



## **Logo Animals**

by

**Helen Kraft**

St. Paul Public Schools

© 1997 Logo Foundation

You may copy and distribute this document for educational purposes provided that you do not charge for such copies and that this copyright notice is reproduced in full.

---

### **Introduction**

The following curriculum areas are but a small part of the first full year in the elementary grades. A part of the first grade science curriculum focuses on observation skills and animals. Part of our math curriculum covers number concepts, geometric shapes, and size. The language arts curriculum is always an ongoing process of developing writing skills with increasing ability to edit correctly. In addition, the messages coming loud and clear from the private businesses of our country are that we teach our students communication skills, creative thinking, and problem solving.

LogoWriter is a tool to use in the classroom for combining thinking skills with interdisciplinary education. It has the power to make connections between various subjects of math, science, social studies, and language arts.

This practicum will show how to incorporate computer programming at the first grade level into the science area. After a science unit about animals, LogoWriter will be used as a learning and evaluating tool to enhance student achievement. As a learning tool the children will become familiar with the geometry of circles, squares, and triangles and experiment with four different sizes of each. These geometric shapes will be used to learn more about animals by envisioning them as parts of animal bodies. The children will act as designers of their own animals and will have to make many decisions about what parts are needed, what shapes will resemble the parts and where should they be placed on the screen. The children will then use the word processor and write short descriptions of their animals. The nature of LogoWriter automatically invites peer assistance at all stages of the project.

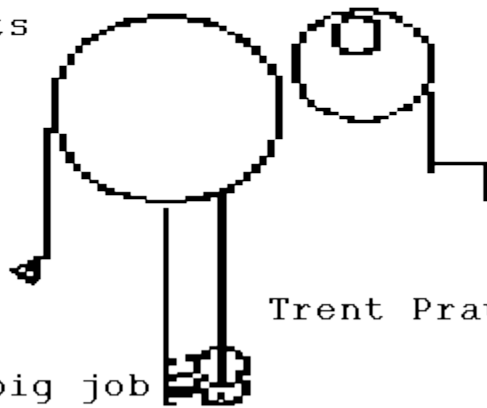
As an evaluating tool, I can see how well a student knows the animal by observing its appearance. I will check to see if the Logo Animal resembles a version of the real animal. The typed description will also give me more insight as to the knowledge the child has of his/her animal. Through observations and interviews, I will also be able to evaluate communication between students and their ability to problem-solve creatively.

Anyone reading this must recognize what the class and I have done prior to this assignment. This practicum is not a lesson in beginning Logo. The following assumptions must be made.

1. All children began learning LogoWriter the beginning of the school year.
2. The class has had four months of discovery and short term assignments.
3. Every child has 15 minutes on the computer every day.
4. Many shortcut commands have been introduced by this time for efficiency purposes. These commands included "apple 9" and set heading.
5. The students are accustomed to asking each other for help.

---

This is my elephant.  
My elephants name is Big One.  
I like Big One very moch.  
Elephants are mammals.  
Big One is very  
very big.  
Some times he eats  
penuts.  
He drinks out  
of hes tronuck.  
His tail is very  
long. Some time  
elephants sleep  
on thir side.  
Down young trees  
to get the tender  
leaves. It is a big job  
to feed an elephant.



Trent Praus

My bird's name is Spicke.

Hey is olee a chik.

Hey neds a home.

Hey has fethes  
and a beck.

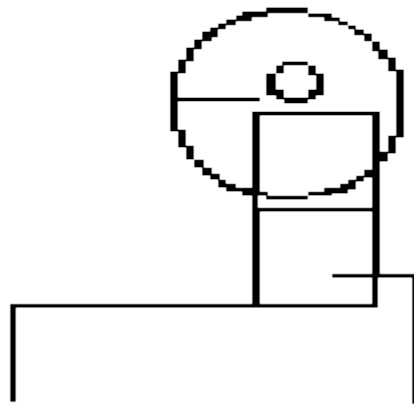
Heye was borne frum  
a egg.



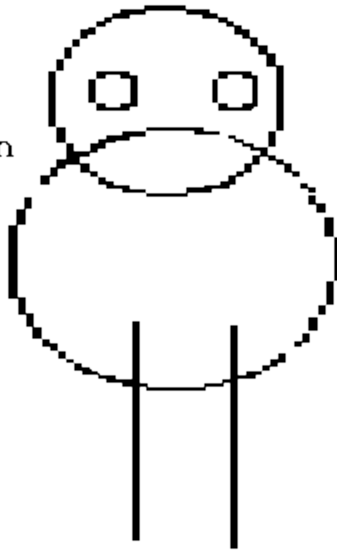
By Jonathon

---

THIS IS MY GIRAFFE HE  
IS A MAMMAL. HE EAT 10  
trees. He is a bag giraffe.  
He is in the zoo.by Chue Yee

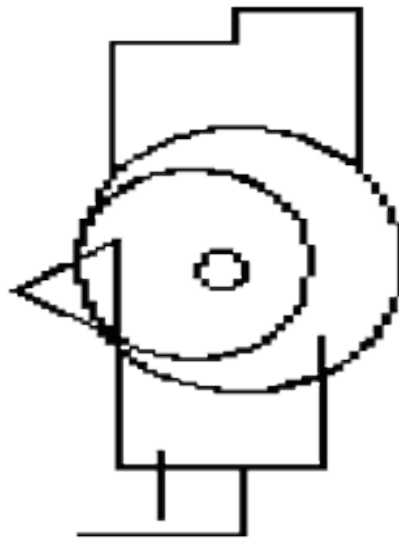


ths is a bird .  
the bird hasfethers  
the bird is a penguin  
by ryan



---

This is my  
turkey.  
It eats seeds.  
It lives  
on the farm.  
The turkey  
hach her  
egg in her nest.  
by Domingo



Amber Goldschmitz

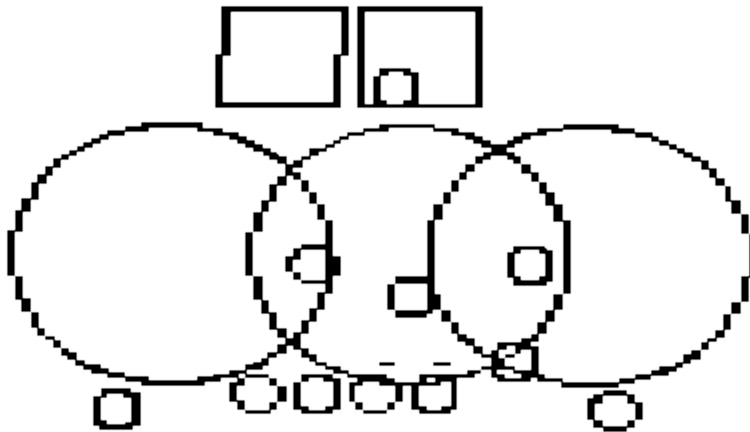


I gest Made a dock. My dock  
can sewem gest like a persin.  
A dock can see Weth it's  
ice gest like a persin.  
It can sewem in the wetr.  
Som docks can Not swem.  
This is a bird.  
Some docks can eat the seam  
thengs as pepol like bred.

The end

by Amber GoldschMitz

---



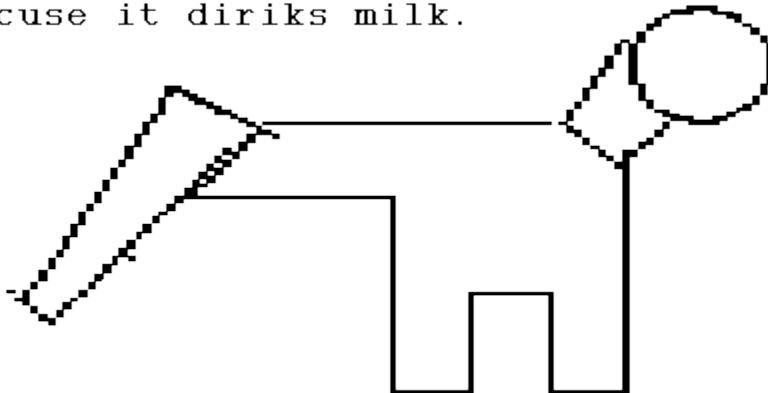
This is My caylabear  
ats a she and likes The zoo  
and she likes to Cim tree.  
The caylabear is a mammal bcas et has  
fr. She also has pas.

by Shayna Jackson

---

---

This is a calf. A calf is a mammals.  
Becuse it diriks milk.



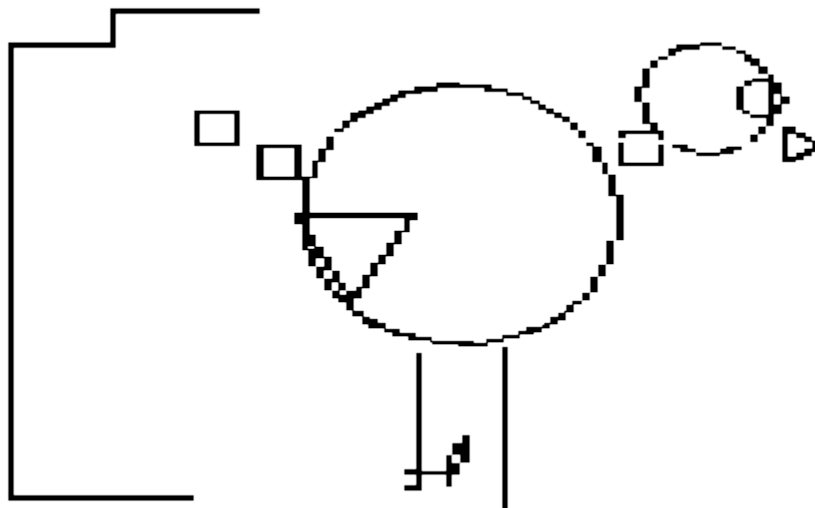
by Sophie Lee

---

---

I like chickens.  
I like all of  
my chickens.  
A chicken is a bird.  
Terfaon.

Justin

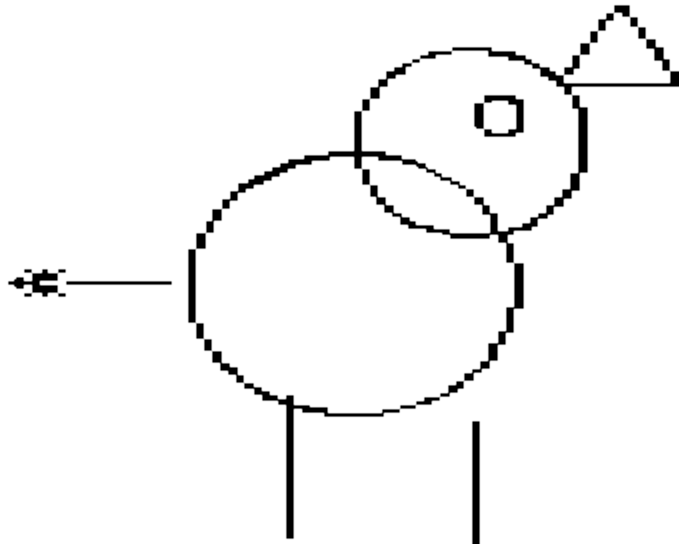


I like my chik. My chik wase 1 pown.  
Mom and dad i hope you like my chik. My  
chik is kiut. My chik is flufee. its  
kiut. A chik has wings. He has a beeck  
and a tale.

Heather.  
I am in 107.

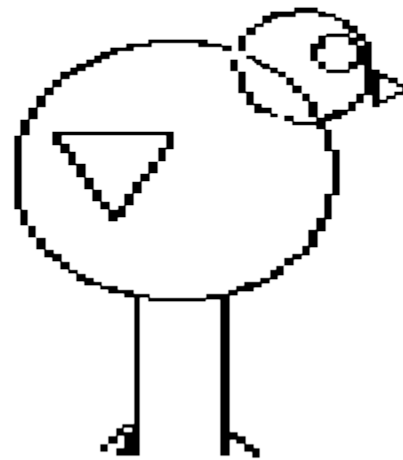
---

Jake



---

This is a mammal.  
This is a bird and it  
can fly  
it is a bird.  
Birds can have a  
babey bird.  
At frst babey birds  
can not fly but  
wen thay get old  
thay can fly and it  
is a blue bird and it  
is a babey blue bird.  
Thay have a mom and ther  
mother techis them how  
to finde fod.

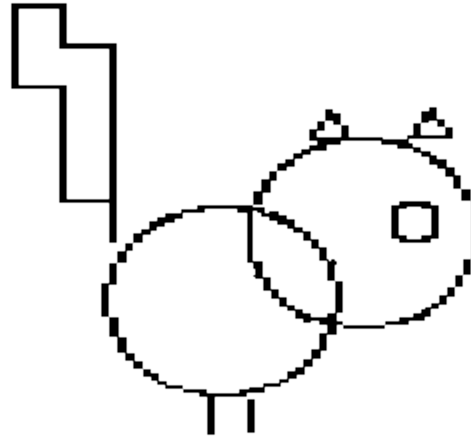


by Cerise

---



This is my cat.  
It is a mammal.  
the cat is fun with me.  
I love my cat.

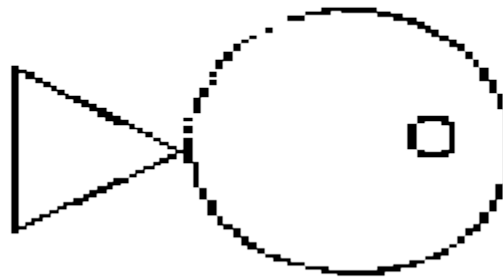


by kari

---

---

This is my goldfish.  
He lives in a fishtaick.  
His name is big j.

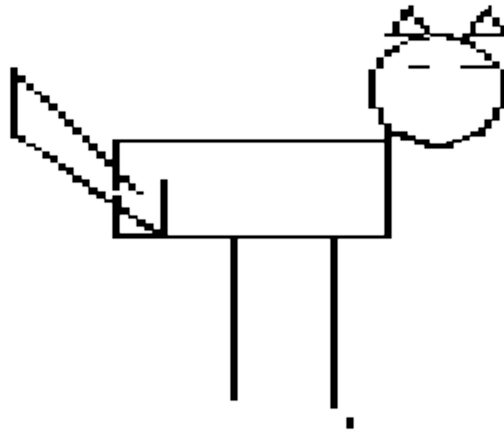


By Terrell

---

---

Sophie Lee



This is my cat. Is this good? I hope you like it. You can make one to. And the cat is a mammals. Because it has fur. And the cat is a sleep.

By Sophie Lee

---

by Amanda



This is Mikeymaos. He is a mammal.  
Mikeymaos has four legs for a  
feet. He gave me a bare. Mikeymaos  
has a tail like me.

by amanda

---

### **Evaluation**

I observed many things during the three weeks the children were working on their Logo Animals projects. Most of the animals were recognizable by their characteristics. Key body parts were present for certain animals. The main bodies were all present. Heads were then placed accordingly. Then smaller parts were added. Students often referred to some of the picture books available in the classroom for some details. Approximately two-thirds of the children recognized that using only the shapes provided was not sufficient for completing their animals. I was very pleased to see that they returned to the four basic commands of fd, bk, rt, and lt to add lines for legs, feet, necks, tails, etc.

I was very watchful of how the different ability students' final products all compared. Two students of limited English had a very difficult time. Students at the lower academic continuum were more dependent on the shapes alone, whereas the average to higher academic learners combined the shapes provided with additional lines drawn in. In spite of these findings, I must add that those lower achieving students' products showed improvement from the last assignment given the previous month. I believe they were more capable of simply placing a shape somewhere rather than having to draw it from scratch using only the four basic commands. They were more successful piecing together an animal rather than drawing individual lines.

Two of my more active students were unable to commit to placing shapes on the screen and leaving them there. In each of their 15 daily minutes, their screen was cleared more times that I would prefer to count.

I took note of products done by girls and boys. I discovered an equal number of products completed. The quality of all the products were all very comparable. Therefore, girls are just as good at programming as boys are.

The quality of the descriptive stories was good, though all of the children required probing questions from me to get to the desired outcome. Many of the children began writing nice little things about their animals and had forgotten to include valuable information. With each student, I had to direct their attention to the word map we made to look for facts. Three or four students then looked in some of the books for additional facts. The descriptions are all readable, though not all grammatically correct with exact spelling. Considering 90% of these children could not even spell their name in September, I rank these stories as highly successful.

All of these children enjoyed the assignment. They shared ideas and knowledge. Following are a few enlightening things some of the children discovered during the assignment.

Trent needed the word "elephant" for his story. He knew the word elephant was printed under the picture of elephant that represented "Ee" on the alphabet chart in the classroom. Unfortunately the computers are placed under "X, Y, Z" along the chart. I observed him looking around the room then going to get a friend. After talking to Domingo, I saw Trent take him to where the elephant was on the ABC chart and then return to his computer. Next, Domingo began spelling elephant as Trent typed on the other side of the room. There was a bit of confusion, so Domingo ended up walking back and forth from elephant to Trent to make sure his messages were received correctly.

Kari was finishing her cat's tail when she needed my help. She had drawn her lines going up but could not come back down to finish the tail. I gave her some paper and a pencil and asked her to draw for me what she wants to do. Next, I had her tell me in words what she drew as I wrote down her directions in Logo commands. She was then able to see the commands needed to move the turtle back down to finish her tail.

Terrell had a difficult time placing the tail of the fish facing in the correct direction. I asked him to draw it out for me on paper. By asking him which direction he thought the turtle ought to be facing in order to draw what he drew, we solved the problem.

Chue Yee explained to me that by taking two squares and putting one on the other, he then had a long rectangle neck instead of a short one.

As Shana talks about her caylabear (Koala Bear) she describes the ears on either side of its head with two eyes and a nose.

Amber brings a lot of what she know personally about docks (ducks) to her story. She sees many similarities between ducks and people.

## **Conclusion**

This practicum was a success. My expectation was for 50% of the class to be able to complete the assignment and to my pleasure I found that I had underestimated the class. I have 80% of the

children with a good finished product. The remaining children are still making their attempts. All of the children have grown in their Logo programming ability and are looking forward to their next assignment.

Logo has proved to be a powerful tool to enhance the Animal unit introduced at the first grade level. It provided the children with more learning and understanding in science, math, and language arts. I intend to continue incorporating Logo learning into my elementary curriculum.

---

---

## Appendix I - Defining the Shapes

### Circle

1. We want to tell the turtle how to make a circle for us on the screen. First watch while I pretend I am the turtle and I am going to walk out a circle. I begin to take a step and then turn a little. I continue these two moves until a circle is beginning to form. As I make each movement I am talking out loud and naming each move. I step then turn, then step, then turn, etc. I continue this process until I end up in the same spot I started in.
2. Now I want you to stand up and we will all pretend to be turtles. Let's all begin making a circle in slow motion by taking one step then a little turn. Keep doing this and name each move as you take it. Keep going until you end up where you started from.
3. Pair off children for the purpose of more practice. Each child will take a turn at being the turtle and the commander for walking and talking out of a circle.
4. Now let's see how you would make a smaller circle. Walk it out. Which move changed: the step or the turn? That's right, if you make a sharper turn your circle will become tighter or smaller
5. Gather around the computer and have the children tell the Logo turtle how to make a circle. After producing the line `fd 1 rt 1` show the children how to manually repeat this command by pressing the "arrow up" key so that the cursor is flashing on the `fd 1 rt 1` and then hit "return." Have the children make tally marks, draw a circle around it to represent a bundle. When the turtle is back in its starting position, count by tens all the bundled tally marks the children made. Ideally, several children will have 360 tally marks.
6. On the "flip side &ndash; apple F," show how to write that very tiring process in a three line program named circle. Why would I want to call this circle?

```
to circle
repeat 360 [fd 1 rt 1]
end
```

7. Sometimes I need different size circles, so I made a few more circles of different sizes for us to work with. I also had to name them different things so the turtle knows which one I want it to draw. Unknown to the children, I changed some of the input numbers to make the turtle draw faster.

```
to circle.1
repeat 36 [fd 1 rt 10]
end
```

```
to circle.3
repeat 36 [fd 5 rt 10]
end
```

```
to circle.2
repeat 36 [fd 3 rt 10]
end
```

```
to circle.4
repeat 36 [fd 7 rt 10]
end
```

Each circle number represents the size of the circle; 1 is the smallest, 4 is the largest, 2 and 3 are in between.

## Square

1. We want to tell the turtle to make a square for us on the screen. First watch me while I pretend I am the turtle and I am going to walk out a square. I begin walking in a straight line several steps, then turn directly to my right. I continue walking in a straight line several steps, then turn directly to my right. I do this two more times until I am right back to where I started from. during the entire walking process I am talking out loud by counting my steps and naming my right turn.

2. I tell the children there is a magic number to make a square corner. That magic number is 90. From now on, when we make a square, the input for the right or left turn is 90. It will look like this: rt 90 or lt 90.

3. Now I want you to stand up and we will all pretend to be turtles. I will give the commands while you walk them out. Walk fd 5 rt 90, fd 5 rt 90, fd 5 rt 90, fd 5 rt 90. You should be back in the spot you started in and facing the same direction as when you began.

4. Pair off children for the purpose of more practice. Each child will take a turn at being the turtle and the commander for walking and talking out a square.

5. Now let's see how we would make a bigger square. Walk it out. Which move changed: the fd or the rt? That's right, if you make the lines longer or go forward more steps, your square will become bigger. The magic number 90 still makes a square corner for all size squares.

6. Gather around the computer and have the children tell the Logo turtle how to make a square. Since turtle steps are much smaller than our steps, we will have to use much larger numbers for the forward inputs. After producing the line fd 50 rt 90 show the children how to manually repeat this command by pressing the "arrow up" key so that the cursor is flashing on the fd 50 rt 90 and then "return." Have the children make tally marks every time the "return" key is pressed. Everyone should have four tally marks. have the children take notice that it took four times to repeat the command and there are also four sides and corners on a square.

7. On the "flip side - apple F," show how to write that very tiring process in a three line program named square. Why would I want to call this square? That's right, it will make a square.

```
to square
repeat 4 [fd 50 rt 90]
end
```

8. Sometimes I need different size squares, so I made a few more squares of different sizes for us to work with. I also had to name them different things so the turtle know which one I want it to draw.

```
to square.1
repeat 4 [fd 10 rt 90]
end
```

```
to square.2
repeat 4 [fd 30 rt 90]
end
```

```
to square.3
repeat 4 [fd 50 rt 90]
end
```

```
to square.4
repeat 4 [fd 70 rt 90]
end
```

Each square number represents the size of the square: 1 is the smallest, 4 is the largest, 2 and 3 are in between.

## Triangle

1. We want to tell the turtle how to make a triangle for us on the screen. First watch while I pretend I am the turtle and I am going to walk out a triangle. I will turn a little, but not all the way to make a square corner which was a rt 90. Then I walk forward 5 steps in a diagonal direction and turn right, so that I am facing diagonally in a direction that would make a  $\wedge$  design. I then walk forward again another 5 steps and make the same kind of right turn. One more time walking 5 steps will get me back to where I started. As I make each movement I am talking out loud and naming each move.
2. Now I want you to stand up and we will all pretend to be turtles. Lets' all begin by turning part way to the right so we are facing in a diagonal direction. Now move fd 5 rt 120 and then a fd 5. This will face you going diagonally in the other direction. Move fd 5 rt 120 and then a fd 5. This time 120 is the magic number for making triangle corners.
3. Pair off children for the purpose of more practice. Each child will take a turn at being the turtle and the commander for walking and talking out a triangle.
4. Now let's see how would you make a smaller triangle? Walk it out. Which move changed: the fd or the rt? That's right, if you take less steps forward you triangle will not be as big. The corners still need to be rt 120 in order to be facing in the correct diagonal direction each time.
5. Gather around the computer and have the children tell the Logo turtle how to make a triangle. First have the turtle make a rt 30 to head it in the right direction. Remind the children that turtle steps are much smaller than our steps so we have to use larger numbers. After producing the line fd 50 rt 120 ask how can we make the turtle repeat those two commands without typing in the line again. That's right, by pressing the "arrow up" key and then the "return" key, the turtle will automatically make those moves again. Have the children make tally marks for every time the "return" key was pressed. Have the children take notice that the number of times it took to repeat the two commands is the same number of sides and corners in a triangle.
6. On the "flip side &ndash; apple F", show how to write that very tiring process in a three line program named triangle. Why would I want to call this triangle? That's right, it will make a triangle.

```
to triangle
rt 30 repeat 3 [fd 10 rt 120]
end
```

7. Sometimes I need different size triangles, so I made a few more triangles of different sizes for us to work with. I also had to name them different things so the turtle knows which one I want it to draw.

```
to triangle.1
rt 30
repeat 3 [fd 10 rt 120]
seth 0
end

to triangle.2
rt 30
repeat 3 [fd 30 rt 120]
seth 0
end

to triangle.3
rt 30
repeat 3 [fd 50 rt 120]
seth 0
end

to triangle.4
rt 30
repeat 3 [fd 70 rt 120]
seth 0
end
```

Each triangle number represents the size of the triangle: 1 is the smallest, 4 is the largest, 2 and 3 are in between.

The seth 0 command is for the purpose of heading the turtle back in it's upright position. All of the shapes are designed for the turtle to be facing in this direction. The turtle is all set up to make a new shape now.

---

---

## Appendix II - Modeling the Assignment

1. I need for the class to help me make an animal using the circles, squares, and triangles that we made earlier. I would like to make a bird.
2. Through questioning the children about what parts a bird needs and what shapes and sizes of the shape should we use, we slowly design a bird.
3. After the bird is finished, I ask the children to help me write a description about the animal we just made. I get sample sentences from the children and choose those that tell information about the bird. Any additional information I think is missing I will probe the children for.
4. While typing the story in, I purposely put in a few editing errors. We then go back and reread the paragraph and check for punctuation, capitalization, and sentences that make sense. With the help of the class, I edit my story and sign my name.
5. Print the picture.
6. What other kinds of animals can be made on the computer using these shapes? As children give examples, discuss the various parts of the animal's body and which shapes and sizes would best represent it.



7. For the next several weeks you may choose any animal and use these shapes to make it with. After your animal is designed, then "apple U" and write your description about your animal. Be sure to use words that will tell what your animal is, what group it is from, and why it is a part of that group. Then ask another person in the class to help you edit the story. Lastly, be sure to put your name on it.

8. Have fun!