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YO-YO SCIENCE

GRADE LEVELS 6-8

Science Investigations Using Duncan Yo-Yos

Yo-Yo Science Investigations will teach your students how to make educated guesses and solutions about the world around them, then create design problems. They will use their yo-yos in a variety of tests. The better students understand the physics within the yo-yo, the better they will perform. These investigations will culminate in SPIN WARS! SPIN WARS! challenges students to modify their yo-yo and yo-yo throwing technique to get the longest spin in their class.

Investigation #1: Solving Problems

NATIONAL STANDARD

NGSS Standard (Next Generation Science Standard)

MS-ETS1 Engineering Design

PART 1 - ENGINEERING DESIGN PROBLEM

Objectives

Students will use a design problem to analyze and interpret data.

Materials

1. Fist sized rock – one per group of two.
2. Pebble – one per group of two.
3. Paper (loosely crumbled to the size of the rock) – one per group of two.
4. Solving Problems Lab Sheet – one per student.

Background

Gravity acts upon all objects equally. Objects will accelerate at the rate of 32 feet per second every second or 9.8 meters per second every second. This explains why the rock and pebble will land on the ground at the same time. For the crumbled paper, the paper will fall slower than the rock. This is attributed to the air resistance exerted upon the paper which is less dense.

Activity

1. Ask your class, "Do big rocks fall faster than pebbles?" Tell them they will conduct a test (experiment) to answer this problem.
2. Divide the class into pairs.
3. One student holds the rock and pebble at the same height above the head, the rock in one hand and the pebble in the other hand.
4. This student will drop both rock and pebble at the same time.
5. The second student observes and records which hits the floor first.
6. Repeat the test using the rock and the crumpled paper.
7. Repeat both experiments with the students switching their jobs.

Discussion

1. Discuss why the rock and pebble landed on the ground at the same time and the effects of air resistance on the crumbled paper.
2. Show the class an experiment that removes the effects of air resistance on the paper. Cut out a circle of paper the size of a penny. Drop this paper and a quarter at the same time. The quarter will hit the floor first due to air resistance. Now center the paper on top of the quarter. When you drop the quarter, the paper will fall with it, hitting the ground when the quarter does.
3. The important lesson in this design problem is how to form a solution (hypothesis), then to develop a test (experiment) to prove or disprove it. Discuss this process to make sure students understand how to ask questions, define a problem, develop a test and analyze the test data to ensure a successful solution.

PART 2 - YO-YO FUN

Objective

Students will learn yo-yo care and safety while practicing with how to make their yo-yos spin.

Materials

1. Duncan Butterfly Yo-Yo – one per student. *(Most other Duncan yo-yos will work, but description of yo-yo body and response system may be different).*
2. Scissors – one per group of two.
3. Solving Problems Lab Sheet – one per student.

Background: *All About Yo-Yos*

Types There are basically two types of yo-yos: sleeping and non-sleeping. A sleeping yo-yo will remain sleeping at the end of the string before you make it climb back up. A non-sleeping yo-yo hits the bottom of the string and immediately climbs back up.

History Yo-Yo play began in Ancient Greece. A yo-yo image was found on a Greek urn that was made around 450 B.C. You can still see these ancient yo-yos made of terra-cotta in The National Museum of Athens. In slightly more recent times, Napoleon's soldiers played with yo-yos to relax before going into battle. All yo-yos before 1927 had the string tied to the axle.

Important Info The best yo-yos are sleeping yo-yos because they can perform hundreds of tricks. Most of these tricks begin with the SPINNER. The SPINNER trick has the yo-yo spinning at the end of the string. It will climb back up the string into your hand when you give it a slight jerk. Learning to throw a good Spinner is the first step toward becoming a good yo-yo player.

What makes the yo-yo spin? Look at the yo-yo string. You can see that the yo-yo string is actually two twisted strands of string that form a loop at the bottom. This loop goes around the axle. When the yo-yo is thrown down, the yo-yo spins with the axle resting inside the loop of string.

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Duncan Yo-Yos were the first to SLEEP (spin at the end of the string) allowing people to perform hundreds of yo-yo tricks like Walk the Dog, Rock the Baby and Split the Atom. Your Duncan Yo-Yo is made of the finest materials and will last for a long time if properly maintained.

Yo-Yo Care **Follow these guidelines for your Duncan Yo-Yo to work fine for a long, long time.**

1. **Never scratch the axle with a knife or any sharp object. The scratch will cut through yo-yo strings as fast as you can put them on. A yo-yo with a scratched axle is not useable.**
2. **Do not pull your yo-yo apart. The gap (distance between the two yo-yo halves) is set in the factory. When you pull the yo-yo apart, you weaken the bond between the yo-yo halves and the distance between them will probably change.**
3. **Use only genuine Duncan Yo-Yo strings. Most toy, hobby and big box stores carry Duncan strings with the yo-yos. Kite string, twine, thread, etc. will not work properly.**
4. **Replace your yo-yo string when it begins to get dirty. The strings will last longer if your hands are clean when you use your yo-yo.**

Yo-Yo Safety for Science Class

Yo-Yos can be used safely indoors and outdoors by following these guidelines.

1. **Allow adequate space between students.**
2. **Make sure students are aware of their surroundings before every throw.**
3. **Anything breakable should be put away prior to yo-yo practice time.**
4. **All students should read the section on Yo-Yo Safety on their Solving Problems Lab Sheet.**

Yo-Yo Safety for Students

1. **Be aware of your surroundings and how close other people are to you.**
2. **Stay away from others and objects that can break while you are learning to control your yo-yo.**
3. **Do not swing your yo-yo around your head. Doing this could hurt someone or break something. *This is not yo-yoing.***

Activity **This activity gives students a chance to practice with their yo-yos.**

1. **One student will hold the yo-yo hanging toward the floor while another student cuts the string four inches above the other's waist. Each pair will switch jobs and repeat this.**
2. **Each student will tie a simple knot in the end of the string, then make a loop.**
3. **Next, open the two strands of string just below the knot tied.**
4. **Pass the yo-yo string through this opening. This forms an adjustable loop which goes behind the first knuckle of the middle finger.**

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5. To wind the yo-yo, gently wind the string until it catches inside the yo-yo. Then finish winding the string up the rest of the way.
6. With their palm up, students will flip the yo-yo down and out in front. If successful, the yo-yo will remain spinning at the end of the string.
7. While spinning at the end of the string, students should turn their hand over and give the string a tug. This will return the yo-yo to their hand.
8. Students shouldn't become discouraged if they don't get their yo-yo spinning right away. With practice they will become expert spinners. Note: More detailed instructions for making the yo-yo sleep (spin) can be found under the Gyroscope section of **Investigation #3**.

Evaluation/Assessment

1. Students will learn how to solve a design problem by testing how gravity acts with rocks, pebbles and crumbled paper.
2. Students will complete the Solving Problems Lab Sheet.
3. Students will adjust their yo-yo string and practice spinning their yo-yo.

Extension

Students can research the early history of yo-yos for more details on how they were used.

Investigation #2: Pendulums

Objective

Students will determine what affects the time it takes for a pendulum to swing.

NATIONAL STANDARD

NGSS Standard

MS-PS2
Motion & Stability:
Forces & Interactions

Materials

1. Pencil – one per group.
2. Ruler – one per group.
3. Stopwatch, watch or clock with second hand – one per group.
4. Duncan Butterfly Yo-yo – one per group.
5. Pendulums Lab Sheet – one per student.

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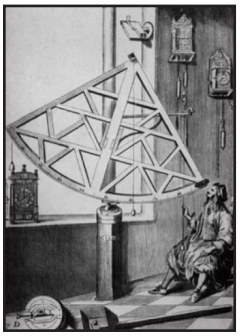

Background

Galileo was a brilliant scientist who lived in the fifteenth and sixteenth centuries. He was interested with how and why things worked in the world around him. Galileo was the first person to conduct the rock dropping experiment in Investigation #1. He dropped steel balls of different sizes from the leaning Tower of Pisa. Both balls hit the ground at the same time. Galileo also made other important discoveries. When he was just 17 years old he noticed that a swinging lamp always took the same amount of time to go from left to right and back again. This observation led to our understanding of pendulums.

A pendulum is very simple. It is often no more than a weight at the end of a swinging string (like a yo-yo). Pendulums are useful because they can accurately measure time. But why do pendulums act so predictably? Students will answer this question in this investigation.

Activity

1. Hold your yo-yo's string about a foot up from the yo-yo and swing it from side to side. Explain that you know a pendulum can accurately measure time, but you are not sure what single thing changes the period (amount of time for the yo-yo to swing from left to right and back again). State that you have thought of one thing that might change the period and that is the weight at the bottom of the string. Ask students for their ideas on what can change the periods.

   How far back do you pull the yo-yo?

   How high up the string do you grasp it?

2. Arrange the class into groups of four depending upon what they think affects the period.

3. Each group will form a solution (hypothesis) stating their idea. For example: We believe that the weight at the end of the string changes the pendulum's period.

4. Before students begin testing (experimenting), make sure you tell them they should change only one variable at a time to get accurate results. Otherwise, they will not know what is responsible for the change.

5. Challenge each group to develop a test to prove or disprove their solution.

   A. The heavy weight group could slip two yo-yos into the loop of string and compare it to a single weighted yo-yo's period.

   B. The pull back further group could suspend a yo-yo over a ruler, then carefully pull the yo-yo back six inches (15 centimeters), then 18 inches (46 centimeters) and measure whether the period changes.

   C. The grasp the string group could measure the period when the string is grasped 15 inches (38 centimeters) from the yo-yo and 30 inches (76 centimeters) from the yo-yo.

   Note: Time permitting, each group can do the other two tests. Make sure students understand that the period is the time for one complete back position.

6. Each student will complete the Pendulums Lab Sheet while testing their solution.

Discussion

1. Each group should have a leader that will explain to the class the group's solution (hypothesis), the model (experiment) they developed to test the solution and whether they proved or disproved their solution.

2. Your class should find that only one variable affects the pendulum's period – the length of the string.

   Note: By now, the students have learned to form a solution (hypothesis), then develop tests (experiments) to prove or disprove that solution. They should have learned from their testing that the string length is the only variable which affects the pendulum's period. If this is not the case, the students inadvertently changed more than one variable at a time.

Evaluation/Assessment

1. Students will participate in a group investigation about what affects a pendulum's period.

2. Students will complete the Pendulums Lab Sheet.

Extension

Student groups of four can determine how long the string must be to require exactly one second per swing. Answer: Precisely one meter (about 39 inches).

Investigation #3: Potential and Kinetic Energy

PART 1: FLYWHEELS

Objective

Students will build and test (experiment) a button flywheel to learn about Potential & Kinetic Energy.

NATIONAL STANDARD

NGSS Standard

MS-PS3 Energy

Materials

1. Large button (one-inch diameter minimum) – one per student.
2. Needle – one per student.
3. Thread – one per student.
4. Energy Lab Sheet – one per student.

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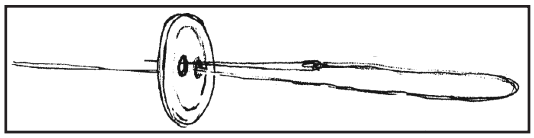
Background

One of the best ways to introduce Potential and Kinetic energy to students is to use the example of a roller coaster. Potential Energy is energy that is waiting to be released. Kinetic Energy is contained within moving objects. When you are at the very top of the roller coaster ride, it is barely moving, but it is high off the ground so it has a lot of Potential Energy. As it begins to descend, Potential Energy is converted to Kinetic Energy (it lost altitude, but gains speed). Kinetic Energy (speed) is converted back to Potential Energy (height) as the roller coaster climbs up the hills. When the roller coaster stops at the bottom of the ride, it will lose all its energy and contains neither Potential or Kinetic Energy.

To understand what makes a yo-yo a yo-yo, students need to understand the Flywheel. Flywheels are used to supply a steady amount of energy even when the added energy is not steady. A potter's wheel has a large flywheel at the bottom that is kicked with the foot to get it spinning. Once it is up to speed, you can quit kicking for a while and the wheel will continue spinning. You can begin kicking the wheel again, adding energy, and the wheel will spin a little faster, but most of the added energy is stored in the spinning wheel.

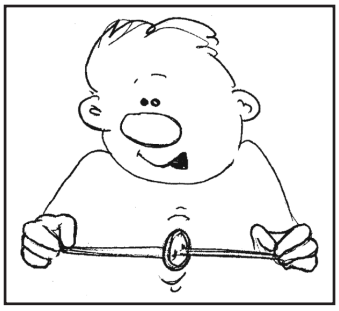
Activity



Discuss with students what a flywheel is and how it works.

Each student will make their own flywheel using these steps.

1. Pull the thread through the button's holes. If it is a four-hole button, use diagonal holes.
2. Tie the ends of the thread together.
3. Slide the button to the middle of the looped string.
4. Take one end of the loop in each hand and twirl the button around 20 or 30 times. The thread will get twisted.
5. What do you think will happen to the button when you pull the string apart? Write your solution (hypothesis) on the Energy Lab Sheet.
6. Conduct your test (experiment). Pull the string. What happened?
7. How long can you keep the button spinning?



Discussion

1. Who had the longest spinning button?

   When the string is twisted, it contains what type of energy?

   Answer: Potential Energy (stored energy, energy waiting to happen)

2. When the string is spinning, it is displaying what type of energy?

   Answer: Kinetic Energy (energy in motion)

3. Can you keep the button spinning indefinitely by properly pulling and loosening the string?
4. Students will complete "Kinetic or Potential Energy?" section on the lab sheet.

   Lab Sheet Answers: 1. Potential, 2. Kinetic, 3. Kinetic, 4. Potential, 5. Potential

PART 2: ENERGY AND THE YO-YO

Objective

Students will conduct tests with their yo-yo to discover when it demonstrates Potential and Kinetic Energy.

Materials

1. Duncan Butterfly Yo-Yo – one per student.
2. Potential and Kinetic Energy Lab Sheet – one per student.

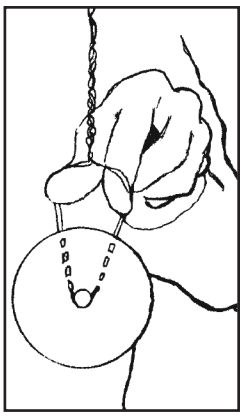
Background

Students will be observing the conversion from Potential Energy to Kinetic Energy then back again. When the yo-yo is dropped, energy is converting from Potential Energy to Kinetic Energy as it falls. As it climbs the string, Kinetic Energy is converted to Potential Energy. There is ALL Potential Energy at the top and ALL Kinetic Energy at the bottom.

The yo-yo will not return completely to the hand due to friction. When the yo-yo spins at an angle, there is a great deal of friction between the string and the perimeter of the yo-yo. A yo-yo thrown straight will not rub and will spin a lot longer. Friction is not good for making long spinning yo-yos.

Activity

1. All spinning flywheels possess Kinetic Energy. To demonstrate this, students will turn their yo-yo into a flywheel by making it so it will not sleep. This is done by forming a double loop of string about the axle and grasping the string two inches above the yo-yo and twisting the yo-yo counter clockwise until the string opens. Next, form the double loop about the axle which is similar to double looping a rubber band around a newspaper. Then, let the yo-yo hang at the end of its string for 30 seconds as the string will re-tighten to the proper tension.



2. Ask students what they think will happen when they drop the yo-yo? Students should form a solution to this problem (hypothesis).

3. To see what will happen, have the students wind up their yo-yos and hold it in their hands, palms down.
4. Instruct students to drop their yo-yos. Tell them to not jerk their hand in any way.
5. They should continue holding their hand out until the yo-yo completely stops. Note: This is a trick called the "Gravity Gripper".

Discussion

Students will answer the questions on the Potential and Kinetic Energy Lab Sheet then participate in a class discussion about their answers.

1. Ask students if their solution (hypothesis) was correct?
2. Where does the yo-yo have the most Potential Energy?

   Answer: In the hand before it was ever released.
3. Where does the yo-yo have the most Kinetic Energy?

   Answer: At the very bottom of the string where it was spinning the fastest.
4. Where was Potential Energy converting to Kinetic Energy?

   Answer: While the yo-yo was falling.
5. Where was Kinetic Energy converting to Potential Energy?

   Answer: As the yo-yo climbed up the string.
6. Why doesn't the yo-yo return all the way to the hand?

   Answer: Friction between the string and the yo-yo takes some energy from the system.
7. How could you make the yo-yo return all the way to the hand?

   Answer: By slightly throwing the yo-yo down as they release it, or giving an upward jerk, just before the yo-yo hits the bottom of the string

Evaluation/Assessment

1. Students will make button flywheels to demonstrate Potential and Kinetic Energy.
2. Students will use their yo-yos to discover where Potential and Kinetic Energy are when throwing the yo-yos.
3. Students will complete the Potential and Kinetic Energy Lab Sheet.

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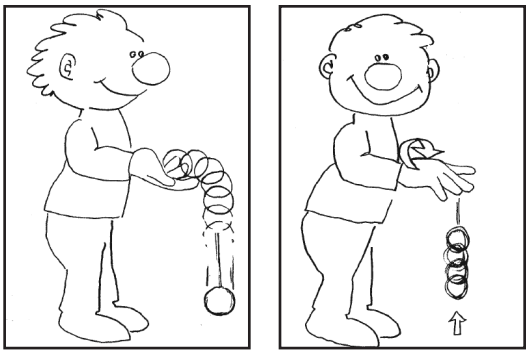
Extension

Throwing the Yo-Yo and a Few Tricks

You can observe Potential and Kinetic Energy at work in other yo-yo tricks. Students have already learned the first one that yo-yo players call the Gravity Gripper. Now they can learn to throw the yo-yo instead of just dropping it. Follow these steps to demonstrate to the class how to correctly throw the yo-yo, then let them practice throwing their yo-yos. Remind students to follow the Yo-Yo Safety guidelines.



1. **How to Throw - Make a slip knot and place over index finger. Hold the yo-yo in your hand, palm up. Make sure the string is wound over the top of the yo-yo. Now throw the yo-yo off the end of your hand.**

   When the yo-yo hits the bottom of the string, quickly turn your palm down to catch the yo-yo. How hard can you throw the yo-yo and still catch it?

2. **The Forward Pass – Hold the yo-yo in your hand like you did for the Gravity Gripper, but hold it palm down. Begin with your hand at your side. Flip the yo-yo straight out in front of you, and before it returns, turn your hand palm up to catch it.**

3. **Loop the Loop – Begin with The Forward Pass, but instead of catching the yo-yo when it returns, flip your hand, sending the yo-yo out into another loop. After flipping the yo-yo out, you will want to wait until the yo-yo returns to within five inches from your hand. You will point your fingertips first toward your nose, then your toes. Keep the motion in your wrist and you will watch your yo-yo loop and loop again.**

4. **Making the Yo-Yo Spin – Hold the yo-yo palm up with the string wound over the top of the axle. Flick the yo-yo down like you did with the "Gravity Gripper". The yo-yo will spin at the end of the string. To get it to come back up turn your hand over (palm down) and give the yo-yo a slight upward tug. If the yo-yo is thrown hard enough, the spinning yo-yo will wind itself all the way up the string back into your hand.**

   Note: When a yo-yo spins tilted, it acts like a gyroscope. Whatever angle the yo-yo has when it leaves your hand is the angle at which it will spin.

5. **Spinner Test – When students can throw a good, long straight Spinner they can try to walk completely around the yo-yo. Ask them what they think the yo-yo will do. Will it turn with them or remain pointing in one direction?**

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Investigation #4: Collecting & Analyzing Data

Objective

Students will learn to collect and average data while they establish their own Base Line Spinner Duration.

NATIONAL STANDARD

NGSS Standard

MS-ETS1
Engineering Design

Materials

1. Duncan Yo-Yo – one per student.
2. Stopwatch, watch or clock with second hand – one per partner group.
3. Pencil – one per student.
4. Collecting and Analyzing Data Lab Sheet – one per student.

Background

Base Line - A Base Line represents a condition before you make any changes. For example, pretend there is a juice drink that claims it will make you run twice as fast. You buy some, drink it and go running. It seems like you were running faster than before but you aren't sure. To test the claim, you might decide to run 100 yards against the clock before drinking the drink. Time yourself as you run the same 100 yards after drinking the product. When you compare the time it took you to run the 100 yards before and after drinking the juice, you will know for sure whether the drink made you run twice as fast. In this example, the 100 yards run before drinking the juice is the Base Line.

Data Collection – Students will be trying to get the longest spinning yo-yo. They will need to measure the time the yo-yo spins in seconds. They might find that their results vary a great deal from one throw to another. Scientists deal with this variation by making several observations, then averaging the results.

Activity

1. Arrange students into partner groups of two. One student will throw a sleeper while the other student watches the stopwatch or clock.
2. The stopwatch/clock watching student will say "GO" and the other student will throw their yo-yo.
3. The yo-yo thrower will say "STOP" when it returns to their hand.
4. The stopwatch/clock watcher will write down the number of seconds that elapsed on their lab sheet. If a bad throw occurred, a zero will be recorded.
5. Students will repeat steps two through four for nine more times. (A total of ten times.)
6. To find the average Spin Time (Base Line), students will add up all the results and divide by ten.
7. Students will change jobs and repeat the Test Procedure so each one will have a Base Line.

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Discussion

1. Ask the class why they had to throw the yo-yo ten times.

   (Taking ten observations then averaging the results yields a truer result than a single observation.)

2. Explain to them that in scoring many sports, the high and low scores are discarded.

3. Instruct students to take their data, throw out the high and the low scores, then average the remaining observations. Remind them they will now be adding eight observations, then dividing by eight.

4. Did their results change? Why?

   (The results will probably change. When the extreme results are thrown out and the remaining observations averaged, the results should be more indicative of the typical observation. Both methods are acceptable. Your students should decide which method they use as they test (experiment) with their yo-yos.

5. Explain to students that tests like these are used by athletes training for the Olympics. Events like the Javelin Throw, the Discus and the Shot Put all lend themselves to improving performance by changing just one variable at a time. They can also apply this technique to improving batting averages in baseball and free-throw percentages for basketball.

Evaluation/Assessment

1. Students will work in groups of two to collect data to determine the Base Line (average spin time) of their yo-yos.

2. Students will complete the Collecting and Analyzing Data Lab Sheet.

Extension

Test More Variables

Students can test different variables to see how it will affect their yo-yo's spin. Tell students that they can modify the yo-yo, the string or their technique. Make sure students form a solution (hypothesis) to each test before they perform it, record the results and answer or discuss the results questions. Also, students should change just one variable at a time then compare the results to their current Base Line.

1. Try throwing the yo-yo straight down versus aiming a couple of feet in front of them and allowing the yo-yo to swing behind.

2. Test what will happen if they wind the string around the yo-yo very loose and very tight.

3. Try maximizing the flip of their wrist versus a normal throw.

4. Will waxing the string allow it to spin longer? How about silicone spray or other lubricants?

Results Questions

1. Was your solution correct?
2. Why or why not?

Note: When you form a solution that leads to a spin time longer than your Base Line, this new observation becomes your new Base Line. You can use your new Base Line or keep your original Base Line.

Investigation #5: Spin Wars!

Objectives

1. Students will analyze their data from Investigation #4 to determine the best technique to practice with their yo-yos so they can obtain the longest spin time.
2. Students will participate in the Spin Wars! Competition.

NATIONAL STANDARD

NGSS Standard

MS-ETS1
Engineering Design

Materials

1. Duncan Butterfly Yo-Yo – one per student.
2. Stopwatch – one.
3. Spin Wars! Lab Sheet – one per student.
4. Duncan Yo-Yo Skill Certificate – one per student.

Background

Friction causes a yo-yo to slow down. If friction is minimized, the yo-yo will spin longer. Brute strength will rarely produce the longest spinning yo-yo. The most important single element is technique. The best technique will produce the greatest rotational power and minimize the wasteful effects of friction. A moderately hard throw with a good wrist flick, which is very straight, will spin for a long time. If the yo-yo "pops up" when it hits the end of the string, the string may be twisted around the axle too tight. Let the yo-yo hang and untwist a bit.

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Activity

1. Give students several afternoons to devise and implement tests with their yo-yos. After several days spent testing (experimenting) with their yo-yos, all students should be able to make the yo-yo spin at the end of the string. Students spending the most time on this will probably be able to throw the longest Spinners. This competition will also show who has put in the extra time, thinking and testing with their yo-yo.

2. Spin Wars! Rules:

   A. Everyone will get two chances. Only your longest time will be recorded.

   B. For a spinner to count, it must go down, sleep at the bottom and return to your hand with less than six inches of unwound string (the length of a dollar bill.).

   C. One student will time the other members of the class with a stopwatch.

   D. The clock will be started when the yo-yo leaves your hand and will stop when the yo-yo is caught.

   E. If it is a legal throw, your score will be recorded by the stopwatch keeper, otherwise it is zero.

   F. Everyone in the class gets their first throw before anyone gets their second chance.

   G. If there is a tie, all tied students go into "sudden death". Sudden death requires a count of three, then tied students throw their yo-yos at the same time. The longest LEGAL spinning time will be declared the winner. If a tie persists, repeat sudden death.

3. All students will receive a Spin Wars! Certificate. Determine what certificates students will get by following these guidelines.

   Duncan Yo-Yo Wizard – Spinner time is under 10 seconds (Participation Certificate)

   Duncan Yo-Yo Expert – Spinner time is 10 seconds

   Duncan Yo-Yo Champion – Spinner time is over 10 seconds

   Duncan Yo-Yo Grand Champion – For the one student that has the longest spinner time

Discussion

1. Discuss with students what they have learned about yo-yos.

2. Ask what the most important thing is when trying to make a yo-yo spin for a long time. Answer: Your technique.

3. What was their favorite activity or activities they did for Yo-Yo Science?

Evaluation/Assessment

1. All students will participate in the Spin Wars! Competition.
2. Students will complete the Spin Wars! Lab Sheet.

Extension

Duncan Yo-Yo Tournament Tricks

1. Hand out the Duncan Yo-Yo Tournament Tricks sheet. Let students learn and practice the yo-yo tricks of their choice.
2. After students have practiced and learned a trick or two, encourage them to:
   - Rename an existing trick
   - Develop a new trick
   - Find a new technique for producing really long spinners
   - Design a new type of yo-yo

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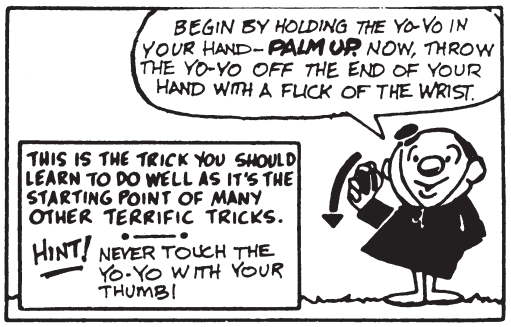
Edited and updated by Ann Grimm, National Science Foundation Eisenhower Lead Science Teacher, Director of Education - Estes Rockets, retired

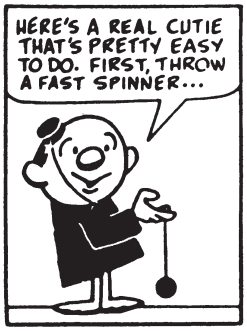
DUNCAN® YO-YO TOURNAMENT TRICKS

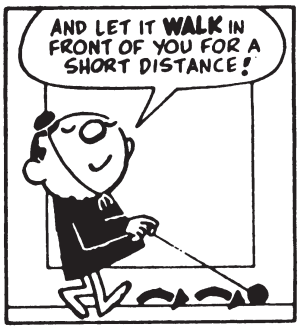
PLACE: _____
DATE: _____
TIME: _____

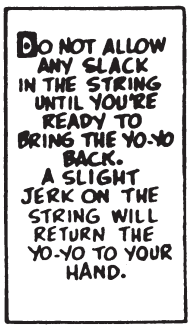
1. THE SPINNER



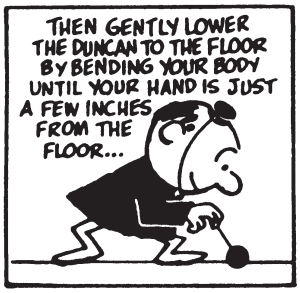
2. WALKING THE DOG

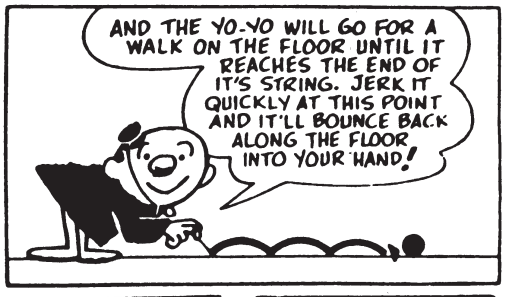




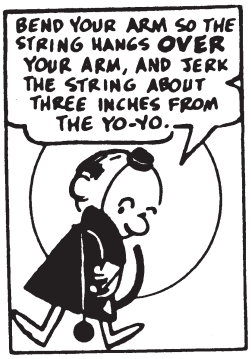


3. the CREEPER

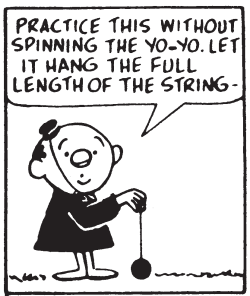


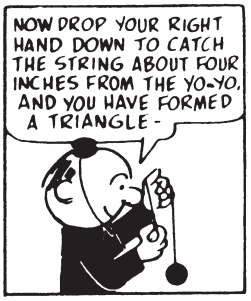


4. AROUND THE CORNER



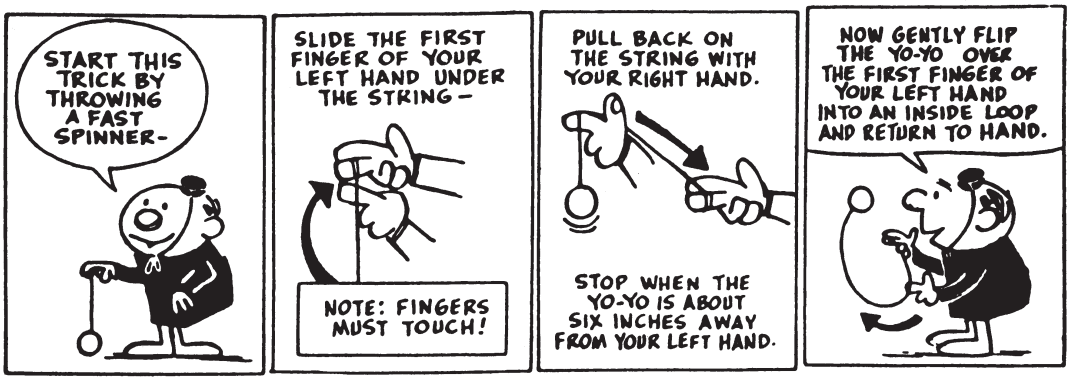
5. ROCKING THE BABY



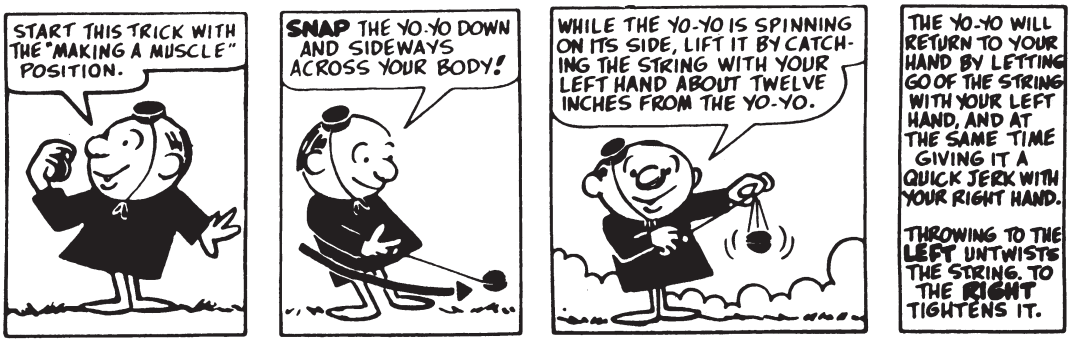


NOW TRY IT WHILE DOING A FAST SPINNER. TO MAKE IT RETURN, FLICK THE YO-YO OUT WITH YOUR RIGHT HAND AND THEN CATCH IT WHEN IT POPS BACK TO YOU!

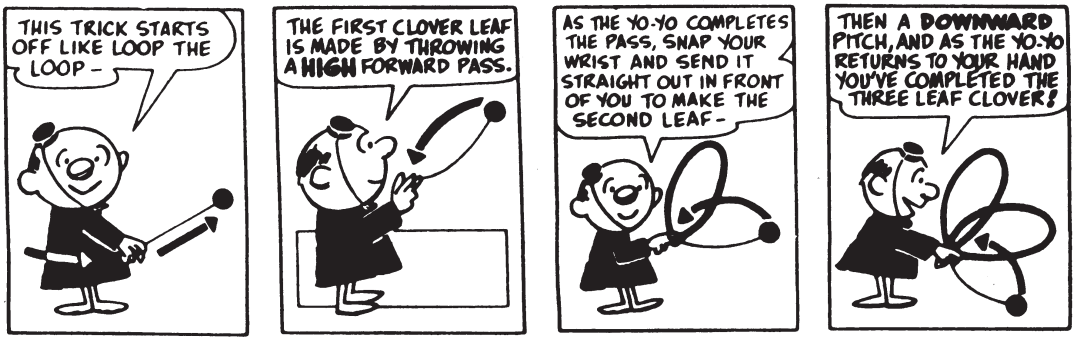
6. Skin the CAT



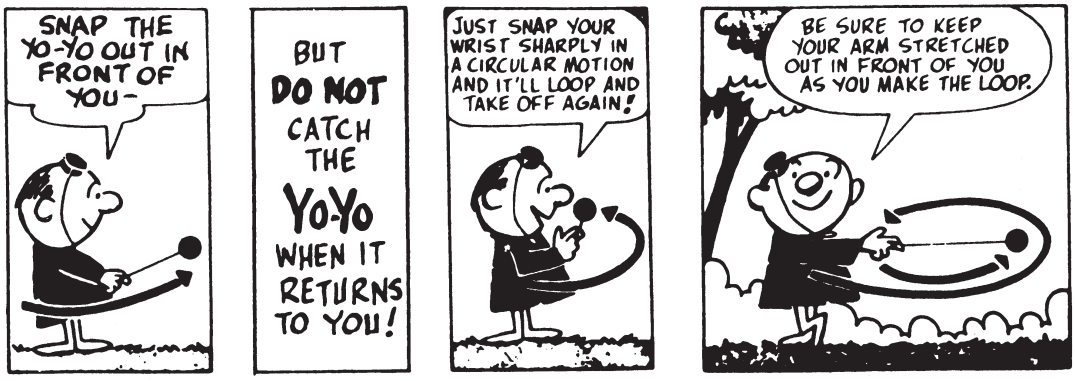
7. Sleeping Beauty



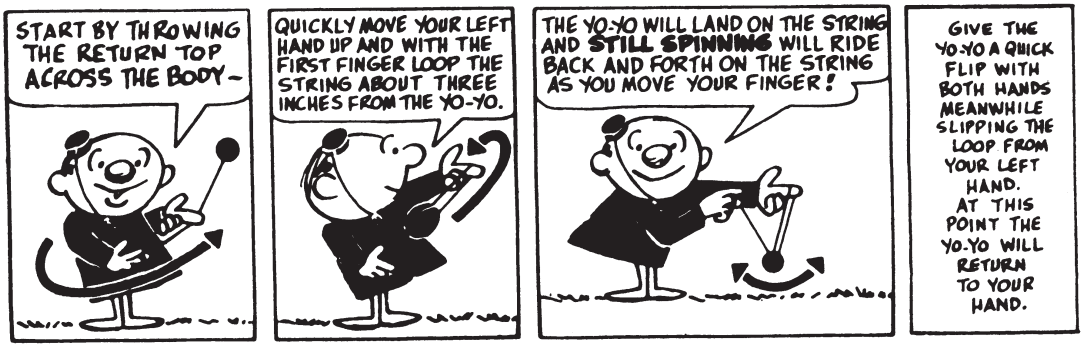
8. & THREE LEAF CLOVER



9. LOOP THE LOOP



10. Man on the FLYING Trapeze



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