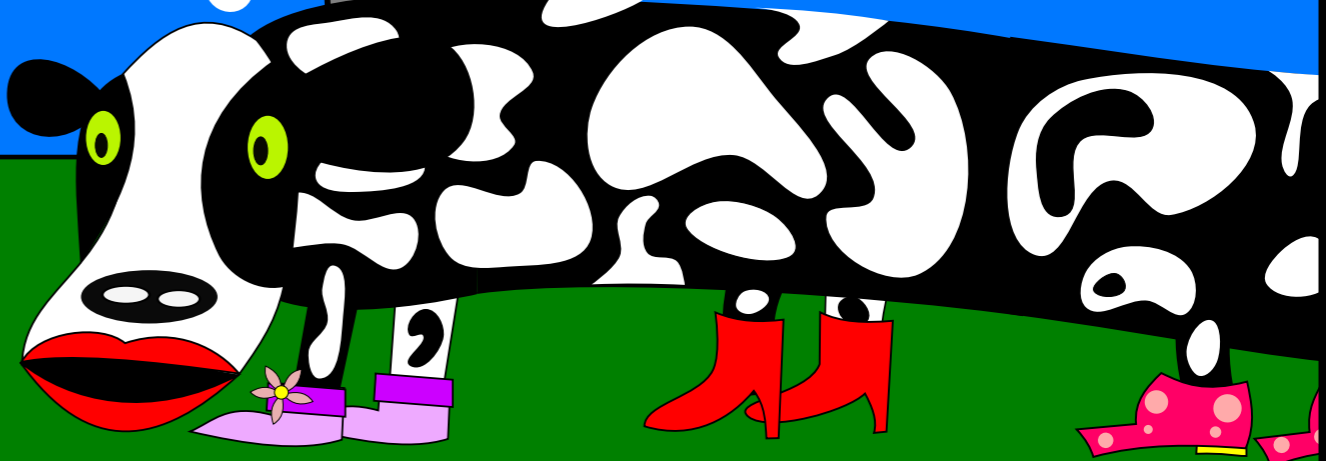




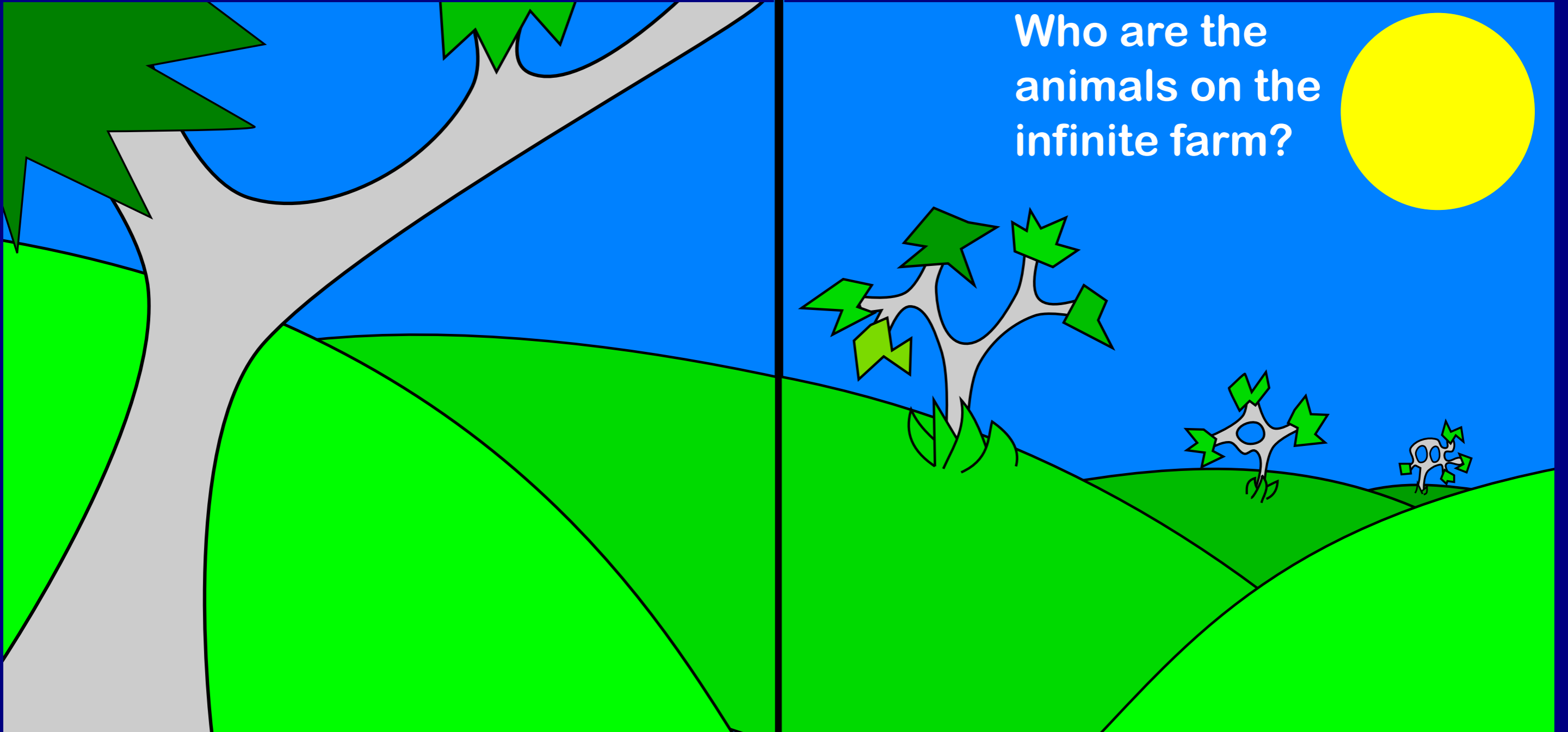


# Life on the Infinite Farm

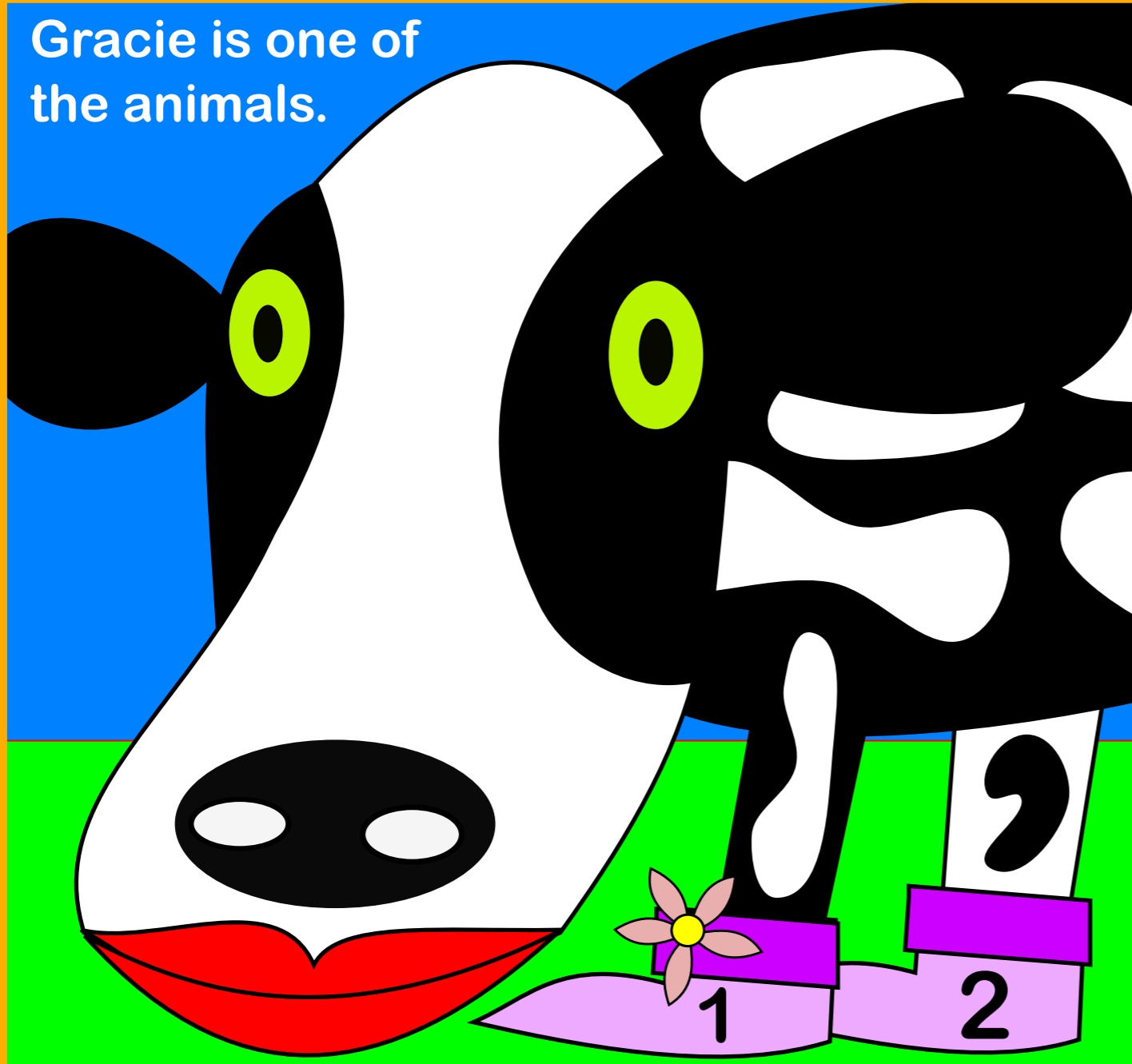


Richard Evan Schwartz

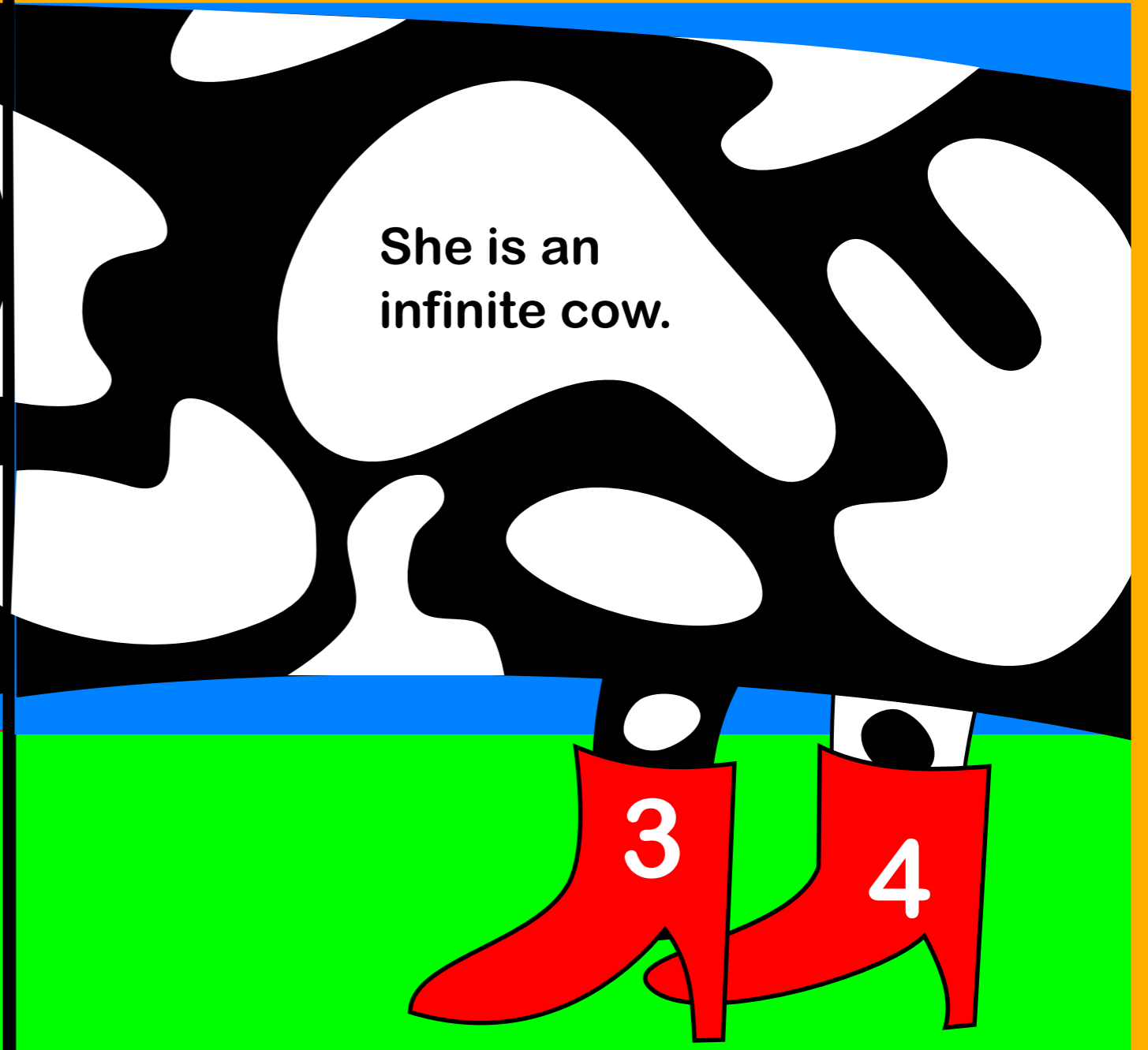
Who are the  
animals on the  
infinite farm?



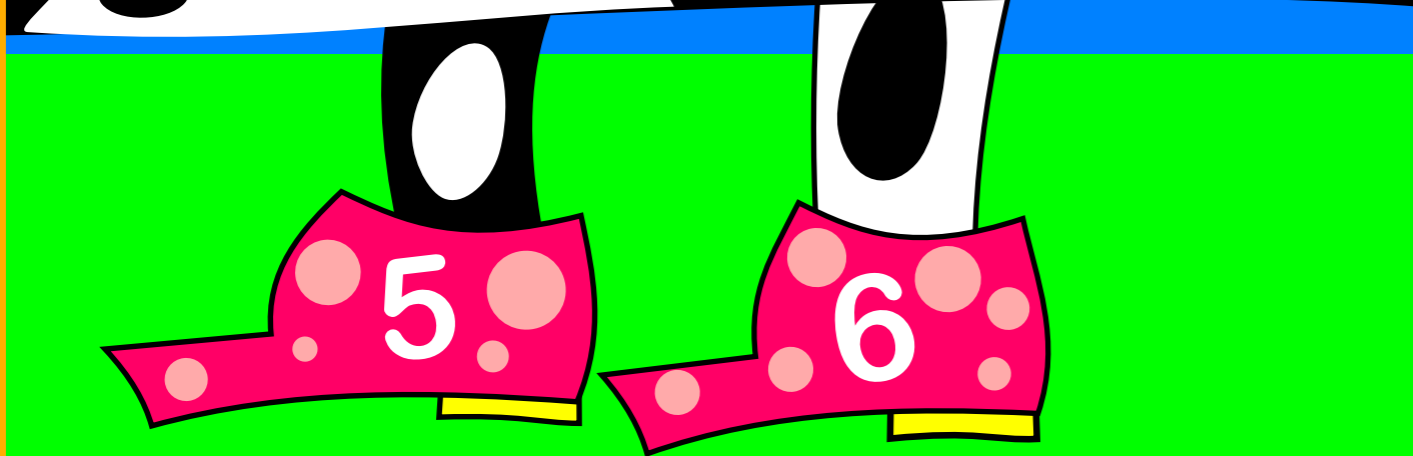
Gracie is one of  
the animals.



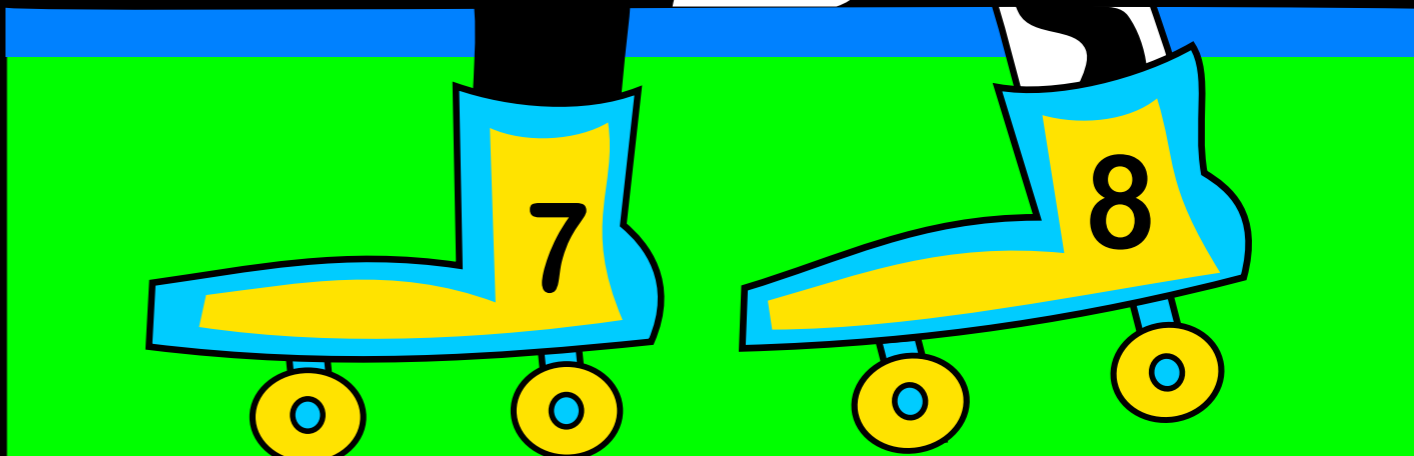
She is an  
infinite cow.



Gracie loves shoes.

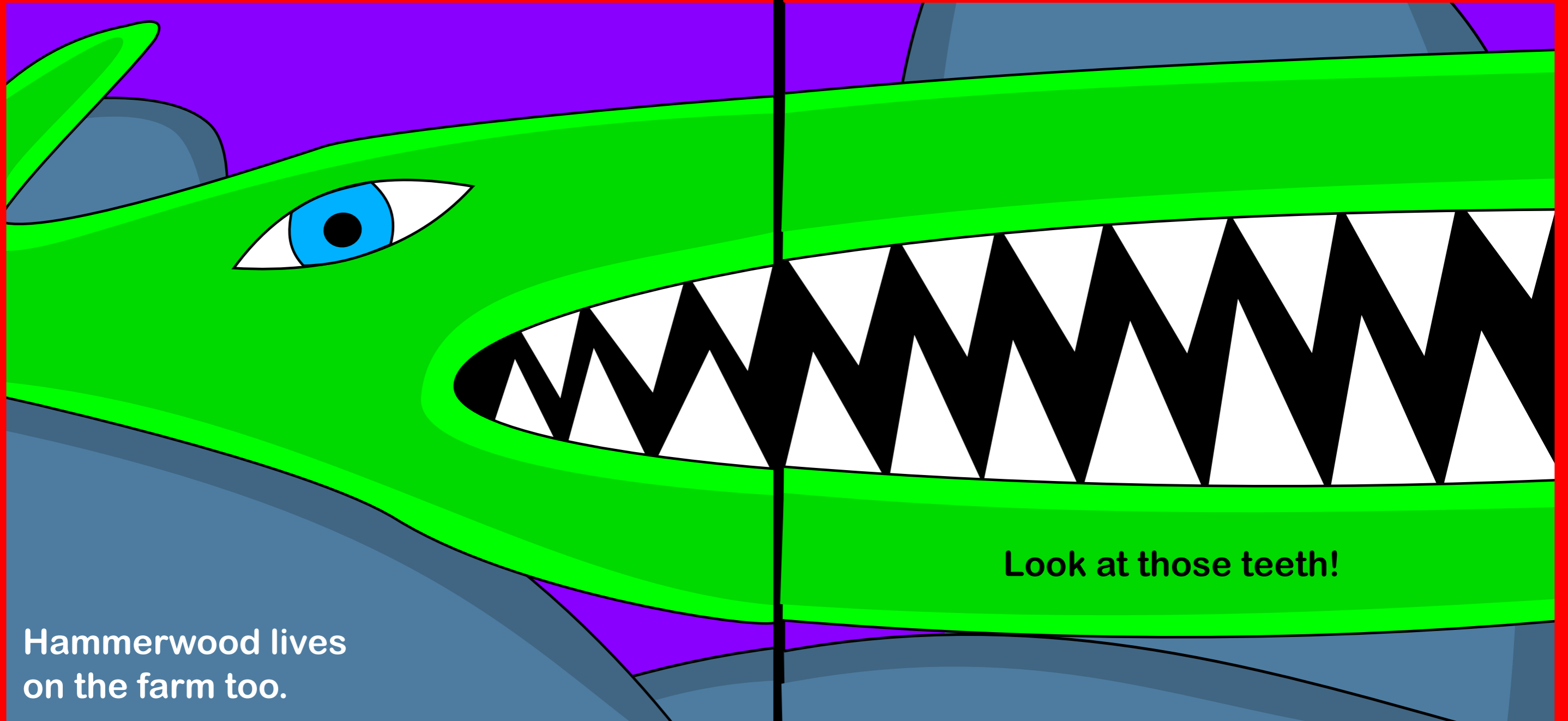


She has one on every foot ...



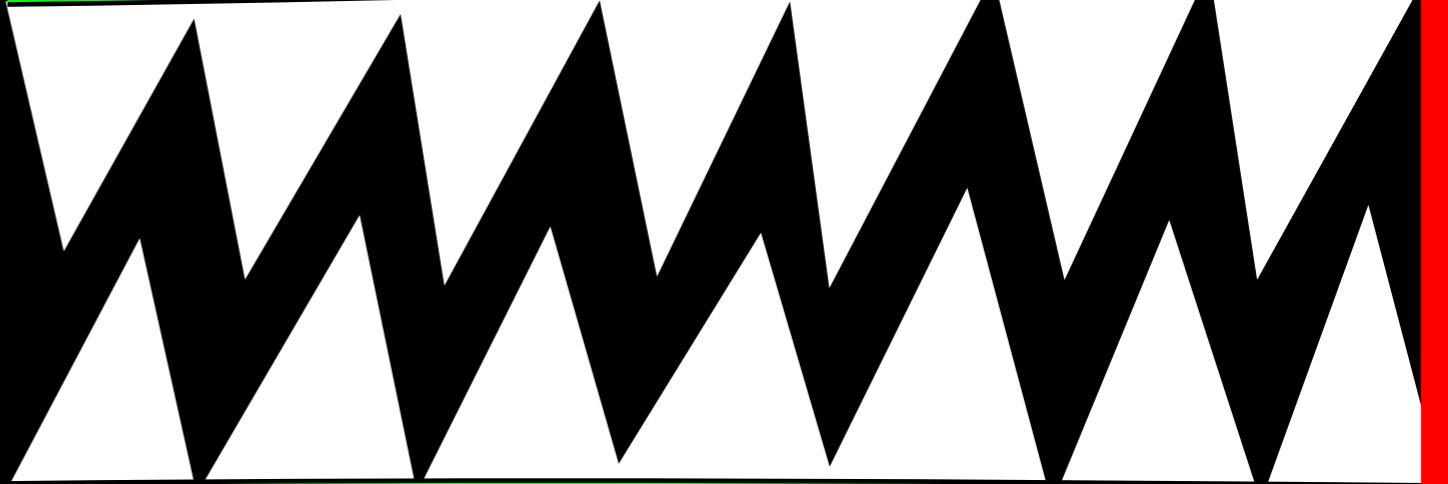


and her  
feet  
go on  
forever!



Hammerwood lives  
on the farm too.

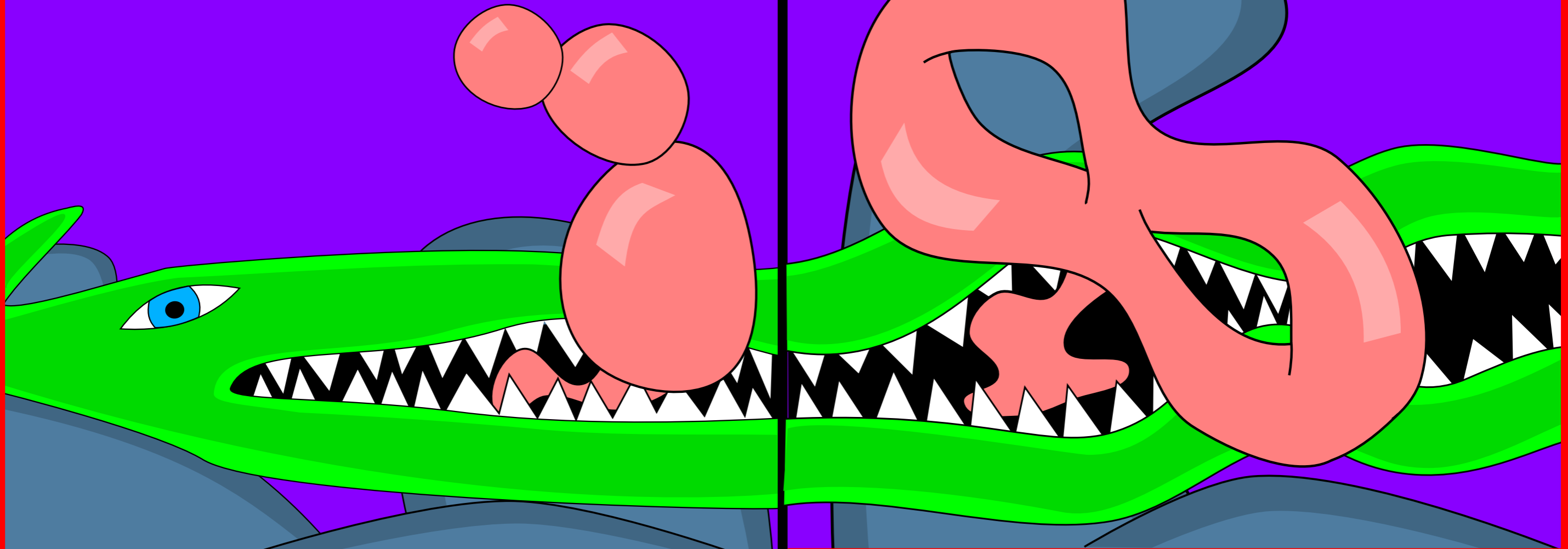
Look at those teeth!



They just keep going.



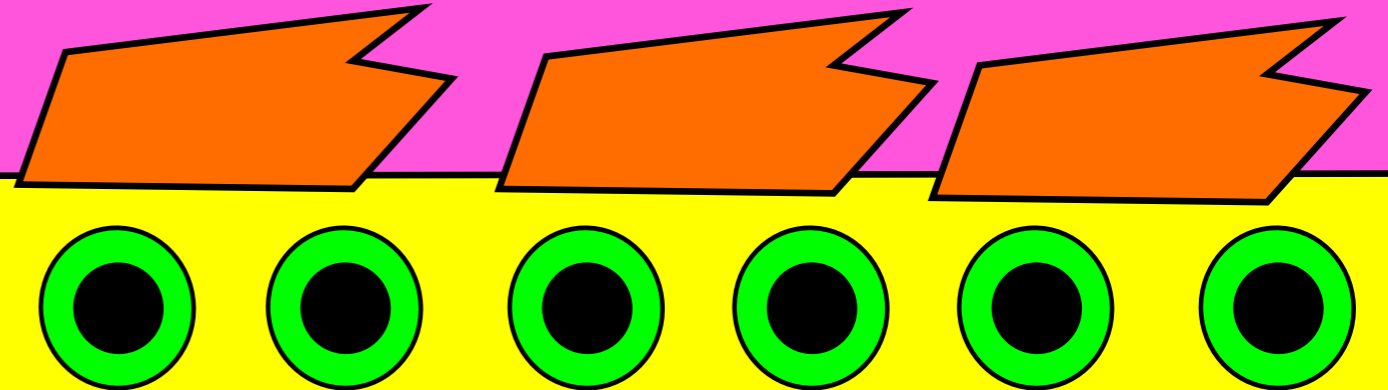
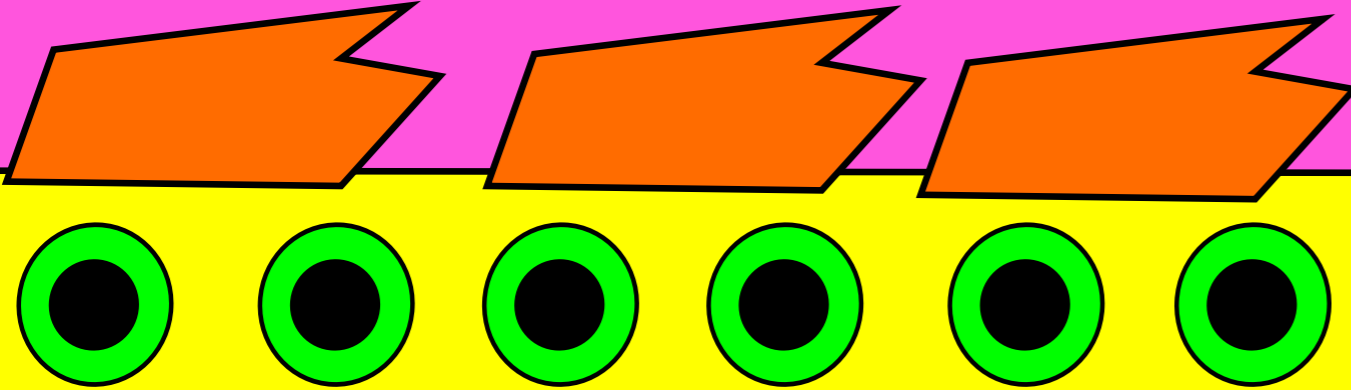
Hammerwood loves bubble gum.  
Even though he has a hard time  
chewing it, he loves the taste...



and the bubbles.

Paddington also lives on the farm.

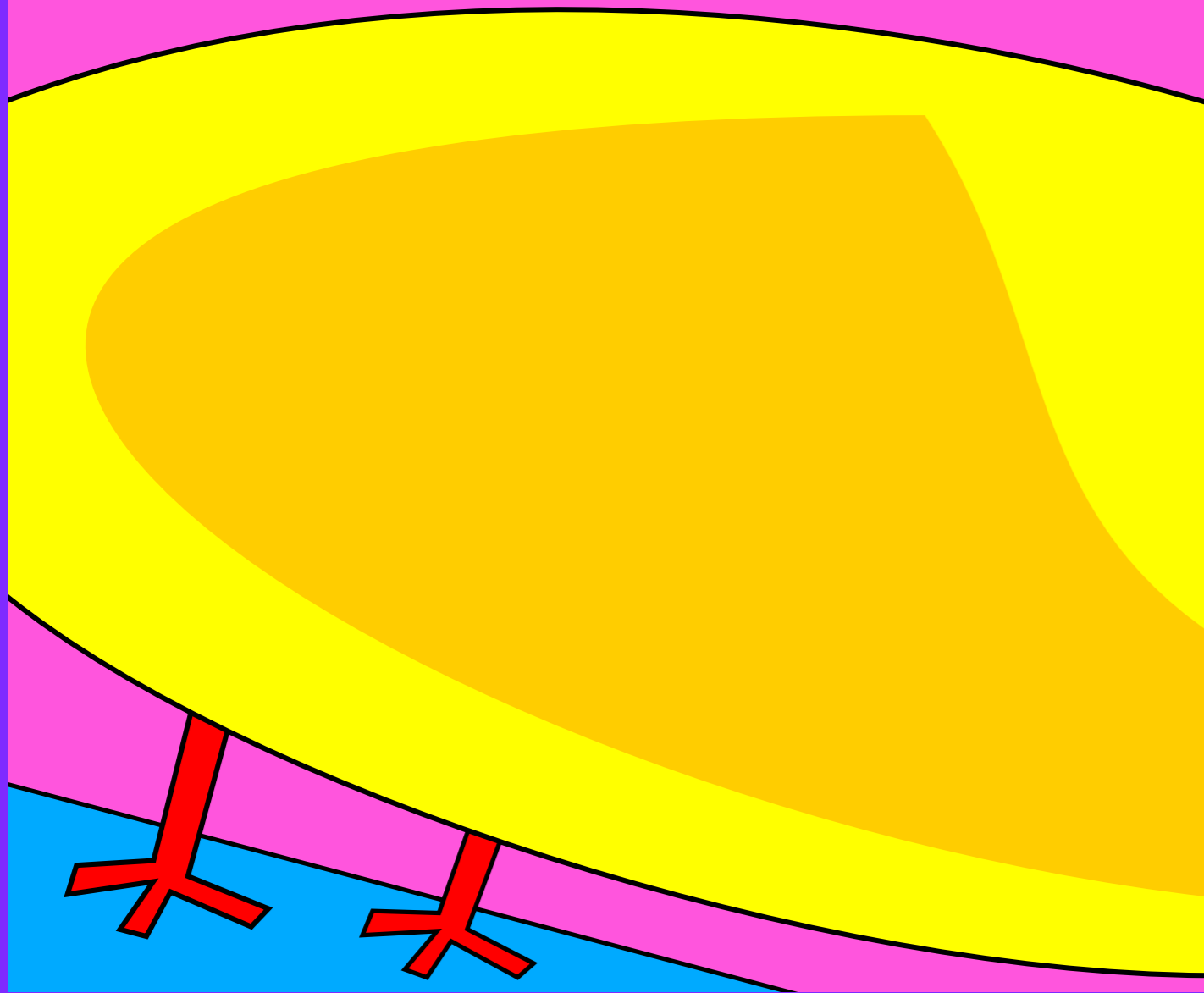
Maybe we're standing too close..  
If you step back, you can see that ...



What is he?

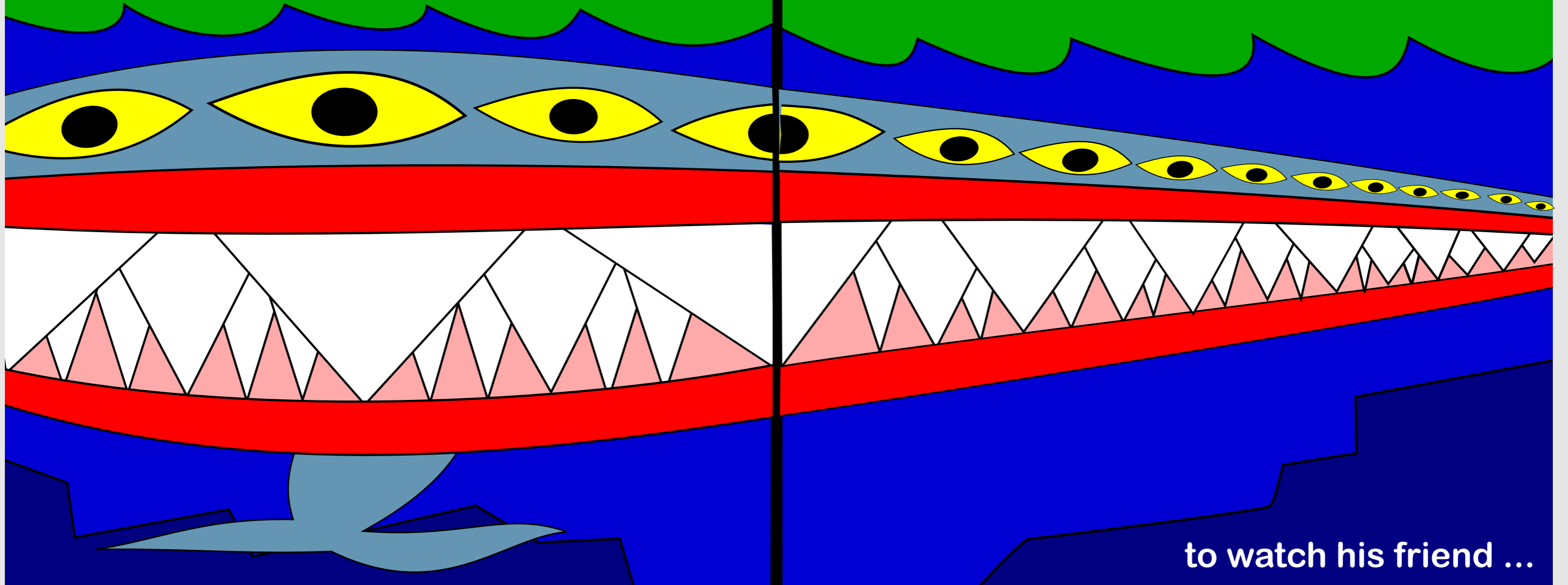


he is an infinite chicken.

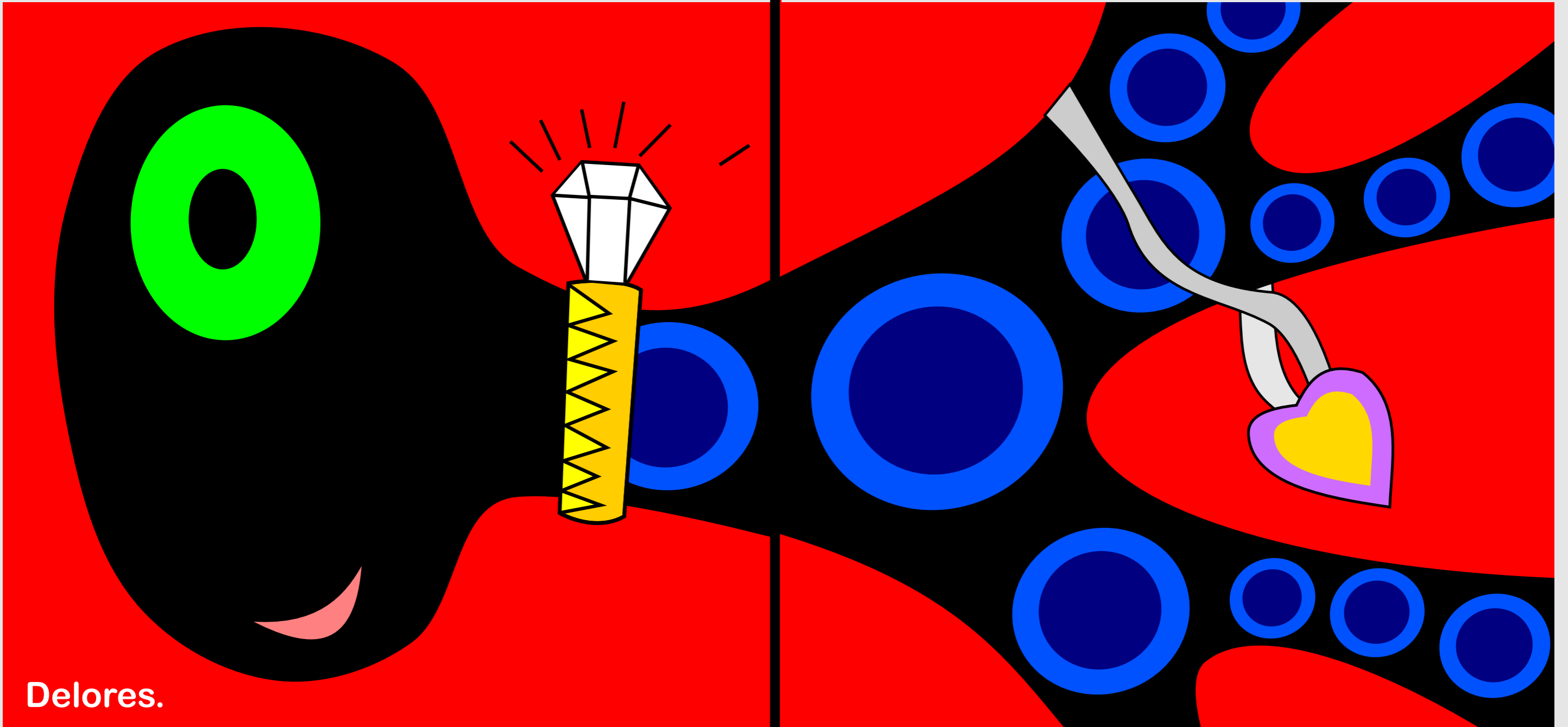


On the infinite farm,  
Chickens have teeth too.

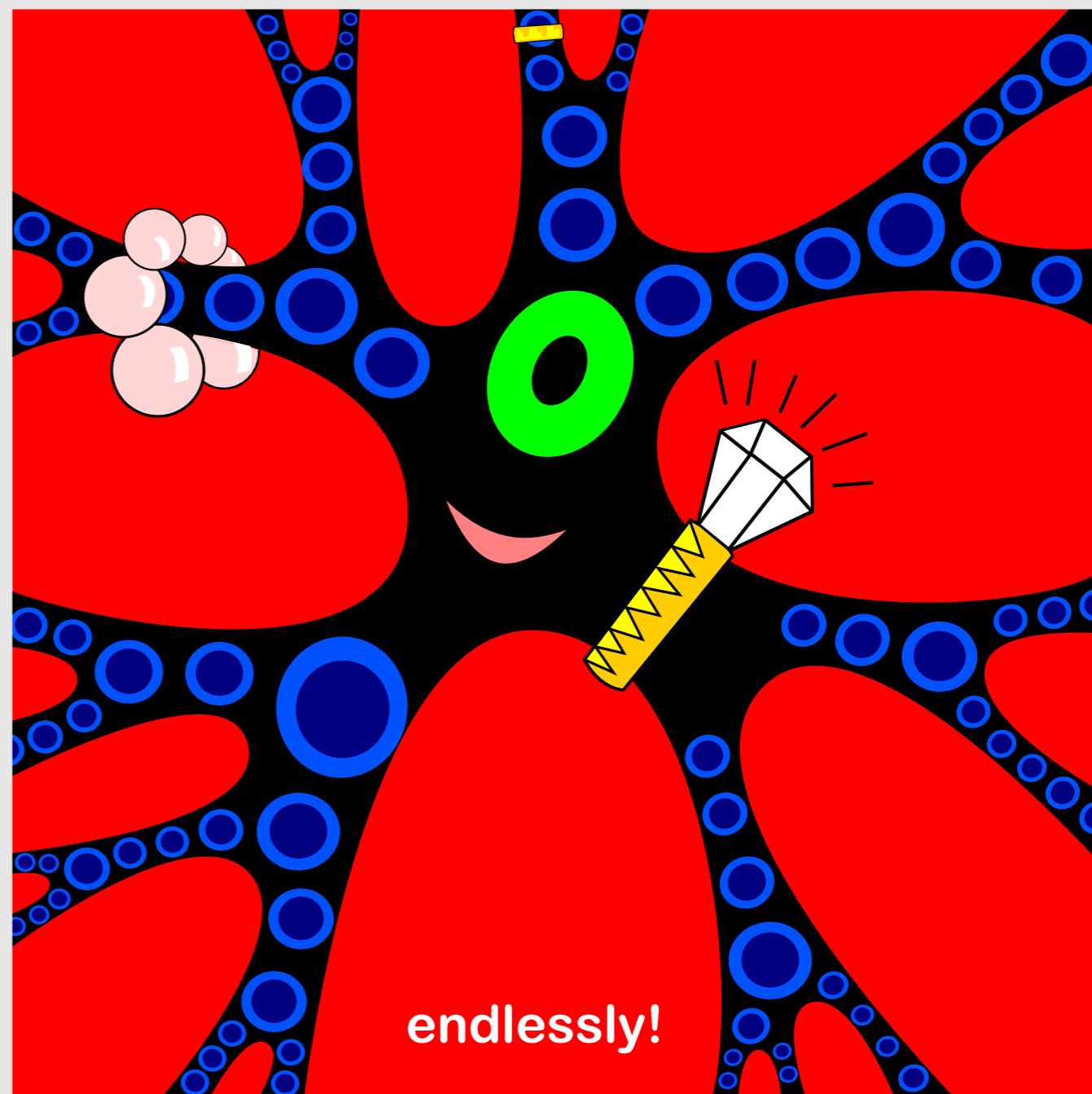
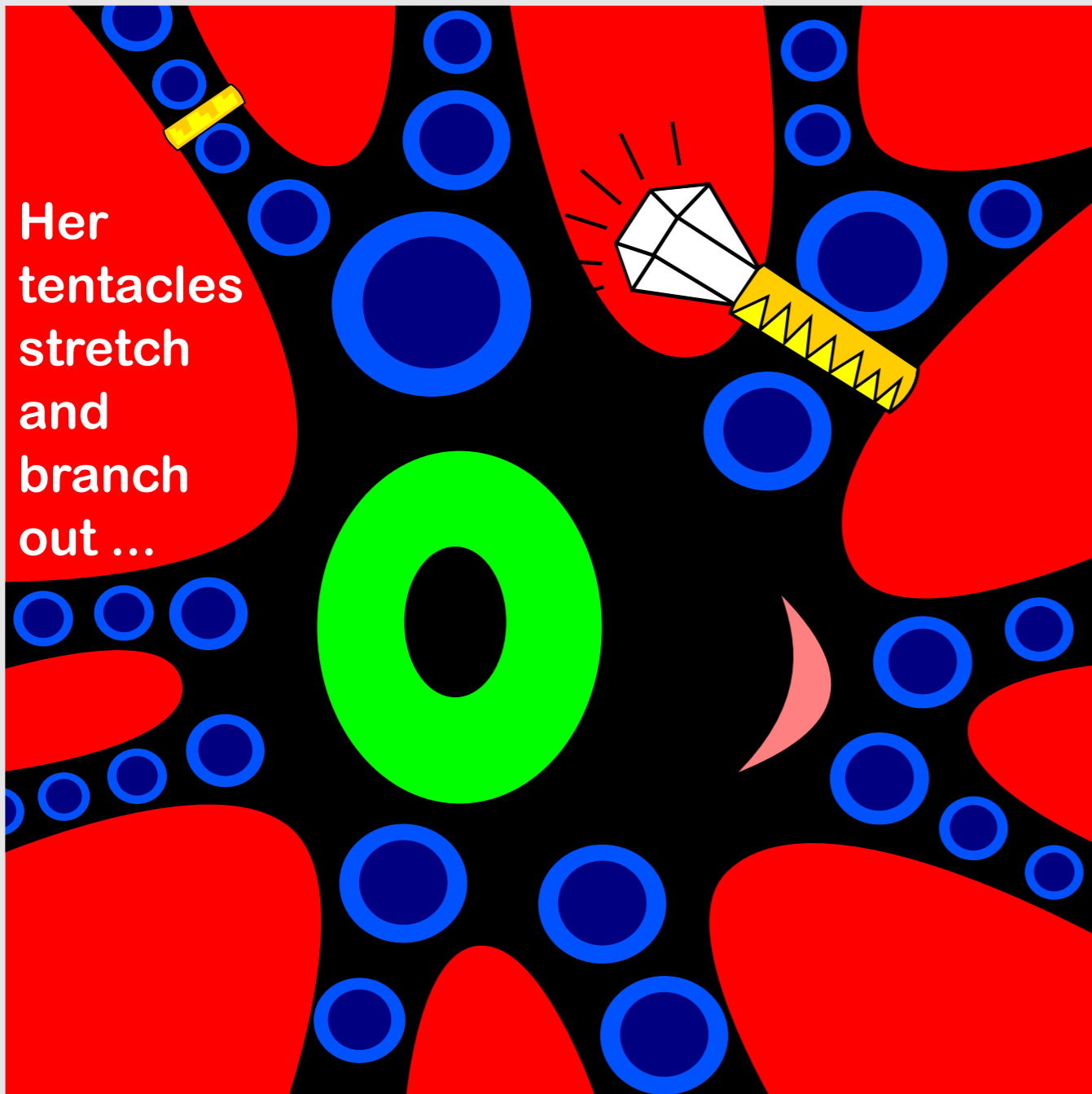
Nelson lives in the pond, and  
uses his infinite row of eyes ...



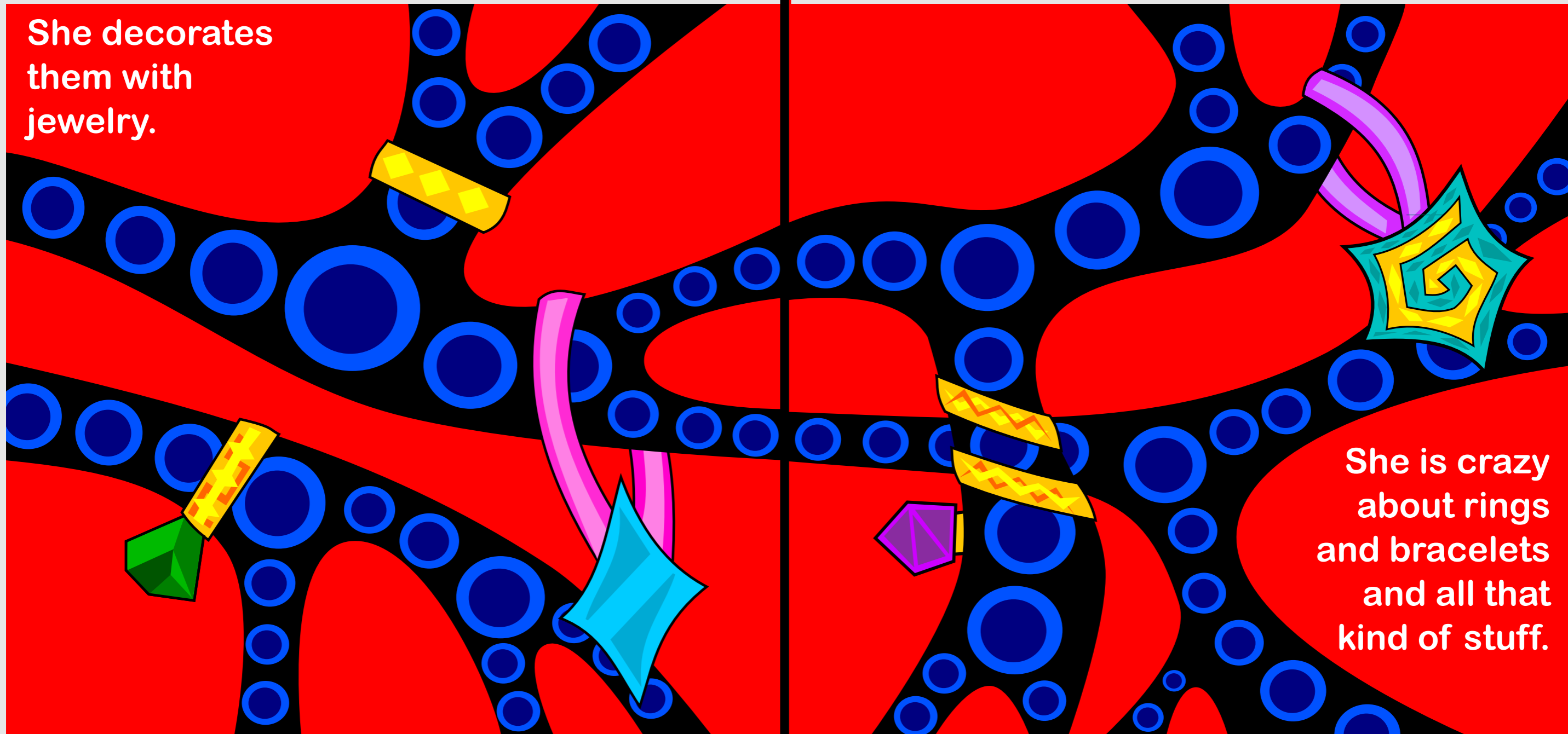
to watch his friend ...



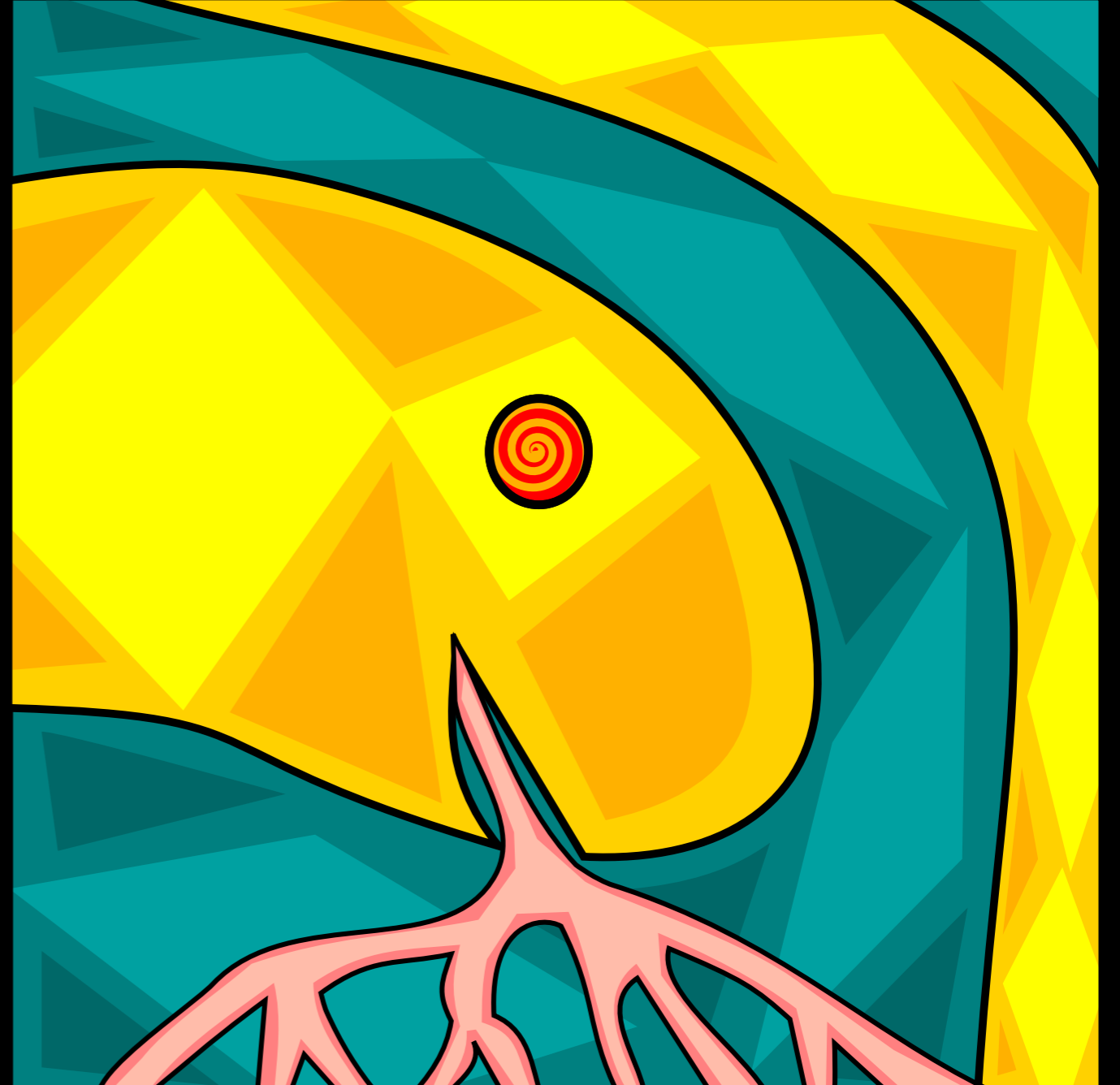
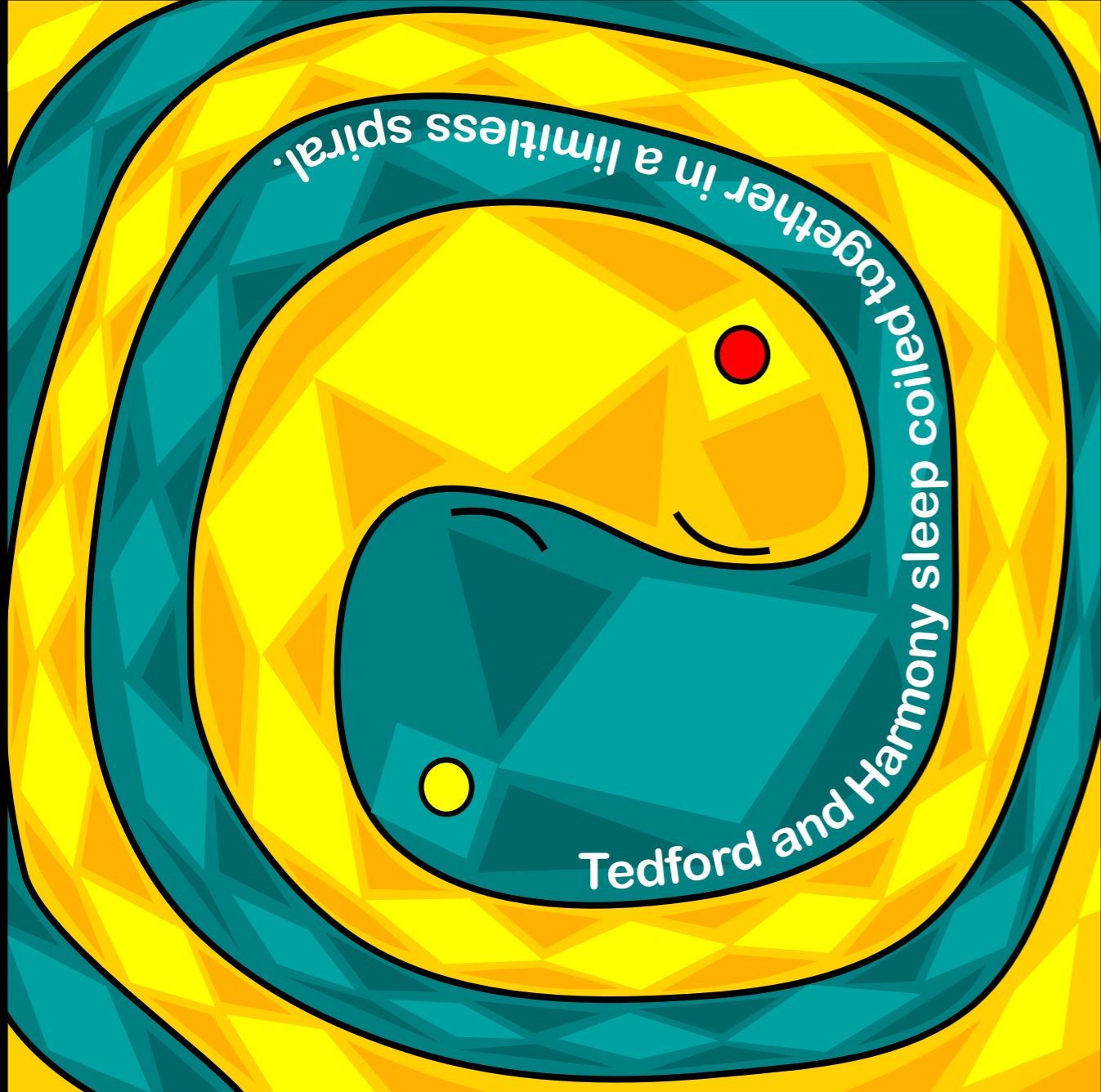
Delores.



She decorates  
them with  
jewelry.



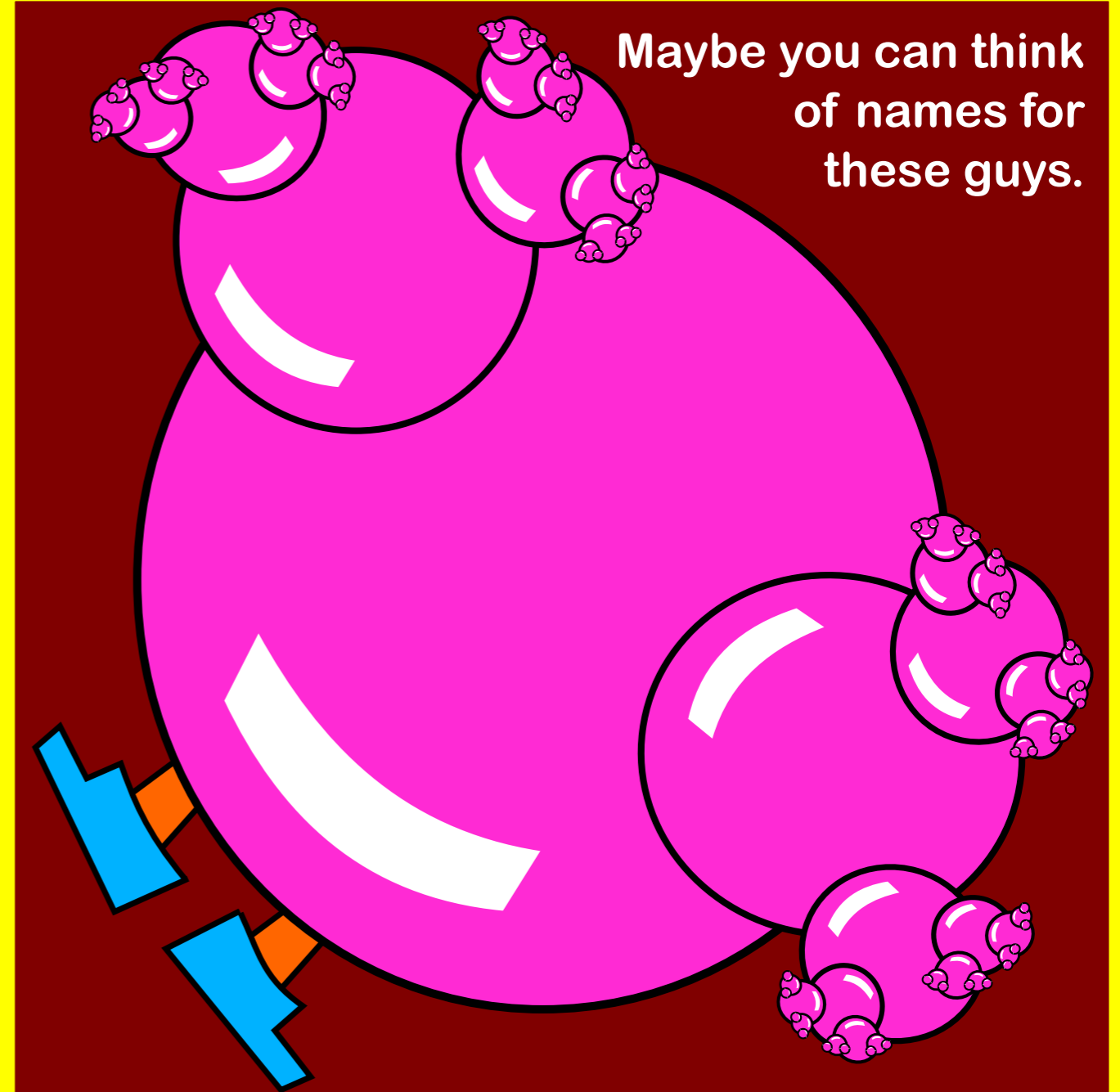
She is crazy  
about rings  
and bracelets  
and all that  
kind of stuff.



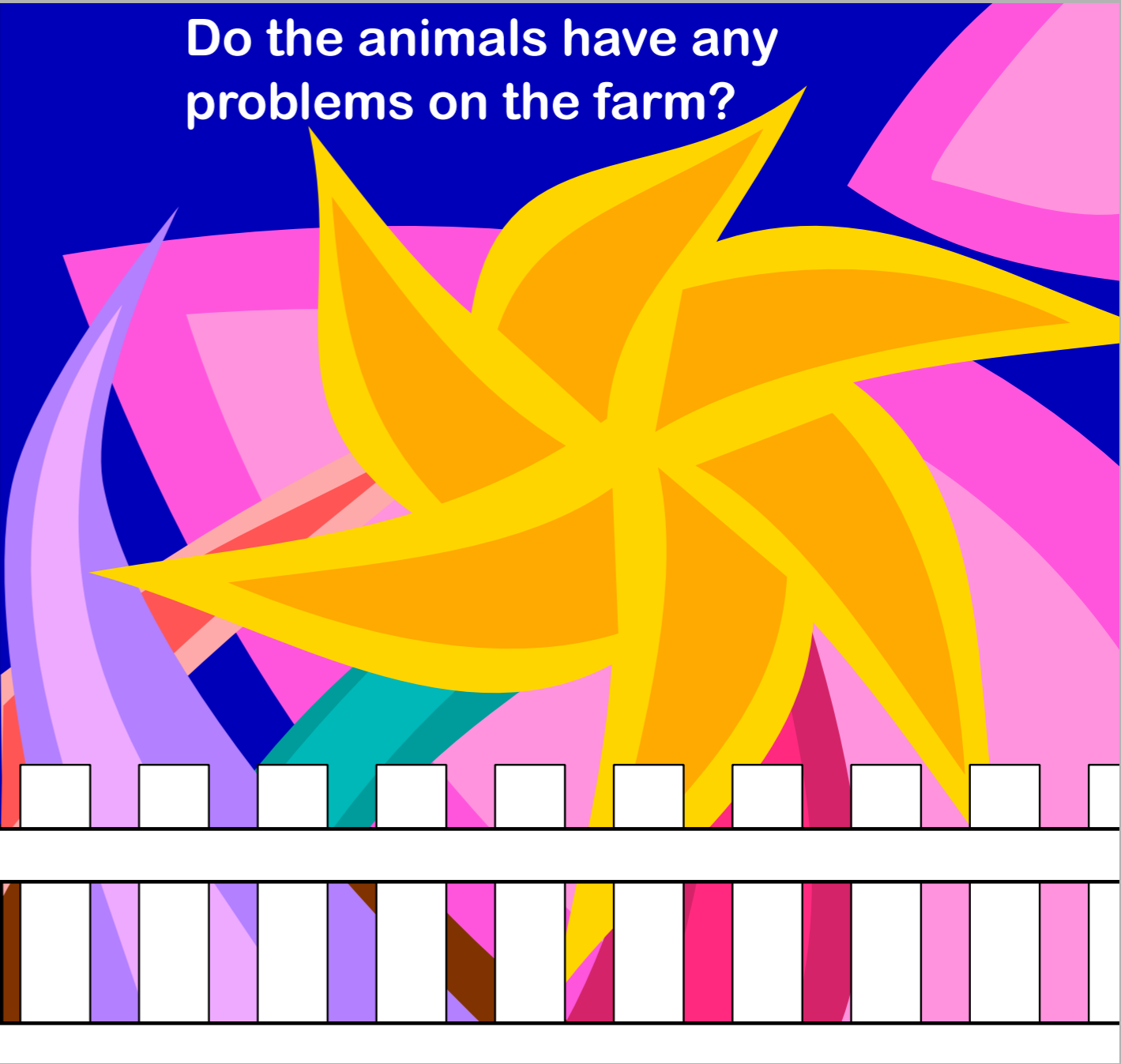
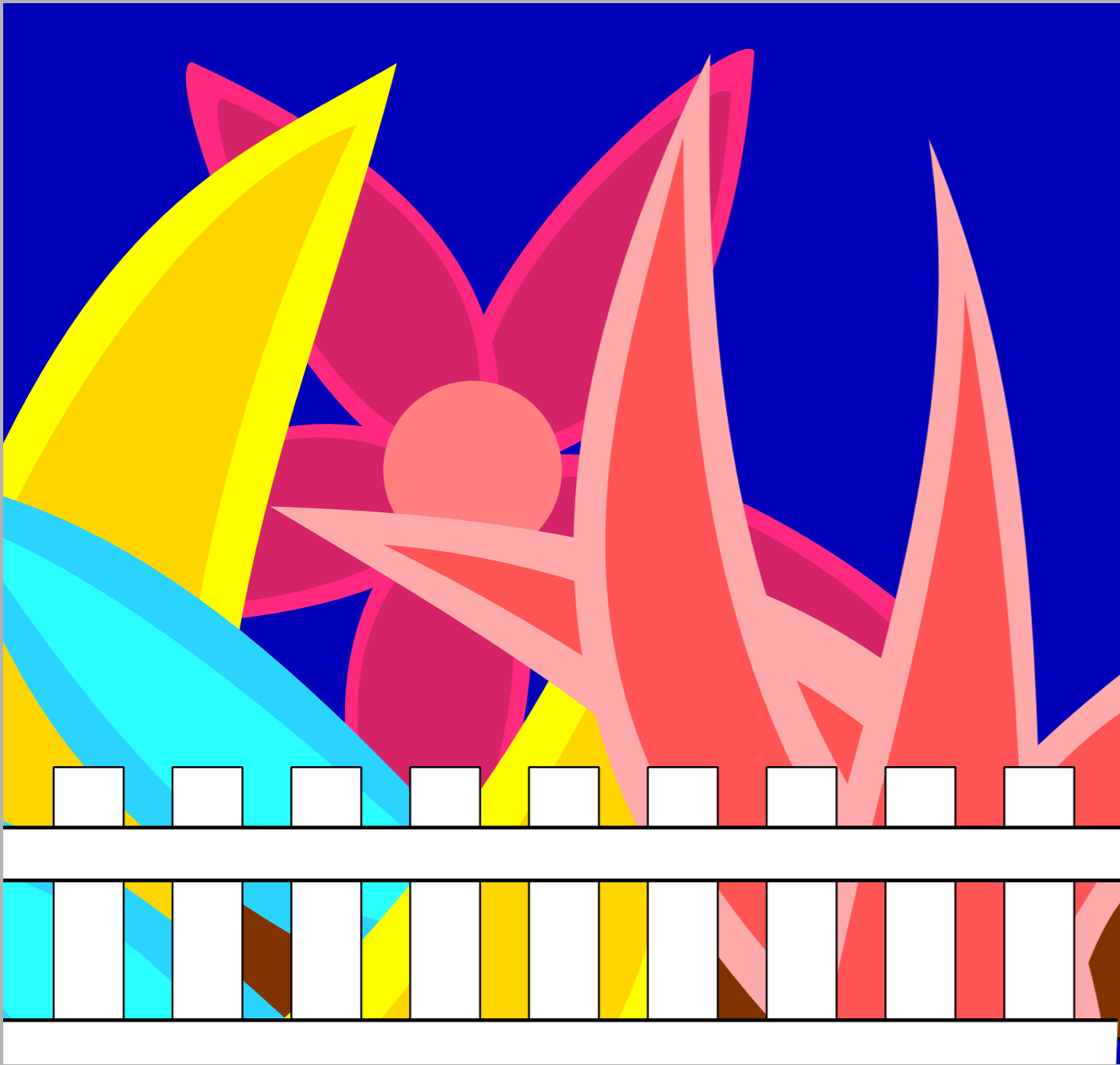




Some of the animals on the farm are so strange that I don't even know their names.

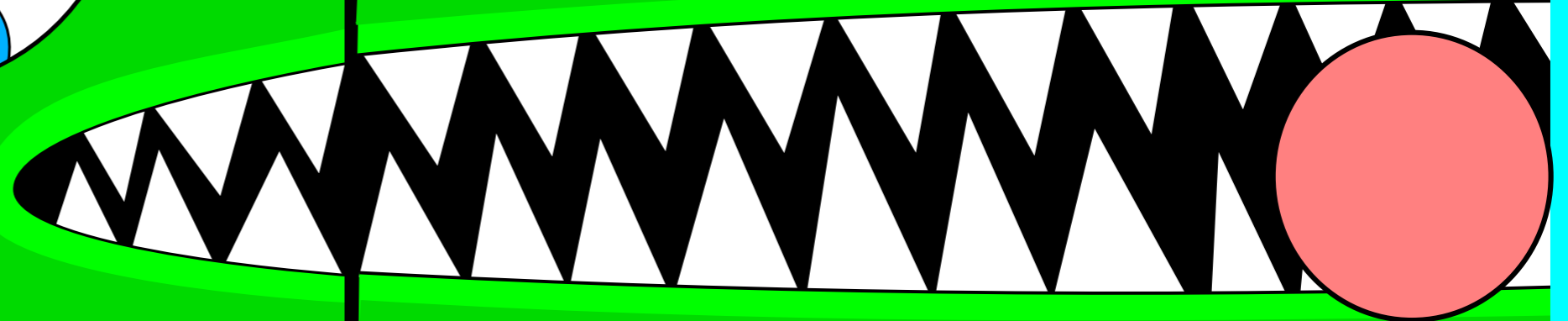
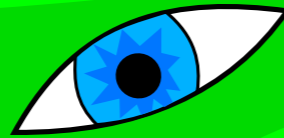
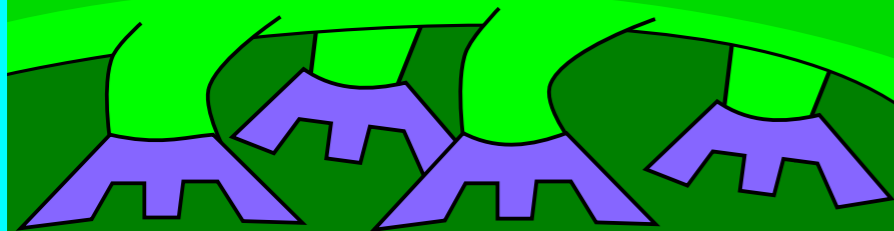


Maybe you can think of names for these guys.





Oh yes, lots of problems!  
Gracie has a problem  
with new shoes.



Her friends know that she loves shoes

so they bring her new ones as presents.



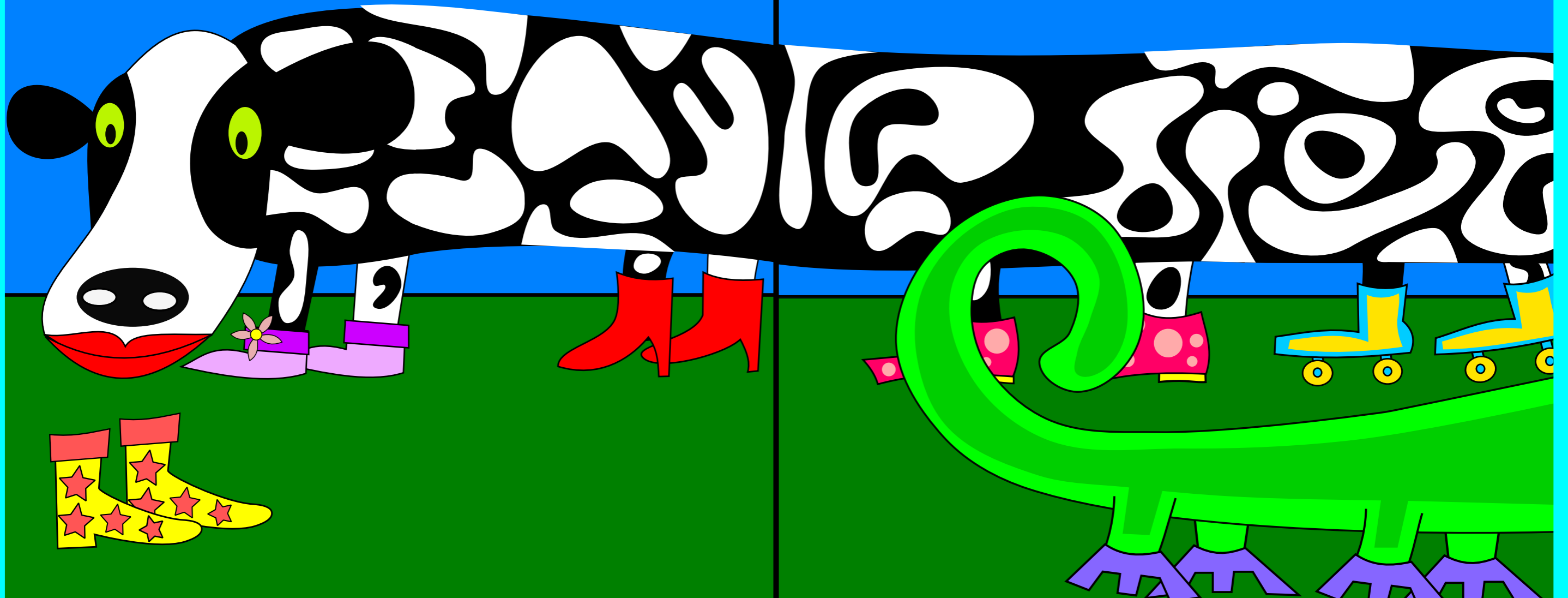
She wants to wear the NEW shoes ...



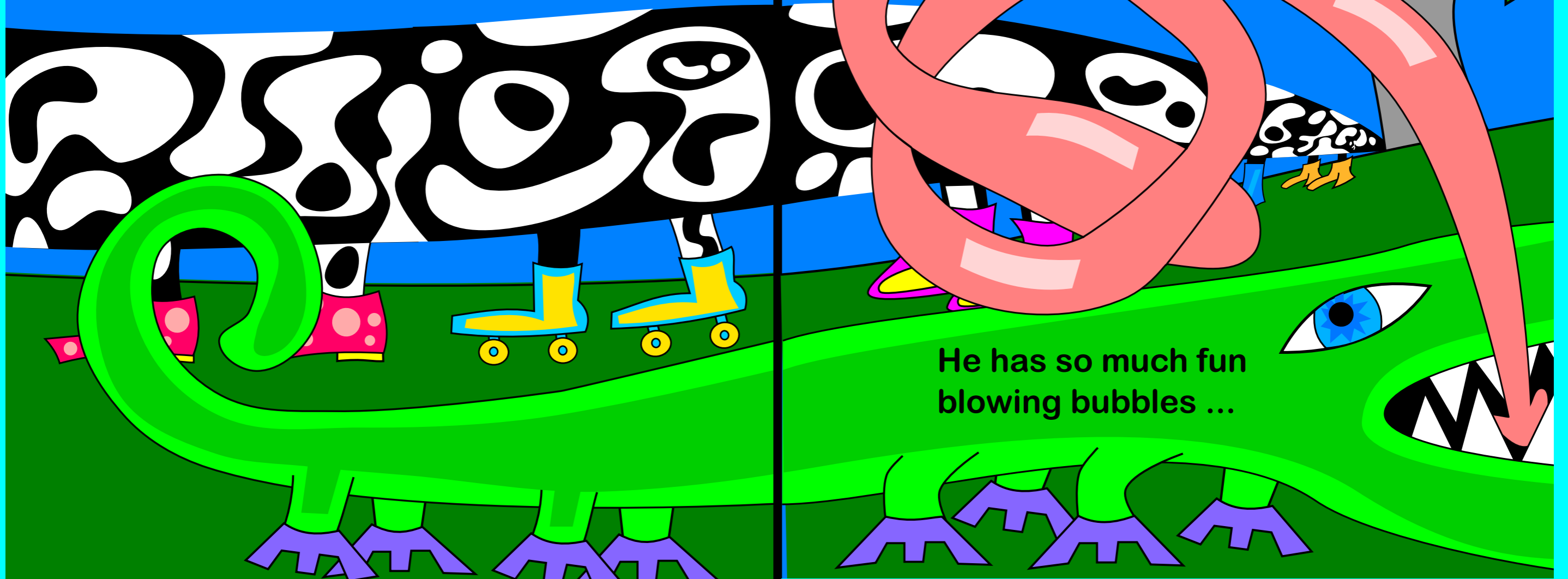
But she doesn't want to stop wearing any of her OLD shoes.

She already has a shoe on EVERY foot...

So what is she going to do?

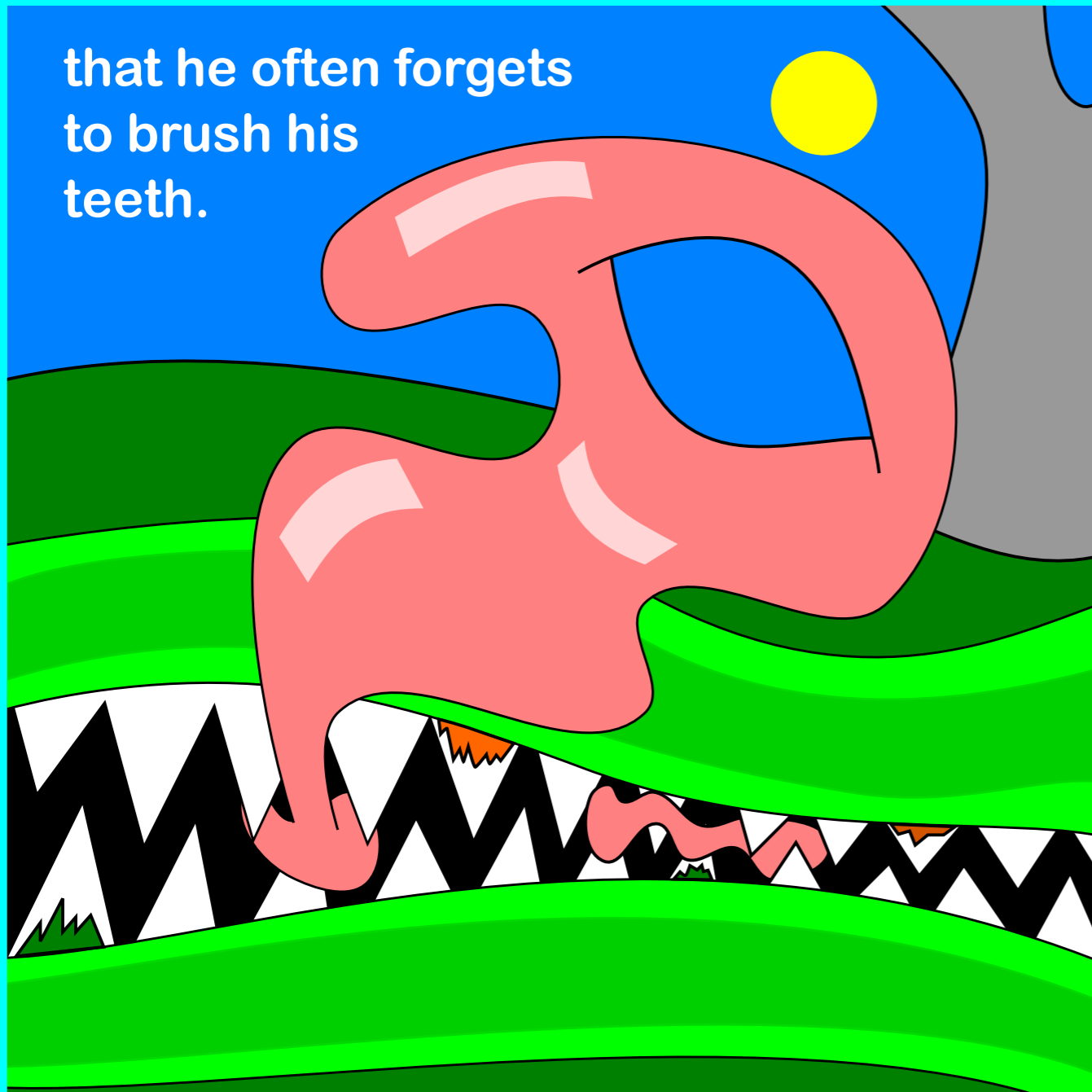


Meanwhile, Hammerwood  
has problems of his own.



He has so much fun  
blowing bubbles ...

that he often forgets  
to brush his  
teeth.



To be honest, bad things  
sometimes happen to  
Hammerwood's teeth.  
It isn't pretty up close.



Sometimes it gets so bad that ...

some of his teeth fall out!

He needs those teeth for  
chewing but he can't grow  
new ones.

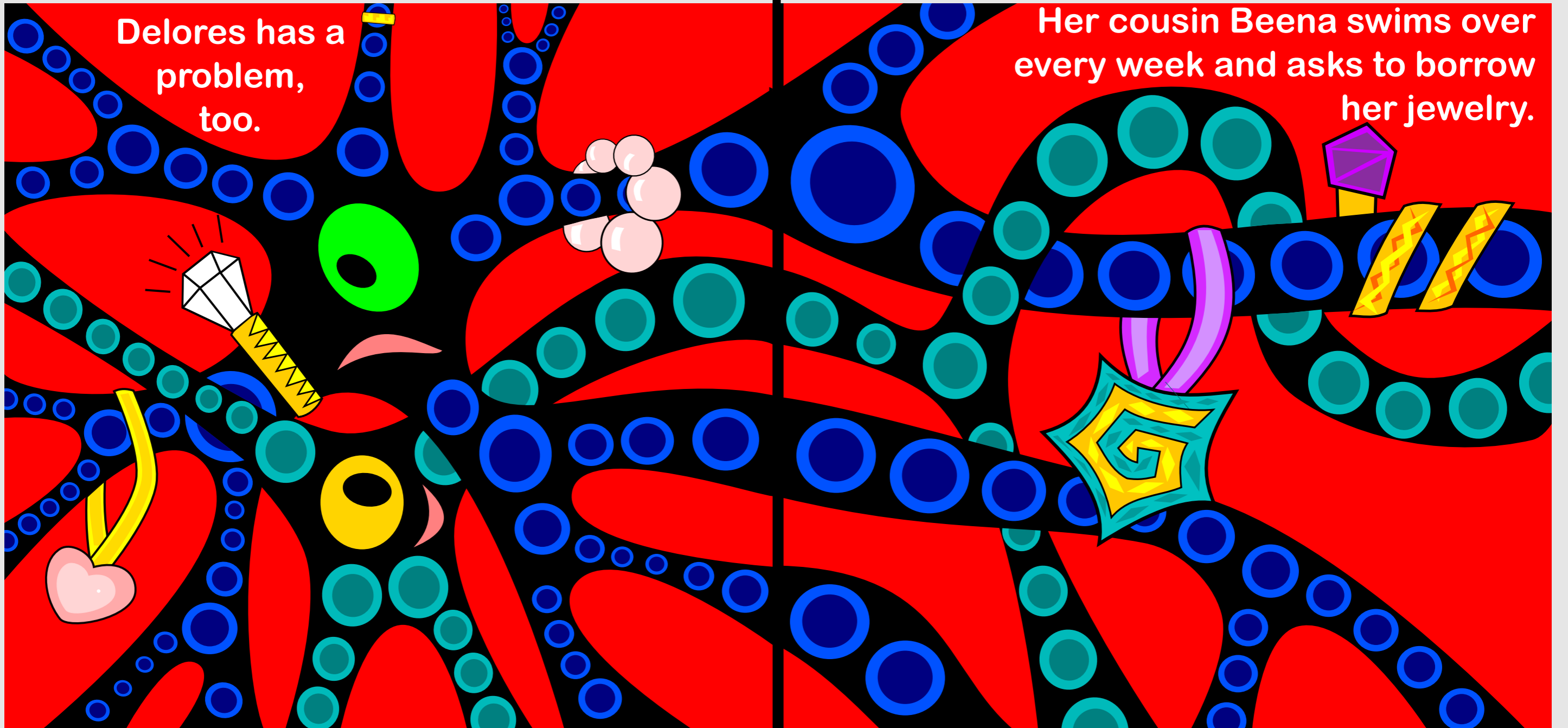


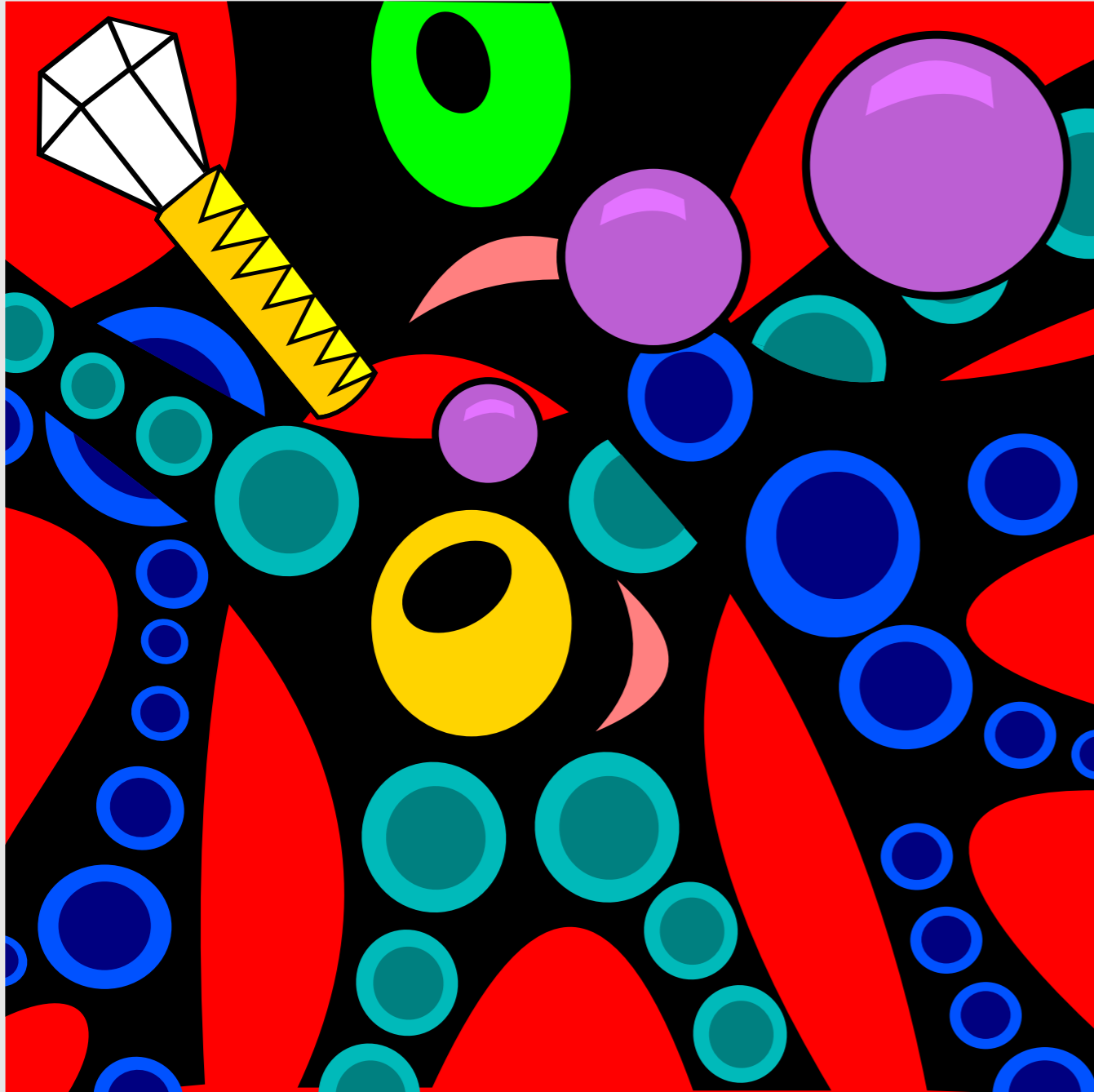
So what does he do?



Delores has a  
problem,  
too.

Her cousin Beena swims over  
every week and asks to borrow  
her jewelry.





Beena wants to decorate all her tentacles

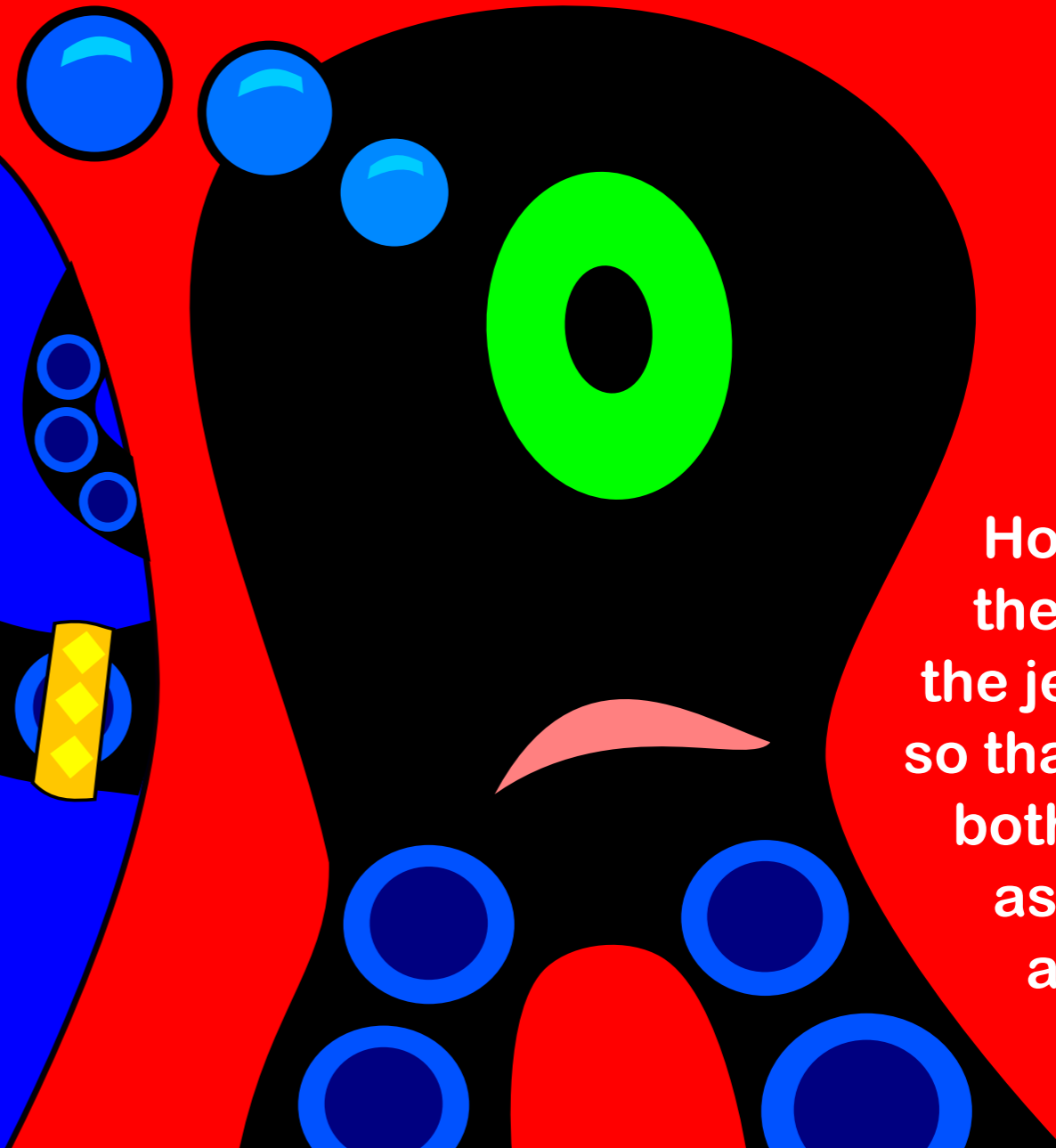


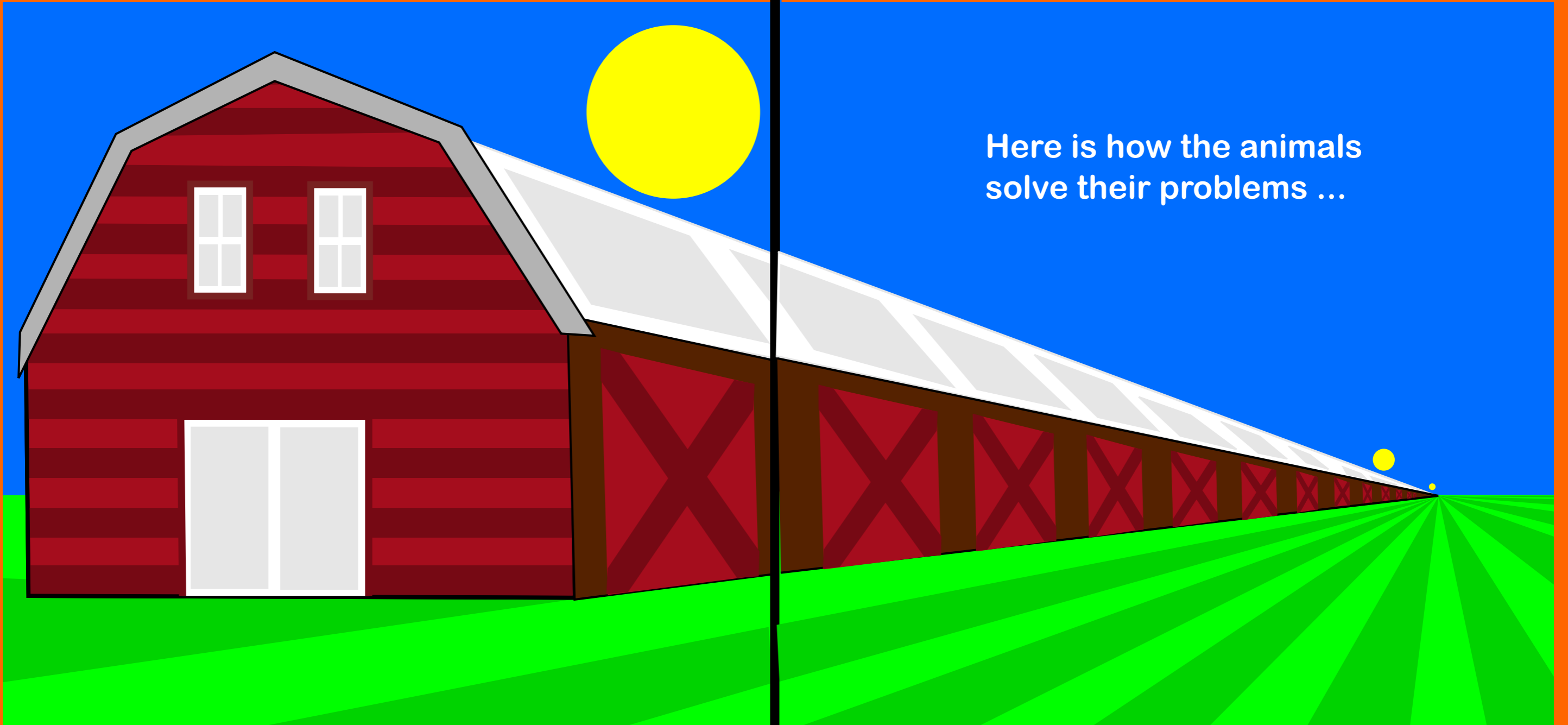
for her Saturday night dances ...

but Delores wants to decorate  
all HER tentacles  
for her Saturday  
night swims  
with Nelson.



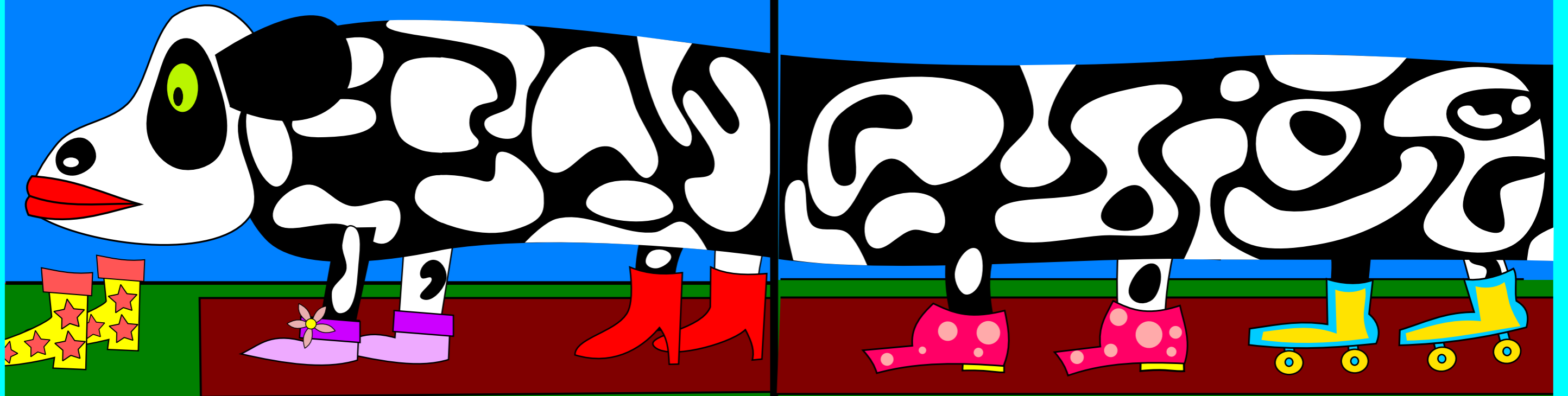
How can  
they split  
the jewelry  
so that they  
both have  
as much  
as they  
want?





Here is how the animals  
solve their problems ...

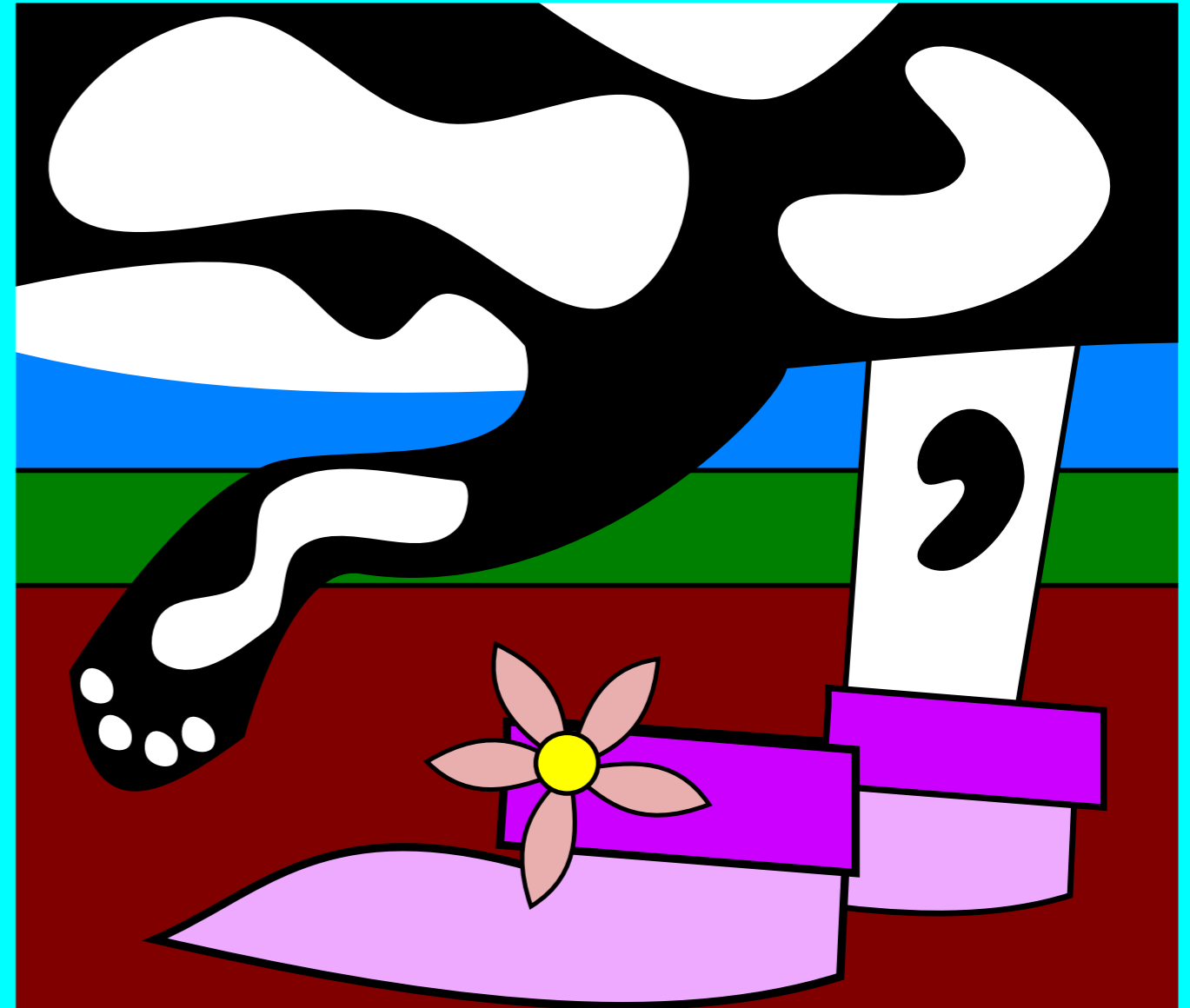
Gracie moves over to a special  
infinite sticky strip in the grass...



and stands behind the  
new pair of shoes.



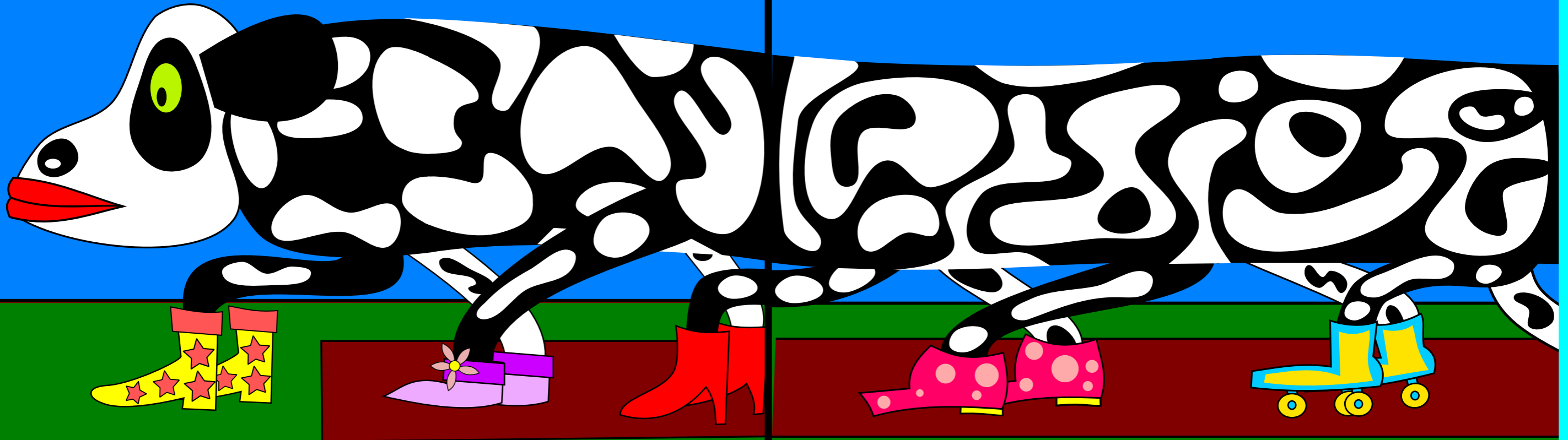
She gives each left leg a little shake ...



then steps out of each left shoe ...

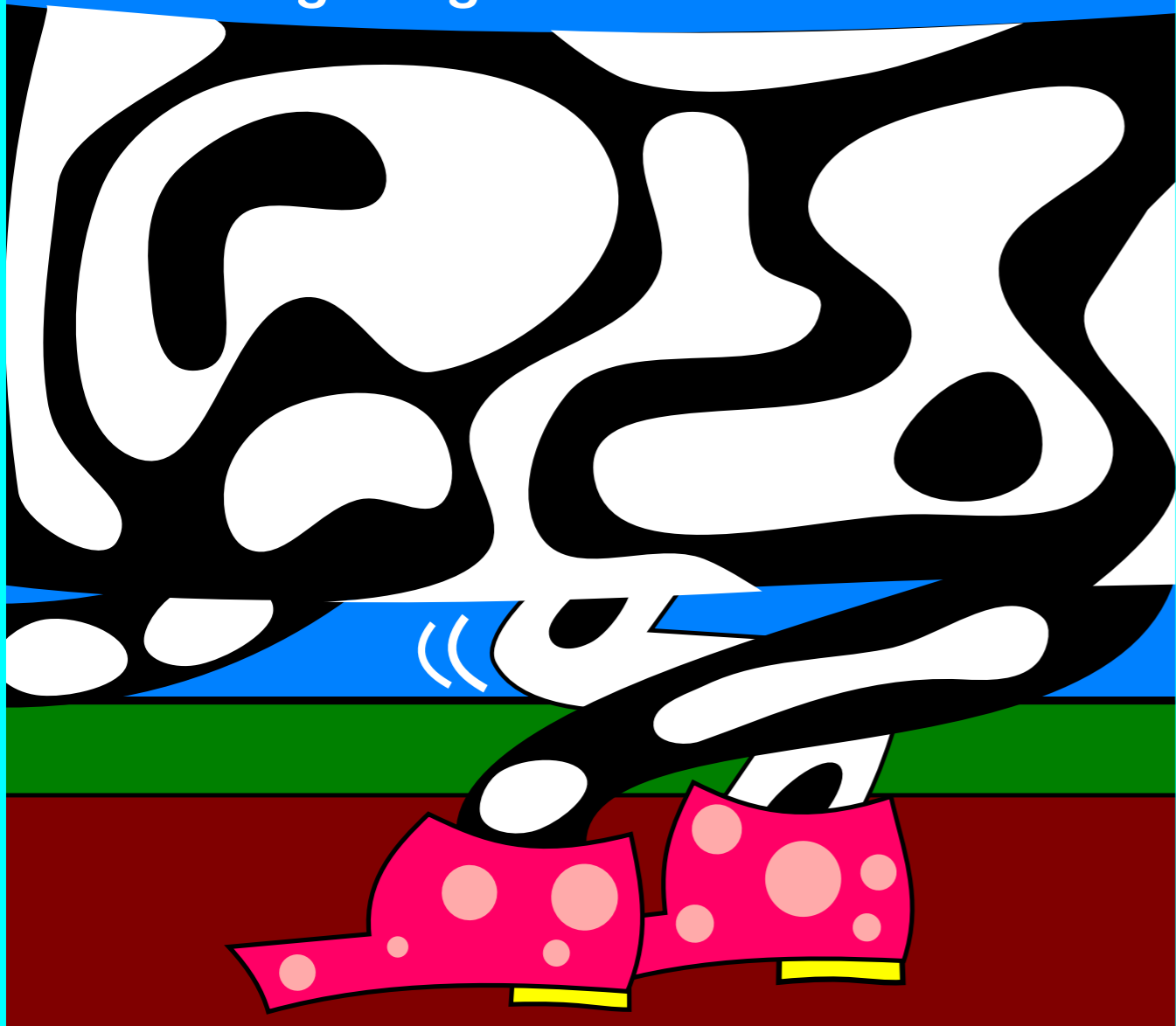
and into the one in front of it.

There is no shoe left over at the  
back end because her legs go  
on forever.



Gracie doesn't have a back end!

Now she gives each  
right leg a little shake ...

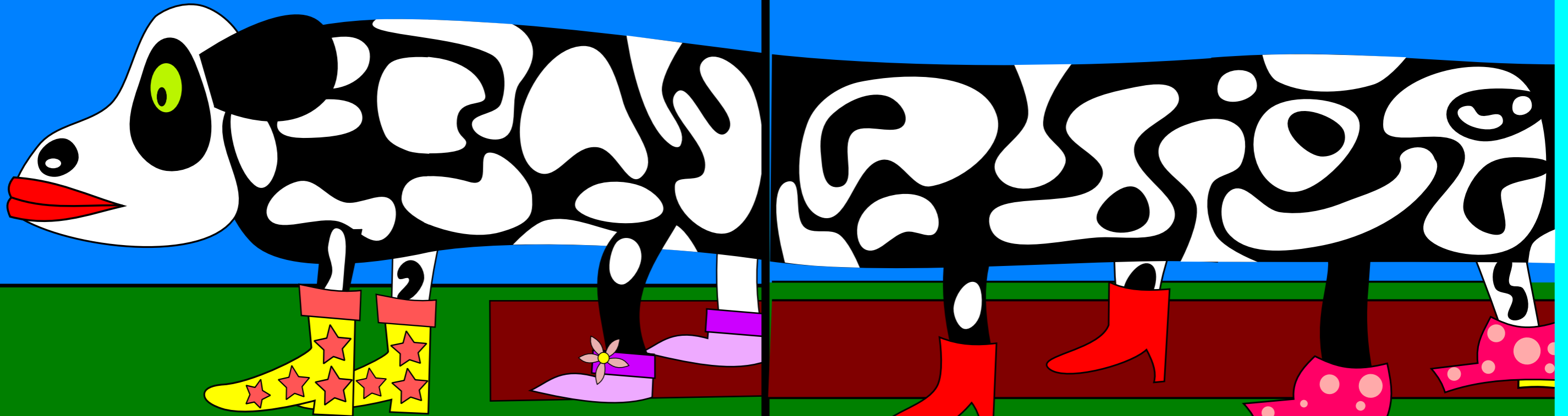


and steps out of  
each right shoe...

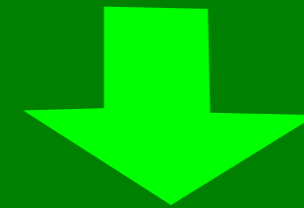


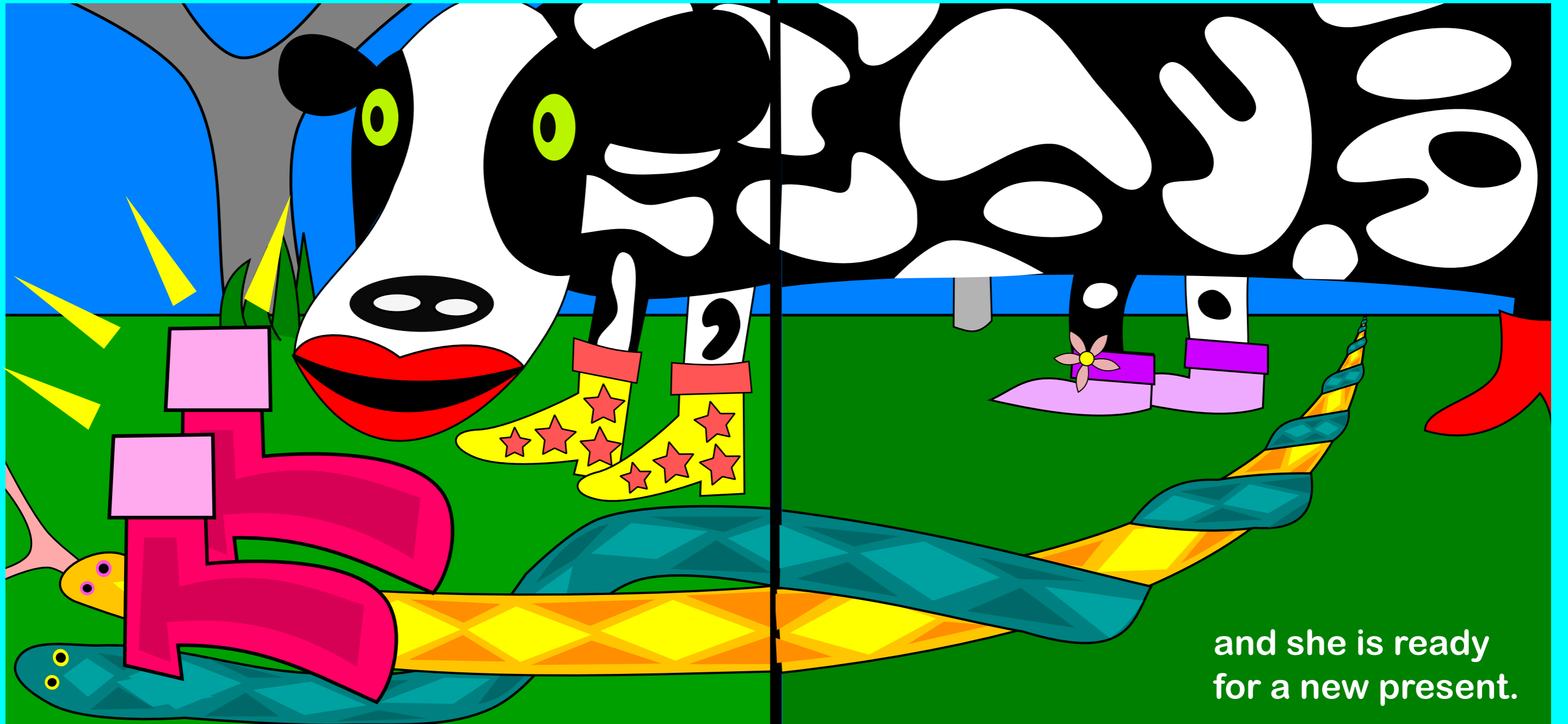


...and into the shoe in front of it.  
Now she is wearing her new  
shoes AND all her old shoes.



Then she moves off  
the sticky strip ...



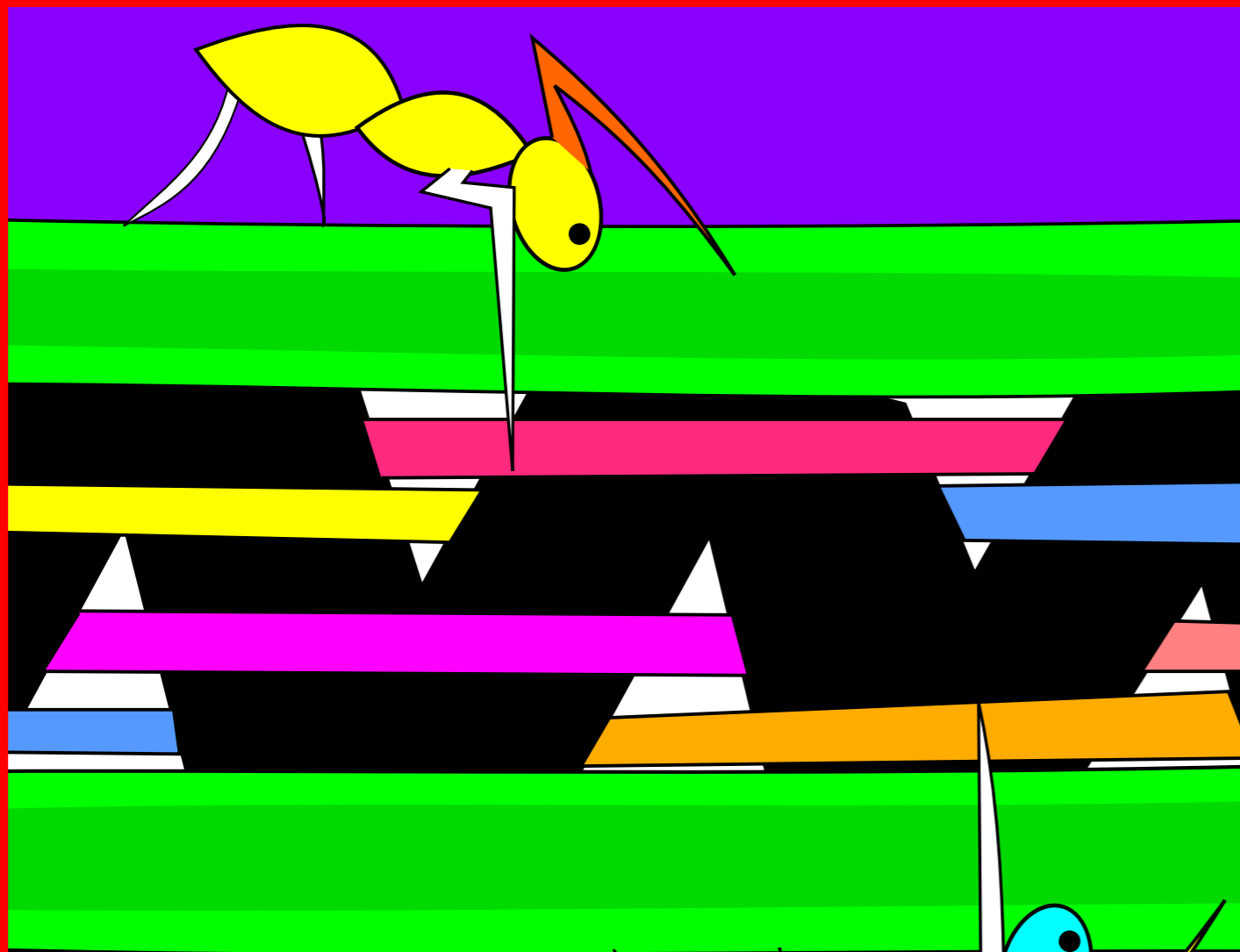


and she is ready  
for a new present.

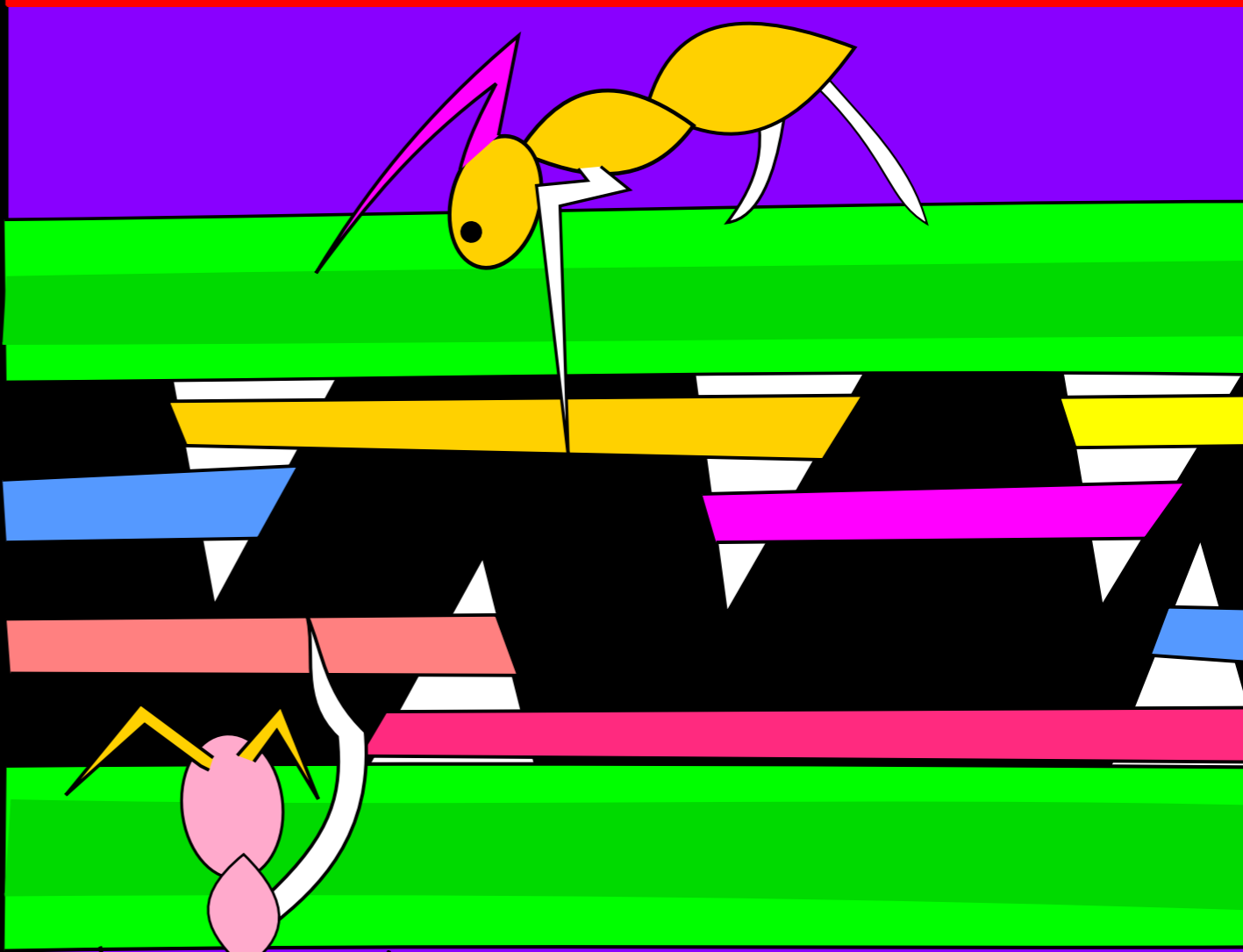
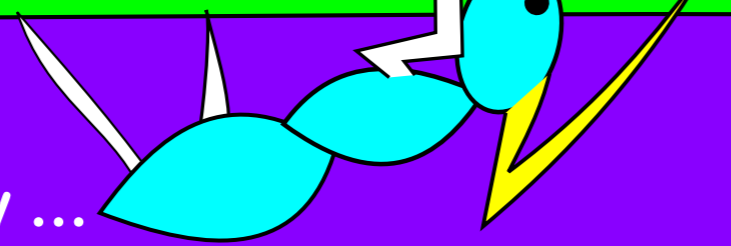


When Hammerwood's teeth thin out to the point where he only has about one out of three, he snaps into action.

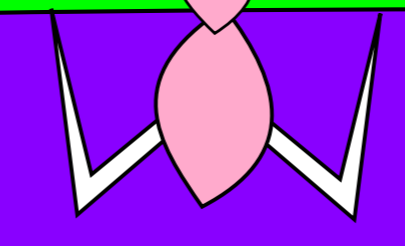
He cleans his remaining teeth with his infinite tooth brush.

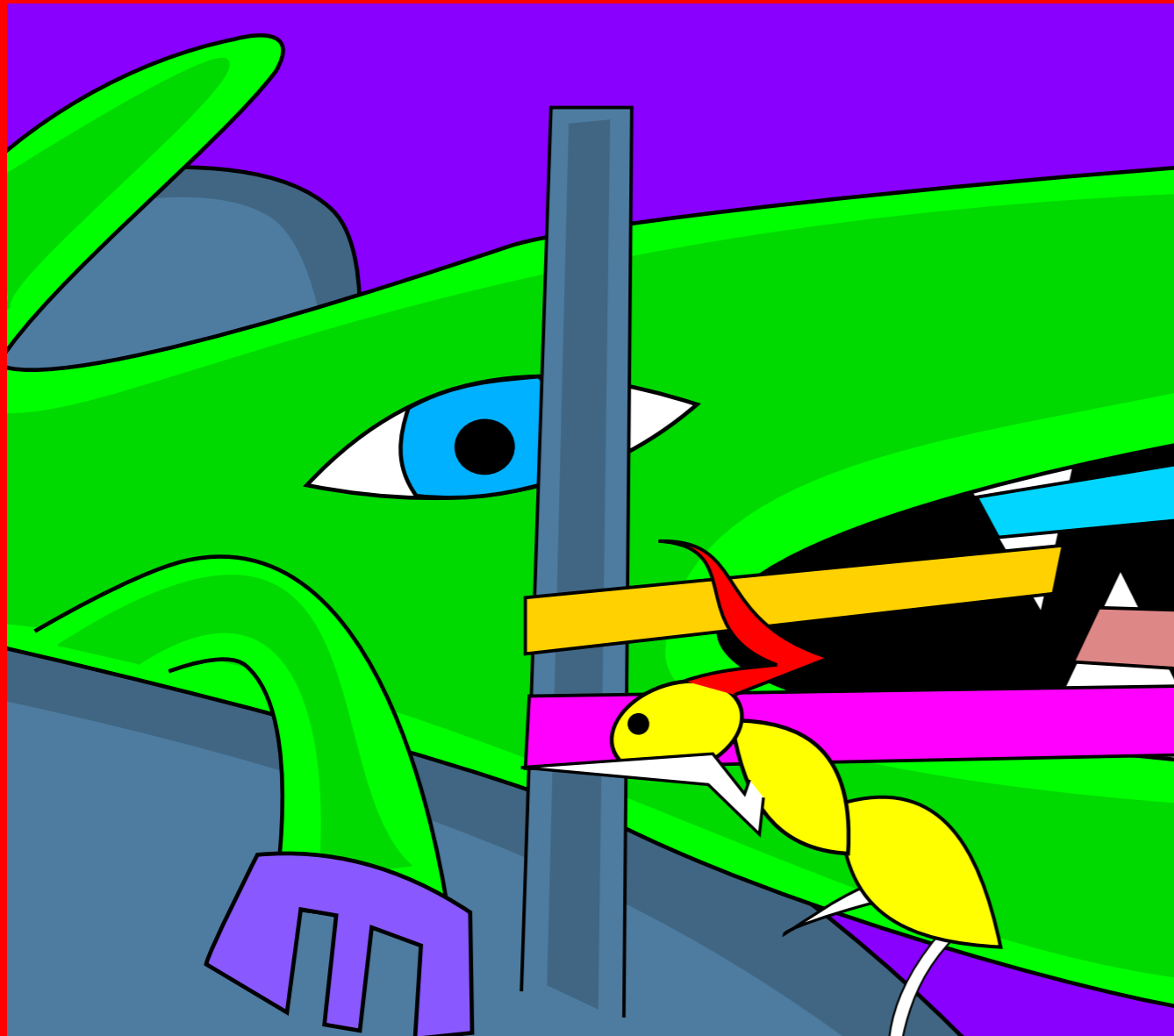


Then his friends from the infinite ant colony ...

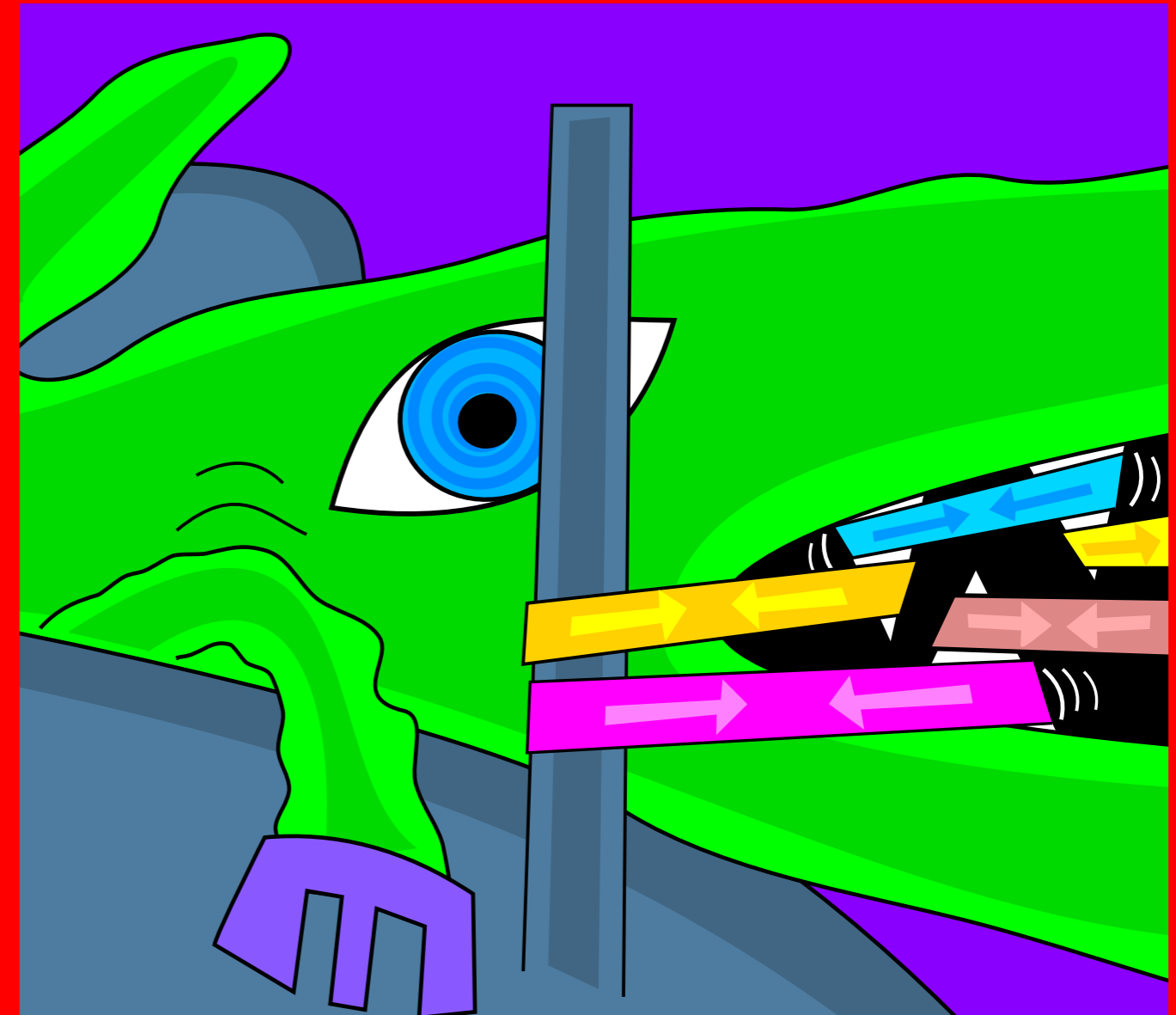


put powerful rubber bands around his teeth.

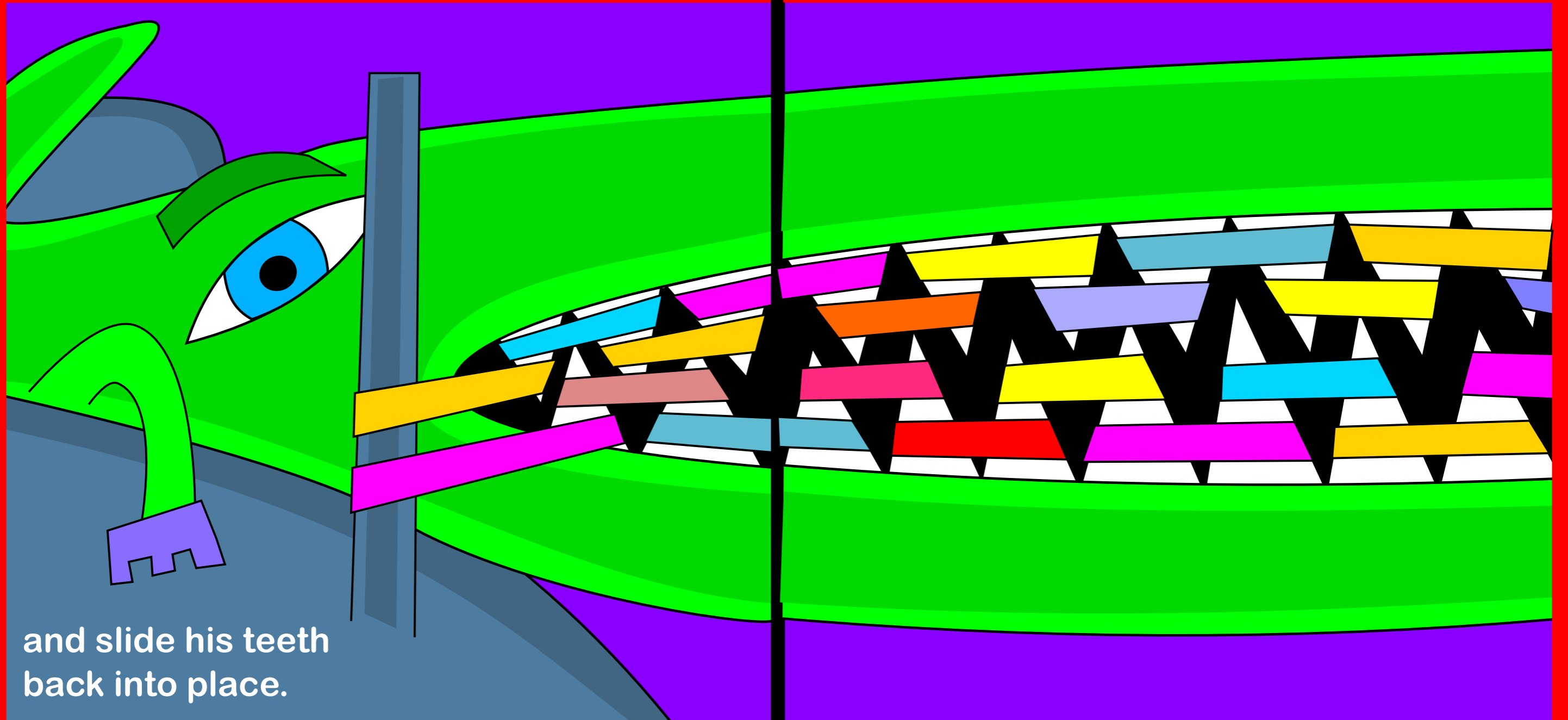




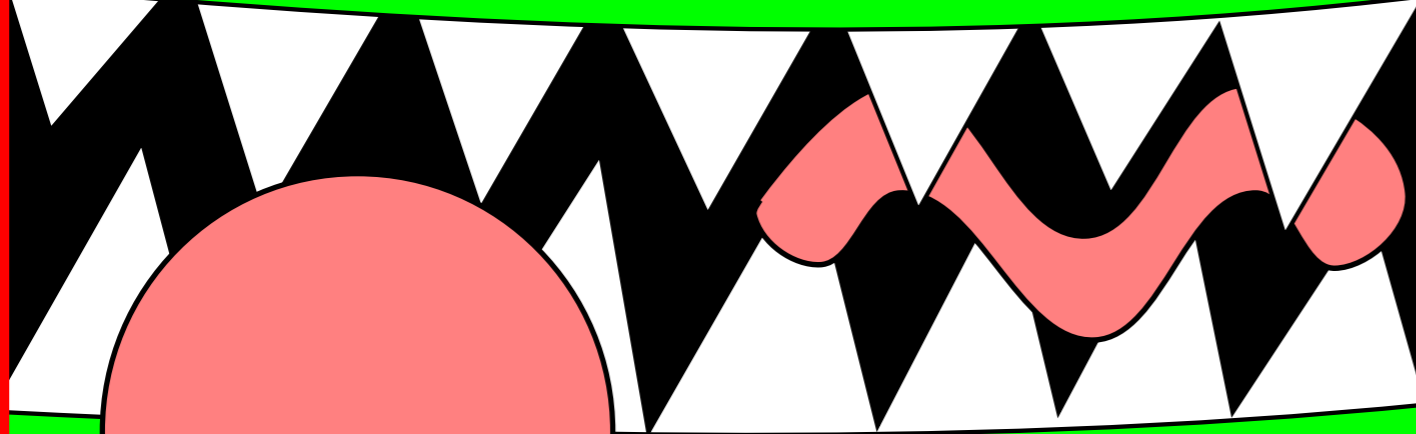
For technical reasons, the first two bands are anchored to a stick.



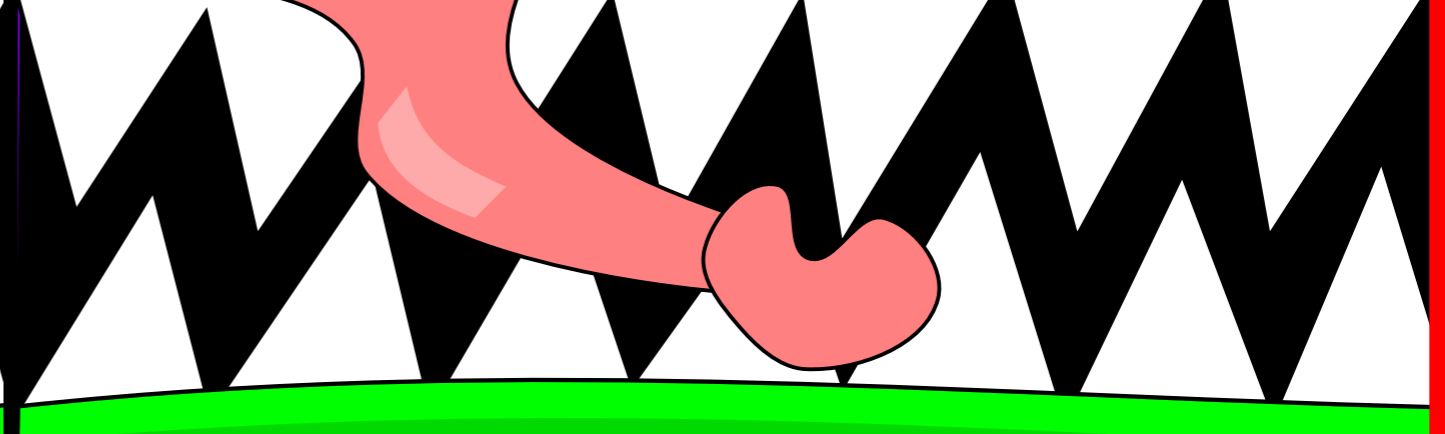
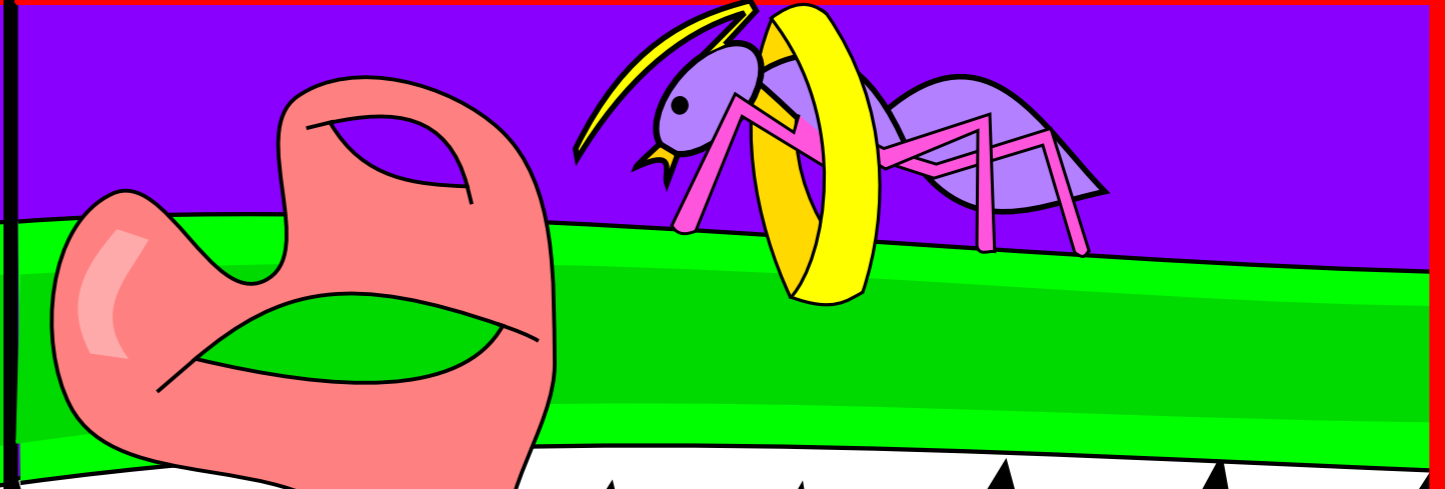
The rubber bands all contract ...



and slide his teeth  
back into place.



The ants carry off the rubber bands ...



And Hammerwood's teeth are all set to start chewing again.

On Saturday  
afternoons,  
Delores and  
Beena line  
up their  
tentacles...



like two  
infinite  
hands  
pressing  
together.



Delores'  
jewelry  
falls into a  
pattern and  
some of her  
spots glow.



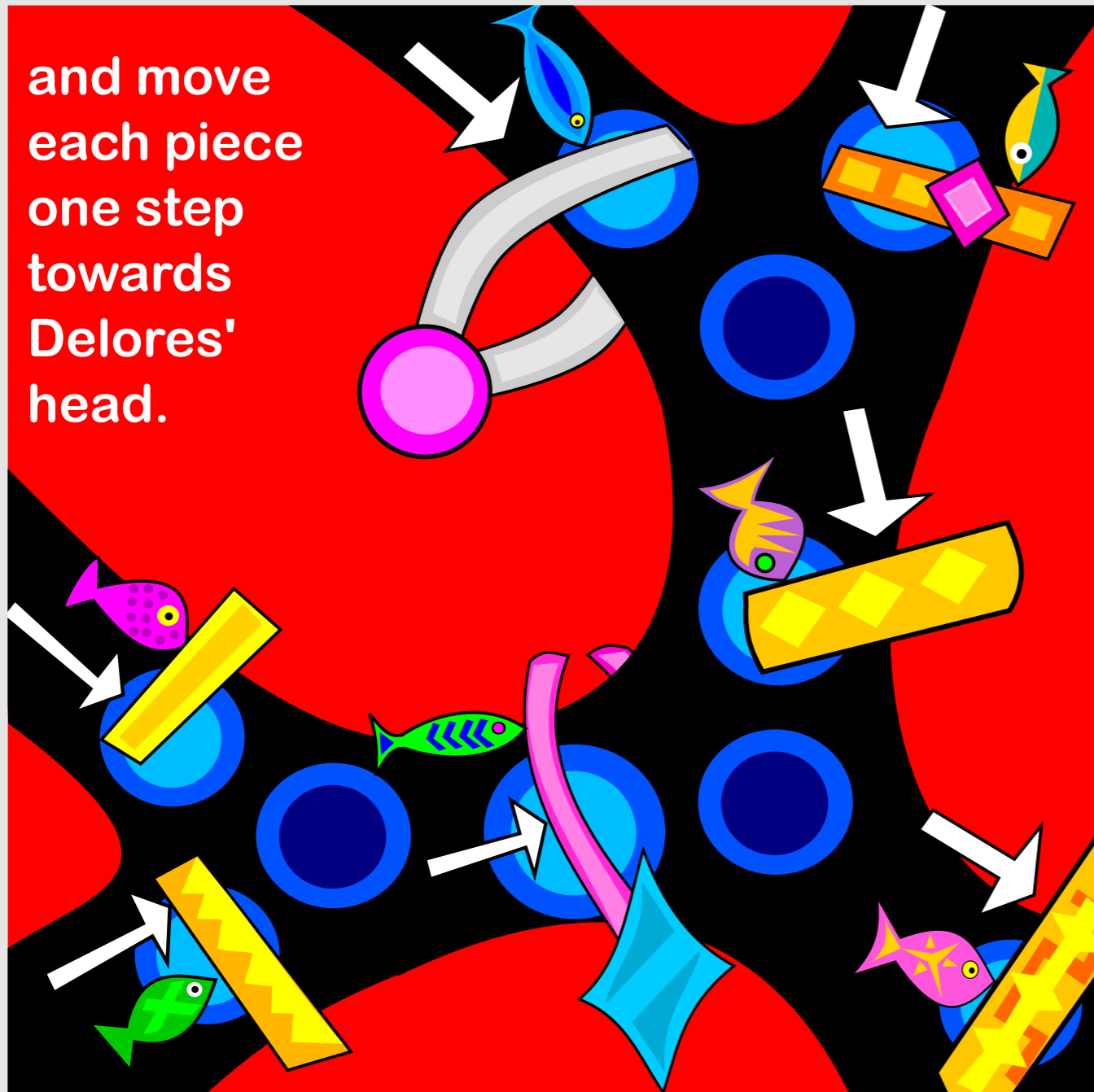


The glowing spots  
attract little fish ...

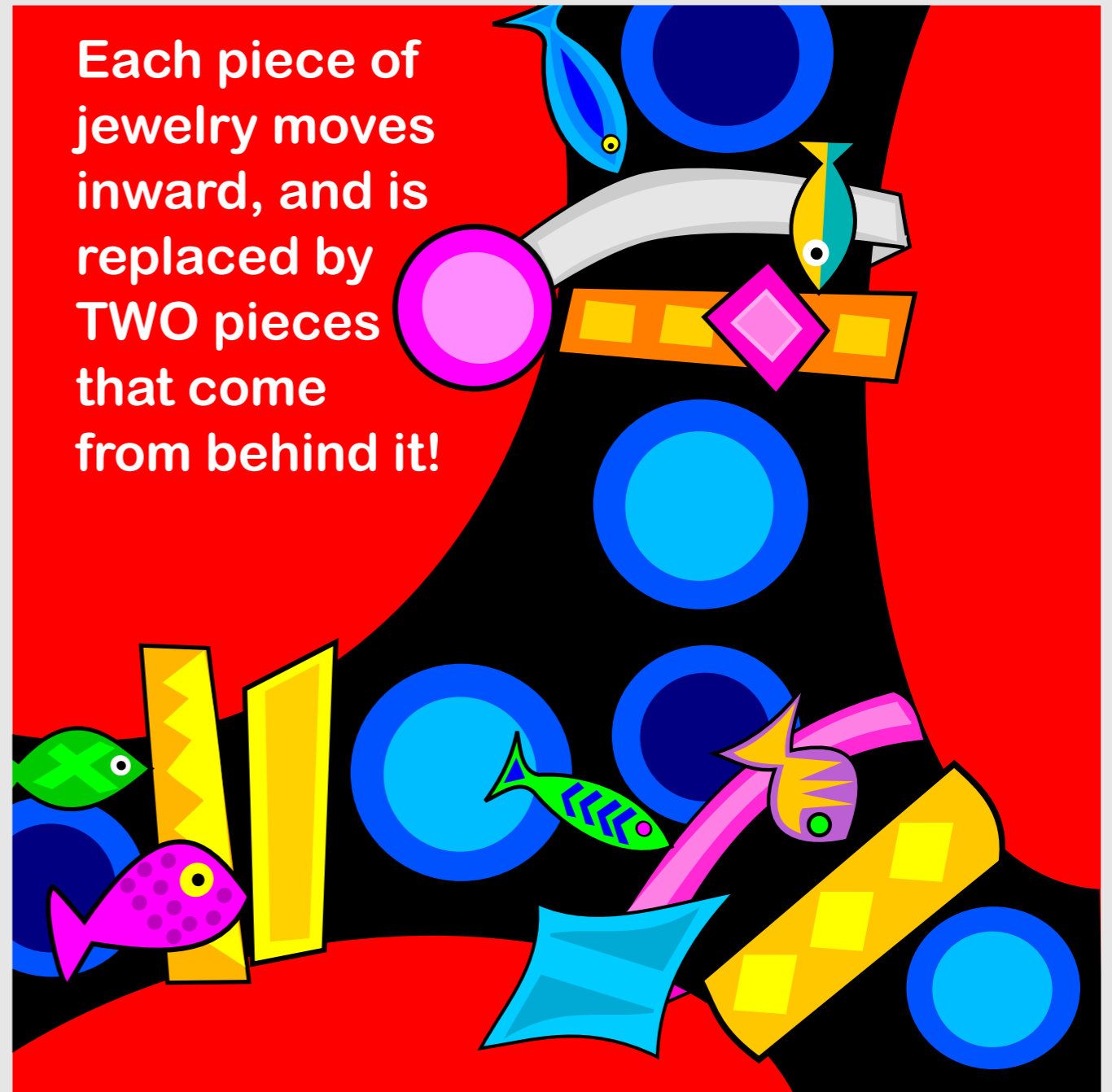


who unclasp  
all the jewelry ...

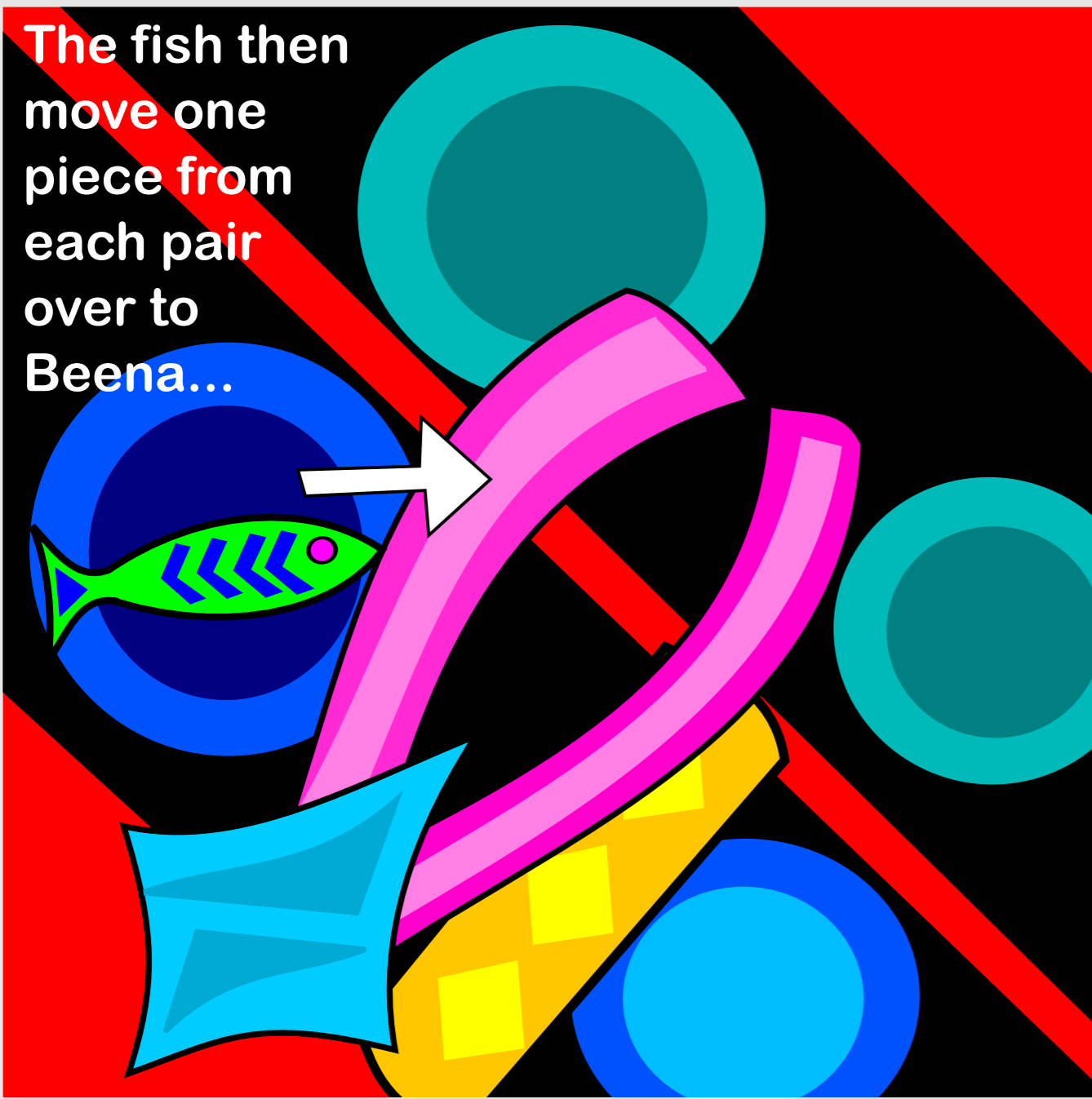
and move  
each piece  
one step  
towards  
Delores'  
head.



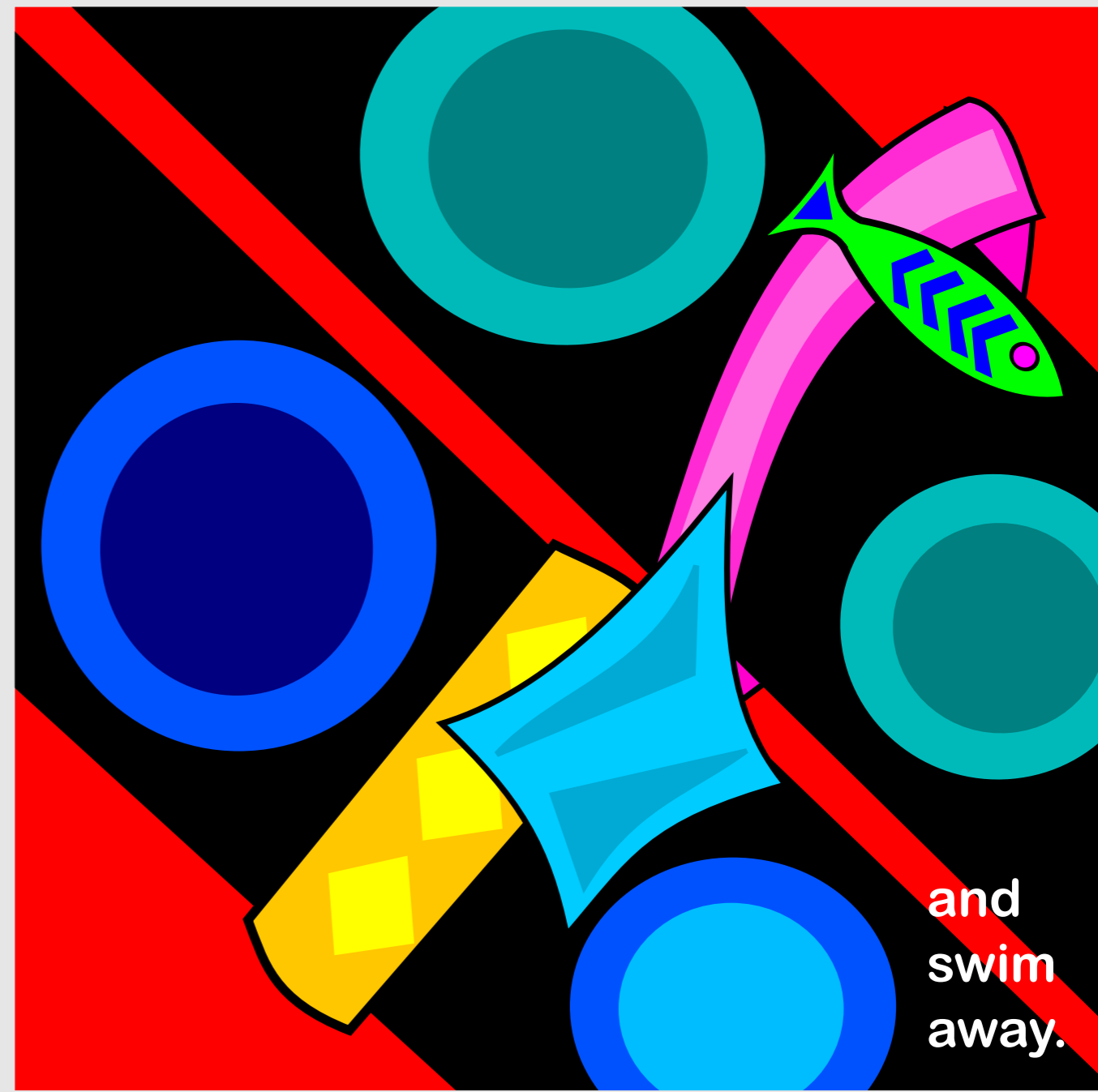
Each piece of  
jewelry moves  
inward, and is  
replaced by  
TWO pieces  
that come  
from behind it!



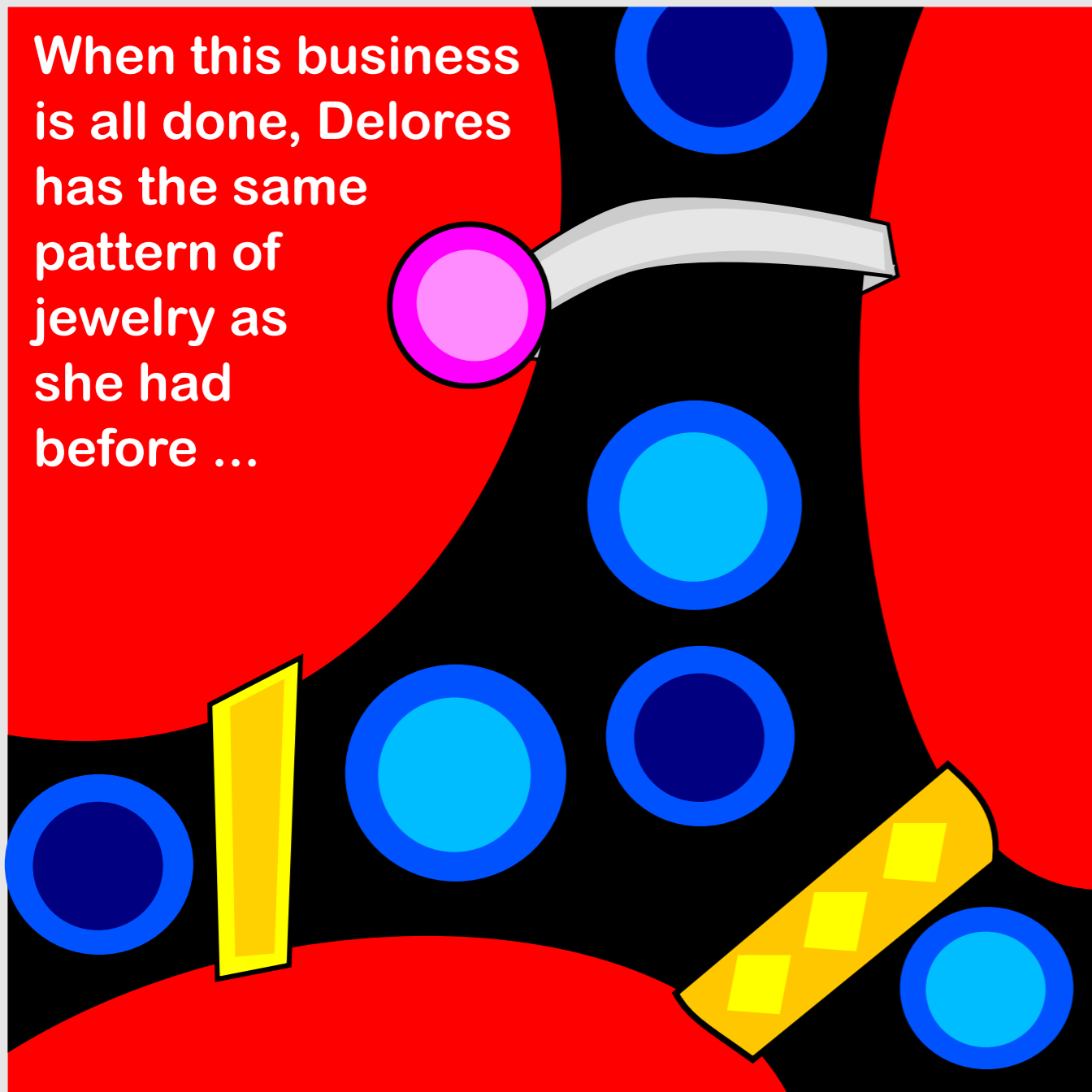
The fish then  
move one  
piece from  
each pair  
over to  
Beena...



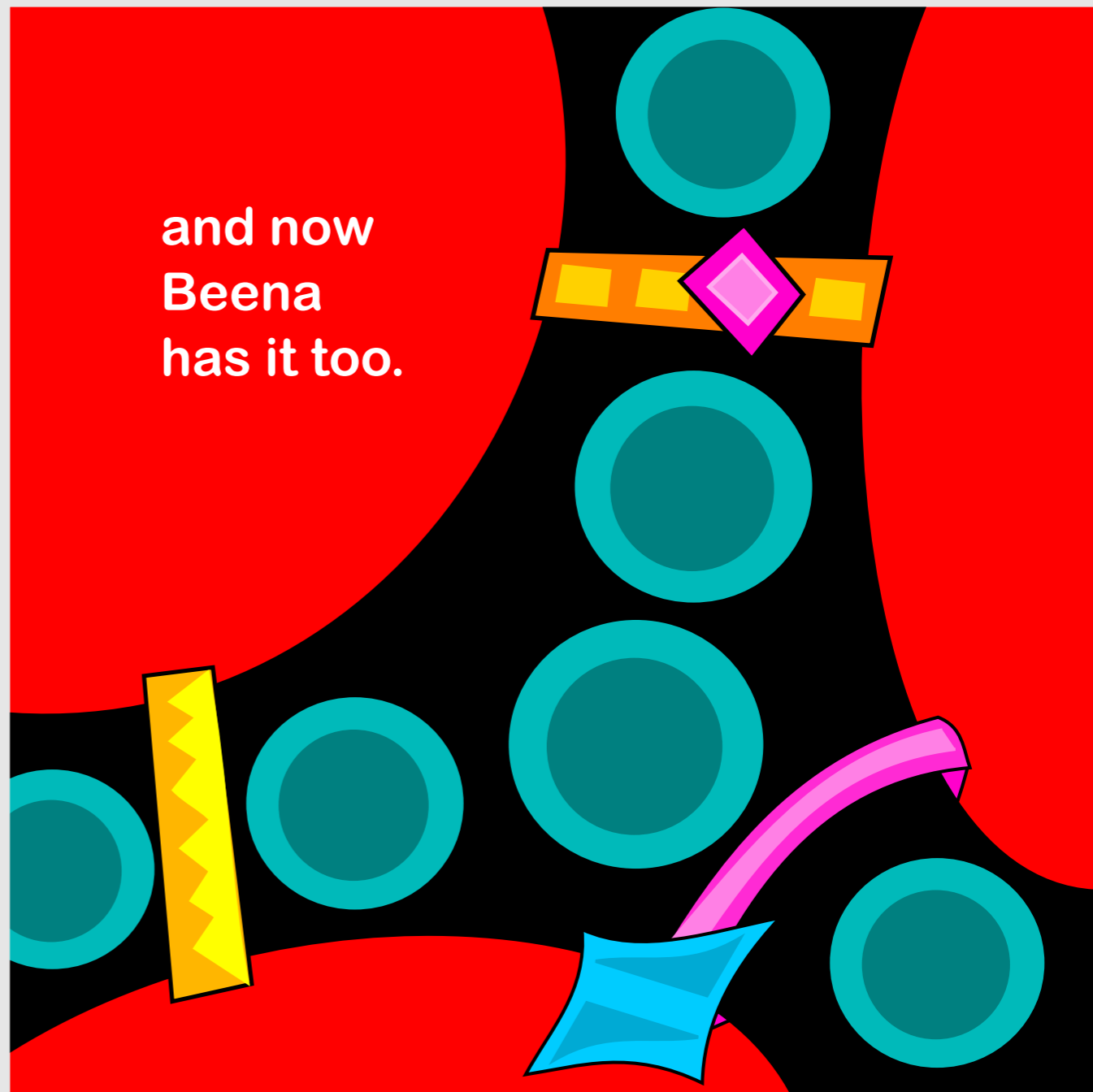
and  
swim  
away.



When this business is all done, Delores has the same pattern of jewelry as she had before ...



and now Beena has it too.





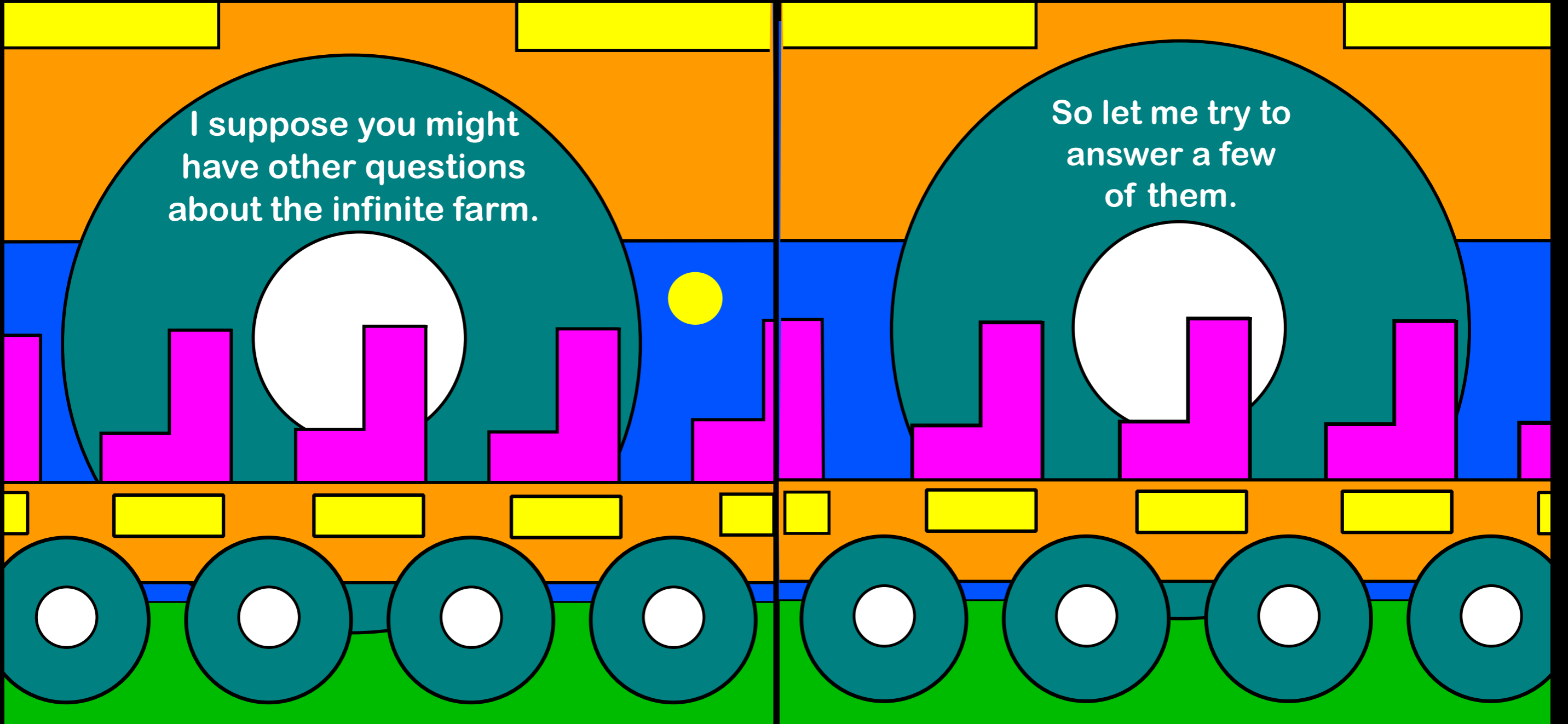
Beena  
thanks  
Delores ...



and then the two cousins swim  
off to their Saturday night fun.

I suppose you might have other questions about the infinite farm.

So let me try to answer a few of them.

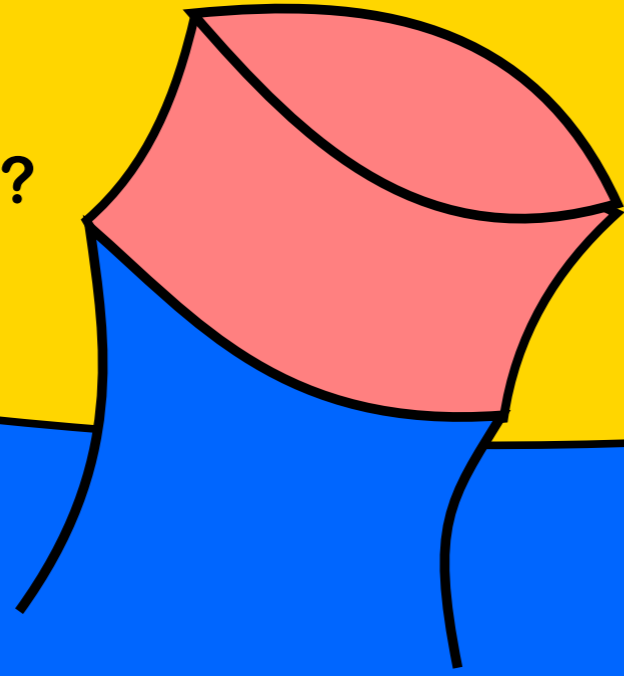


How does Beena  
return the  
jewelry to  
Delores?



Easy! On  
Sunday  
mornings  
they meet  
and reverse  
the whole  
process.

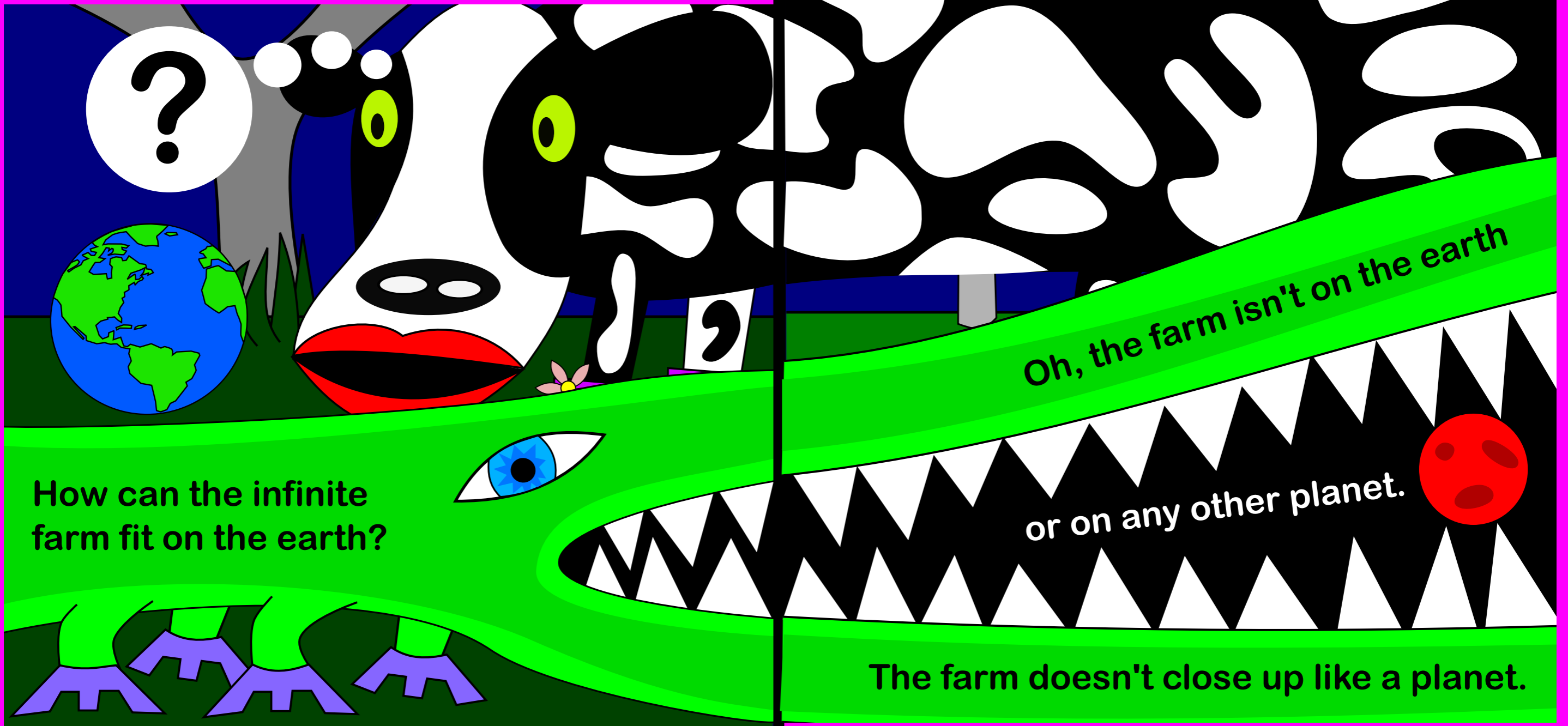
Where does  
Hammerwood  
get his bubble gum?



Simple. He crawls alongside  
an infinite tube of the stuff  
and bites off what he needs.



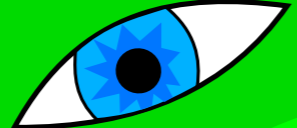




?

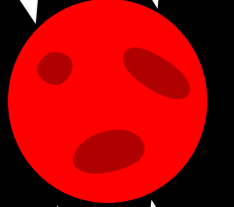


How can the infinite farm fit on the earth?



Oh, the farm isn't on the earth

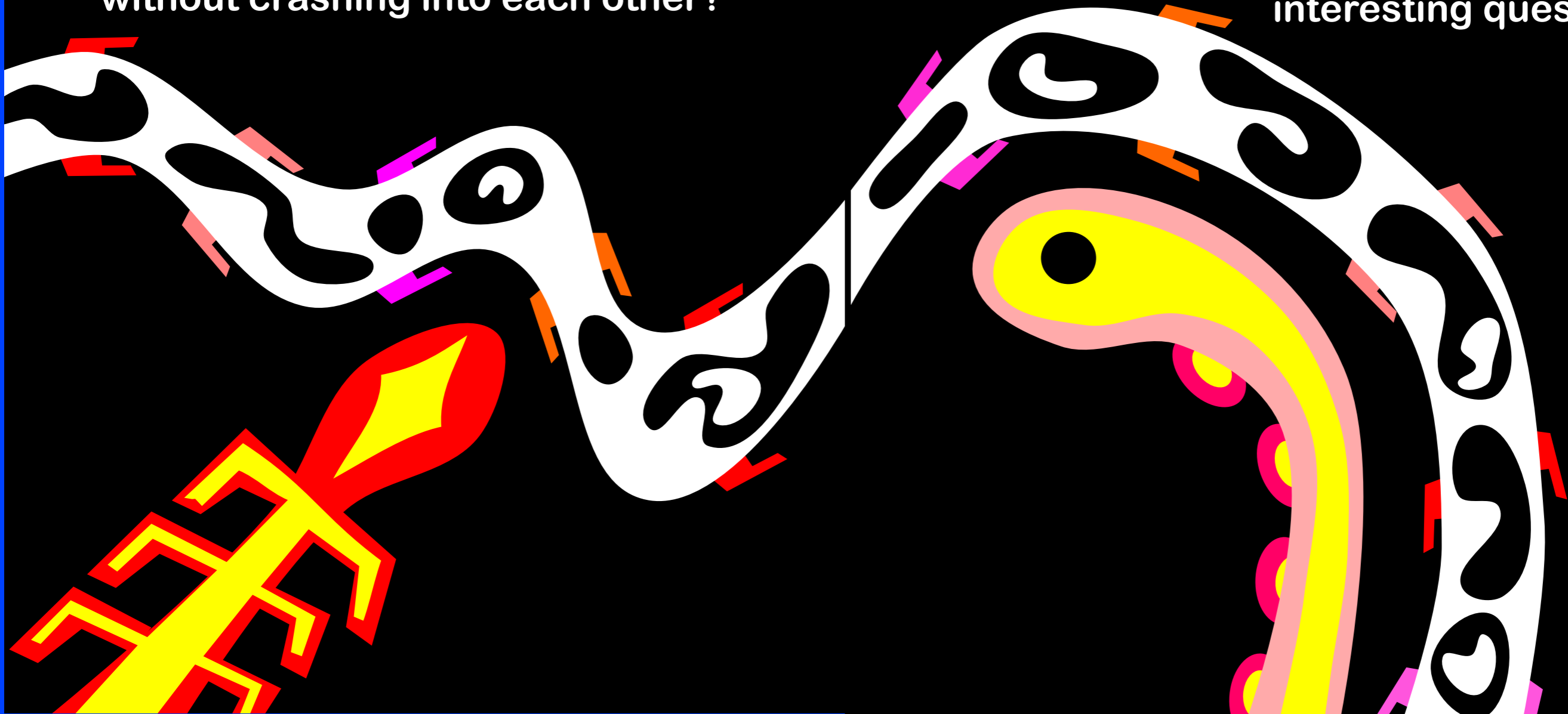
or on any other planet.



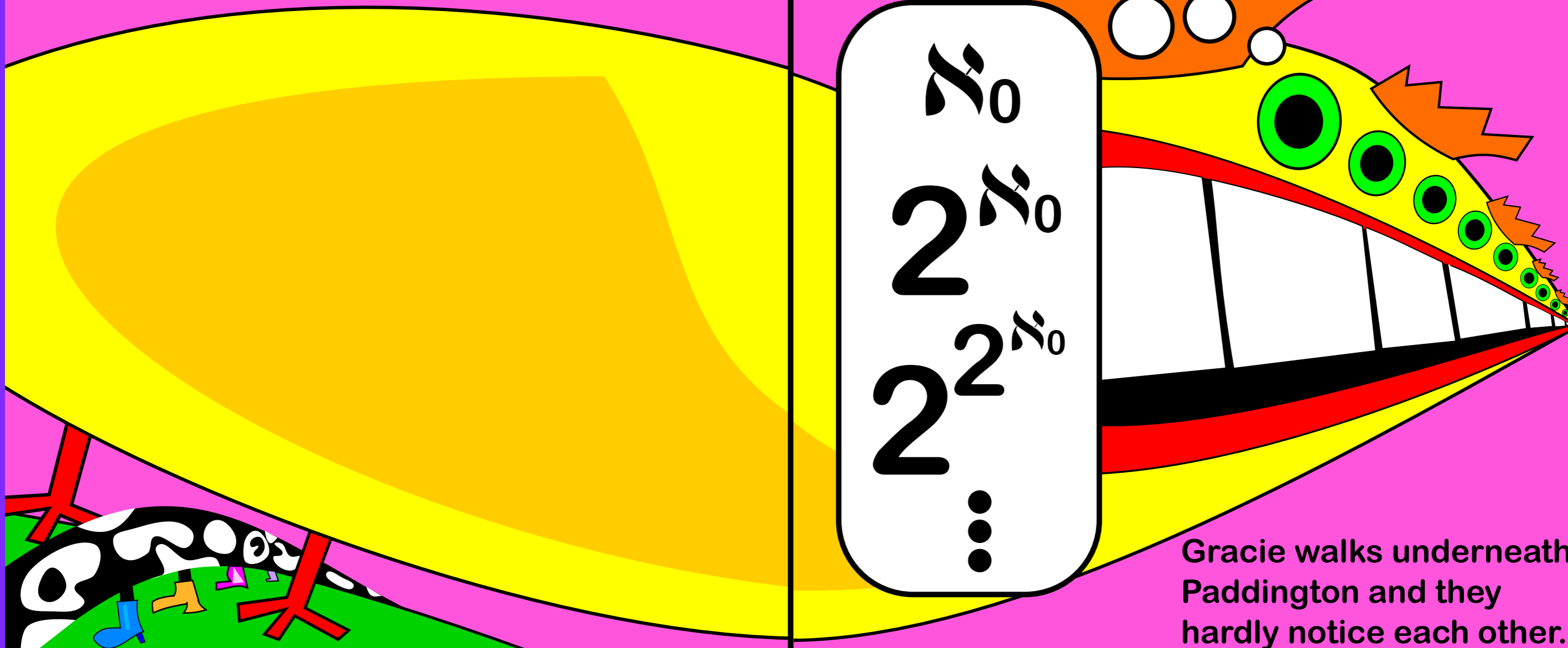
The farm doesn't close up like a planet.

And how do the animals move around  
without crashing into each other?

Ah, that is a very  
interesting question!

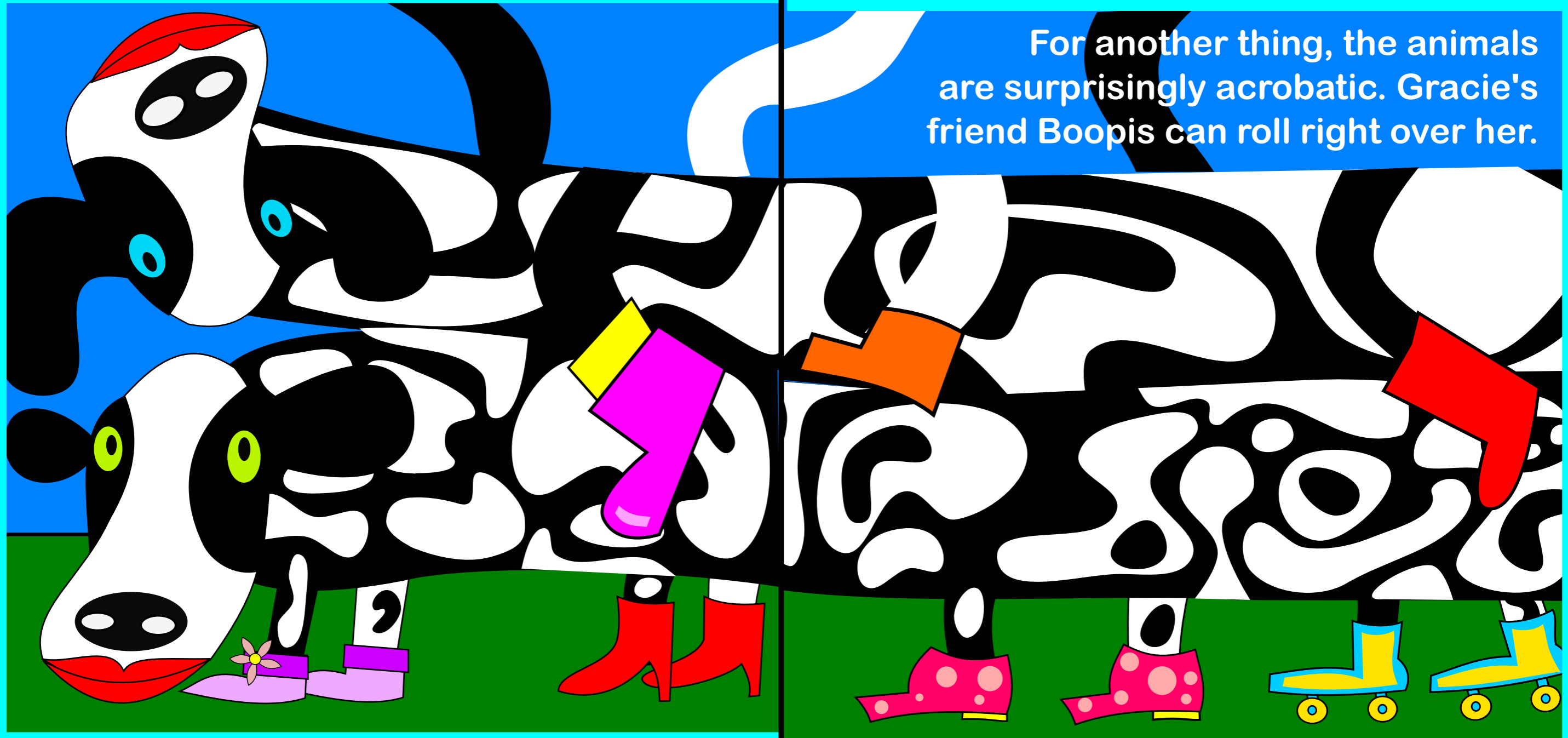


For one thing, the animals often have very different sizes.

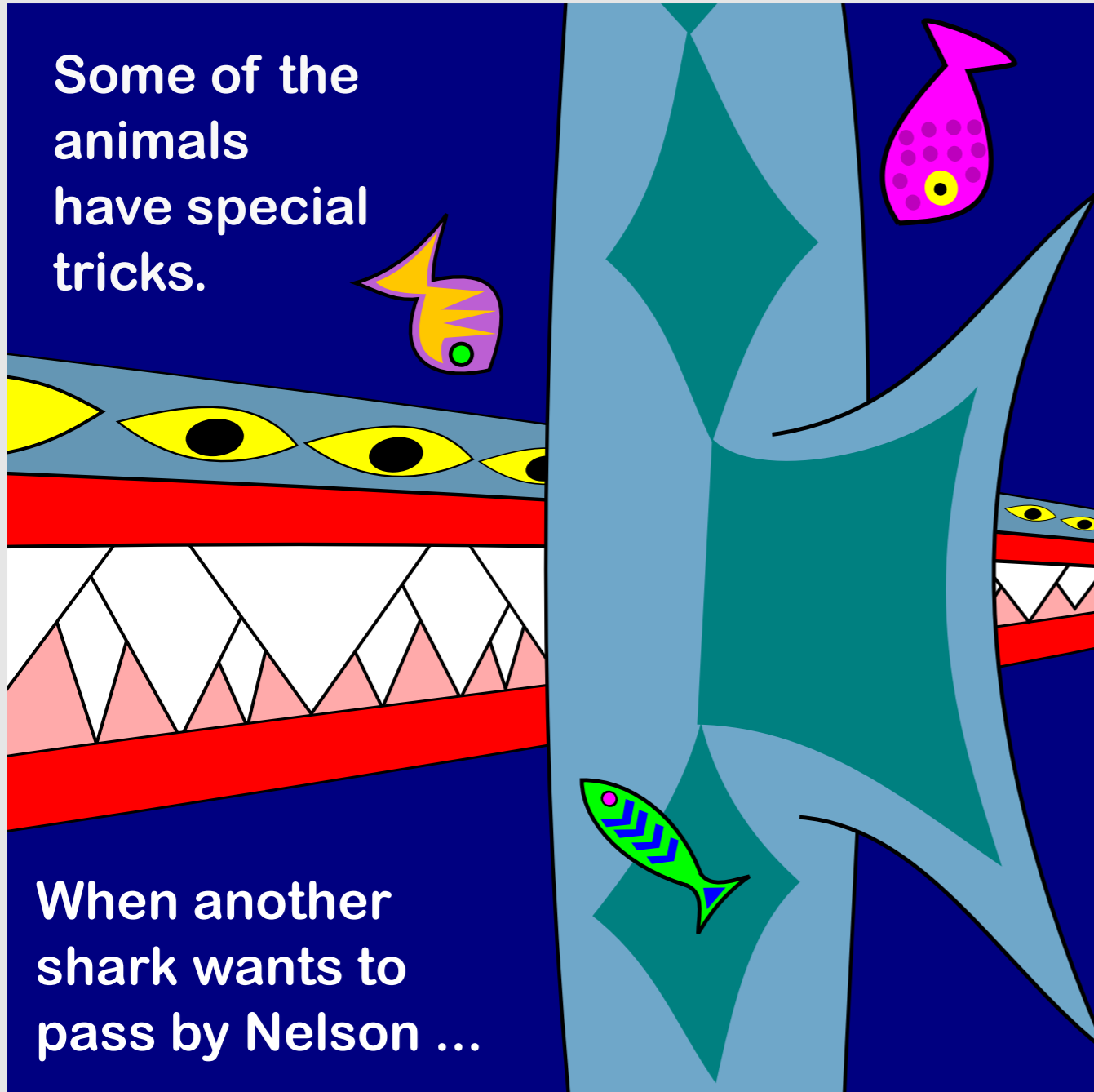


Gracie walks underneath Paddington and they hardly notice each other.

For another thing, the animals are surprisingly acrobatic. Gracie's friend Boopis can roll right over her.

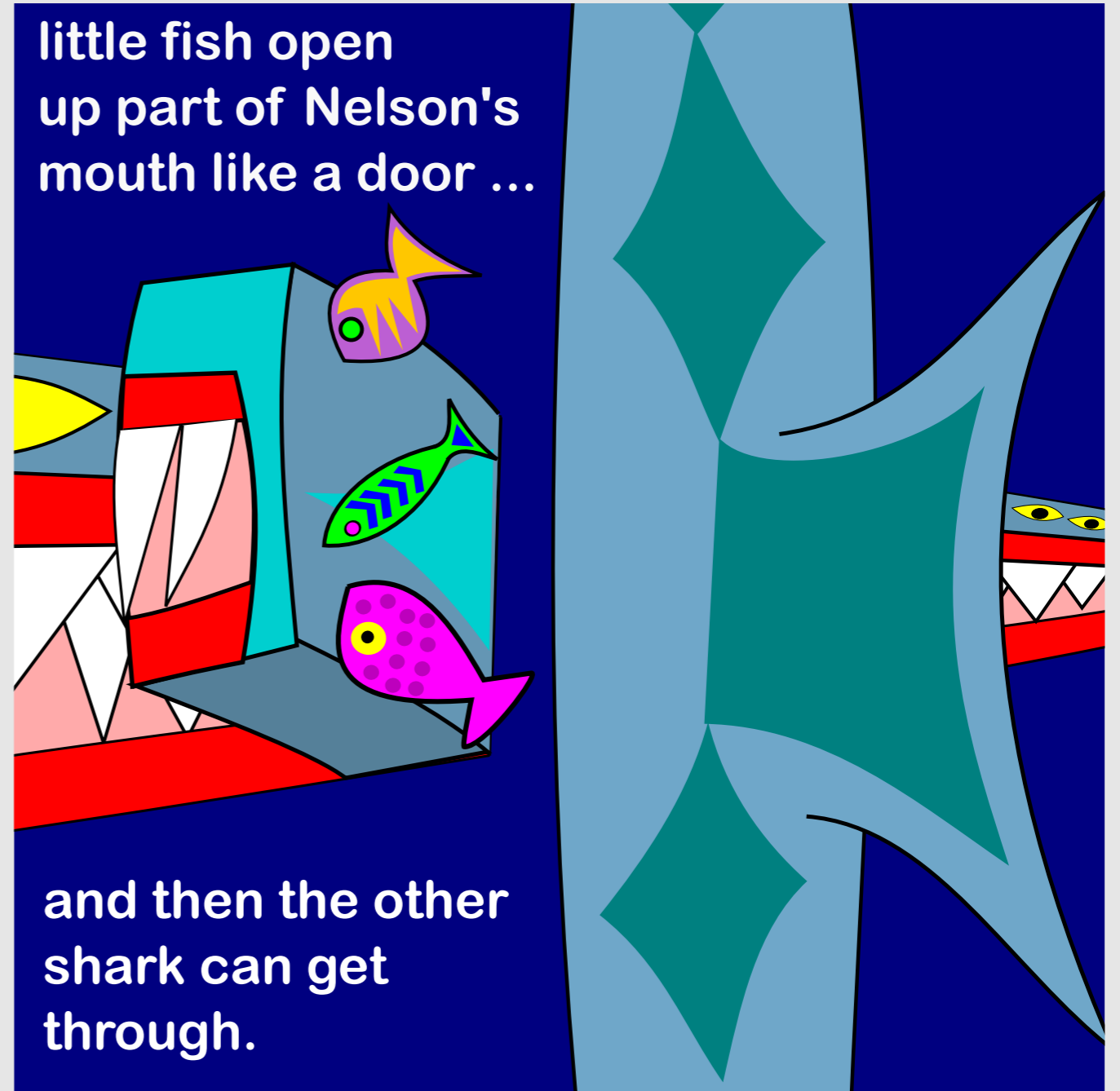


Some of the animals have special tricks.



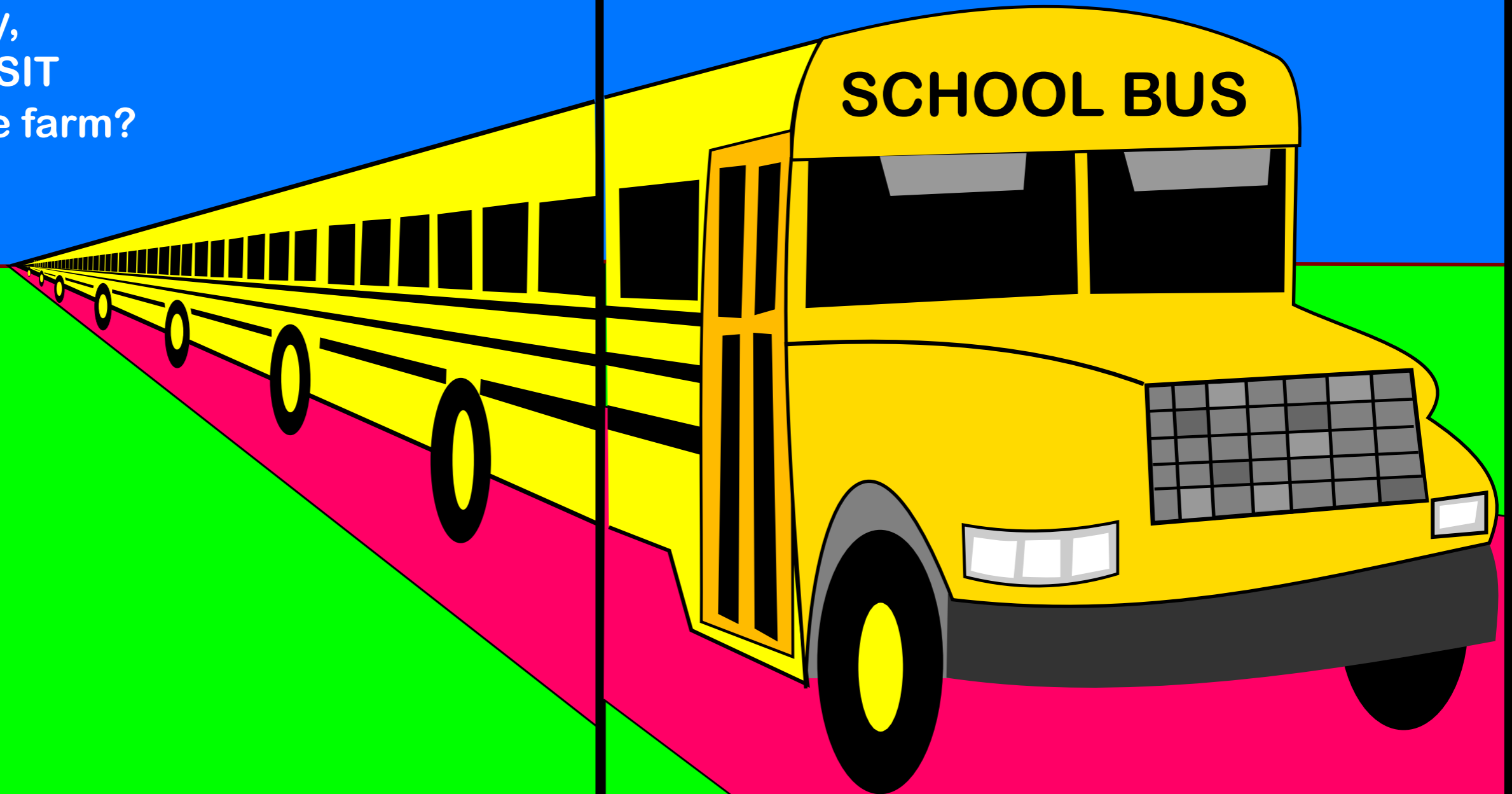
When another shark wants to pass by Nelson ...

little fish open up part of Nelson's mouth like a door ...



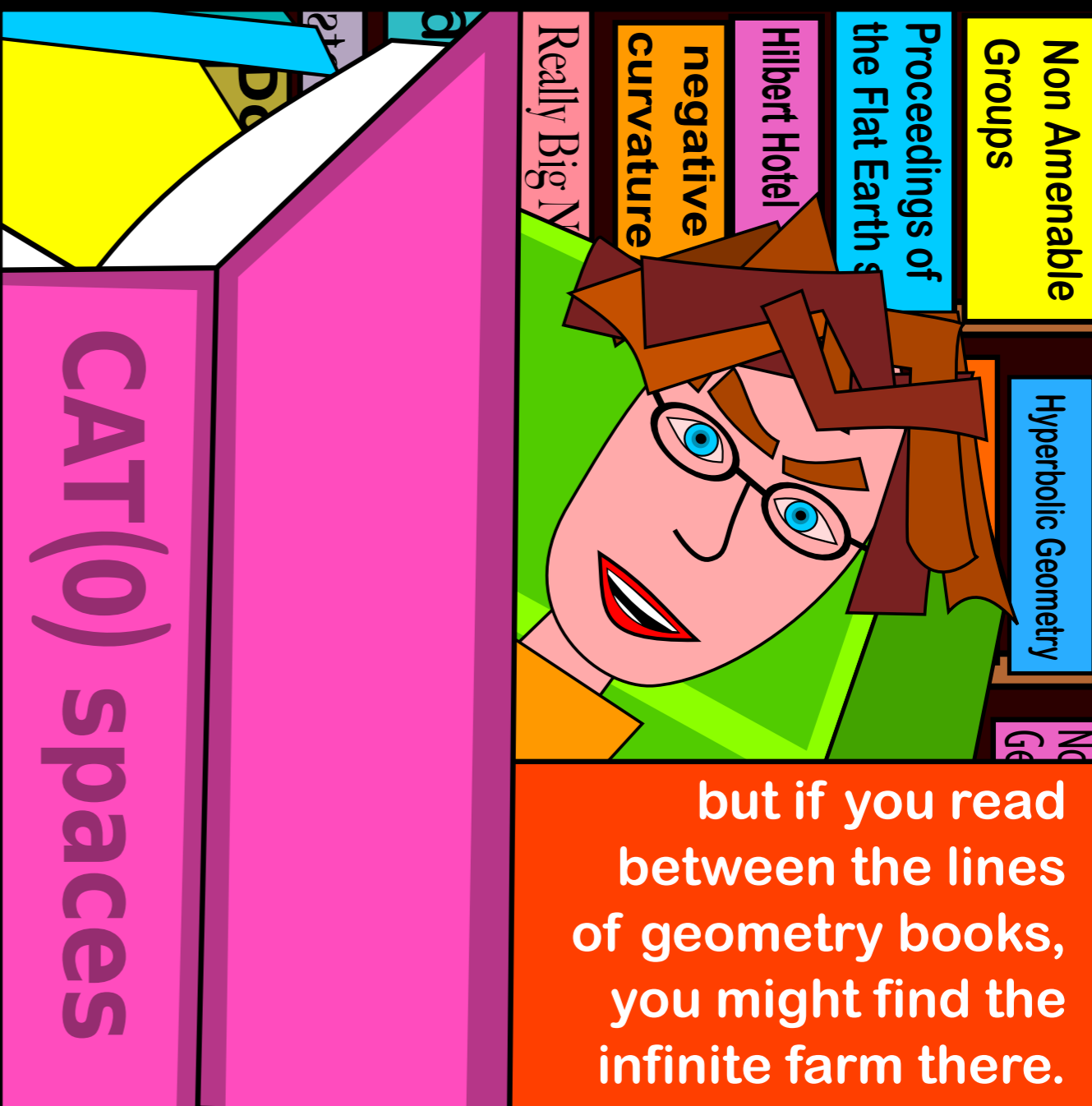
and then the other shark can get through.

And finally,  
can we VISIT  
the infinite farm?





Well, it depends on what you mean by "visit". Unfortunately, we're stuck on the earth ...



**CAT(0) spaces**

but if you read between the lines of geometry books, you might find the infinite farm there.

Non Amenable Groups

Proceedings of the Flat Earth s

Hilbert Hotel

negative curvature

Really Big N

Hyperbolic Geometry

ND  
Ge