand how push force is imparted onto the disc by the player, which is later imparted onto the goal. This force can physically move the goal. The greater the friction value (coefficient) of the surface below the goal, the greater stability it will have to resist movement.

OBJECTIVES

Students will measure distances, record the data and analyze the data.

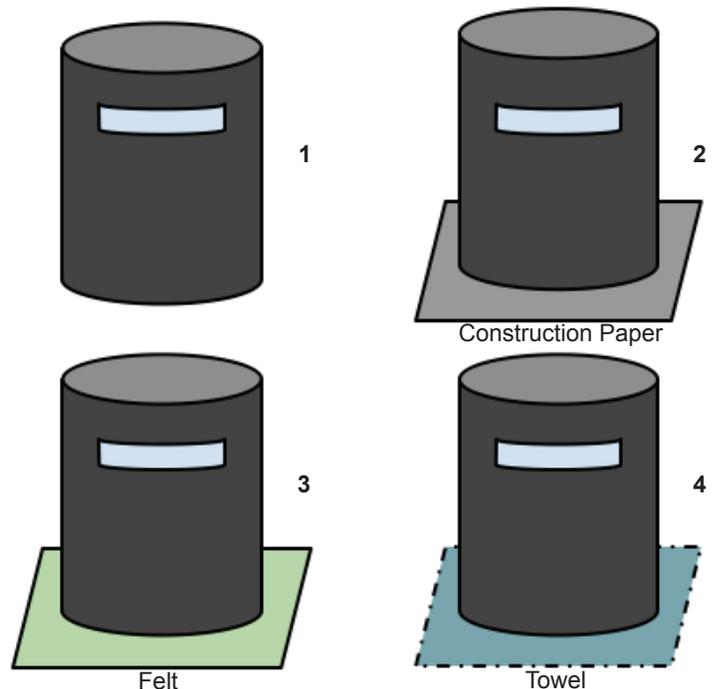
EXPERIMENT

Hypothesis: The higher friction value of a material will make the KanJam Mini goal more stable and move less after being hit by the disc.

Materials: KanJam mini game set, construction paper, a towel, a piece of felt, yard stick, tape, recording form.

Directions:

1. Set a KanJam Mini goal up on a relatively smooth surface (table, desk, tile floor)[1]. Tape a yardstick next to the goal oriented front to back. Place a piece of masking tape 6 feet away from the goal where the disc thrower will throw from. The number on the yardstick that lines up with the front of the KanJam Mini goal should be recorded.
2. Start by having the thrower toss the disc at the goal with the intention of hitting the goal and moving it backwards. The number of units (centimeters or inches) the goal has now moved back can be the recorded distance for the “smooth” surface. This surface can be used several times to record the “average distance moved” if desired.
3. The experimenter can now place a new, less smooth surface under the goal to increase friction and stability. We will call this surface “semi or medium smooth” [2]. This surface can be a piece of construction paper taped in place. The distance the goal moves after being hit by the disc is again recorded.
4. The next surface to be taped in place can now be a piece of felt. This surface can be called “fuzzy” [3]. Again, the distance the goal moves after a direct hit is recorded.
5. The final surface to be taped in place can be a terry cloth towel. This surface can be called “very fuzzy” [4]. The distance of goal movement after a direct hit is recorded. The experiment has now concluded and the data can be compiled and be analyzed. The varying surfaces should reveal less and less movement of the KanJam Mini goal after being hit.



smooth surface (ex: table)	semi smooth surface (ex: construction paper)	fuzzy surface (ex: felt)	very fuzzy surface (ex: towel)
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LESSON 2. GRAVITY AND MOTION

RATIONALE

Students will understand that Gravity is Earth's pulling force that pulls objects to its surface. When motion is imparted on a disc to fly and move through the air, the pulling power of gravity pulls the disc to the ground eventually. The further distance the disc thrower tries to throw the disc, the more force/effort is needed to fight the pulling of gravity.

OBJECTIVES

The students will measure distance in feet, write down an effort score and analyze data that they recorded.

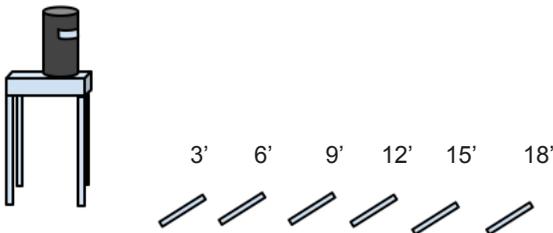
EXPERIMENT

Hypothesis: The further the thrower stands from the KanJam Mini goal, the greater effort they will need to overcome the pulling force of gravity.

Materials: KanJam Mini game set, ruler, tape, recording form.

Directions:

1. Start by setting the KanJam Mini goal on a surface (floor, desk, table). Place a piece of tape next to the goal to indicate the goal resting place in case it is moved. Measure a distance of 3 feet from the goal and mark it with tape. Next measure distances of 6, 9, 12, 15 and 18 feet from the goal and mark each with a piece of tape.



2. The disc thrower will start by standing at the 3 feet piece of tape and attempt to throw the disc the distance of the goal (The goal can be hit, entered or thrown past).
3. The object is to attempt to throw the distance of the goal). The thrower then rates the throw's effort using an effort scale of:
 - Very Easy (1 point)
 - Easy (2 points)
 - Sort of Easy (3 points)
 - Sort of hard (4 points)
 - Hard (5 points)
 - Very Hard (6 points)
4. After each thrower has thrown and rated each distance the class data can be compiled and charted for all to see. Each distance will have an average corresponding effort that can be interpreted as the effort needed to overcome gravity. Distance vs. effort can be displayed graphically in various ways.

Recording Form Exemplar-

Distance	Effort Score
3 feet	
6 feet	
9 feet	

LESSON 3. MATERIAL TESTING, MATERIAL PROPERTIES

RATIONALE

Students will gain the knowledge that specific materials are used to make Kam Jam Mini for certain reasons. For example, the goal is made of durable, but flexible plastic. Flexibility is a material property that means the material can be moved and shaped from its original form to a new shape, the material can then return to its original shape without breaking.

This flexible material is used because the goal must be folded into a cylinder shape for storage and to play the game. The flexible plastic tab can be taken out of the tab holes to make the game smaller so it fits in the box. The plastic tab can also be inserted into the tab holes to make the goal bigger and joins both ends of the plastic so the game can be played.

The KanJam Mini plastic goal is durable too. Durability is a material property that means a material is able to withstand forces over time. Durability means the goal can be hit many times over and over by the disc and will not fall apart or become damaged.

OBJECTIVES

Students will create a new KanJam Mini goal out of a different material and analyze how the new material affected the game. Students will record their findings.

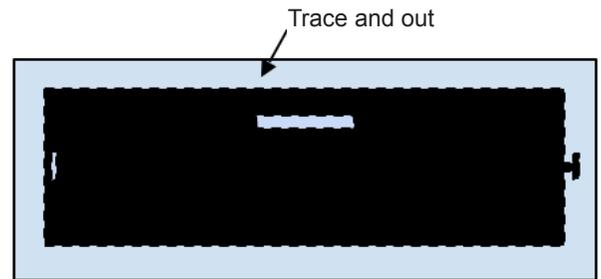
EXPERIMENT

Hypothesis: The KanJam Mini goal can be made of different materials, but those materials will not have the right durability or flexibility for the game to work properly.

Materials: Variety of materials that are the size of KanJam Mini Goal (ex: construction paper, cardboard, foam board..) and KanJam Mini game set.

Directions:

1. Divide class into partnerships. Each partnership picks one material that they want to make a KanJam Mini from (ex- cardboard, construction paper, foam board...). Students trace an outline of KanJam Mini onto the material they have chosen. They can now cut out the shape of their goal.



2. Students can rotate around to each goal and they can begin game play against other teams. After game play the teams can ask the following questions about the goal they have created:

1. Was the material able to make a KanJam Mini goal?
2. Did the material tear or damage during game play?
3. Did the material last the entire game?
4. Was the material able to be shaped into the goal and then return to its original shape?
5. If you fold the material in half, is it permanently creased or damaged?
6. Would your material be a good choice for a KanJam goal? Why or Why not?
7. Was your material durable, flexible or both?

Recording Form Exemplar-

Materials	Findings/reaction

LESSON 4. ENGINEERING AND DESIGN

RATIONALE

Students will learn that engineering is the act of creating something to perform in a desired way. The design of that creation gives it its properties and characteristics needed to complete the wanted outcome.

The KanJam Mini disc has been engineered and designed to be thrown by a player and fly through the air for a certain distance. The disc has this ability because of its design allows for **airfoil**. Airfoil is the process of air flowing under and around an object moving through a fluid (air). The air flow creates a force called **lift** on the object.

The KanJam Mini disc has a flat circular top and curved edges that extend downward. This airfoil shape creates lift as it flies through the air. That is why the disc can fly for long distances before it comes to rest.

OBJECTIVES

Students will create a potential airfoil out of cardboard, then measure appropriate distance and analyze and discuss how the shapes performed when throwing them at the goal.

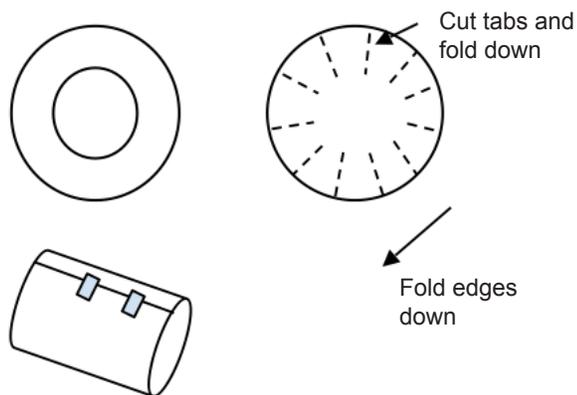
EXPERIMENT

Hypothesis: Shapes that have airfoil are better at creating lift and flying further than shapes that do not have airfoil.

Materials: Cardboard, scissors, markers, masking tape, white board, measuring tape.

Directions:

1. The experimenters can be divided up into teams up to 4 if desired. Each team member will create a potential airfoil shape out of cardboard. Shapes include a circle with a hole cut in the middle (shape 1), a circle with tabs cut around the edges and folded down (shape 2), a rectangle folded into a cylinder and taped ([to be thrown like a football] shape 3) and a three point prop with each point's right edge twisted down (shape 4).



2. The teams will create their shapes and prepare to test the shapes ability to fly through the air.
3. The teams should measure out 16 feet between a KanJam Mini goal and the throwing line. Mark these areas with a piece of tape. Each team member should take a turn throwing the KanJam min disc, three point prop, circle with the tabs, the circle with a hole and the boomerang towards the KanJam goal.
4. The total distance each shape traveled should be recorded. The different distances for each shape can be compiled and displayed graphically if desired.
5. All distances can be compared to the distances of the KanJam Mini disc.
6. Discuss why certain shapes worked better than others. Discuss how each shape performed.

MATH

LESSON 1. KANJAM IN SPACE

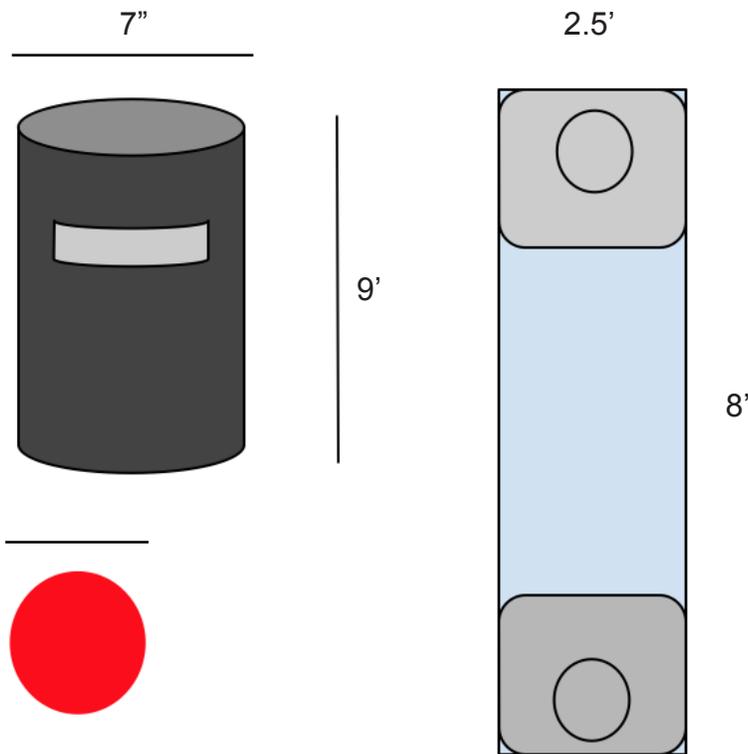
OBJECTIVES

Students will identify geometric patterns, practice measuring and drawing to scale, find perimeters and areas, incorporate algebra and geometry skills and learn to appreciate spacial layout.

Materials: Measuring tape and a the KanJam Mini game set.

Directions:

1. Have students measure the dimensions of the KanJam Mini set and disc using the measuring tape.
2. On paper, the student will draw to scale the KanJam Mini set, labeling each dimension in inches or centimeters.
3. The student will then measure out and set up the KanJam Mini playing court as outlined in the rule book. The student can then calculate the area/square feet and perimeter of the playing court using the distance between the goals and the width of the desk or surface.
4. The student can now draw the “field of play” on the paper from a bird’s eye view. Labeling all dimensions.
5. Now the student is ready to play the game.



LESSON 2. DIVIDE AND CONQUER

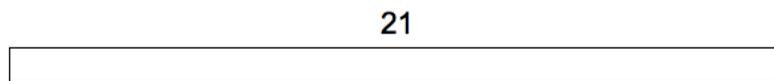
OBJECTIVES

The students will show the score of the game in percentage and fraction, using a tape diagram and number bond as a visual.

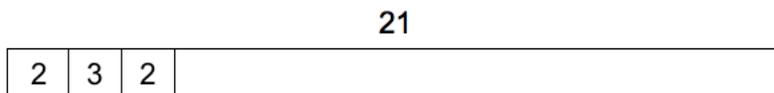
Materials: KanJam Mini game set, white board or poster board, markers, timer.

Directions:

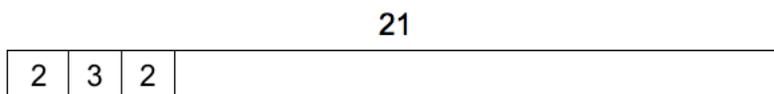
1. Students should be paired together in teams of two.
2. The KanJam Mini game set should be set up in accordance with the rule book (the distance may be modified dependent upon the skill level of the students).
3. On the poster board or whiteboard, the team should draw a tape diagram with 21 total points.



4. Set the timer for 5 minutes. As they throw the disc, they will record their score on the tape diagram.

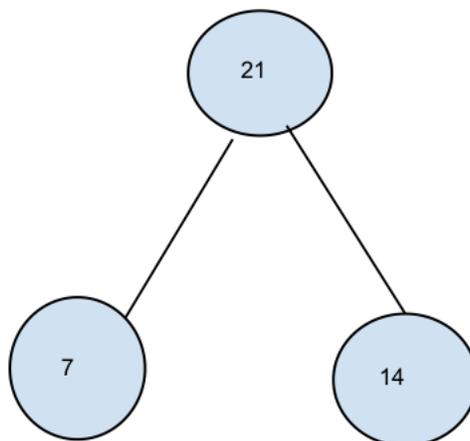


5. After 5 minutes of playing, the team will calculate their score, write it as a fraction, as a percent and draw it as a number bond to check their work.



7/21 33%

Number bond



6. Team can set the timer for another 5 minutes and repeat steps above with new scores.

LESSON 3. MULTIPLICATION BLITZ

OBJECTIVES

Students will multiply and measure in inches through KanJam Mini game play. This lesson can be substituted with Addition or Subtraction principles.

Materials: KanJam Mini game set, Measuring tape, multiplication table, whiteboard, marker.

Directions:

1. Students should be paired in teams of 2.
2. Set the KanJam Mini game court as outlined in the rulebook. The distance can be modified based on the skill level of the student.
3. On the ground, layout a measuring tape from one KanJam Mini goal to the other off to the side of the game court.
4. Students begin 2 on 2 game play as outlined in the rule book.
5. Both teams take their first set of throws and record their score on the whiteboard.
6. Once a team records points from both team members, on that team's next throw the teacher asks the throwing student to: multiply the first score the team had (ex.2 points) by the next score the team recorded (ex. 2 points, ie. $2 \times 2 = 4$).
 - If the student correctly answers the multiplication problem, they are now able to move up as many inches as the answer they gave (in this example the student could move up 4 inches closer for their throw using the measuring tape as a guide).
 - If the student incorrectly answers the multiplication question, they are shown the correct answer and allowed to throw from behind their goal.
 - Now that the first team member has answered their multiplication question and thrown, it is now the second team members turn. If the first team member was able to score points on their last throw (ex. 3 points), the second team member is asked by the teacher to multiply the last scored point amount (ex. 3) by the total points. In this example the multiplication problem would be $3 \times 7 = 21$. If this student correctly answers the problem, they are allowed to throw 21 inches closer using the measuring tape as a guide.
 - The multiplication is continued throughout the entire game always multiplying the total score by the new points gained. Be sure to write down each new score for reference.
 - If no points are recorded between throws, no advantage is given and the throwing commences behind the goal line as in normal game play.
7. The first team to 21 points wins!

ELA

LESSON 1. THE 5 W'S AND THE "H" OF KANJAM

OBJECTIVES

The student will investigate and report on the Who, What, When, Where, Why and How of "The Story of KanJam". For higher level readers, the students should read the "about" section on KanJam.com.

Materials: "The Story of KanJam" book, computer/note pad.

Directions:

1. Read "The Story of KanJam" or the "about" section on KanJam.com.
2. Discuss and record the major facts of the story being sure to include the 5 W's and "H" of the story.
3. Identify key vocabulary words and discuss their definition and meaning to the story.
4. Identify the "problem" of the story.
5. Summarize the story.

LESSON 2. LOOKING BEYOND THE STORY

OBJECTIVES

The student will identify the theme of the story (working hard to achieve goals) to make connections between the characters of the story and their own lives.

Materials: "The Story of KanJam", writing instruments.

Directions:

1. The students should read the story and identify the theme of the story (working hard to achieve goals).
2. After the theme is identified the student should write a story illustrating a time that they worked hard to achieve a goal.
3. The stories can be shared and discussed.

LESSON 3. EMAIL AND LETTER WRITING

OBJECTIVES

Students have now read the story behind the KanJam game, they've played the game and explored its aspects. Now they can write a letter to the owners of the KanJam company. The student will practice letter writing structure and content.

Students can write about a wide range of topics including: a game (or variation of an existing game) they have invented and how its played, what they like/dislike about KanJam, crazy shots that they've scored points on, times that they came back from behind to win, things they like about "The Story of KanJam" etc.

Materials: Computer, writing utensils.

Directions:

1. Students should start by deciding on the topic they wish to write about to the the owners of KanJam.
2. Identify the structure of a properly written letter including **salutation, introduction, body, closing and signature.**
3. Construct the letter on paper and revise as needed.
4. Go to the "contact us" area of KanJam.com
5. Write the letter as an email or hand written letter and send accordingly. If writing an email, please write in the subject line "Student Letter".
6. Discuss and summarize the experience.

LESSON 4. INTRODUCTION TO STARTING A BUSINESS: LEARNING THE CONCEPT OF ENTREPRENEURSHIP

OBJECTIVES

Students will understand the meaning of being an entrepreneur and entrepreneurship. Following a guideline, the student will create a short outline about an idea they have for a business and share it with the teacher or others.

The owners of KanJam started a business to sell their game, they are entrepreneurs because they:

1. Thought up an idea and for an item (game) that people might like to have.
2. They found a way to make their idea.
3. They found a way to sell it to people.

These three concepts are the core principles to becoming an entrepreneur and entrepreneurship. Everyone has ideas of items/products or even services they could make that other people might like to have. There is no limit to what products or services a business can provide.

*Students should note that KanJam is a green company - they make their games from 100% recycled material. Using materials that can be used again is important to keeping the Earth clean. The students may consider making their business green by using materials and resources that are recycled.

Materials: writing utensils, computer.

Directions:

1. Students should follow the following guideline to create their business plan. For the purposes of this lesson, use the concept of selling an novel item, not a service.
2. The item can be something that is made-up (ex. floating car), it can be something that is a new version of an existing item (ex. a water bottle with a fan) or something that would be a new part or component of an existing item (ex. a specially shaped handle for a snow shovel).

Business Guideline

- What is the item or product you would sell?
 - What does it look like?
 - Diagrams
 - How would you make this item?
 - What would the item be made out of?
 - How could you make this item more **green** (ex. recycled plastic, metal, cardboard, water. Sustainable energy like solar power, wind power, water power [Niagara Falls])?
 - Where would you sell your item?
 - In a store?
 - On the internet?
 - Door to door?
 - To friends?
 - Who might buy your item?
 - Kids?
 - Grown ups?
 - Grandparents?
 - Girls?
 - Boys?
3. Complete the lesson by discussing the outlines and their aspects. Students can compare and contrast different ideas or even combine ideas to create a new product. Students can group products together based on similarities and even label groupings (ie. tools, transportation, furniture, toys, clothes, etc). This will give the student a better idea of who and where their product can be sold.