

Energy Science Experiment: Feb. 2, 2021

Pull-back Car (Potential and Kinetic Energy)

The screenshot shows a Google Meet window with a Google Docs document titled "Pull-Back Car Experiment Rubric" shared on the screen. The document contains a table with four rows of criteria and their corresponding point values:

Criteria	Points
Fill in every box in the experiment sheet with thoughts and observations.	35 points
Use at least two of the listed vocabulary words in observations.	20 points
Participate in the jamboard discussions by posting a sticky with name attached.	20 points
Submit the experiment sheet ON TIME. (by the end of the day today!)	25 points

Below the table, there is a "meets.google.com is sharing your screen" notification with "Stop sharing" and "Hide" buttons. The bottom of the screen shows the Meet interface with a red mute button, a red hangup button, and a video off button. The taskbar at the bottom includes icons for Windows, Edge, File Explorer, Outlook, Chrome, and the Meet application.

Overview of Pull Back Car Experiment - Rubric

The screenshot shows a Google Meet window with a Google Docs document titled "Pull-Back Car Experiment Sheet" shared on the screen. The document content includes:

Pull-Back Car Experiment

Materials:

- Pull-Back Car
- Ruler
- Tape
- Marker
- 5 Pennies
- A large, flat, smooth surface such as a wood or tiled floor, or a big table

Instructions:

1. Set up:
 - a. Find a large, flat, smooth surface where you can perform your experiment.
 - b. Place a piece of tape in your work area. Mark this piece of tape "START" with your marker. Note: You will need a few feet of space on either side of this piece of tape in order to conduct the experiment.
 - c. Use your ruler to measure six inches TO THE LEFT of the tape marked "START". Place another piece of tape in this spot and mark it "1".
 - d. Use your ruler to measure twelve inches TO THE LEFT of the "1" piece of tape. Place another piece of tape in this spot and mark it "2".
 - e. Use your ruler to measure twelve inches TO THE LEFT of the "2" piece of tape. Place another piece of tape in this spot and mark it "3".

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Review of Directions - Pull Back Car Experiment

Science Experiment - ruchalaa@ x Science Experiment Feb. 2, 2021 x Ruchala Gr. 4 - Class 2020-2021 x Pull-Back Car Experim

meet.google.com/dat-qoxd-fji?authuser=0

Alicia Ireland is presenting Nylah Nderitu and 15 more

Pull-Back Car Experiment Sheet

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A large, flat, smooth surface such as a wood or tiled floor, or a big table

Instructions:

- Set up:
 - Find a large, flat, smooth surface where you can perform your experiment.
 - Place a piece of tape in your work area. Mark this piece of tape "START" with your marker. Note: You will need a few feet of space on either side of this piece of tape in order to conduct the experiment.
 - Use your ruler to measure six inches TO THE LEFT of the tape marked "START." Place another piece of tape in this spot and mark it "1."
 - Use your ruler to measure six inches TO THE LEFT of tape "1." Place another piece of tape in this spot and mark it "2."
 - Use your ruler to measure twelve inches TO THE LEFT of tape "2." Place another piece of tape in this spot and mark it "3."
- Experiment Part One:
 - Place your pull-back car at the "START" tape. Pull it back to tape "1" and release. Write down your observations in the box below. Repeat the process for a second trial.
 - Place your pull-back car at the "START" tape. Pull it back to tape "2" and release. Write down your observations in the box below. What was different this time? Repeat the process for a second trial.
 - Place your pull-back car at the "START" tape. Pull it back to tape "3" and release. Write down your observations in the box below. What was different this time? Repeat the process for a second trial.
- Experiment Part Two:
 - Tape 5 pennies to the top of your pull-back car. Place your car at the "START" tape and run more trials.

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Explicit Directions -Step 1 (Set Up)

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Alicia Ireland is presenting Orlian Bernard and 15 more

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Monday, Oct 29, 2020

Monday, Nov 2, 2020

Monday, Nov 9, 2020

Monday, Nov 16, 2020

Monday, Nov 23, 2020

Monday, Nov 30, 2020

Monday, Dec 7, 2020

Monday, Dec 14, 2020

Monday, Dec 21, 2020

Tuesday, Dec 29, 2020

Monday, Jan 4, 2021

Monday, Jan 11, 2021

Monday, Jan 18, 2021

Monday, Jan 25, 2021

Monday, Feb 1, 2021

Monday, Feb 8, 2021

Monday, Feb 15, 2021

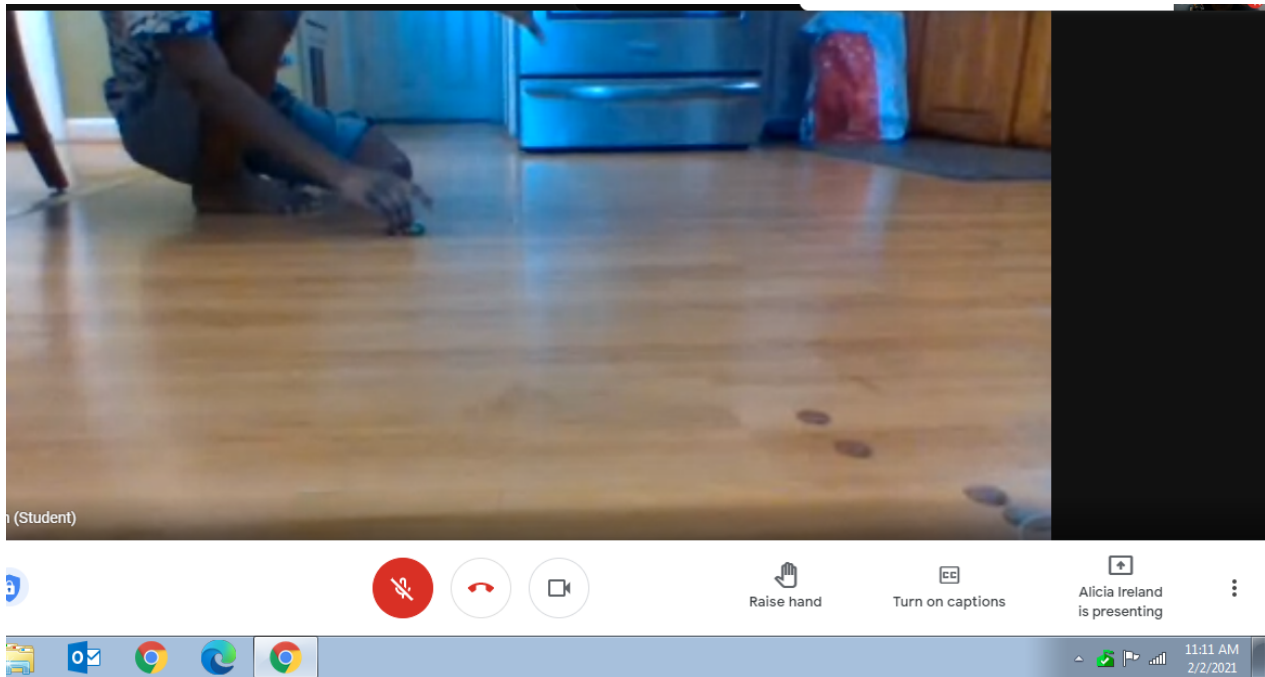
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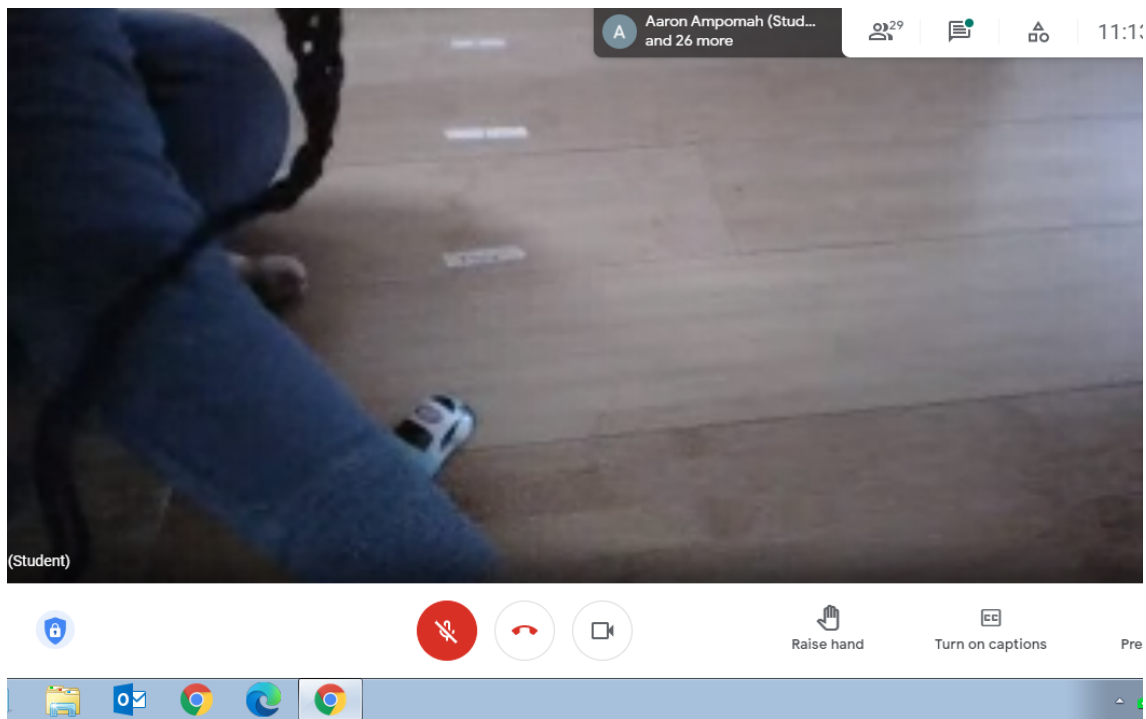
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Explanation & model of how to set up tape & work area - Part 1 (Set Up)



Tape # 1 - Trial 1 Observations of Movement



Tape # 1 - Trial 1 - Observations of Movement

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Pull-Back Car Experiment Jamboard

2/7

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Set background Clear frame

Tell me something you observed during part one of this experiment. What was the difference between releasing the car at tape "1" vs. tape "3?" Remember to add your name to your sticky!

The pull back car got stuck under the couch at # 3 and crashed into the stairs at # 1. Kevin

My pull back car fell onto my chair multiple times- Mia

i pulled it back and it roles under my sister bed Tati

Number 1 was really slow and did not go as far and number 3 went really fast and really far. Orlian

The impact was faster and i left it up and it still had speed. The energy was faster. It had energy as it stopped and i left it up and it had more speed. Alexander

Tape #1 "Trial 1" Its speed was fast when i let go of the car and it turned around. Tape #3 "Trial 2it has less kinetic energy than the first- Nylah

Rose on one it turned more then on number 3 it did not make it because it KEEDED TURNING and it turned under my bed and my brother!

Ellie: The car fell off the table each time but in different ways

i saw

Olivia: The first one was a "Meh". But the third one was a "WOW!"

Lella: My observation was that my car did different movement like curves it went fast sometimes it got stuck or it went slow.

David Tap 3 had not gone faster because i use to have one but it went that fast but number 1 was FAAAAAST

what i observed was that number 1 it twirled around and went back and number 3 was going to fast that as soon as it moved it crashed in the wall. Sania

Something i observed that during part one of this experiment that my car was doing loops and was vary slow. MAAAYLA

Astria: The difference is that when you pull back the car on tape 1 it went far but not as far as on tape 3. When you pull back the car on tape 3 it will go fast and farther than tape 1.

Nathaniel- every trial it would use a lot of energy even at tape 1

it went faster when i put it on three alot faster Erel.

Tape 1 my car was spinning alot. Tape 3 my car was going straight. Maia

The car went under the kitchen table 1 was super slow 2 was fine. But 3 it was super fast. By Elijah Bedanov

11:39 AM 2/2/2021

Observations between Tape # 1 vs. Tape # 3 - Jamboard

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Pull-Back Car Experiment Jamboard

3/7

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What can we conclude about the relationship between elastic potential energy and kinetic energy based on our experiment?

When we pull the car back farther, it goes farther and faster. When it crashed into something, it was a big crash and the car flipped upside down!

11:44 AM 2/2/2021

Classroom conclusion - Relationship between potential & kinetic energy

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Pull-Back Car Experiment Jamboard

Caleb Delvalle (Student) joined

Tell me about your predictions for part two of this experiment. How will adding pennies to the top of the car change your results? Remember to add your name to your sticky!

Lella: I think its gonina roll perfectly fine but I also think it might fall of to.	David. I think that the car will go slower because of the weight.	I think that the pennies will make the car slower. Orlian	Ellie: I think the pennies will make the car slower.	brooklynn I think the car will go real SLOW	I think that it will go slower than before - nyiah	Rose: I think it will roll strait and no more turns .	I think the weight of the pennies were pushing down on the car making it go slow -Kyara
Astrid - What I think will happen is that by adding pennies to the pull back car it will go slower and not that fast.	I think the car will go so slow that it can't move. Maia	Is slower and not that fast. Alexander	Aaron- I think it will go slower, because there is more weight.	Keziah: It will not go as fast as when it did not have the pennies.	Olivya: I think it will go faster.	My predictions for number 2 is that it will go even slower and keep turning around. Dania	The car will be less fast with the pennies because the wind blowing at it will make it go straight. Erel.
I think the car will go fast. by Elijah Pedanou	I think it is going to be slower sense theirs more weight on it. Kevin	I think it will go slower scene there is more weight. -Mia	I think it will go fast but it will move slow. Tati	I think even with all the weight on it, it will still go fast. -Nathaniel	I think it will go slow but I can't do it because I don't have stickers or tape. angelyn	I think that it will be faster. MAKAYLA	

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Part 2 - Predictions with Pennies



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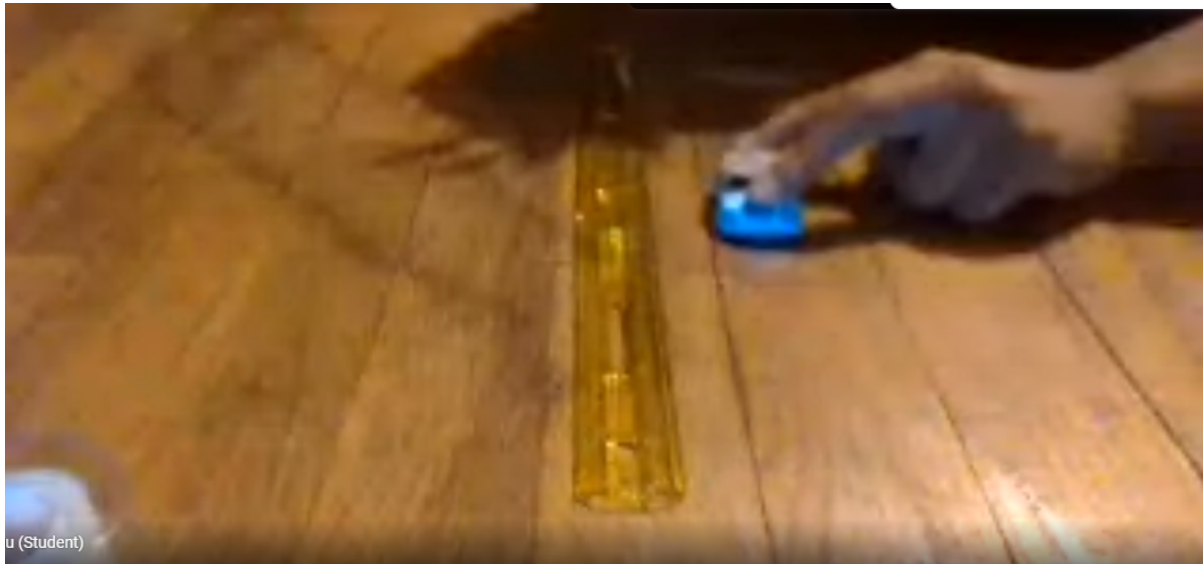
Trials & Observations with Pennies - Part 2



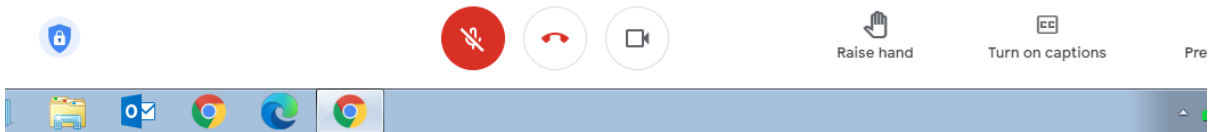
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Trials & Observations with Pennies - Part 2



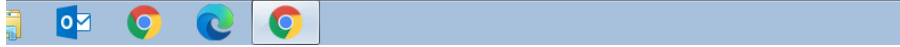
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Trials & Observations with Pennies - Part 2



Raise hand



Trials & Observations with Pennies - Part 2

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Pull-Back Car Experiment Jamboard

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Tell me something you observed in part two of the experiment. How did adding pennies to the top of your car change your results? Remember to add your name to your sticky!

It curved to the right. Kevin

It didnt even get 1 foot. Kevin

It went only 16 inches didn't even get past tape # 2. Kevin

Ellie: It was slower then part 1.

Aaron- it was slower.

it did not go brooklyn

I saw that the car still went fast and far. Olian

I carwent faster and farther. YAY. WAY BETTER THAN THE ONE WITH NO PENNIES CUZ IT HAD WAY MORE ENRGY. MAKAYLA

Olivia: THE CAR WENT SO FAST! But my question is why?

It went in a circle. Kevin

It slammed into the wall. Kevin

It didn't even get past the start tape. Kevin

it went slower than part 1 (like in my prediction) -Nylah

it was slower and it seemed like it was heavier. -Mia

Nathanle: That on tape 3 trial 1 and 2 it went faster than tape 1 and 2.

It went really slow on Tape 1, 2, and 3 it did 1 do anything at all only some went a bit but not really. Sania

Rose: it went super fast and the speed was lots fast and past the start then at 3 it turned and wait for number 2

David: It was choppy as it went just then slow then just again but my prediction was GREAT! It was slow at first but it was like after that you could never know for sure.

It didn't even move, then it moved a little bit. Maia

Lella: It didn't really change the only thing that changed was I was really slow 2 was slow then 3 was having kinetic energy.

it was really slow. -Kyara

It was faster but not too fast but it was faster than 1 and 2 and it stable. Alexander

Astrid - it changed it by it went a little slow on tape 3 but on tape 2 and 1 it went fast even with the mass on the pennies.

I observed that the coin had no effect. By Elijah Pedanou

Rose part 2 it kepted turning by the computer so a full turn it was hitting micuon speed and... wait for number 3 3 is my last one...

Even though I could not do the project when I saw rose do it went REALLY fast but really cool. angelyn



Part 2 Observations with Pennies

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Pull-Back Car Experiment Jamboard

6/7

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Rania Sidik (Student) joined

What can we conclude about the relationship between mass and kinetic energy based on our experiment?

David, when we did not put mass the car went faster but slower but when we put mass on the car it went slow and then fast and slow well... you get the point the mass makes the car speed hard to guess.

When you add extra weight (mass) to your car, it goes slower. The mass in the car affected the kinetic energy of the car.

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Classroom conclusions about the relationship between mass & kinetic energy

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Pull-Back Car Experiment Jamboard

7/7

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Think about our other vocabulary words (force, collision, gravity, friction). How might we use our pull-back cars to experiment with these things? Remember to put your name on your sticky!

By pulling the car back you are using force and when it goes super fast and collide with something it makes a collision. Nathaniel

It looked like friction was on a vaca cuz it did nothing force was the reason why the car when fast slow I did not see any collision but it would make it bounce and maybe make it go faster.

pull the car back brooklyn

The car kept touching the chair behind the experiment. I friction - Niyah Tape 3" Trial lit went farther than tape one and two I think because I used more force. Niyah

force to pull back the car and force to make it go forward left or right Kevin

Rose: if you were on a rug then it will go slower because there is friction.

I wanna know how can people in the future break gravity so it can slow people to feel how life on the moon is like. Caleb

A sticky because it causes force which means the sticky will pull back. By Elijah Pedanou

David after the pendulum I know the gravity did its work because the gravity of earth makes things go faster.

Pull the car back and let it go. MAKAYLA

By pulling 3 cars at the same time by both of them hitting each other it creates a collision. Orlan

Olivia: Pull back the car. Let it go and find out what scientific word can describe how far it car went.

You push your car back and the force is strong and the impact is powerful. Alexander

I wanna know what the whole world will be like with no gravity. Angelyn

Friction to make the car drive on a tiled wooden floor or wooden table. Kevin

I think that you should get a hair dryer and get a plastic ball and put the plastic ball into the hair dryer and watch it float in look at it and the gravity.

I think it would have been so much different on the rug cause the car won't move. Maia

Astrid - I think when you pull back the car friction helps it slow down like if we did it on carpet but if we did it on wood than the car gets slower and slower in till it stops.

Keziah: Collision: We could tape two cars together.

Lella: if we did it on a rug it would create less friction the car would barely move.

Aaron - we more force, so it can be faster

It would be friction because the pull back car would rub up against the penny and it gives it friction. Banla

I think when you put the wheels in water it will go slower because with the water it would slide with the tires to make it go more fast. Eric

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Integrating Energy Vocabulary with Future Experiments

