Original Physics Experiments

First and Second Grade Students

Santa Fe School for the Arts
And Sciences

2007

Alicia's Experiment

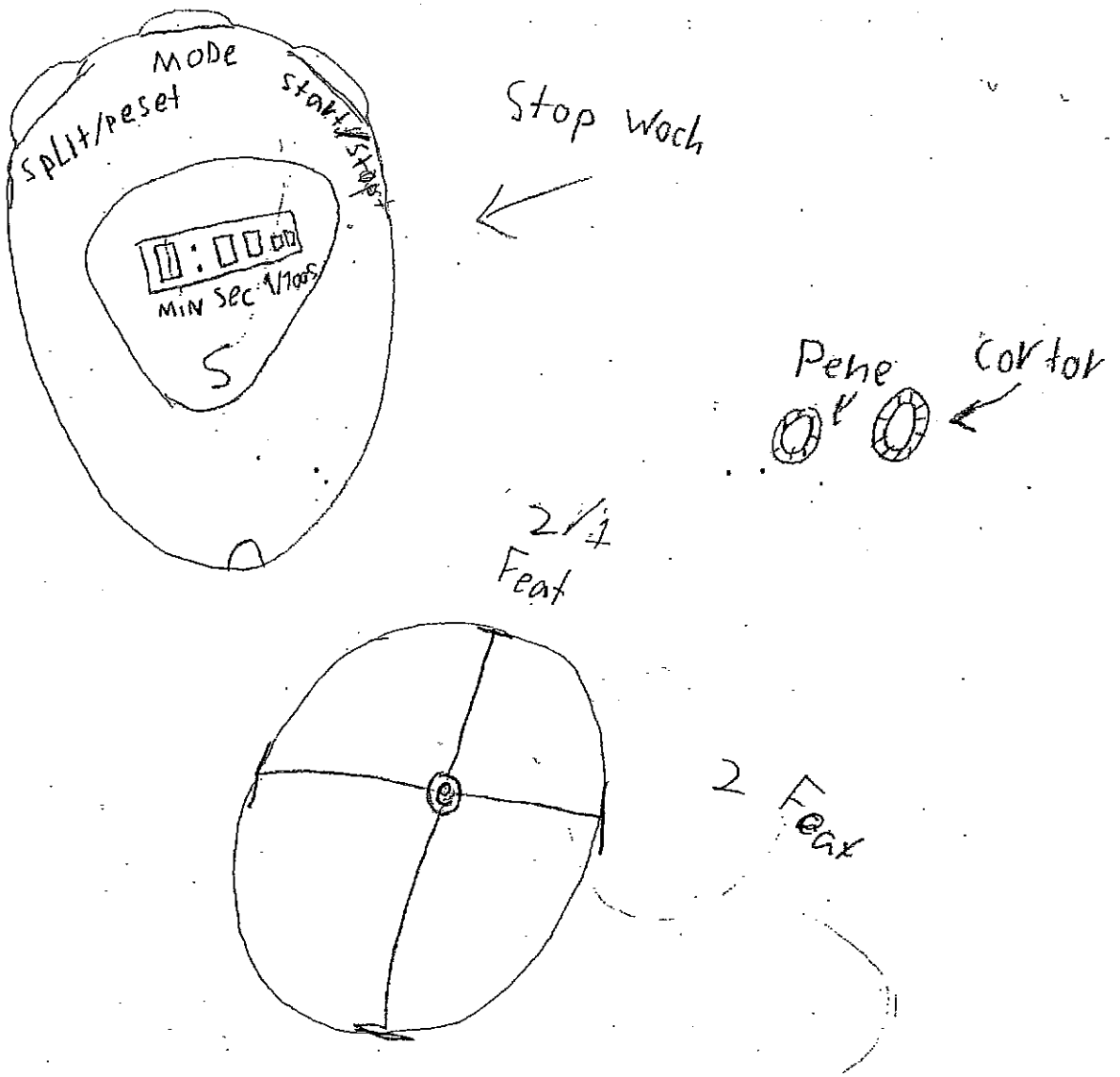
What Made Me Wonder What I Wondered

Once when I was having a contest to see who could spin a spinning top the longest on the ground at my school, Santa Fe School for the Arts and Sciences, and I noticed that since all the spinning tops were the same, mostly they stopped at the same time. I wondered if the size matters. This is why I decided to do my experiment.

Hypothesis

My hypothesis is that smaller things spin longer.

Materials


MODE
split/reset
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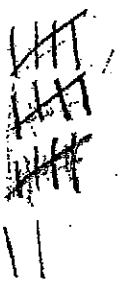
Feet

Procedure

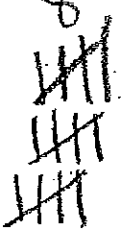
1. I go to the carpet.
2. I bring a board to the carpet.
3. I get a pencil
4. I get my expedition book.
5. I get a penny
6. I spin the penny. When I spin the penny, I time it.
7. I write it down.
8. I get a quarter.
9. I spin it.
10. And when I spin it, I also time it.
11. I write it down.
12. I do it again.
13. I do it again.
14. I do it again.
15. I do it again.
16. I do it again.
17. I do it again.

Data

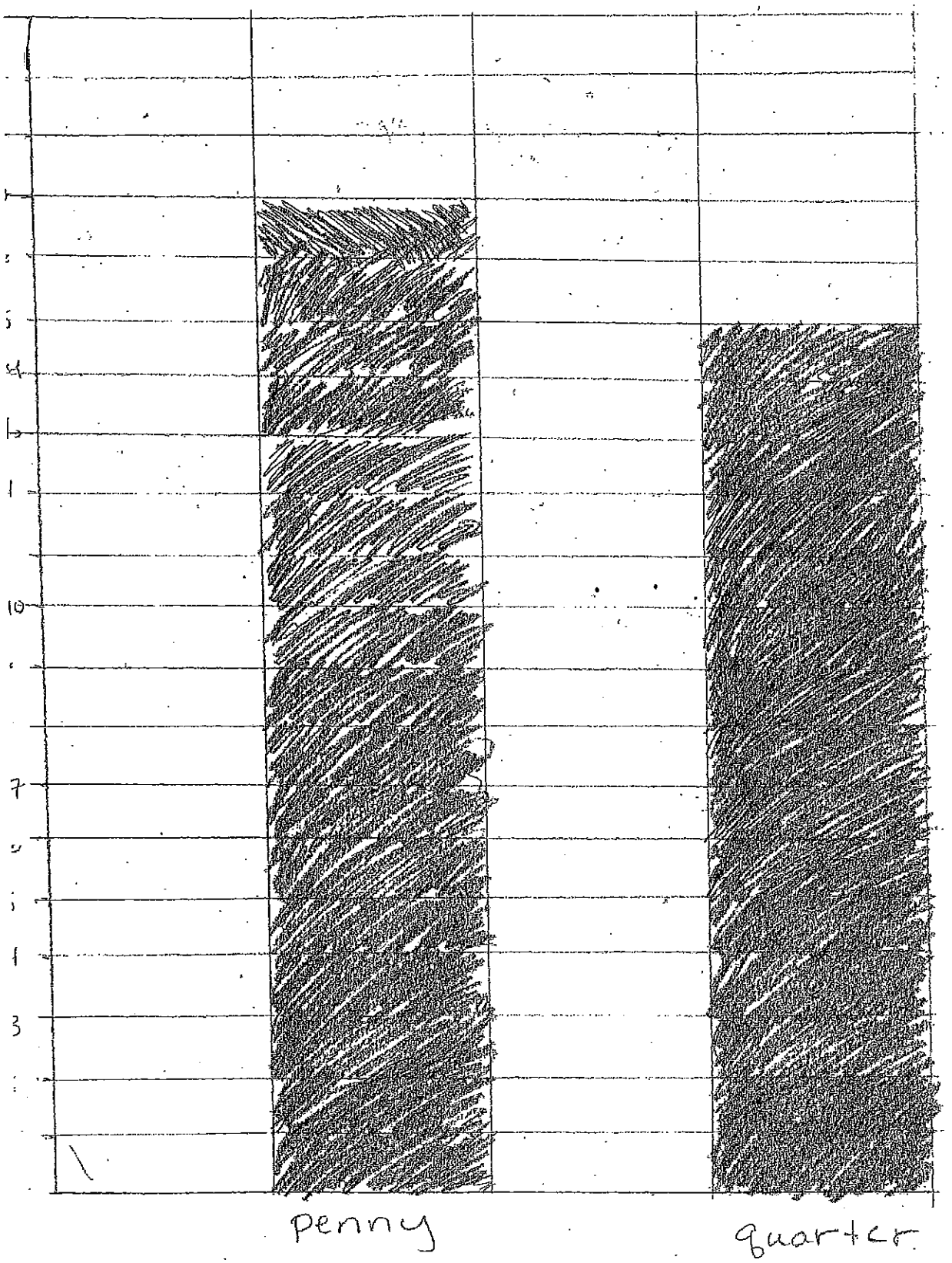
Pene



quarter



Graph



Conclusion

In my experiment, my conclusion was that penny spun longer more times than the quarter did but it was almost the same. Do smaller things spin more times than bigger things? Yes, but not always.

Why I think this is so.

I think the quarter is bigger than the penny so it stops first because it is heavier but heavier things get pulled down faster? No,. because gravity pulls them down at the same time. My coins spun from the force I gave them. I probably didn't give the same force because if I just did it I probably didn't give it more energy the more times I did it...I couldn't do it exactly the same. So, do smaller things spin longer? I think they both spin the same.

John's Experiment

Why I Wondered What I Wondered

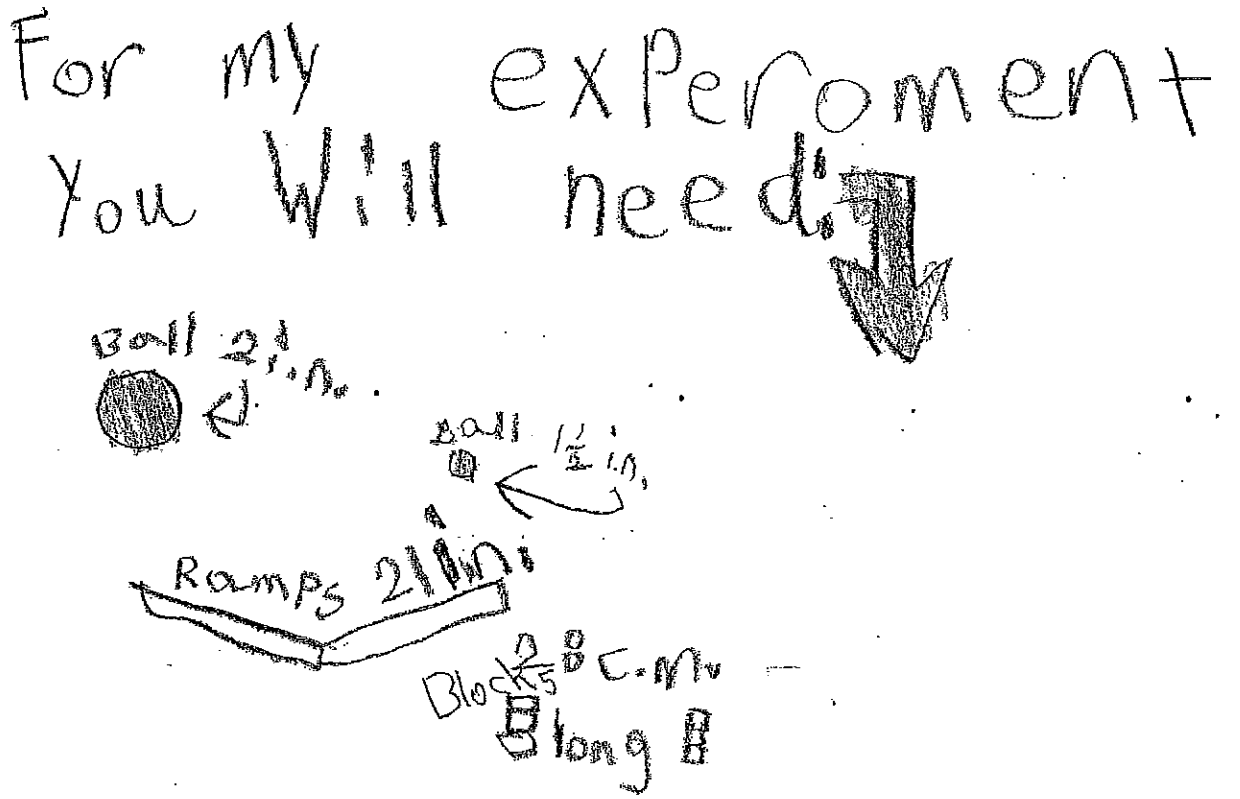
We went to Explora. Explora is a science museum. When you first walk in there is this place, on the side of the ball machine, where there are tubes and tracks where you can make your own design of where the ball goes. There are pegs, you put the peg in and put the tracks on top of the pegs and it holds the tracks up. That is where I got the idea for balls and ramps. I wondered which one, the big one or the small one, would go back and forth on ramps more times.

My Hypothesis

My hypothesis is I think the smaller balls will go more times than bigger balls.

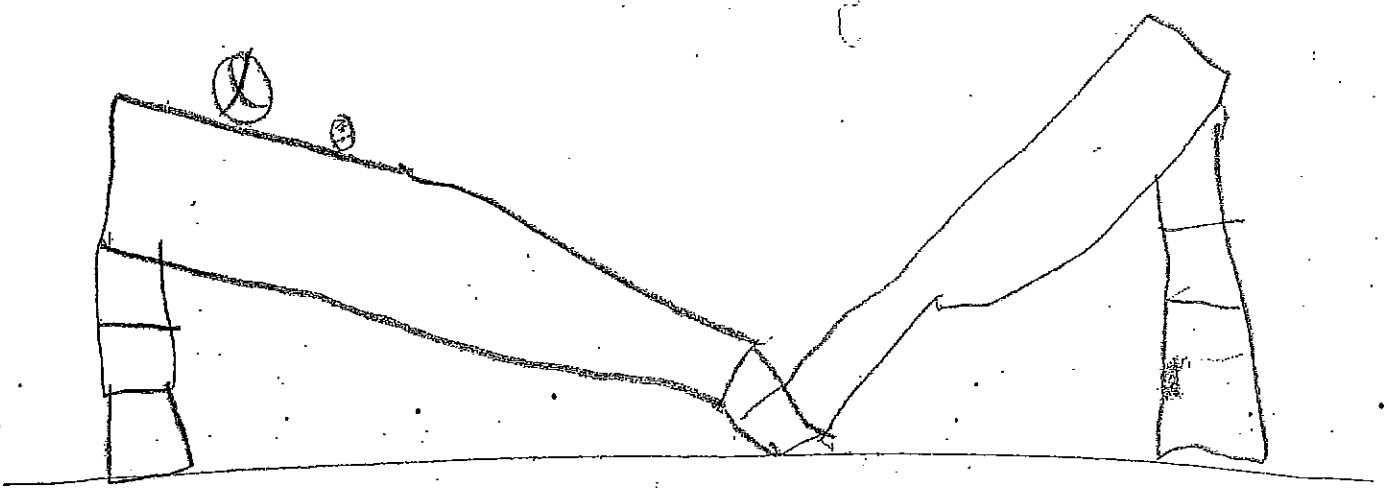
Materials

I will need ball, 2 inches, ball 1½ inches, ramps 21 inches and blocks 28 centimeters.



Procedure

I set my materials up like this.



I rolled one ball then the other.

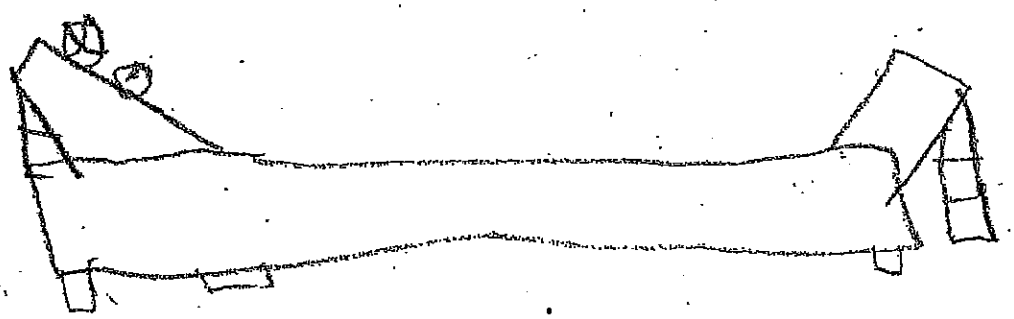
I counted how many times it went back and forth.

Data

	Small Ball	Big Ball
+1	+1 fell off	
-2	fell off	
+3	3 times fell off	
+4	15 times fell off	
+5	1 fell off	
+6	2 fell off	
+7	1 fell off	
+8	2 fell off	
-9	1 fell off	
-10	2 fell off	
+11	1 fell off	
+12	1 fell off	
+13	3 fell off	
+14	1 fell off	
+15	1 fell off	
61	1 fell off	
+12		2 fell off
+2		1 fell off
+3		3 fell off
+4		1 fell off
+5		2 fell off
+6		5 fell off
+7		3 fell off
+8		1 fell off
+9		1 fell off
+10		2 fell off
+11		2 fell off
+25		fell off
+13		1 fell off
+14		1 fell off

Change in Procedure

I set my materials up like this.



I rolled one ball then the other.
I counted how many times it went back and forth.

New Data

	Big Ball	Small Ball	The small ball went more times,
1	20 times.	24 times.	yes
2	25 times.	12 times.	no
3	19 times.	24 times.	yes
4	22 times	20 times.	no
5	18 times.	13 times.	no
6	16 times.	14 times.	no
7	30 times.	16 times.	no
8	12 times.	15 times.	yes
9	17 times.	13 times.	no
10	23 times.	12 times.	no
11	21 times.	17 times	no

Conclusion

What happened the first time you tried your experiment?
The first time, since there were no walls, the balls fell off the ramps.

So what did you do?
I put walls on it so they wouldn't fall off.

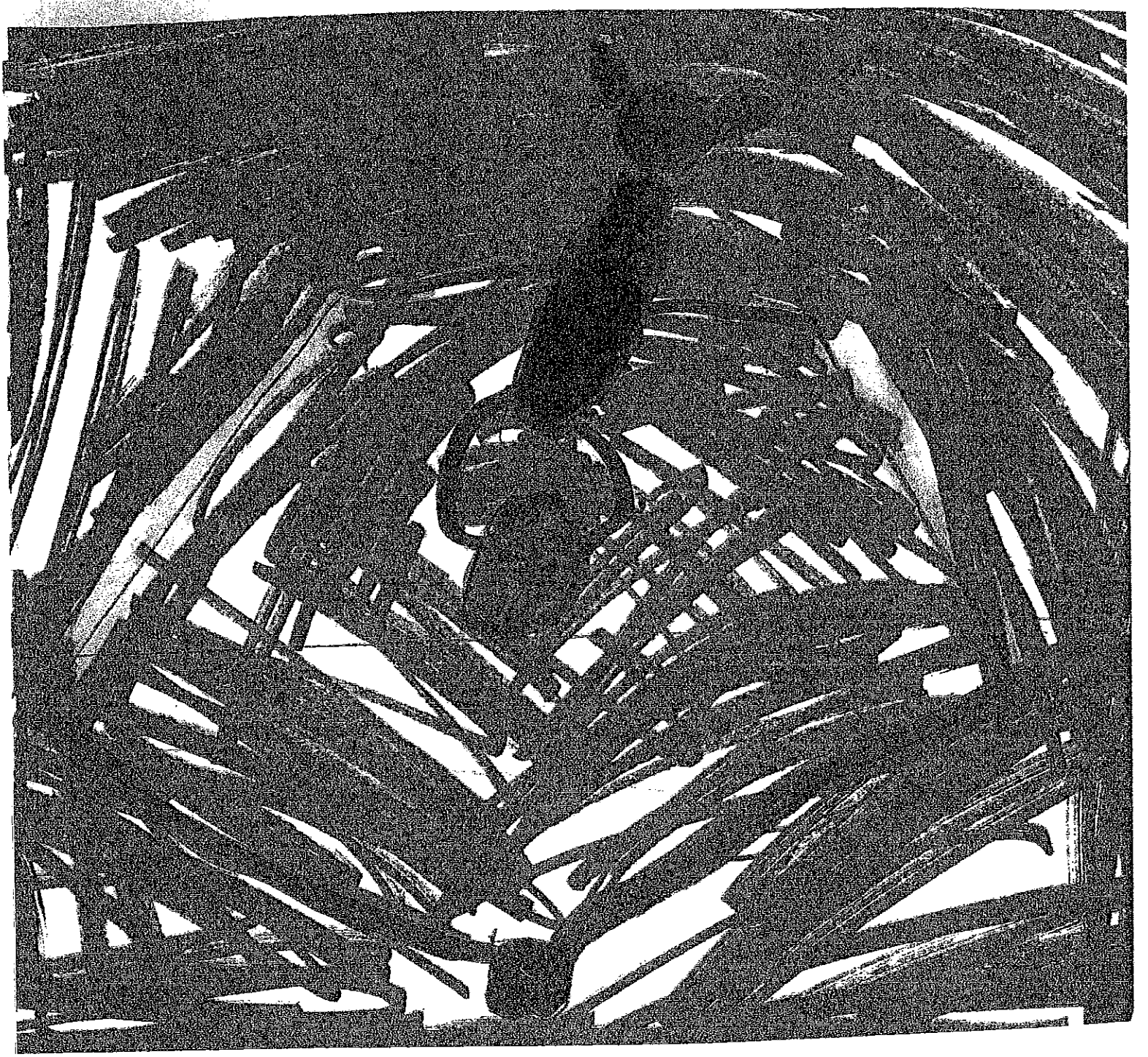
When you put the walls on, did the small ball go more times than the big ball?
No

So was your hypothesis right?
No.

Which ball went more times?
The big one did.

Why do you think that is?
Because it is packed together more.

So things roll better if they are more packed together?
Yes



Sarafina

Sarafina's Experiment

What Made Me Wonder What I Wondered

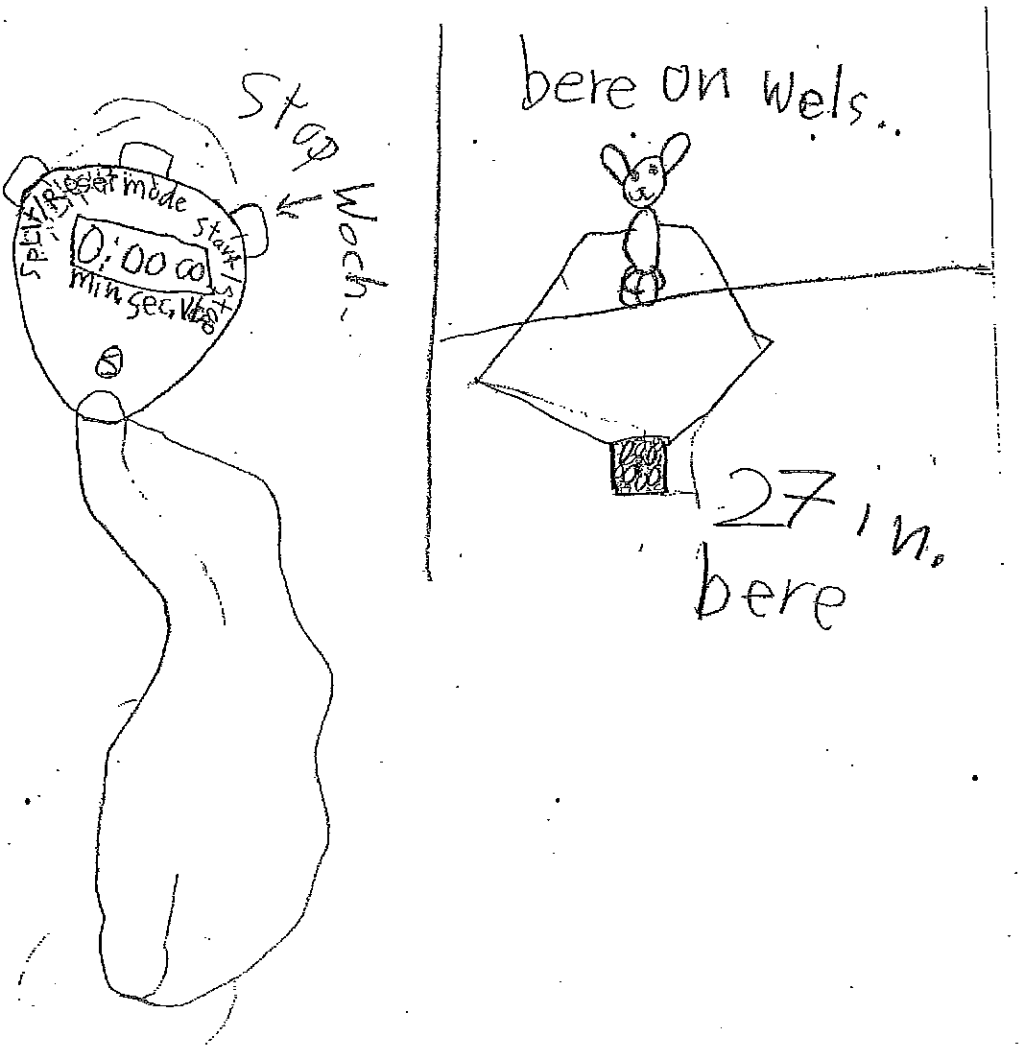
Everyday in Santa Fe School for the Arts and Sciences I watch the bear on the unicycle on the zip line. It had two sticks sticking out of it and string taped on the sticks, and the string sticks to a bucket of rocks. It made me wonder, if I had a pair of rocks that is lighter than another pair of rocks that is heavier than the other one, which one will make the bear on wheels go faster.

Hypothesis

My hypothesis is more rocks will make the bear on the unicycle go faster.

Materials

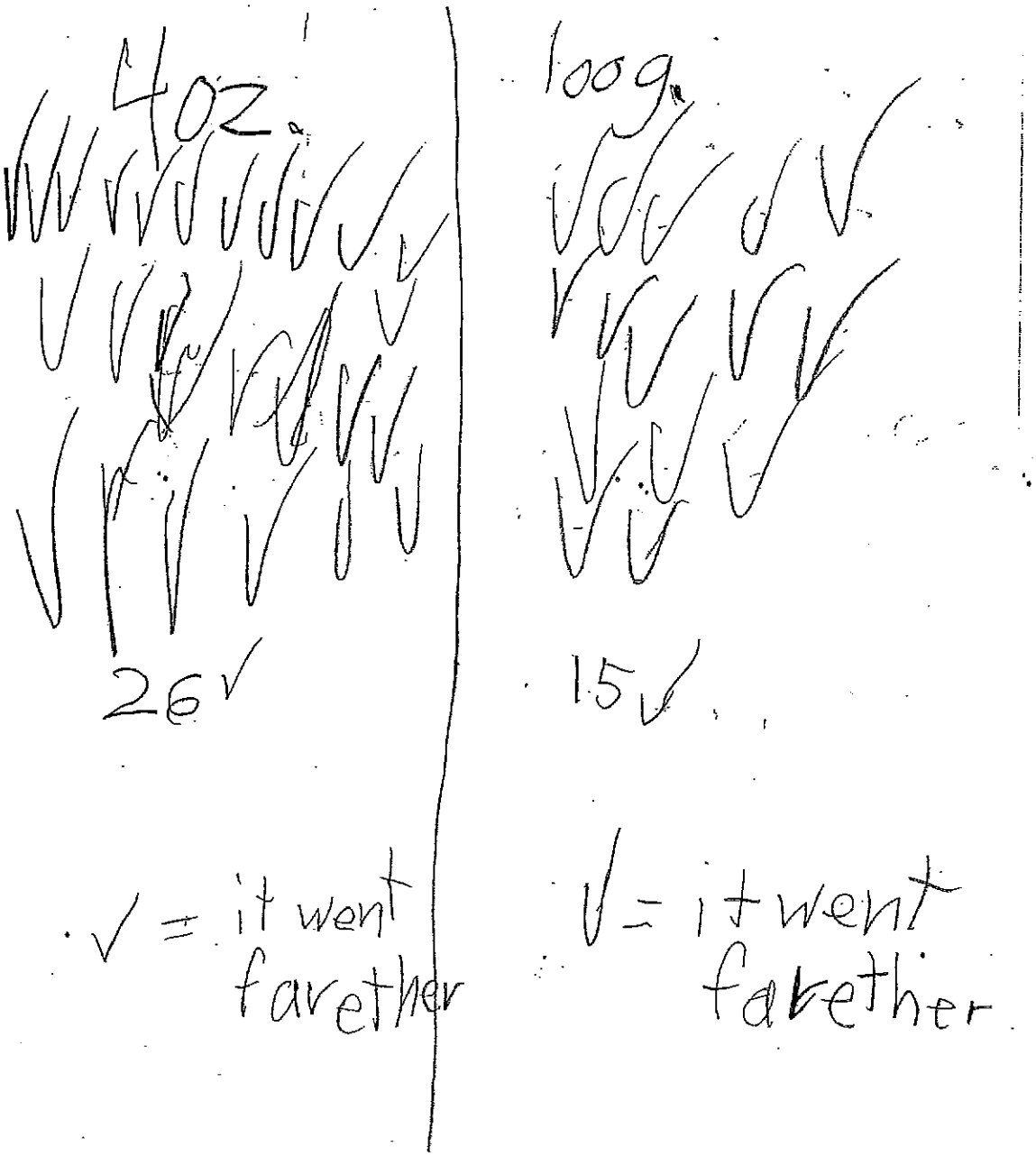
One stopwatch
Bear on a unicycle with a cup hanging on strings which is connected to the sticks which is connected to the unicycle.
Zip line
Two pair of rocks; one heavier and one lighter.



Procedure

1. I take a fake bear on a unicycle.
2. I have a zip line.
3. I have a pair of rocks that is lighter.
4. I have another pair of rocks that is heavier.
5. I put the bear up on the zip line.
6. I let the bear go on the zip line.
7. I count how long it took to get to the other end of the zip line.
8. I do it 14 times.

Data



Conclusion

My hypothesis was right, heavier rocks make the bear on the unicycle go faster.

Why do you think that is?
I think because gravity is pulling the heavier rocks down and the zip line is a little loose, so the heavier rocks pull down on the zip line and make the zip line more slanted down. If there is more of a slope then the bear on the unicycle goes down the zip line and makes it to the other side of the zip line.

Does this remind you of the balls and ramps in any way?
Yes. It reminds me because if there is a sloper ramp, the ball goes down faster.

Do you know why?
Because gravity pulls it down and it makes it go faster.