Ashaway School Science Journal

June of 2010
Trimester 3
Volume 2

The Ashaway School Science Journal highlights the observation and investigative work of our school's young scientists.

Ashaway School Teachers

Kindergarten

Kerri Smith
Tricia Koukas

Grade 1

Christine Austin
Patience Breault
Laurie Gigliotti

Grade 1and 2 Split

Annie Campbell

Grade 2

Patricia Pearce
Gina Lee

Grade 3

Kim Allen
Lindsay Bliven
Kelly Vocatura

Grade 4

Clare Ornburn
Julie Young

Published by Principal Steven Morrone

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Grade 1

Balance and Motion

Overview:

This kit consists of three sequential investigations. Each one is designed to introduce concepts in balance and motion. The students explore stable (balanced) and unstable systems using counterweighing to change the center of mass in the systems. They explore two types of motion—spinning and rolling—through trial & error and through exploration. Students begin to develop a sense of variables, which they control to produce outcomes.

Goals:

*Students investigate materials during free exploration and in guided discovery

*Students explore concepts of balance, counterweight, and stability

*Students observe unstable systems and modify them to reach equilibrium

*Students discover different ways to produce motion

*Students construct and observe toys that spin

*Students explore and describe variables that influence the spinning of objects

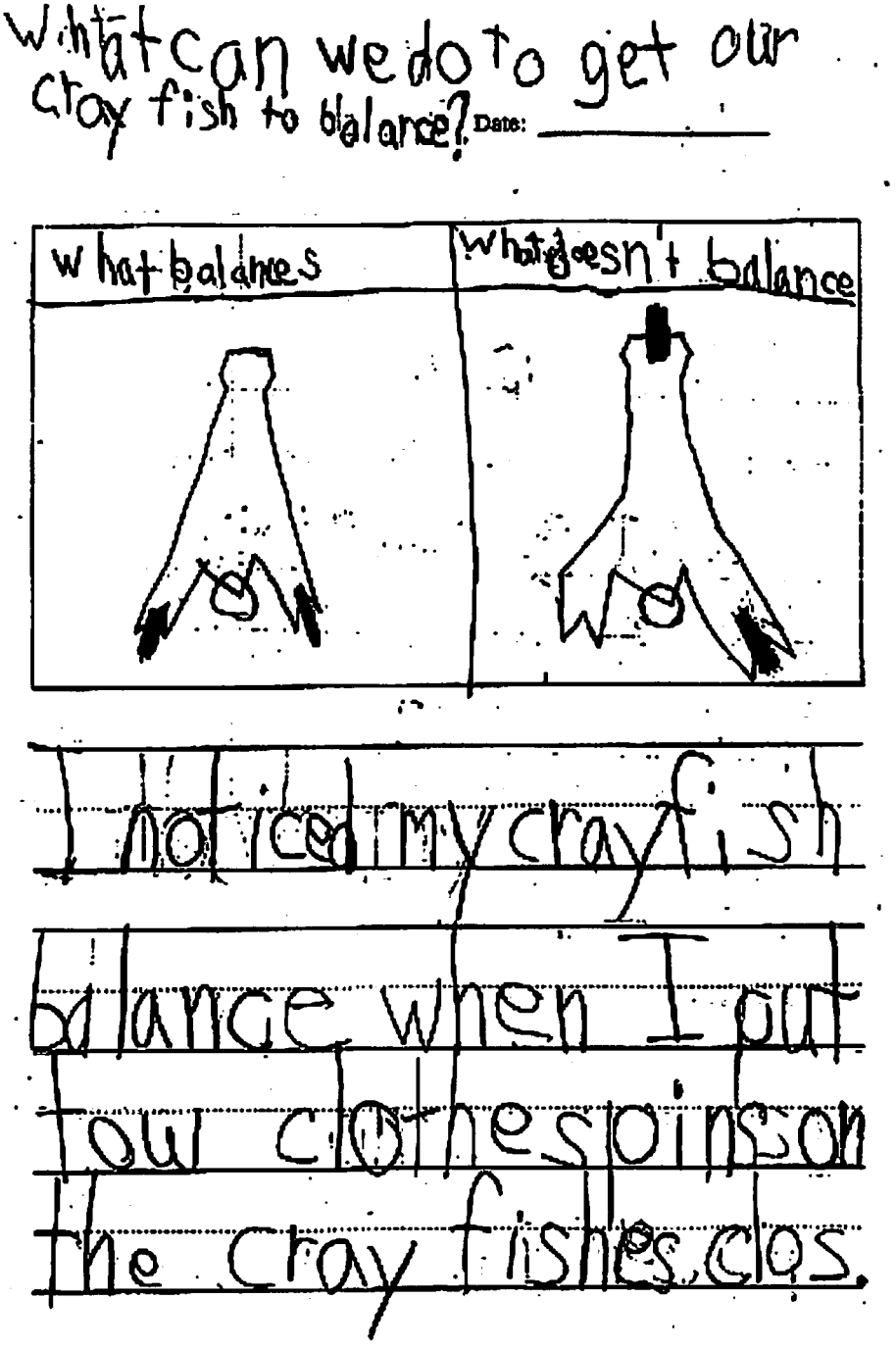
Mrs. Austin
Mrs. Breault
Mrs. Campbell
Mrs. Gigliotti

In the first investigation students experimented with an oak tag crayfish. The students had to get the crayfish to balance on one finger using the nose as the balance point. They were given clothes pins as counter weights to help balance it.

Sam R. provides a detailed explanation of how he was able to balance his crayfish. He also explained where he placed his counter weights and that they needed to be placed below the balance point.

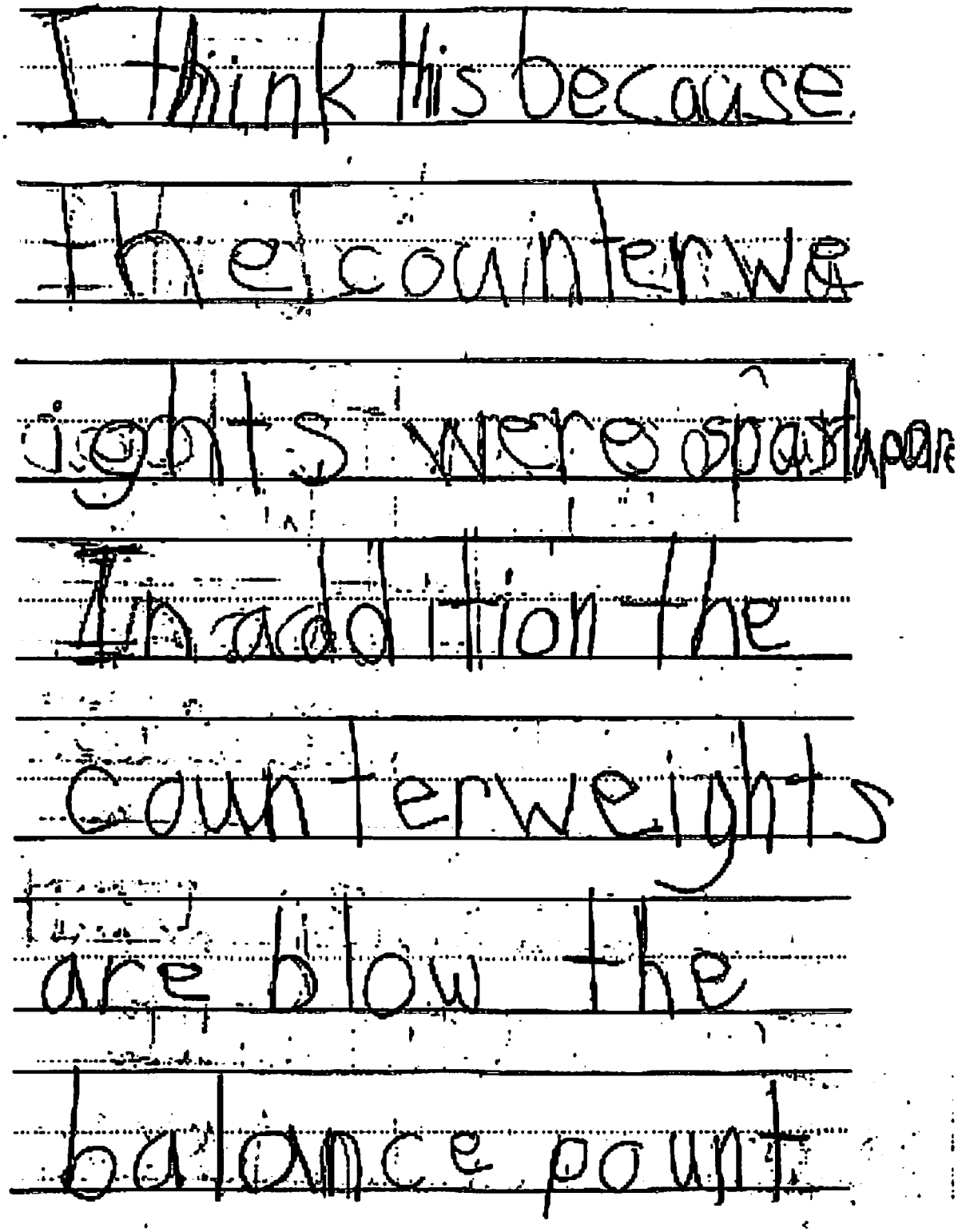
Sam R.

Grade 1



Sam R.

Continued...

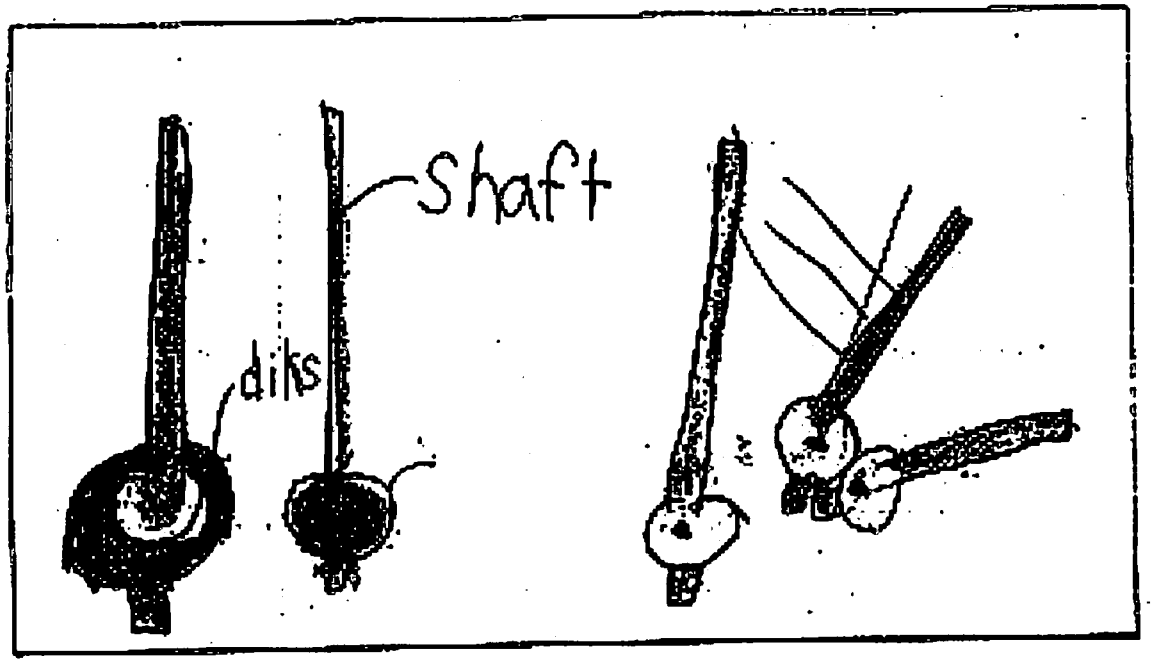


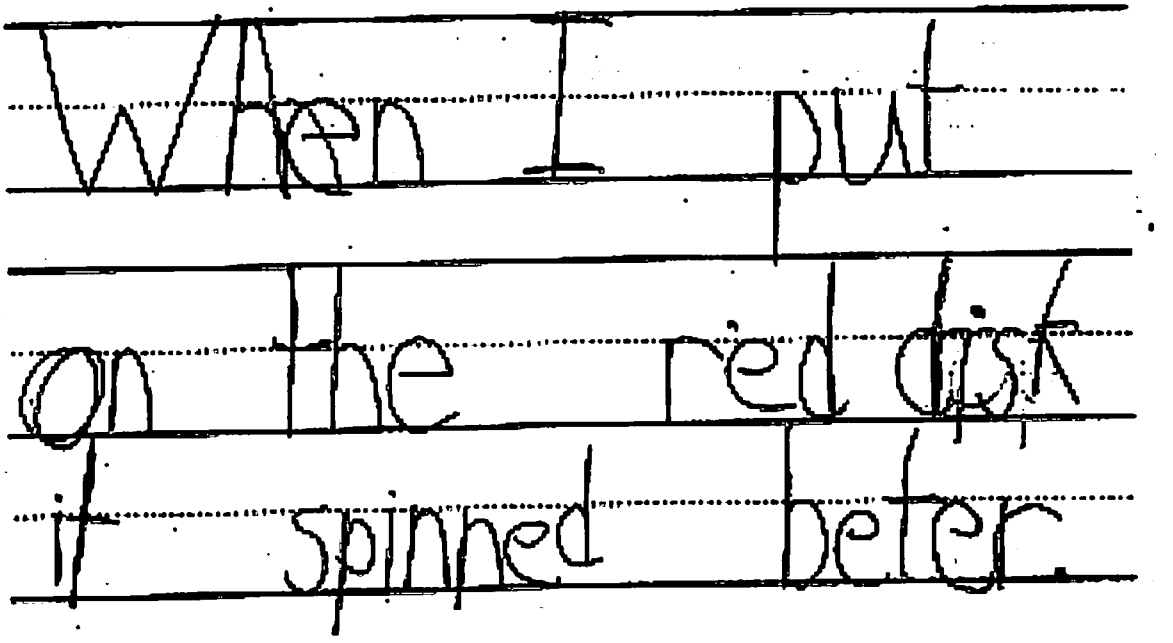
Students completed an investigation that allowed them to explore the concept of spinning. They were asked to make a top using one red disk, one yellow disk, and a shaft. They needed to get their top to spin.

Zander P. provides a detailed explanation of his two tops, one red and one yellow. He provides an example of how they spun. He also explains that combining the two tops make is a better top.

Zander P.

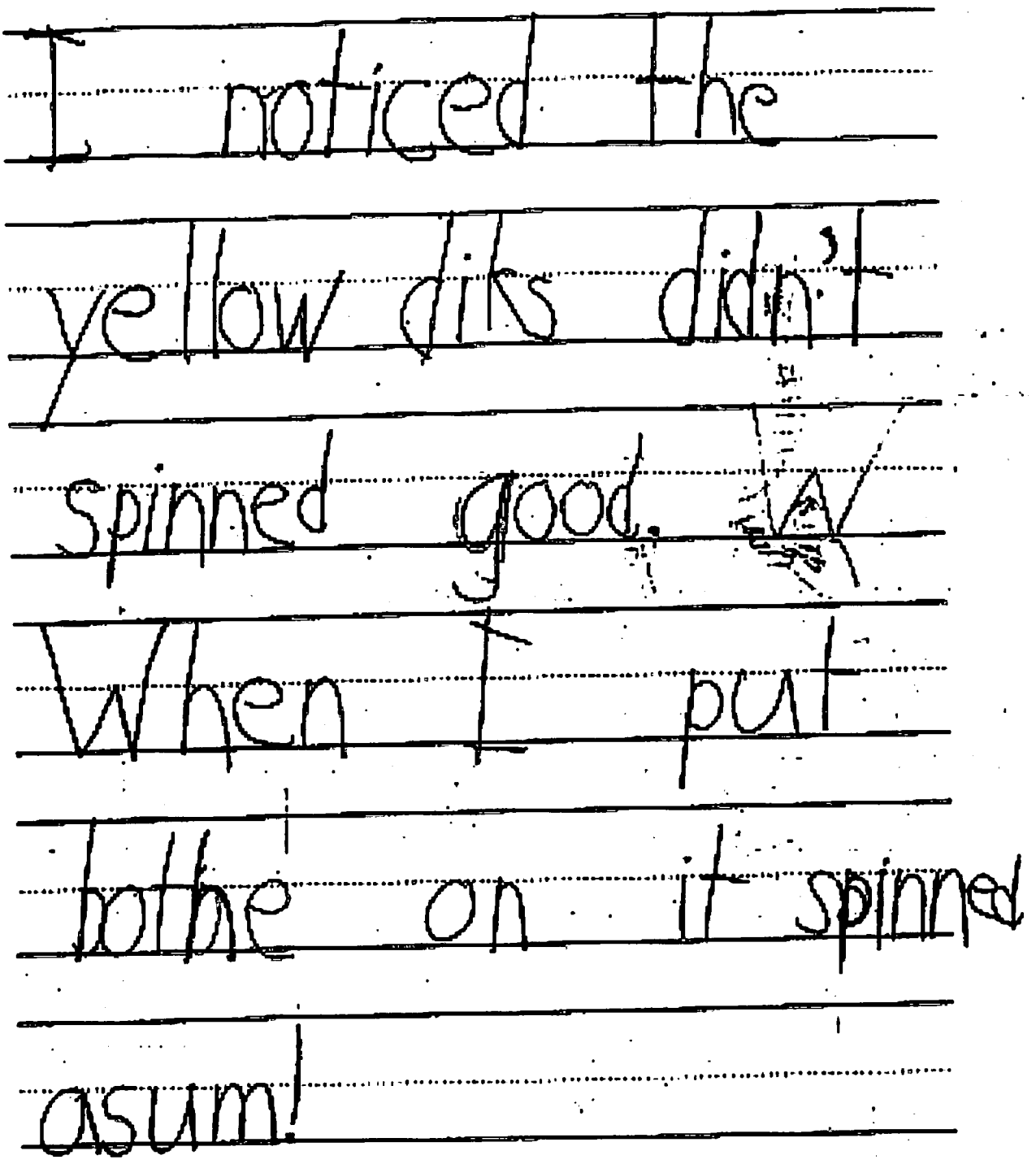
Grade 1





Zander P.

Continued ...



Grade 2

Solids and Liquids

Concepts

- Solids and liquids can be described by their properties.
- Some properties of solids are color, shape, and ability to roll or stack.
- Some properties of liquids are color, tendency to flow, degree of viscosity.
- Tests can be performed to investigate properties of solids and liquids that cannot otherwise be observed.

Skills

- Observing and describing the properties of solids and liquids.
- Conducting tests to investigate the properties of solids and liquids.
- Sorting solids into groups on the basis of their properties.
- Comparing similarities and differences among solids.
- Comparing similarities and differences among liquids.
- Applying tests to investigate new solids and liquids.
- Comparing the properties of solids with the properties of liquids.
- Communicating ideas, observations, and experiences through writing, drawing, and discussion.

At the end of the unit, students are challenged to take an unknown substance, Oobleck, and conduct a series of tests and to determine if it is a liquid or a solid. The students make predictions and then collect data. Once the data is collected, predictions are revisited and science thinking is readjusted accordingly. Finally, second graders predict what will happen when a solid (Mentos) are added to a liquid (diet coke) and the unit ends with a "BLAST"!

Mrs. Campbell
Mrs. Lee
Mrs. Pearce

As we were awaiting the arrival of Betsy Rupp-Fulwiler to our classroom in May, we asked the 2nd graders to draw and write about scientists. The two samples reflect the topics that we've studied in class. Spencer includes the bottle levels in the corner of her picture. We had just completed this observation in our science notebooks. Michaela has designed her own science lab complete with organized storage. She also included herself in the picture, conducting an experiment and wearing a lab coat. It is wonderful that she considers herself a scientist!

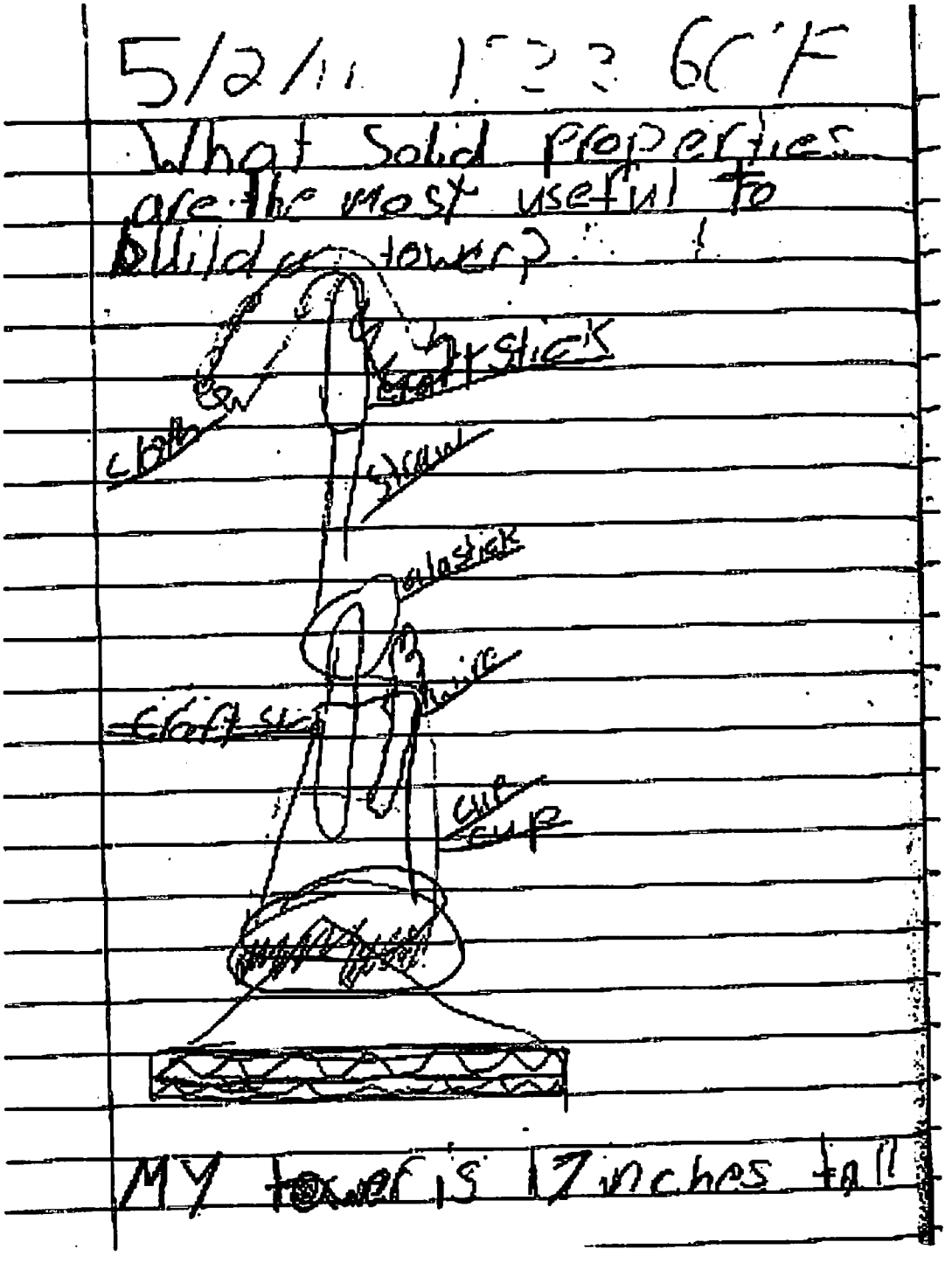
Spencer S.

Grade 2

Michaela A.

Grade 2

During this investigation students were given a number of solid objects and asked to observe and come up with a list of properties. They are asked to apply the properties and were given the challenge to build the tallest tower. William draws and labels his tower and then writes what he learned about the building of these towers. He realized that when his tower became top heavy he needed a steady base to support his structure.



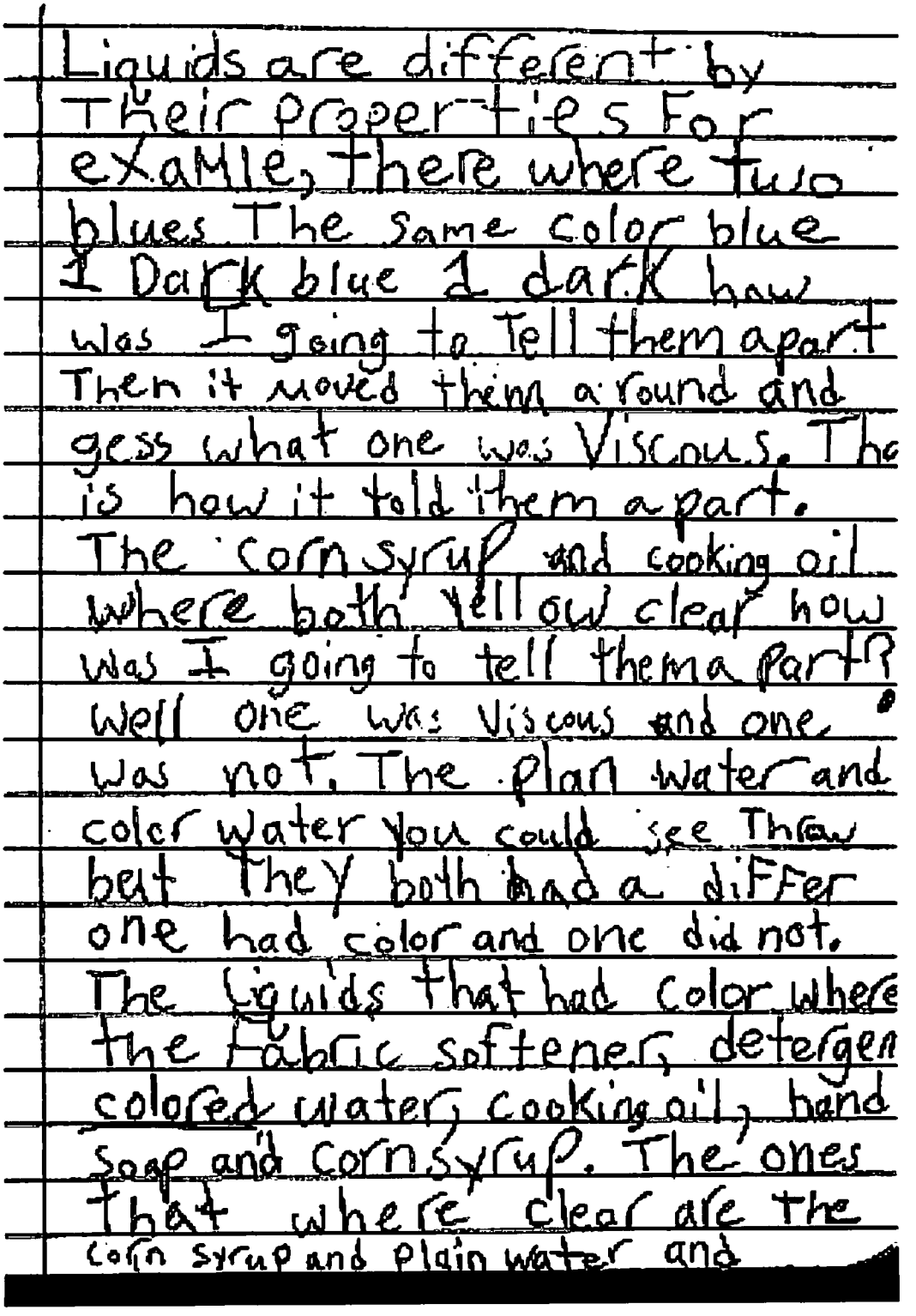
5/3/11 9.35 53F

I noticed when I put my craft stick in the cup I needed to put it in the right position. I tried to coccct all of the flexible parts and not rigid peaces together but it didn't work because it got a little bit to heavy and the hole tower fell. I learned to get a very stedy base and tower or elk it would get to heave a fall. It surprised me that I got the same meisher as the pursen next to me. It also surprised me that I made it more than ten. I wounder if you could keep going and going and going. It reminds me of bilding a house.

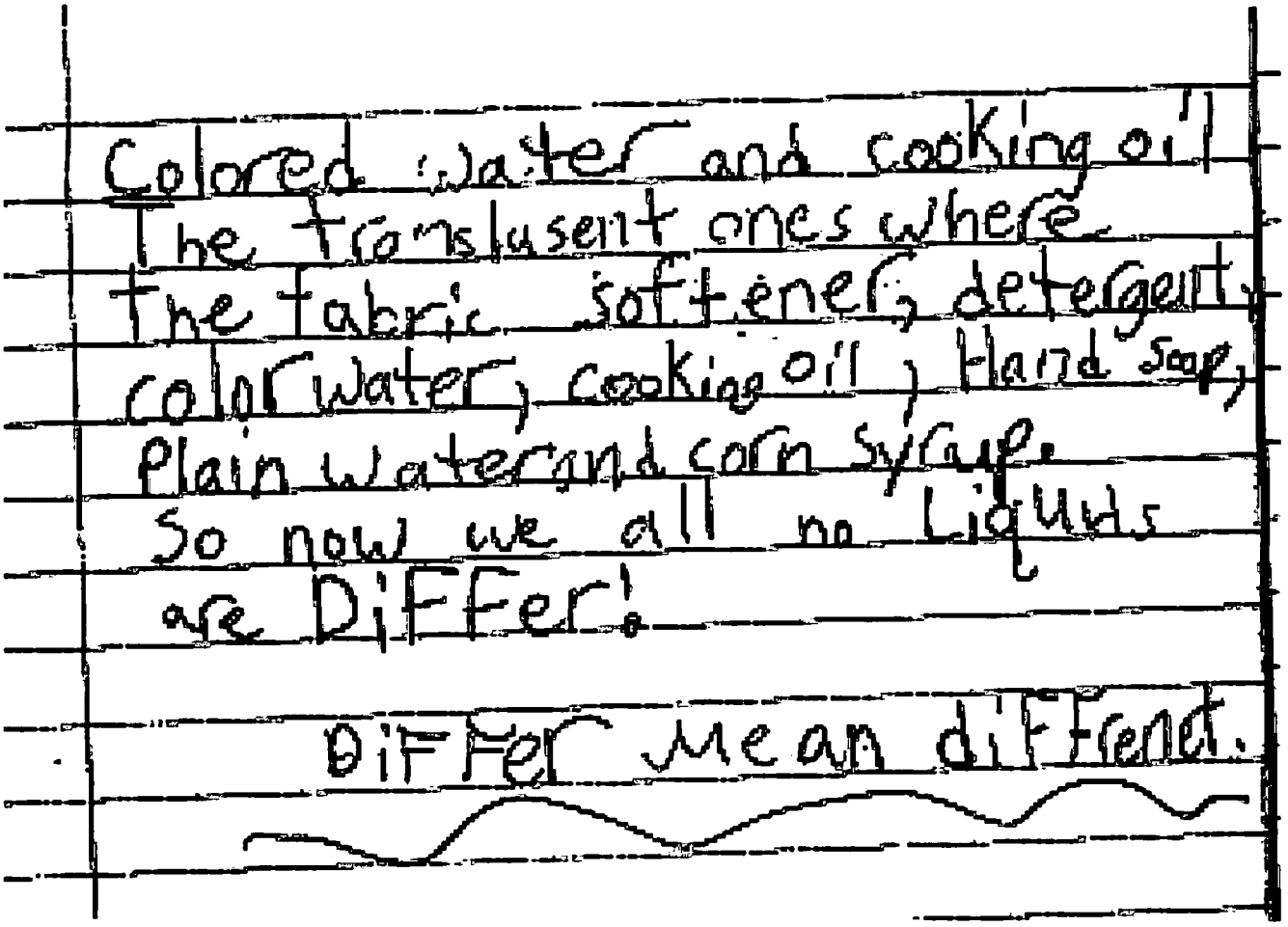
William L.

Grade 2

After observing a number of liquids in prepared bottles, students were asked to make observations and record properties. Meganne from 2L tells how she is able to tell the liquids of the same colors apart. She uses her science vocabulary and is clear that viscosity, color, and translucence are all properties of liquids.



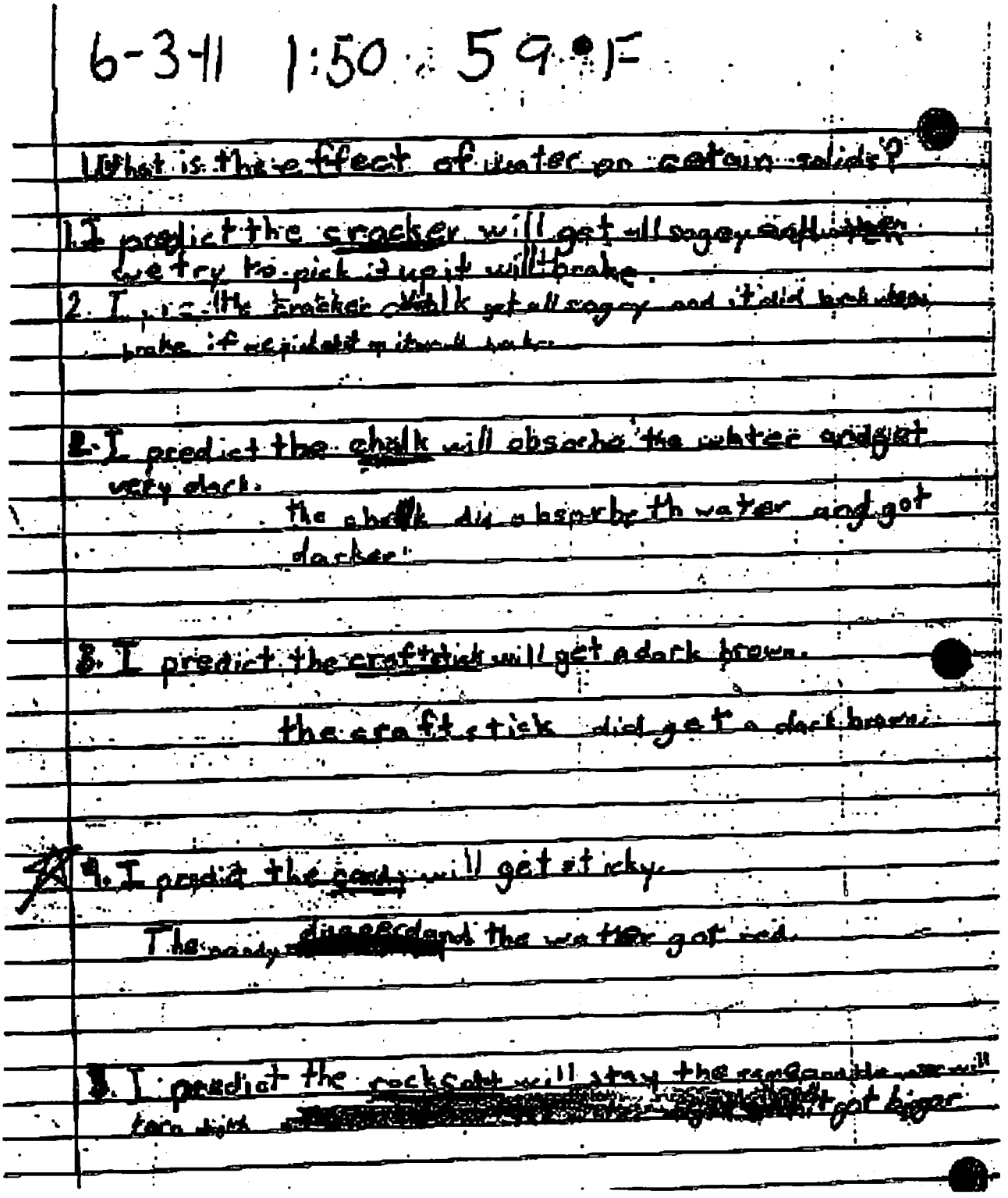
Liquids are different by
Their properties For
exAMle, there where two
blues The same color blue
I Dark blue 1 dark how
was I going to Tell them apart
Then it moved them around and
gess what one was Viscous. The
is how it told them apart.
The corn syrup and cooking oil
where both Yellow clear how
was I going to tell them apart?
Well one was Viscous and one
was not. The plan water and
color water you could see Thraw
but They both had a differ
one had color and one did not.
The liquids that had color where
the Fabric softener, detergen
colored water, cooking oil, hand
Soap and corn syrup. The ones
that where clear are the
corn syrup and plain water and



Meganne D.

Grade 2

After observing solid and liquid properties, students experimented and predicted what will happen when solids are combined with liquids. Madison predicted what would happen to each solid when it was submerged in water. She chose to write about the peppermint candy and predicted that it would simply be sticky. Her thinking changed when she noticed that the candy actually dissolved in the water over time. She writes her conclusion stating that a solid can turn into a liquid. Her "I wonder" is equally exciting because she wonders if another type of candy would disappear too. This is a good example of her applying and wanting to extend her knowledge of different properties.



6-3-11 1:50 : 59 °F

What is the effect of water on certain solids?

1. I predict the cracker will get all soggy and then get very to pick it up it will break.

2. I predict the chalk will get all soggy and it will break when I pick it up it will break.

2. I predict the chalk will absorbe the water and get very dark.

the chalk did absorbe the water and got darker.

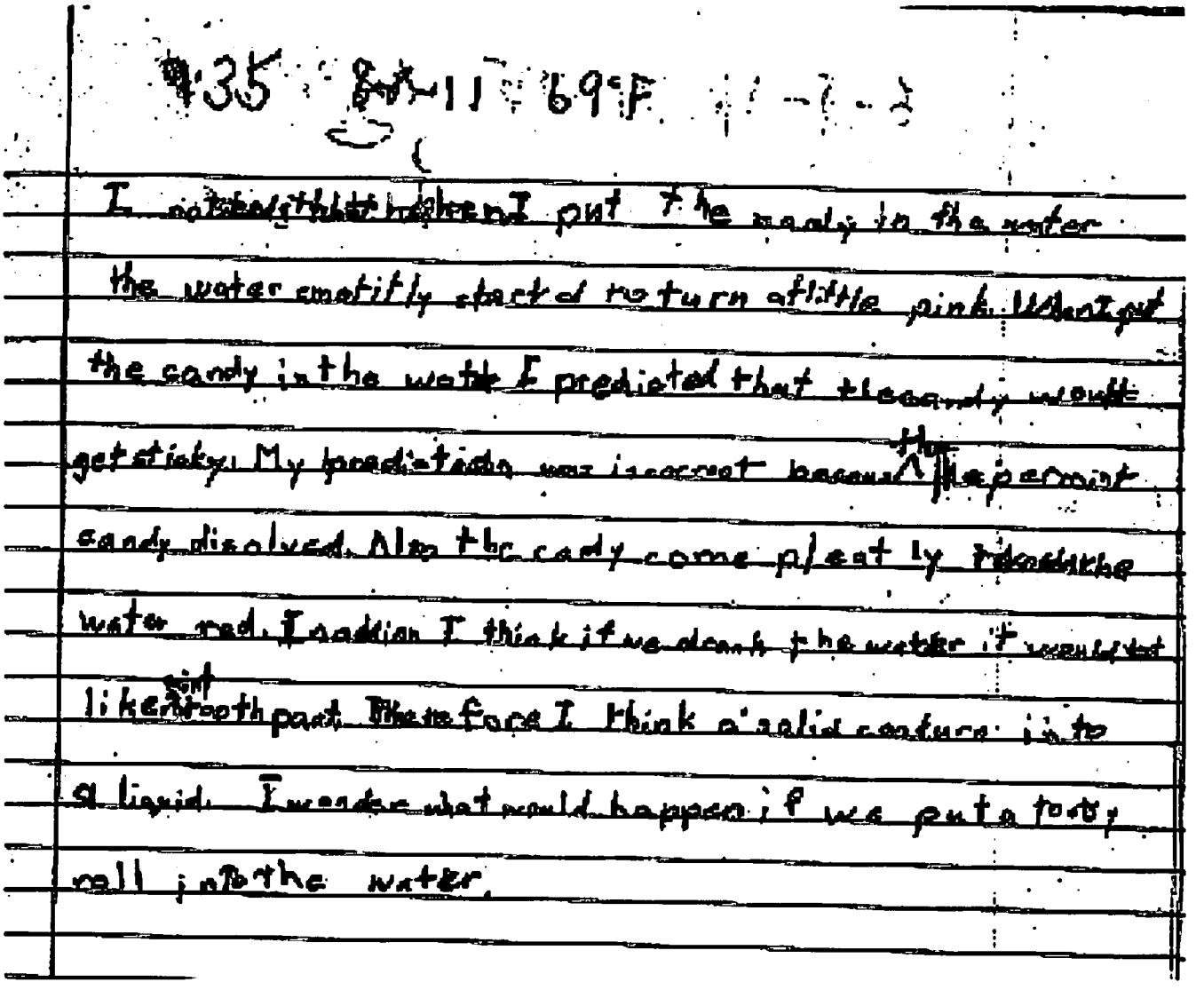
3. I predict the craft stick will get a dark brown.

the craft stick did get a dark brown.

4. I predict the candy will get sticky.

The candy dissolved and the water got red.

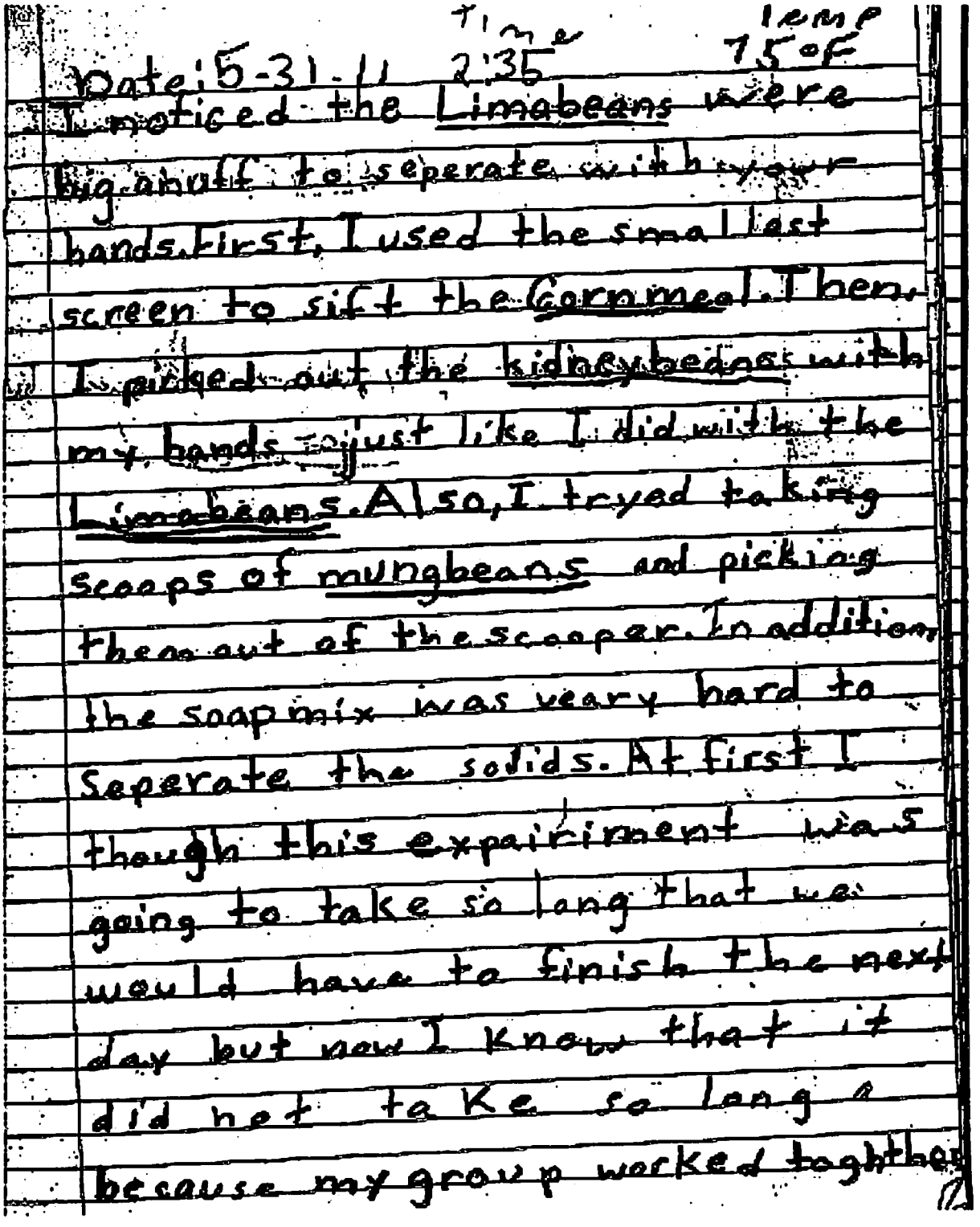
5. I predict the rock salt will stay the same and the water will turn salty. [illegible] got bigger



Madison S.

Grade 2

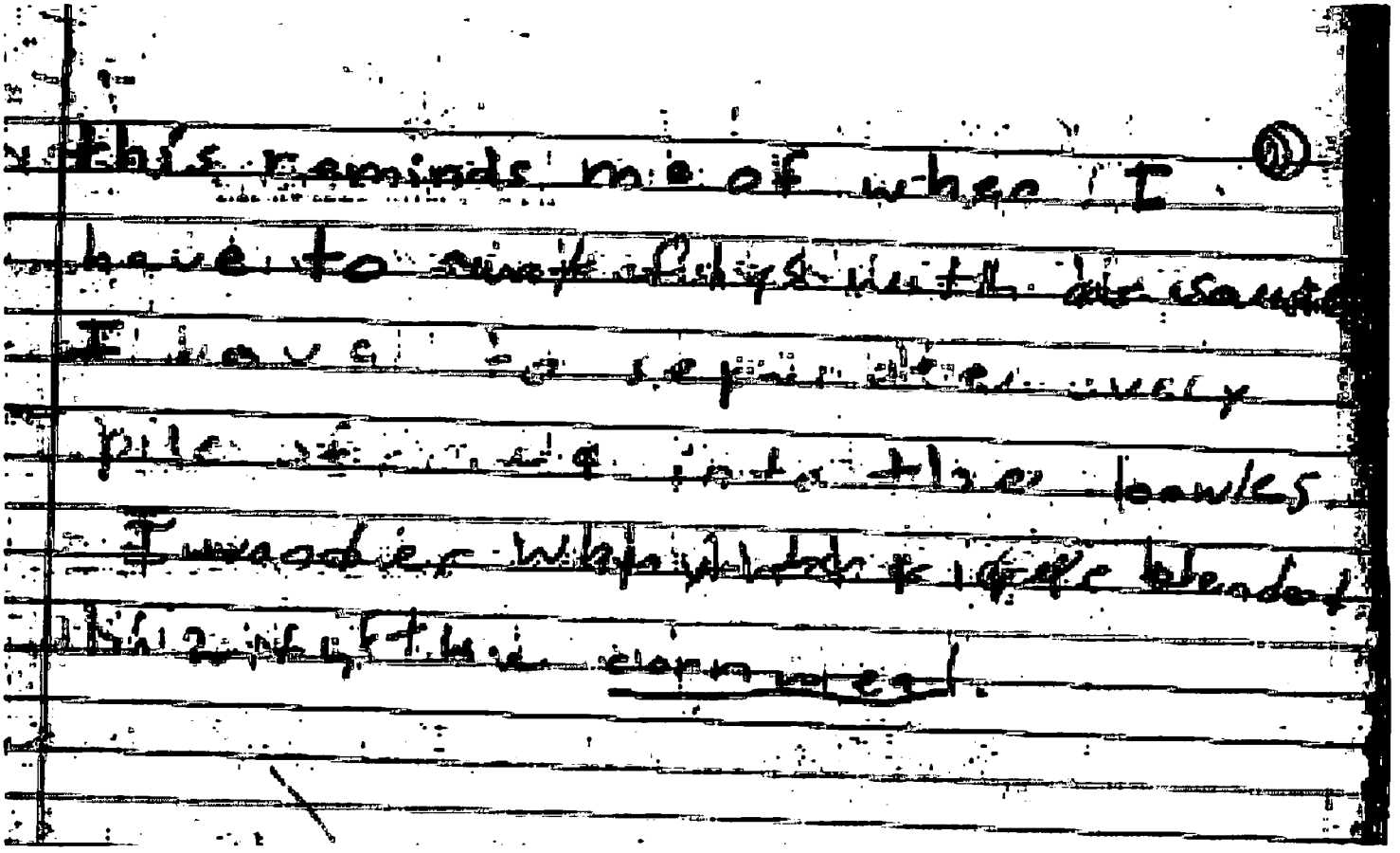
Students were asked to determine if solids can be separated and use mesh screens of different widths to separate the "soup mix". Natalie does an excellent job recording and writing about what she observes as she separates the different size solids. She does mention that separating the larger solids with her hands was easier than using the screens. She also mentions that she thought it would be easy, but it took more time than she thought.



Time Temp

Date: 5-31-11 2:35 75°F

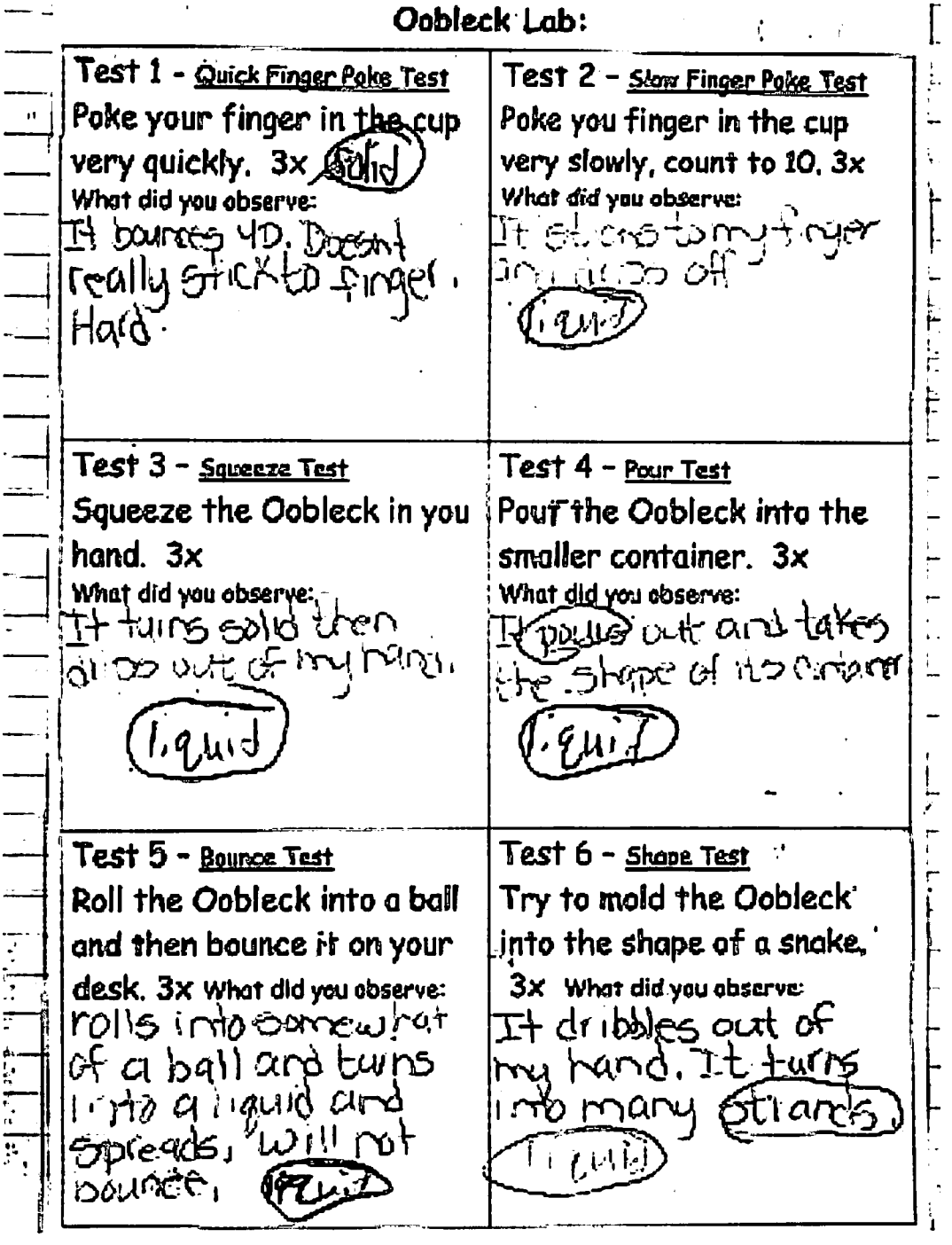
I noticed the Limabeans were big ahuff to seperate with your hands. First, I used the smallest screen to sift the Cornmeal. Then, I purged out the kidneybeans with my hands just like I did with the Limabeans. Also, I tryed taking scoops of mungbeans and picking them out of the scooper. In addition the soap mix was veary hard to Seperate the solids. At first I though this expairiment was going to take so long that we would have to finish the next day but now I know that it did not take so long because my group worked toghther



Natalie B.

Grade 2

To end the unit the students in 2P invited their parents in to do an experiment and experience the science writing process. Their challenge was to determine if a substance called Oobleck (cornstarch and water) was a solid or liquid. Rhiannon and her mom worked together and made a prediction, performed a number of tests on the substance, recorded their results, and then wrote a conclusion. There writing shows their change in thinking as they predicted Oobleck to be a solid and then they were able to determine it was a liquid. They used the data from their tests to support their decision and then ended with an "I wonder."



Oobleck Lab:

Test 1 - Quick Finger Poke Test
Poke your finger in the cup very quickly. 3x (Solid)
What did you observe:
It bounces up. Doesn't really stick to finger. Hard.

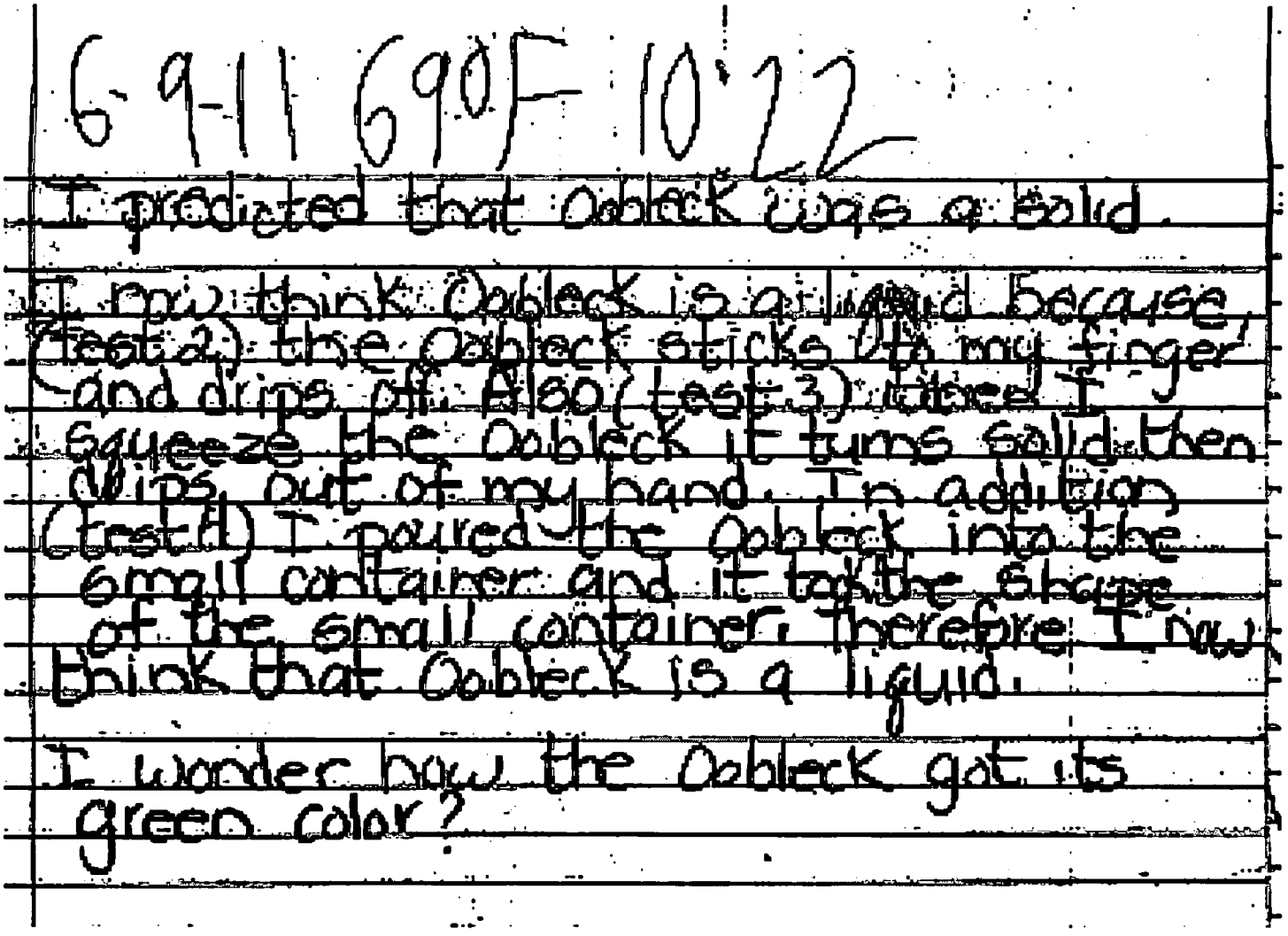
Test 2 - Slow Finger Poke Test
Poke you finger in the cup very slowly, count to 10. 3x
What did you observe:
It sticks to my finger and runs off
(Liquid)

Test 3 - Squeeze Test
Squeeze the Oobleck in you hand. 3x
What did you observe:
It turns solid then drips out of my hand.
(Liquid)

Test 4 - Pour Test
Pour the Oobleck into the smaller container. 3x
What did you observe:
It pours out and takes the shape of its container
(Liquid)

Test 5 - Bounce Test
Roll the Oobleck into a ball and then bounce it on your desk. 3x What did you observe:
rolls into somewhat of a ball and turns into a liquid and spreads, will not bounce. (Liquid)

Test 6 - Shape Test
Try to mold the Oobleck into the shape of a snake. 3x What did you observe:
It dribbles out of my hand. It turns into many strands
(Liquid)



Rhiannon W.

Grade 2

Grade 3

Wondrous World of Water!

Third Graders here at Ashaway School were very excited to explore the liquid that surrounds them everyday – WATER. There were three main concepts we focused upon and they are listed below:

Water Observations:
Students investigate properties of water. They compare the way water interacts with four different surfaces, observe the property of surface tension, and investigate how to change this property. They compare the rates of different amounts of water flowing downhill.

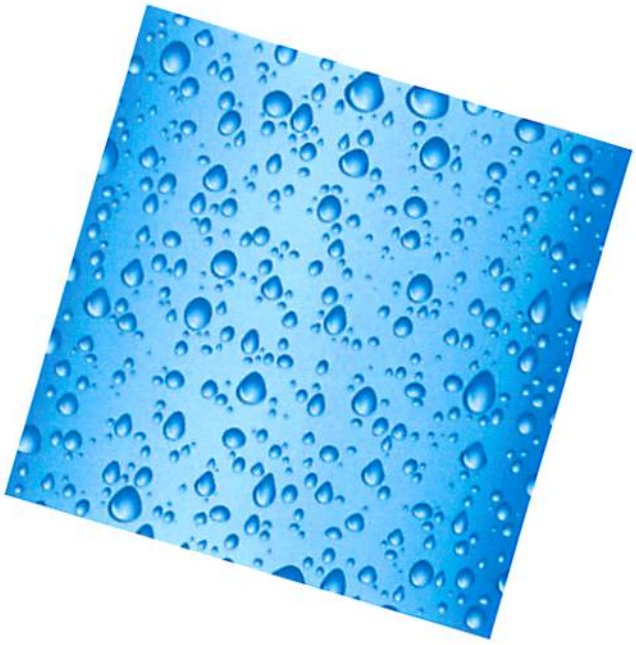
Hot Water, Cold Water:
Students observe the properties of water as it is heated, cooled and frozen. They make a water thermometer and find that water expands as it is heated. Student compare the density of water at different temperatures and find that warm water is less dense than cool water, and ice is less dense than liquid water.

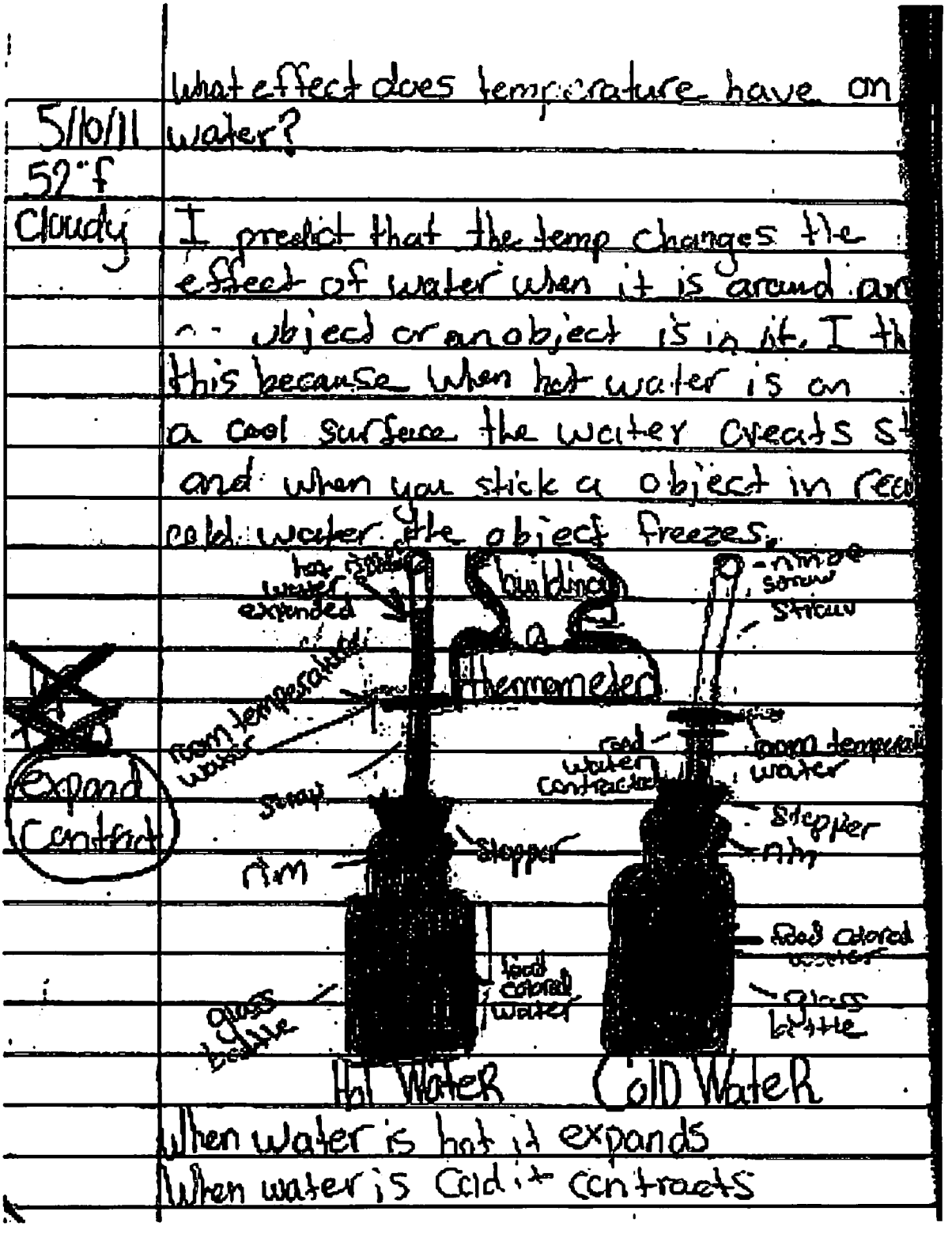
Waterworks:
Students compare what happens when water is poured through two different earth materials, soil and gravel. Students construct a water wheel and use it to lift objects, learning about the power of water.

Mrs. Allen

Mrs. Bliven

Mrs. Vocatura

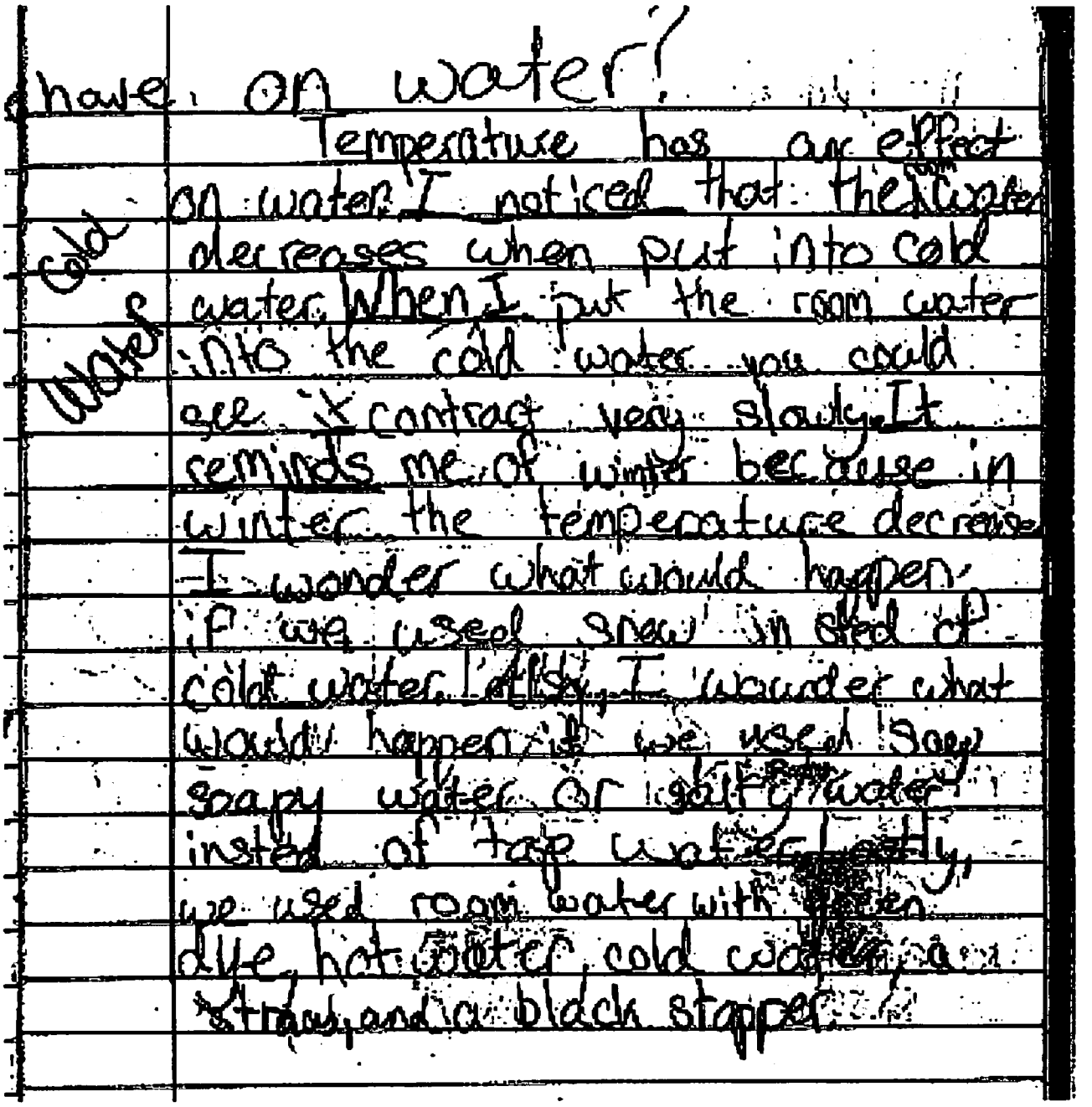




Haley made accurate and full observations when building a thermometer. Her clearly illustrated thermometers are correctly labeled.

Haley S.

Grade 3


have on water?
Temperature has an effect
on water. I noticed that the liquid
decreases when put into cold
water. When I put the room water
into the cold water you could
see it contract very slowly. It
reminds me of winter because in
winter the temperature decrease
I wonder what would happen
if we used snow instead of
cold water. Also, I wonder what
would happen if we used soapy
soapy water or salty water
instead of tap water. Lastly,
we used room water with green
dye, hot water, cold water, a
straw, and a black stopper.

In her observational writing piece, Erin supports her explanations with appropriate data about how temperature has an effect on water. The class first wrote a shared writing piece about the hot water. Then, while using scientific vocabulary, Erin was able to make draw reasonable inferences from her data about the cold water and the thermometer she constructed.

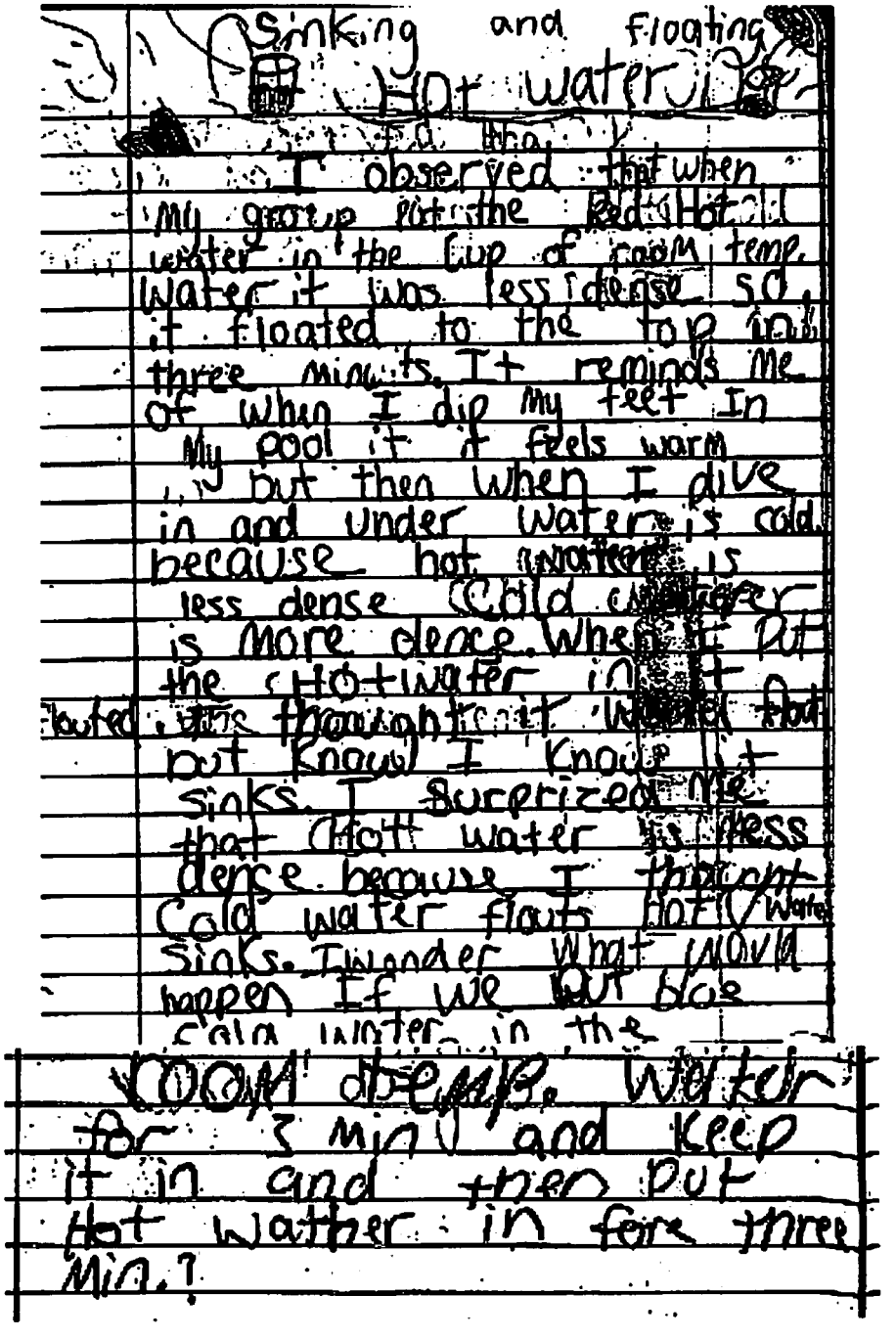
Erin S.

Grade 3

After making full and accurate observations about what happens when you place hot or cold water in a container of room temperature water, Megan used her accurate data accurately and completely. She supported her explanations with appropriate data and was able to make real-world connections to the science content. Megan constructed quality questions, which could lead to a further investigation of sinking and floating.

Megan B.

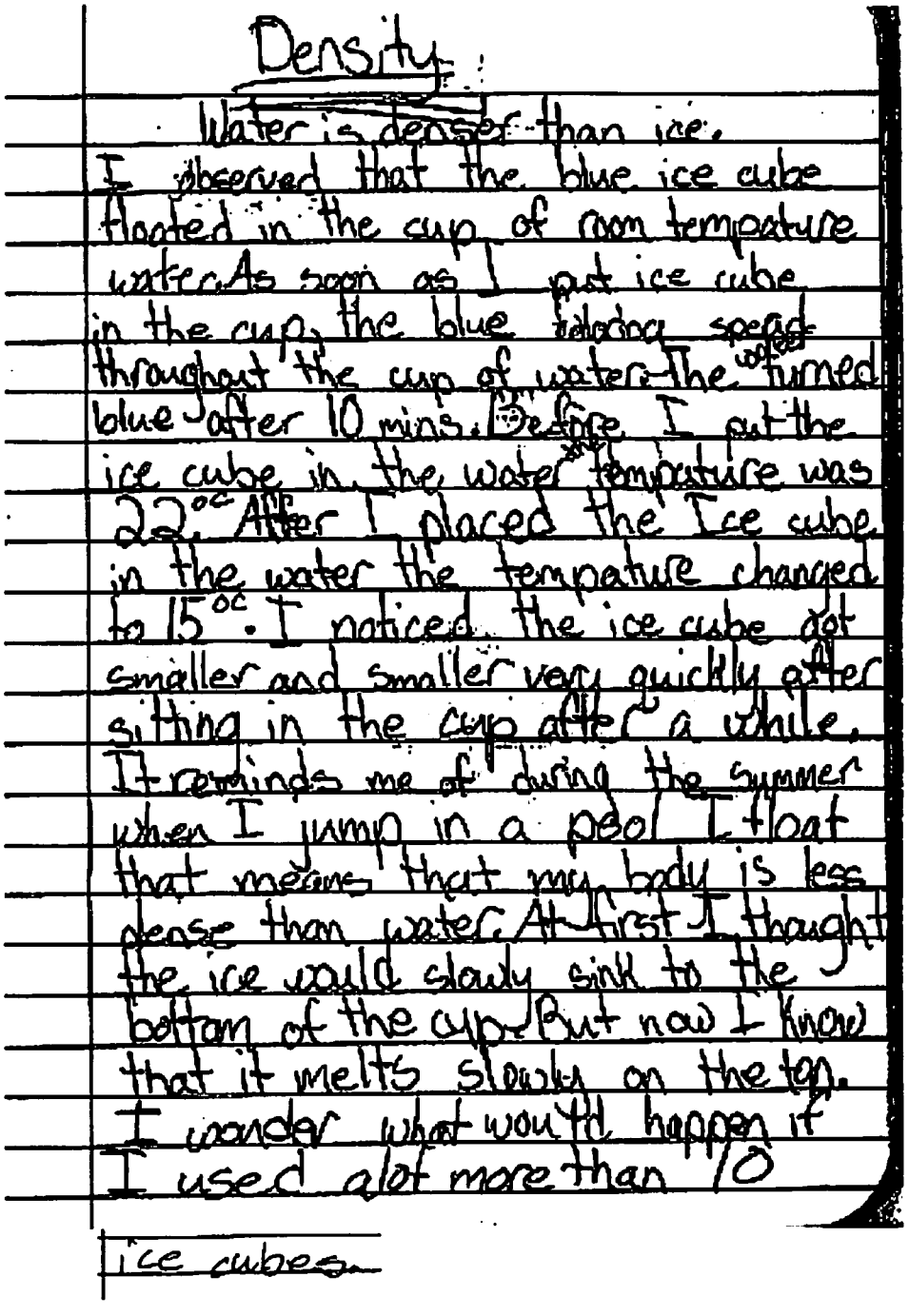
Grade 3



Madison used her accurate scientific illustration to write her observations about density. She supported her explanations with appropriate data. In addition, Madison used appropriate transition words, while explaining real world connections to density and also used scientific vocabulary accurately.

Madison B.

Grade 3



Density:

Water is denser than ice.

I observed that the blue ice cube floated in the cup of room temperature water. As soon as I put ice cube in the cup, the blue coloring spread throughout the cup of water. The water turned blue after 10 mins. Before I put the ice cube in the water temperature was 22°c. After I placed the Ice cube in the water the tempature changed to 15°c. I noticed the ice cube got smaller and smaller very quickly after sitting in the cup after a while. It reminds me of during the summer when I jump in a pool I float that means that my body is less dense than water. At first I thought the ice would slowly sink to the bottom of the cup. But now I know that it melts slowly on the top. I wonder what would happen if I used alot more than 10 ice cubes.

Grade 4

Motion and Design

This unit provides students an opportunity to explore the physics of motion and to apply those concepts to technological design. From their experiences, students are introduced to many concepts, skills, and attitudes.

Students learn that a force is any push or pull on an object. They discover that unbalanced force is needed to make a resting object move, to bring a moving object to rest, or to change the direction of a moving object. They investigate how force can change the speed of an object and how far an object can travel. Potential and kinetic energy is discovered while students work with the power of rubber band energy.

Some of the skills students work on while using the Motion and Design kit are designing, building, testing, and modifying vehicles to meet design requirements. Students also learn how to build vehicles from technical drawings. Observational skills are worked on as students describe a vehicle's motion and change in motion. Other skills that are focused on during this unit are data collection and analyzing, measuring, and predicting the affect of an applied force on how a vehicle moves.

Throughout this unit, students develop attitudes and opinions about the role that technological design plays in daily problem solving. They learn to appreciate how science can be used to solve practical problems and they recognize the importance of repeating trials to gain valid test results.

Mrs. Ornburn
Mrs. Young

4/23/11
1:20
hot/sunny

How does changing the force affect the speed of the vehicle?

Prediction I predict that changing the force of the speed of the vehicle will affect how fast or slow the vehicle goes because if you push the vehicle weakly you will have the vehicle going slower and if you push the car strongly the vehicle will go fast.

Number of small washers	Observations of how the vehicle moved	Ranking of speed 1=slowest 5=fastest
1 small washer	I noticed that the vehicle did not move at all.	1
2 small washers	I noticed that 2 washers made it move but not all the way to the hook end and faster than 1 small washer	2
4 small washers	I noticed that 4 small washers made it to the hook end and went faster than 2 small washers	3
8 small washers	8 small washers did go faster than 4 small washers	4
16 small washers	I notice that 16 washers went the fastest.	5

Students were investigating how changing the force would affect the speed of the car using a falling weight system. Students added washers to a hook to create the force to move the car. Paige's prediction and data chart were chosen because her prediction directly answers the focus question. She also explains her thinking clearly. She made complete and accurate observations and organized her data chart appropriately.

Paige S.

Grade 4

2

1/1 How does changing the force affect the speed of the vehicle?

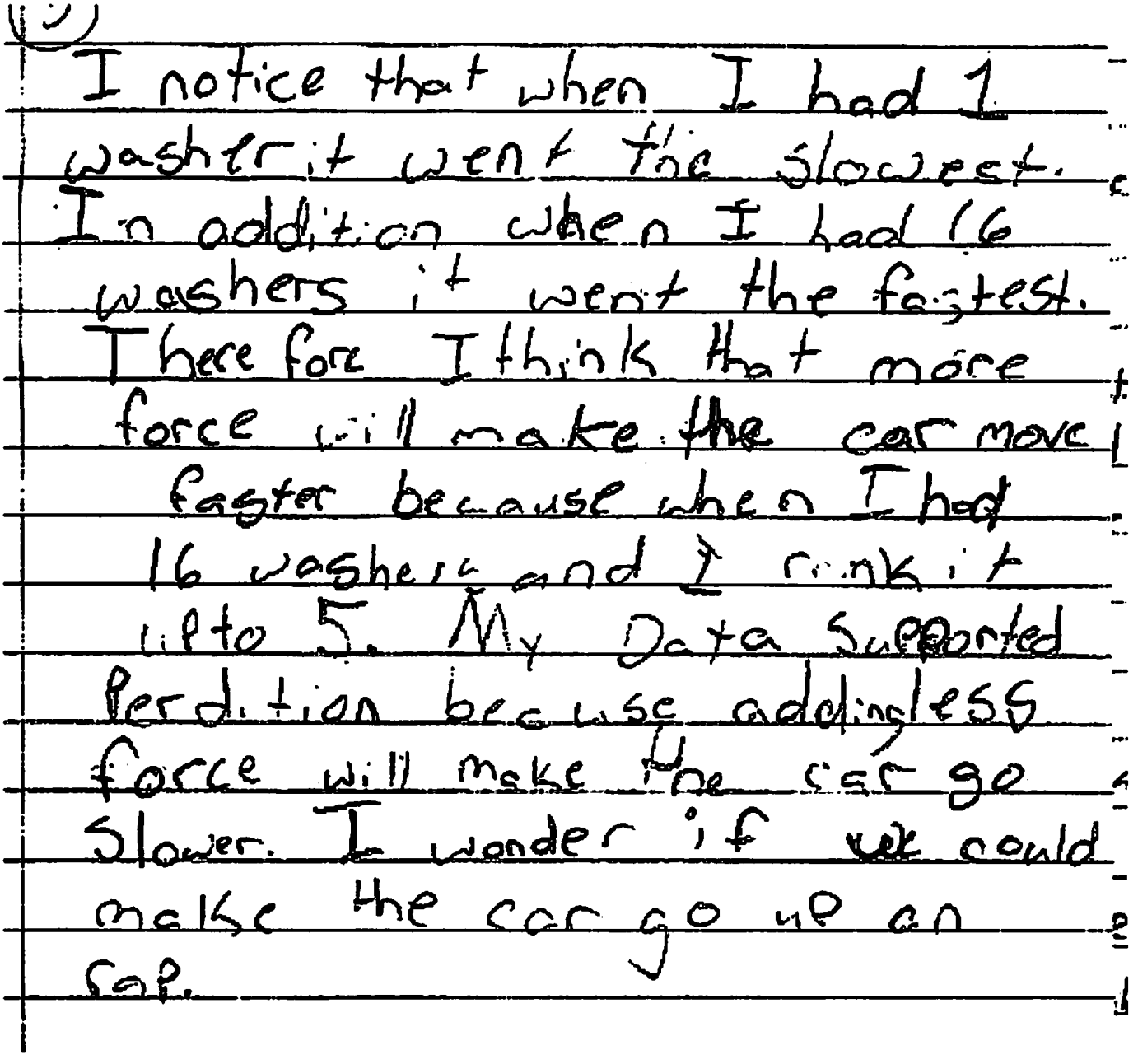
Prediction: I think the the stronger the force the faster the vehicle will go but, the weaker the force the slower the vehicle will go because the stronger or weaker the force affects how fast or slow the vehicle will go.

# and Size of washers	Observations	rating
1 small w.	did not move	1
2 small w.	did not move	1
4 small w.	did not move	1
6 small w.	Half way down	4
6 small w.	Made it to the end	5

Malese's prediction appropriately applies previous learning to a new concept. She supports her prediction and accurately collected data as she completed the investigation. She also used appropriate scientific vocabulary to clarify her thinking.

Malese F.

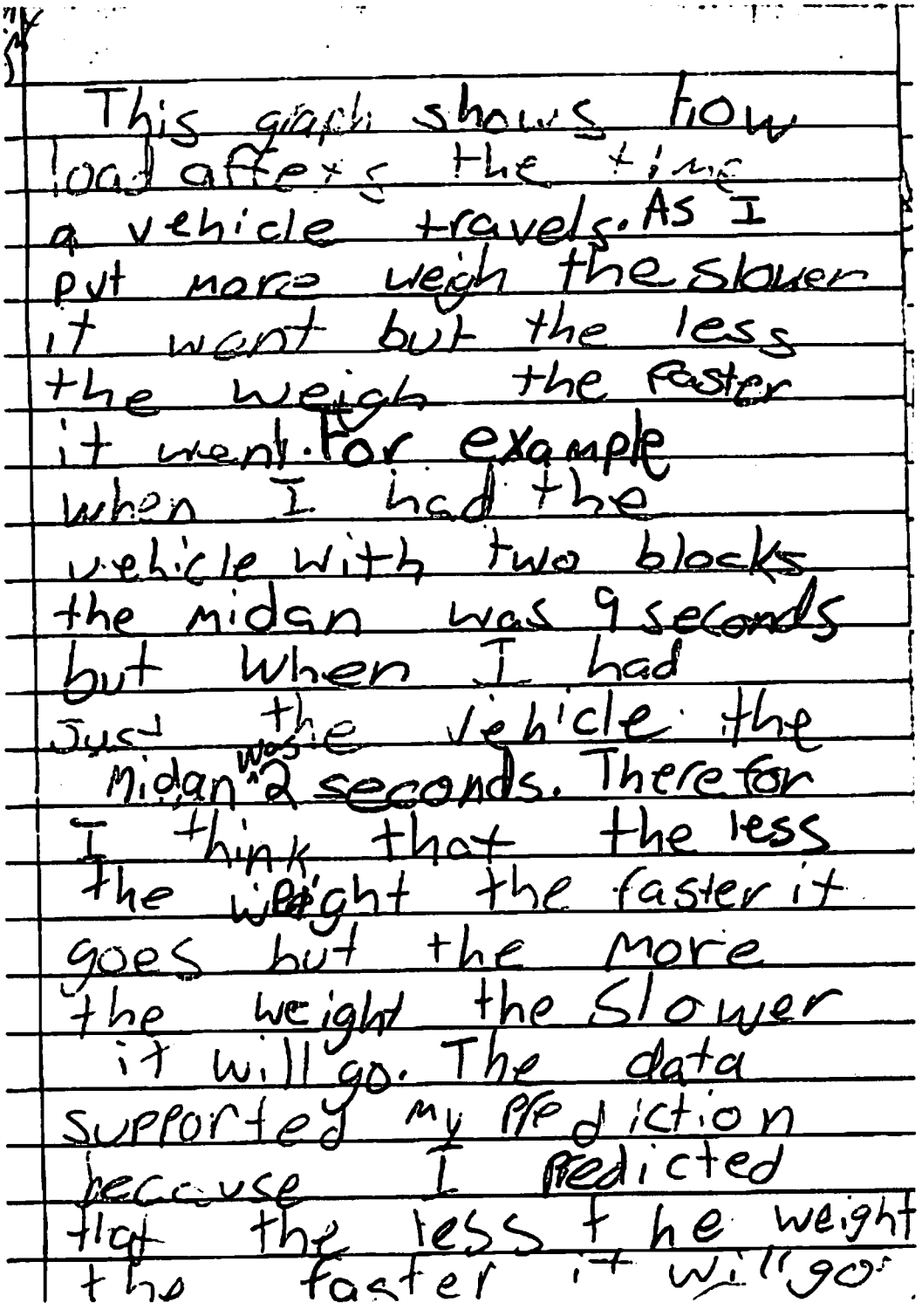
Grade 4


I notice that when I had 1 washer it went the slowest. In addition when I had 16 washers it went the fastest. There for I think that more force will make the car move faster because when I had 16 washers and I rank it 1 to 5. My Data Supported Perdition because adding less force will make the car go slower. I wonder if we could make the car go up an hill.

Jersie's writing was chosen because of her use of the data to support her thinking. She demonstrated a good understanding of the relationship between the data and her explanation. She finished her writing with a question that she could investigate in the future.

Jersie D.

Grade 4

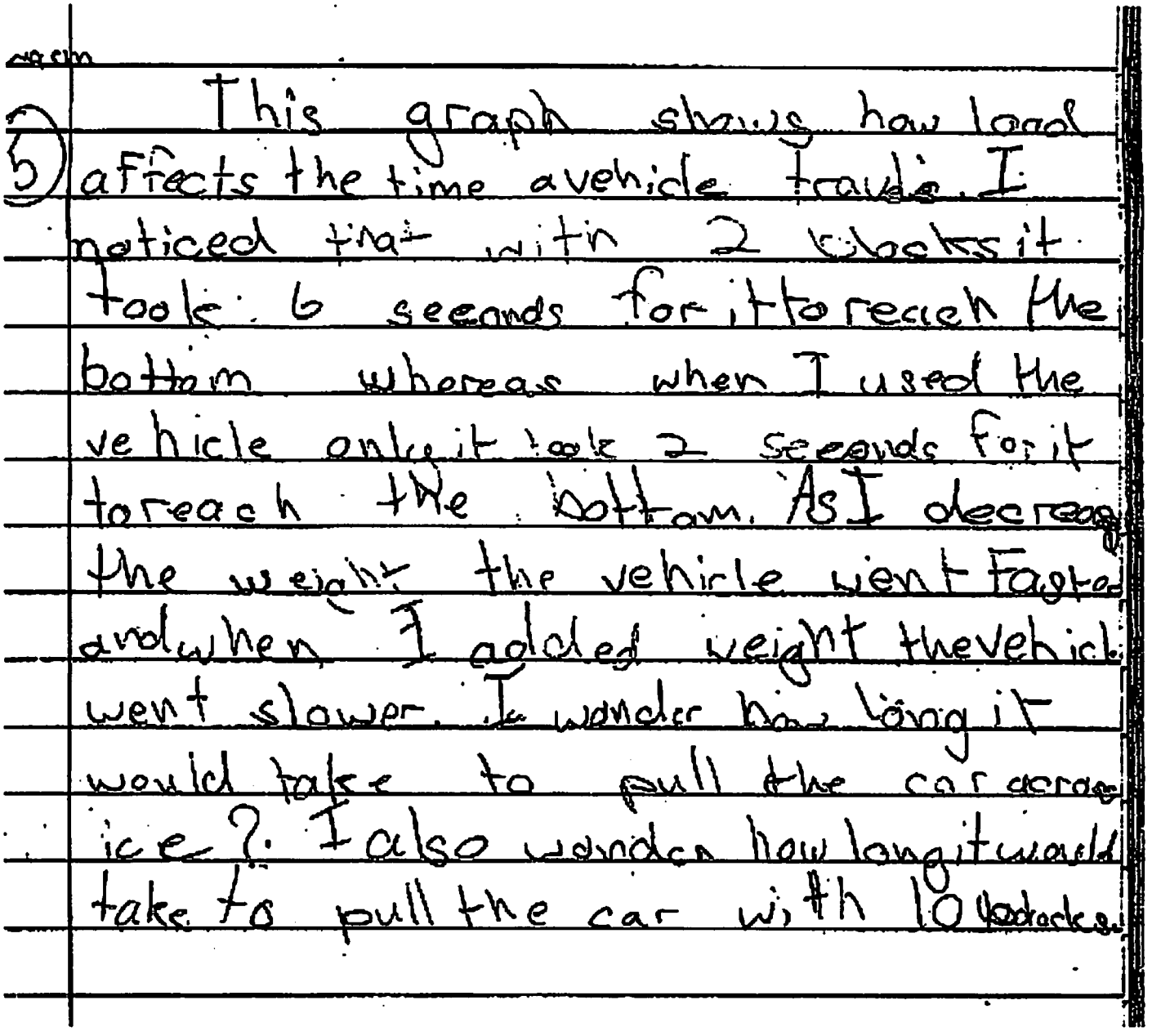


This graph shows how load affects the time a vehicle travels. As I put more weigh the slower it went but the less the weigh the faster it went. For example when I had the vehicle with two blocks the midan was 9 seconds but when I had just the vehicle the midan was 2 seconds. Therefor I think that the less the weight the faster it goes but the more the weight the slower it will go. The data supported my prediction because I predicted that the less the weight the faster it will go.

The focus question for this investigation was "What effect does load have on the time it takes a vehicle to travel?" Students used a standard vehicle and added blocks to represent load. They collected data and graphed the results on a line plot. Students were then asked to write a data analysis. Bethany organized her piece of writing using appropriate transition words. She carefully examined the data identified the results by comparing different data points. She supported her explanations with appropriate data.

Bethany H.

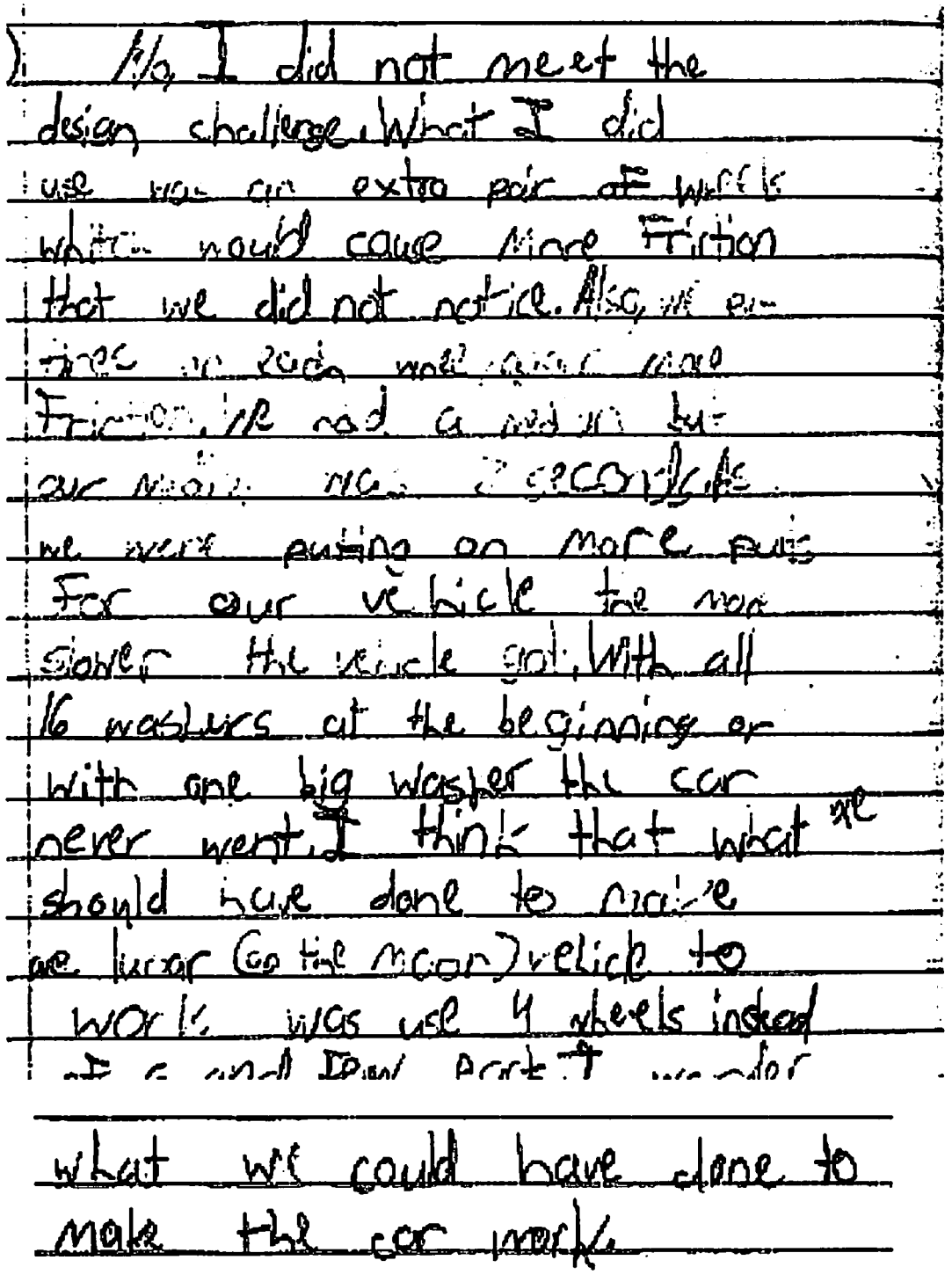
Grade 4



Katie's writing shows her use of critical thinking skills to draw reasonable inferences about the data she collected. She supported her inferences with appropriate data. She developed her thinking fully using relevant details, evidence, and explanation. Katie also structured her writing in a logical sequence with appropriate transition words to show logical connections.

Katie F.

Grade 4



In this investigation, students were asked to design a vehicle using a falling weight system that could carry a load (represented by blocks) and travel across the workspace in 4-6 seconds. As students tested their vehicles, they revised their designs to meet the requirements. After completing the investigation, students were asked to reflect on whether or not they succeeded in meeting the design challenge. Avery's writing shows that he made accurate and full observations, and collected and recorded data honestly. He used both scientific and nonscientific vocabulary to effectively explain his thinking, and he supported his ideas with relevant details.

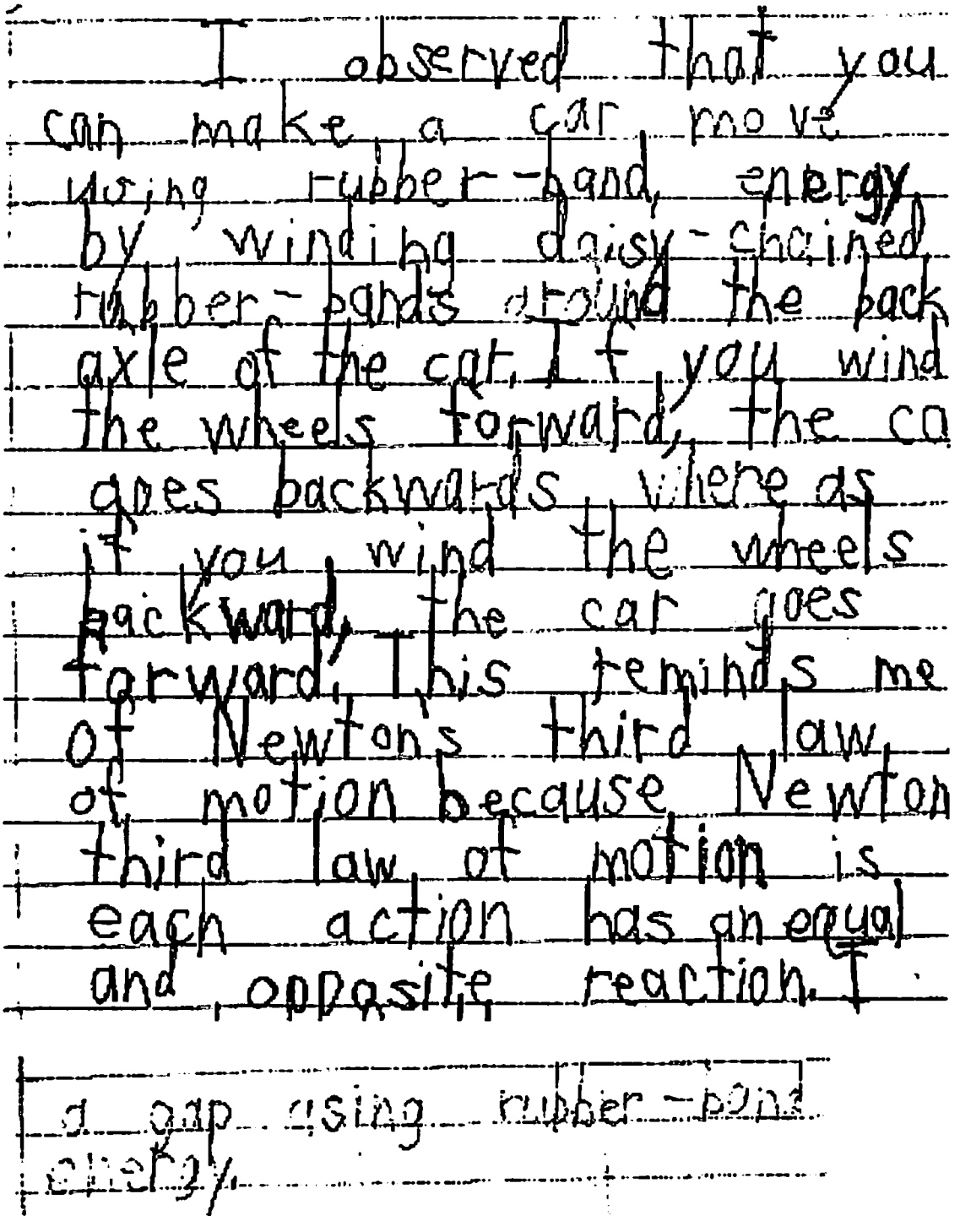
Avery M.

Grade 4

I observed that when I wound the rubber bands around the axel alot of times it made the car go faster. Also I noticed that when I wound the rubber band I could feel it getting tighter. As I wound the rubber band it was storing energy and when I let go of the wheels I made kinetic energy. In addition I noticed that when I wound the rubber band lots and lots and lots of times the car went super fast. I wonder if the

In this investigation, students were challenged to use rubber bands to make their standard vehicle move. As students investigated, they recorded their observations. After completing the investigation, students wrote an observational piece of writing. Taylor K.'s writing demonstrated an understanding of key concepts in the lesson. She used scientific vocabulary to explain her thinking, and she made detailed observations.

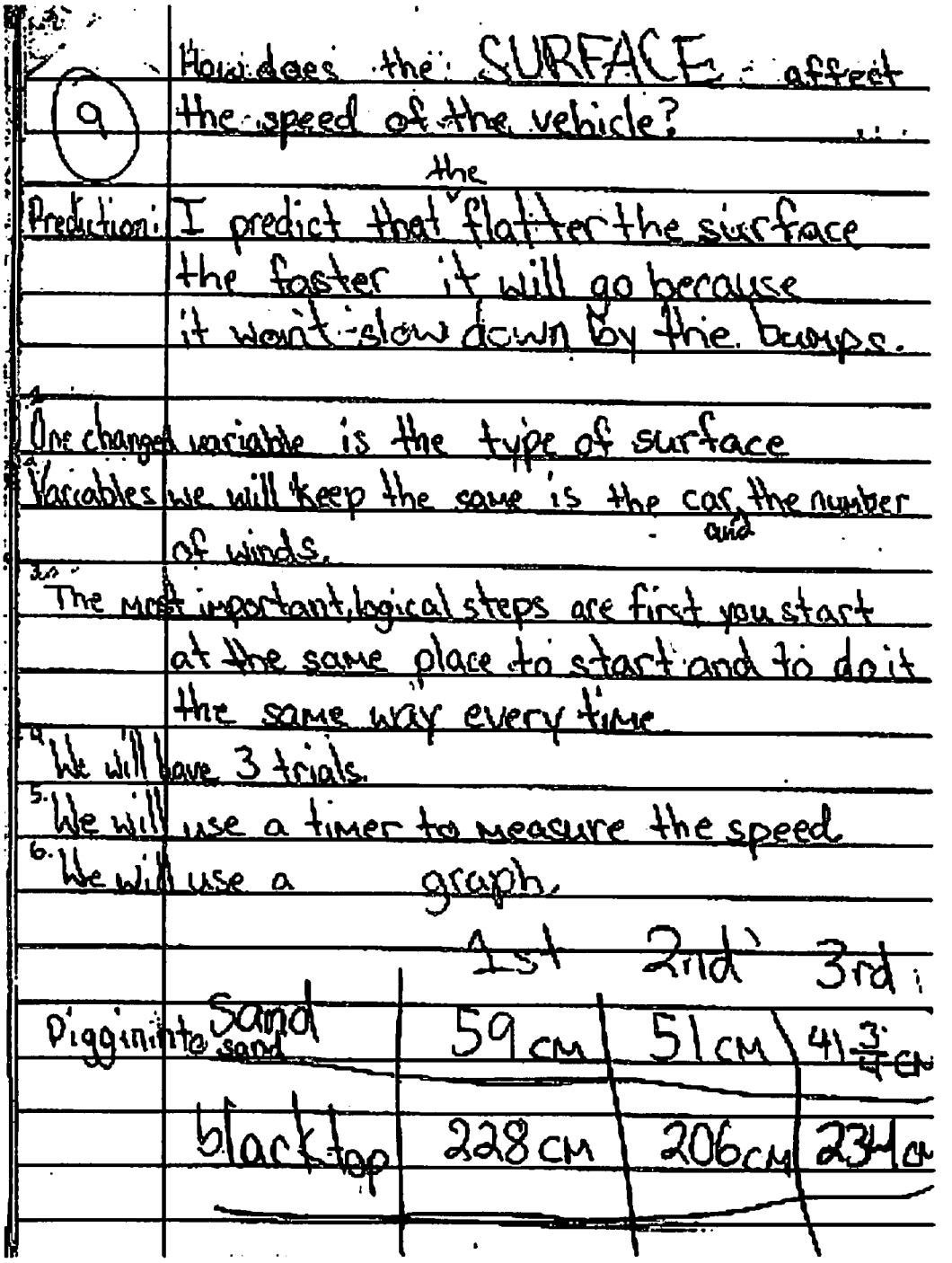
Taylor K.
Grade 4


I observed that you can make a car move using rubber-band energy by winding daisy-chained rubber-bands around the back axle of the car. If you wind the wheels forward, the ca goes backwards, where as if you wind the wheels backward, the car goes forward. This reminds me of Newton's third law of motion because Newton third law of motion is each action has an equal and opposite reaction. I a car using rubber-band energy.

Alex's writing demonstrated a clear understanding of the major scientific concepts in the lesson. He was able to apply previous learning to a new situation, and his writing was clear and well organized.

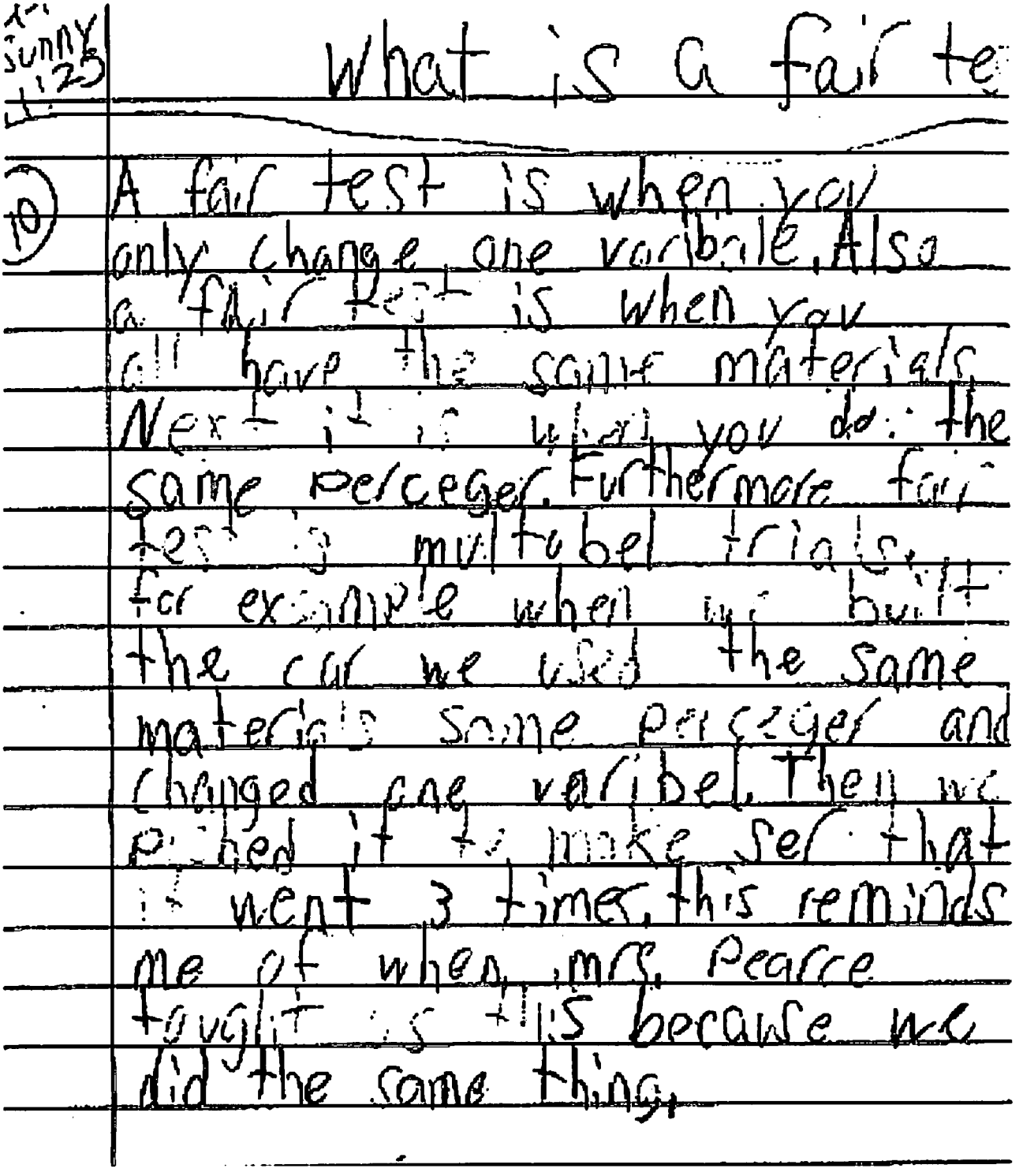
Alex W.

Grade 4



Students brainstormed questions they still had about the things that affect the motion of their vehicles. They chose a focus question, and with their groups planned an investigation. The students needed to identify the variable they would change and the variables they would control. They also needed to decide how they would measure change and what type of data to collect. Maura's writing shows a clear plan with all of the requirements of a good investigation.

Maura B.
Grade 4



After one of our investigations the question of fair test came up. Josh did a good job explaining what a fair test was, and gave good examples of what his group did to create a fair test.

Josh L.

Grade 4

Ashaway Elementary School
12A Hillside Avenue
Ashaway, RI 02804
401-377-2211

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