

**JANUARY 23 – FEBRUARY 21, 2020**



Wrinkle <sup>A</sup>in Time

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*preparing for the play*

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# A NOTE TO TEACHERS AND PARENTS

## A WRINKLE IN TIME

Dear Educators and Parents,

It was a dark and stormy night. When a mysterious stranger arrives at Meg Murry's home, she embarks on a wild, empowering journey of self-discovery. Joining forces with Mrs. Whatsit, Charles Wallace, Calvin O'Keefe, and more, they travel through space and time to battle the forces of evil so she can rescue her father, save humanity and find herself. Propel your imagination with this fantastical adventure of a lifetime.

Enclosed in this enrichment guide is a range of materials and activities intended to help you discover connections within the play through the curricula. It is our hope that you will use the experience of attending the theater and seeing A WRINKLE IN TIME with your students as a teaching tool. Use this guide to best serve your children— pick and choose, or adapt, any of these suggestions for discussions or activities. We encourage you to take advantage of the enclosed student worksheets—please feel free to photocopy the sheets for your students, or the entire guide for the benefit of other teachers.

Enjoy the show!

Julia Magnasco  
Education Director  
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## First Stage Policies

- The use of recording equipment and cameras are not permitted during the performance.
- Food, drink, candy and gum are not permitted during the performance.
- Electronic devices are not permitted in the theater space.
- Should a student become ill, suffer an injury or have another problem, please escort him or her out of the theater space.
- In the unlikely event of a general emergency, the theater lights will go on and the stage manager will come on stage to inform the audience of the problem. Remain in your seats, visually locate the nearest exit and wait for the stage manager to guide your group from the theater.

Seating for people with special needs: If you have special seating needs for any student(s) and did not indicate your need when you ordered your tickets, please call our Assistant Patron Services Manager at (414) 267-2962. Our knowledge of your needs will enable us to serve you better upon your arrival to the theater.

# SETTING THE STAGE SYNOPSIS

It is a dark and stormy night and Meg Murry is sitting wide awake in her attic bedroom writing a letter to her father. A loud crack of thunder prompts her out of her bed and downstairs. Her little brother, Charles Wallace, is sitting at the table. Meg prepares cocoa for the both of them while Charles Wallace offers her a sandwich he made. Their mother appears and they begin to talk about a fight that Meg got into earlier in the day. Mother feels that Meg's behavior and attitude is due to the absence of her father. She reassures Meg of their love for her and that she foresees big things for her daughter. Charles Wallace offers to take Meg to see his new acquaintance, Mrs. Whatsit, a woman who lives in a haunted house in the back of the nearby woods. According to Charles Wallace, Mrs. Whatsit and her two friends have a special job for him. Suddenly, Meg lets out a shriek when she sees a figure appear out of the shadows.

Charles Wallace is confused to see his friend, Mrs. Whatsit at his house in the middle of the night.

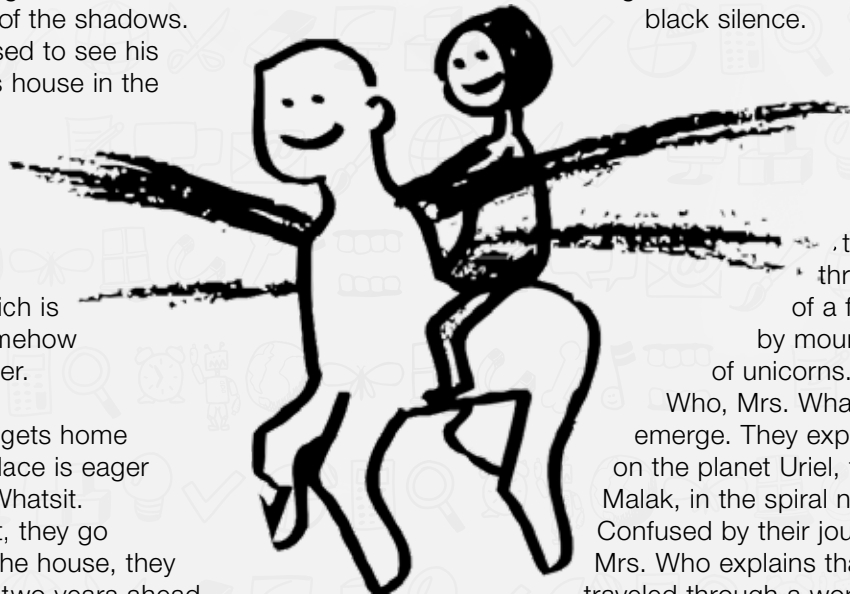
They offer her some food, yet Meg remains suspicious of the stranger. While chatting and eating, Mrs. Whatsit mentions a tesseract, which is confusing to Meg but somehow strikes a chord with Mother.

The next day, when Meg gets home from school, Charles Wallace is eager for them to go see Mrs. Whatsit. Although Meg is reluctant, they go anyway. On their way to the house, they spot Calvin, a boy that is two years ahead of Meg in school- a boy she's not very fond of.

When Calvin speaks to them, he refers to Charles Wallace as Meg's dumb little brother. Meg quickly jumps to the defense, ready to go at him, but Charles Wallace holds her back. After talking, Calvin is impressed by Charles Wallace's intelligence and two become friends. The two of them set out for Mrs. Whatsit's house, leaving Meg in their wake.

The three children approach a haunted house, cloaked in shadows. The front door opens by itself and they enter. A ghostlike figure shouts "Boo!" and Charles Wallace recognizes it to be Mrs. Who. Meg is curious to know if this woman knows her father. Mrs. Who reveals that she does know her father and he is in need of her help. She pushes them out of her way and disappears. Meg is confused. Charles Wallace seems to know something. The kids return home and eat with their Mother, Calvin included.

Later that evening after Meg finishes Calvin's differential calculus homework, the two of them set out on a walk. Calvin finds out that her father worked for the Institute for Advanced Study (along with her mother) and he was working on a top secret project. He traveled a lot, writing letters often, and that two years ago, the letters stopped coming and she never saw him again. Mrs. Whatsit and Mrs. Who magically appear between them and tell Meg that it is time to find her father. Then a little ball of light appears and the sharp, strange voice of Mrs. Which declares that it is time for them to begin. Mrs. Whatsit warns them of the upcoming frightening experience. Light quickly turns to darkness and Meg calls out for her brother and Calvin. She is terrified, losing her body, becoming a drop of nothingness. Is it a dream or nightmare? She calls for help and then... black silence.



Charles and Calvin appear out of the darkness. Meg lurches into the light and collapses to the ground. The three are in the middle of a field surrounded by mountains and a herd of unicorns. Magically, Mrs. Who, Mrs. Whatsit, and Mrs. Which emerge. They explain that they are now on the planet Uriel, third planet of the star Malak, in the spiral nebula Messier 81. Confused by their journey to this planet, Mrs. Who explains that they "wrinkled" or traveled through a wormhole to this new place. Using her skirt as a guide she shows that they traveled through space and time as if they were a small insect traveling from one point on her skirt to another. If it went the normal way, it would take a long time, but if they wrinkle the fabric (she folds the two points together) the little bug gets to the point in no time at all. Just like that bug, they themselves have traveled through galaxies in an instant! This is what is known as a tesseract. They explain that this is exactly what Meg and Charles's Father did, yet since he was the guinea pig in this experiment, he tesserated into a terrible place and now they must find him. Just then, Mrs. Whatsit transforms into a half man-half horse with powerful wings. The children are then taken upon her back and they are flown to the top of the mountain, high above. As they are looking out above the land, they see a large, black, formless cloud. It feels evil. Mrs. Whatsit assures them it is evil; it is dark energy that infects every planet in it's path. That Blackness is what their father is fighting against and he needs their help. Charles Wallace is eager to begin the journey; Meg is

# SETTING THE STAGE SYNOPSIS

scared. They are informed that they will be traveling to Camazotz, the place behind the Blackness and that this leg of the journey will be difficult. Unfortunately, the three children will be on their own in this dangerous place. Calvin is reluctant, but talk of her father's struggle ignites a fire in Meg to save him. The tesser effect begins as they travel through darkness to Camazotz.

Arriving on Camazotz, the children realize that it looks like their home on Earth. Mrs. Whatsit appears briefly to gift them with a charm that will help them on their journey. Calvin's gift is his ability to communicate, Charles Wallace his innocence, and Meg's is her faults. This alarms Meg but Mrs. Whatsit assures her they will be useful on Camazotz. Mrs. Who appears and gives Meg her magic glasses. After giving some final advice, the two ladies disappear. Mrs. Which appears with a final warning; they must stay together and be strong. As they search Camazotz, they notice that all of the houses look the same and that all of the kids are doing the exact same thing. Something about this place is very odd. They talk to a woman who informs them that their city has the best obedience record in all of Camazotz. Because of this, Central Intelligence and IT resides here. As she leaves, the kids are alarmed by the mention of IT. As they begin to move on, Meg realizes Charles Wallace has not moved. After a moment he continues on with them. The kids walk to the center of the city and see a very tall building-Central Intelligence. The three friends march into the building linked arm-in-arm.

The doors close loudly behind them as they approach a man who tells them to present their "papers" to a machine. Charles Wallace feeds in his math homework. The wall in front of them disappears and they begin walking down a very long hallway. Charles Wallace stops moving and begins behaving very strangely. As they reach the end of the hall, they encounter the Man with the Red Eyes. Charles Wallace warns the others that he will try to hypnotize them, and he tries to resist the Man's powers. Meg pleads for information about her father, but receives no answer from the Man. When Calvin speaks up, the Man telepathically harms him and Charles Wallace to try to attack the man. He is repelled by an invisible force. The Man with the Red Eyes tries to hypnotize Charles Wallace once more. Charles Wallace's body becomes relaxed and his eyes become vacant. Meg is devastated and begs the Man to release Charles, who now has superhero strength, denies his family, and professes his loyalty to IT. Calvin and Meg try to snap him out of this trance to no avail. Charles, in his state of possession, tries to convince the two join him and live on Camazotz. He leads the pair into an omnivator (an elevator that travels in all directions) to a new place. Charles exits through a wall and Meg seems defeated. Shortly after, the wall opens to reveal Charles

Wallace and their father. Ecstatic, Meg tries to go to him but is thrown backwards. Father is trapped in a cell of darkness and cannot see anything on the outside. Meg takes out the magic glasses from Mrs. Who, puts them on, and crashes through the enclosure where her father is, freeing him. Meg and her Father share a heart-felt reunion. When Father approaches Charles Wallace, he is unresponsive. Charles Wallace leads the group reluctantly in the omnivator once again and father warns the kids about the danger of IT.

Now in a red-lit room, Meg discovers a large pillar with a huge brain on top of it. This is IT. IT tries to lure them in and Meg and Calvin are being physically drawn in. IT becomes stronger and stronger as Meg cries out for her father's help. Chaos ensues as Meg completely disappears. They soon spot her lifeless body. Charles Wallace is still under hypnosis and sided with IT. All of a sudden, a creature appears out of the darkness. Although alarmed at first, the Beast is not hostile. The Beast takes Meg into it's arms and heals her. Aunt Beast, as she calls herself, talks of the havoc the Black Thing has caused to her world. Mrs. Whatsit appears and the group discusses how they will rescue Charles Wallace back from Camazotz. She reveals that Meg must be the one that can take on the challenge. Although frightened for her safety, Father and Calvin wish her a safe journey as she leaves, escorted by Mrs. Whatsit.

Meg is swept into the darkness and lands in one of the many corridors in the Central Intelligence building. She enters the omnivator and is quickly swept up towards IT where she finds Charles Wallace crouching beside. As she pleads with Charles Wallace to release himself from IT and return with her, IT grabs a tight hold on Meg. She is totally sucked into IT's control, mentally and physically. Meg fights hard against IT and finally breaks free. Charles Wallace shouts hateful things towards his sister, prompting her to fight back with more anger. Then suddenly a sense of calm comes over her and in a moment of realization she proclaims that she possesses the love of other's: Mrs. Whatsit, her father's her mother's, Calvin's, and her brother's. Her love for her brother draws Charles Wallace away from IT. He has finally broken free from IT and Meg holds him in a long hug. IT disappears and Meg and Charles Wallace find themselves back in their mother's vegetable garden. Calvin is there also, along with their mother and father. This family union fills Meg with a sense of love and joy she has never experienced before.

# ABOUT THE AUTHOR MADELEINE L'ENGLE

Taken directly from: Scholastic Book Files A Reading Guide to "A Wrinkle in Time™", by Manuela Soares, 2003. [www.scholastic.net/kids/homework/pdfs/A\\_Wrinkle\\_in\\_Time.pdf](http://www.scholastic.net/kids/homework/pdfs/A_Wrinkle_in_Time.pdf)

L'Engle was born Madeleine L'Engle Camp on November 29, 1918. Her mother was a pianist and her father was a journalist and a writer who fought in World War I. His lungs were damaged from a poisonous gas that was used as a weapon in the war and because of his health problems, the family traveled to places where the air was dry and easy to breathe. As an only child, L'Engle always wished for a larger family. She says that's why the families in her novels have lots of children.

L'Engle grew up in a house full of books, so reading and writing came naturally. "My parents read aloud to each other every night," says L'Engle. Among the books they read were the works of the French writer Alexandre Dumas. It was from Dumas that L'Engle says she found "a sense of story."

When Madeleine was 12, the family moved to a town in the French Alps. She was sent to a boarding school, which she hated.

When she was 14, the family returned to the United States and Madeleine was sent to Ashley Hall, a boarding school in Ashley, South Carolina, which she loved. She went on to spend four years at Smith College, graduating with honors in 1941. In 1981 Smith awarded her a Smith Medal for "service to the community that reflects the purpose of a liberal arts education."

After graduating from Smith, L'Engle moved to the Greenwich Village neighborhood in New York City. She still wanted to be a writer, but "I had to pay the bills, so I went to work in the theater."

While she was on tour as an actress, Madeleine wrote her first book, *The Small Rain*. While she was rehearsing another play, she met an actor named Hugh Franklin. They were married when they were on tour with yet another play. A short time later, they both decided to give up acting. They moved to rural Connecticut, where they opened a general store.

"It was a very safe place to start raising our kids," L'Engle recalls. "No city lights, no noises at night." They lived in a very small town that is a lot like the town in *A Wrinkle in Time*. In fact, it was while they were living in Connecticut that L'Engle wrote *A Wrinkle in Time*.

*A Wrinkle in Time* combines elements of science fiction and fantasy with two of L'Engle's special themes—moral responsibility and the power of love, especially family love. But it is also based on science, one of L'Engle's favorite subjects.

Despite the fact that L'Engle was an author who had already published six books, it took more than two years to find a publisher for *A Wrinkle in Time*. Later, after the book was a

success, one publisher who had rejected it told her, "I wish I'd had the chance to publish it." L'Engle mailed him a copy of the rejection slip he had sent her.



<http://today.msnbc.msn.com/id/20643685/ns/today-books/t/wrinkletime-author-lengle-dies/#.TueDDXM4PC4>

*A Wrinkle in Time* won the prestigious Newbery Medal in 1963, the year after it was published. It is the first book in what became a four-book series called "The Time Quartet." Three other books about the Murry family were published after *A Wrinkle in Time*. They are *A Wind in the Door*, *A Swiftly Tilting Planet*, and *Many Waters*. In *A Wind in the Door*, Meg and Calvin, school principal Mr. Jenkins, a farandola, and a cherubim, travel inside one of Charles Wallace's mitochondria to save him from an evil being. In *A Swiftly Tilting Planet*, newly married Meg takes a telepathic trip with Charles Wallace through time in order to save the world once again. The twins Sandy and Dennys are the heroes in *Many Waters*, in which they time-travel to the time of the biblical Noah.

Another book, *An Acceptable Time*, is sometimes considered part of the Time series because it includes Meg's parents. But it is really about Polly O'Keefe, Meg's daughter. It belongs with the four-book series about the O'Keefe family, which also includes *The Arm of the Starfish*, *Dragons in the Water*, and *A House Like A Lotus*.

L'Engle's longest series is about the Austin family. The series has eight books: *The Twenty-Four Days Before Christmas*, *A Full House*, *Meet the Austins*, *The Anti-Muffins*, *The Moon by Night*, *The Young Unicorns*, *A Ring of Endless Light*, and *Troubling a Star*.

L'Engle has many personal heroes—people she looks to for inspiration and encouragement in her life and work. The composer Johann Sebastian Bach is high on her list. "If I get out of proportion and all confused, if I can sit down and play Bach fugues, he'll pull me back." She also loves Mozart and Scarlatti. L'Engle especially likes Albert Einstein and calls him "Saint Albert."

"He [Einstein] says that anyone who is not lost in rapture at the power of the mind behind the universe is as good as a burned out candle."

L'Engle has never lost her awe of the universe. This awe helps give her the inspiration to write. "When I look at the night sky I'm looking at time as well as space," says the author, "looking at a star seven light-years away... It's so exciting that it makes me want to write so I send Meg to the outer galaxies."

What advice does Madeleine L'Engle have for her readers? "Be brave! Have courage! Don't fear! Do what you think you ought to do, even if it's nontraditional. Be open. Be ready to change."

# ABOUT THE PLAYWRIGHT JOHN GLORE

*Taken directly from: Scholastic Book Files A Reading Guide to "A Wrinkle in Time™", by Manuela Soares, 2003. www.scholastic.net/kids/homework/pdfs/A\_Wrinkle\_in\_Time.pdf*

John Glore is the Associate Artistic Director of South Coast Repertory (SCR), in Orange County, Calif. He is an award-winning playwright whose work for young audiences includes his adaptation of Madeleine L'Engle's *A WRINKLE IN TIME*, which debuted at SCR in 2010 and has since moved on to numerous productions nationwide; an adaptation of Jon Scieszka and Lane Smith's *THE STINKY CHEESE MAN AND OTHER FAIRLY STUPID TALES*, which had its professional premiere at the Coterie Theatre and has since had dozens of productions nationwide; and his newest, an adaptation of Laura Amy Schlitz's *THE NIGHT FAIRY*, which has been produced at SCR and Imagination Stage in Washington, D.C. Other plays for young audiences include *WIND OF A THOUSAND TALES*, *FOLKTALES TOO*, *RHUBARB JAM*,



<http://www.scr.org/interactive/dialoguejan10/wrinkledialogue.aspx>

and *THE DAY AFTER EVERMORE*. His plays for adults include *On the Jump* (produced by SCR and Arena Stage in Washington D.C.), *The Company of Heaven*, *Preludes and Fugues*, and *City Sky* (a scenario for a dance piece). With the performance trio *Culture Clash* he has co-authored adaptations of two plays by Aristophanes, *The Birds* and *Peace*. In addition to the theatres already named, his work has been produced at Berkeley Rep, Actors Theatre of Louisville, The Round House Theatre, The Children's Theatre Company, First Stage, Childsplay, Oregon Childrens Theatre, the Getty Villa and many others. He received a 2000 Playwrights Fellowship from the California Arts Council and has occasionally taught playwriting and related subjects at UCLA and Pomona College.

## PRE-SHOW QUESTIONS

1. The power of love helps to save our main character, Meg, and her family. How important do you think love is in the world? Is it more important to love or be loved?
2. Many stories examine the conflict between good and evil. What examples of goodness do you see in the world around you?
3. What were those experiences and how did you become stronger and wiser because of them?
4. The character Meg is the heroine of this story. What are some characteristics of heroes? Who are some of your personal heroes, and why?

## CONTENT ADVISORY

***This play contains sequences and effects that some audience members may find frightening or intense.***

# RECOMMENDED READING

## Other Series by Madeleine L'Engle

### **Murry Family Series**

*A Wrinkle in Time*  
*A Wind in the Door*  
*A Swiftly Tilting Planet*  
*Many Waters*

### **O'Keefe Family Series**

*The Arm of the Starfish*  
*Dragons in the Water*  
*A House Like a Lotus*  
*An Acceptable Time*

### **Austin Family Series**

*Meet the Austins*  
*The Moon by Night*  
*The Young Unicorns*  
*A Ring of Endless Light*  
*The Anti-Muffins*  
*The Twenty-Four Days Before Christmas*  
*A Full House: An Austin Family Christmas*  
*Other series by Madeleine L'Engle*

### **Katherine Forrester Vigneras Series**

*The Small Rain*  
*A Severed Wasp*

### **Camilla Dickinson Series**

*Camilla Dickinson*  
*A Live Coal in the Sea*

### **Other books by Madeleine L'Engle**

*And Both Were Young*  
*The Journey with Jonah*  
*Dance in the Desert*  
*Ladder of Angels: Scenes from the Bible*  
*Illustrated by Children of the World*  
*The Sphinx and Dawn: Two Stories*  
*The Glorious Impossible: Jesus Christ and His Family*  
*The Other Dog*



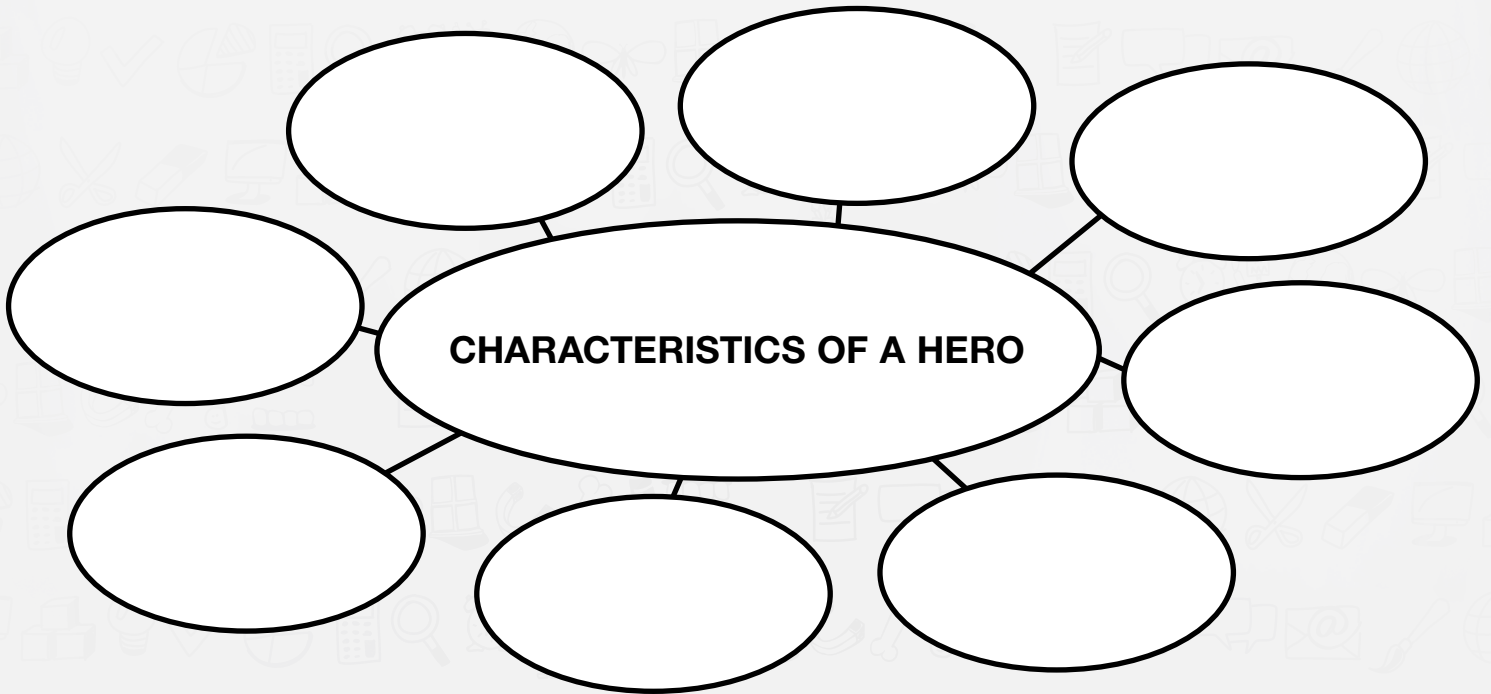
# HEROES AMONG US, HEROES LIKE ME

## Social Studies Student Worksheet

Taken from: *Mathematical Analysis*, by Jessica Weare, 1998. <http://www.math.brown.edu/~banchoff/Yale/project12/math.html>; Scholastic "A Wrinkle in Time™", by Manuela Soares, 2003. [www.scholastic.net/kids/homework/pdfs/A\\_Wrinkle\\_in\\_Time.pdf](http://www.scholastic.net/kids/homework/pdfs/A_Wrinkle_in_Time.pdf), Read, Write, Think: *Heroes Around Us*, by Mary E. Shea. International Reading Association, 2011. <http://www.readwritethink.org/classroom-resources/lesson-plans/heroes-around-171.html?tab=4#tabs>

**Two of Madeleine L'Engle's personal heroes are Johann Sebastian Bach and Albert Einstein. When she wrote *A Wrinkle in Time*, L'Engle hoped Meg would be a hero to those who read the book.**

Think of some people or literary figures you would consider to be heroes. What are some of the similar characteristics these heroes share? Fill in these qualities of a hero below on the brainstorming web:



In the table below, write down the name of three of your personal heroes, the characteristics of a hero they possess, and when and how they demonstrated these heroic qualities.

Hero's Name	Characteristics of a Hero	Examples of Heroic Actions

How can you become a hero? What can you do to make a difference in the lives of your family, friends, community and world?

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# A NEW STORY—COMBINING LITERARY GENRES

## Language Arts Student Worksheet

Adapted from: Scholastic Book Files A Reading Guide to "A Wrinkle in Time™", by Manuela Soares, 2003. [www.scholastic.net/kids/home-work/pdfs/A\\_Wrinkle\\_in\\_Time.pdf](http://www.scholastic.net/kids/home-work/pdfs/A_Wrinkle_in_Time.pdf) , Read, Write, Think, Definition of Science Fiction, 2005. [www.readwritethink.org/files/resources/lesson.../SciFiDefinition.pdf](http://www.readwritethink.org/files/resources/lesson.../SciFiDefinition.pdf) , Robert Sweetland, <http://www.hunzel.net/rsweetland/literature/genre/index.html>

### **A WRINKLE IN TIME combines elements of science fiction and fantasy.**

**SCIENCE FICTION** is a genre of fiction in which the stories often tell about science and technology of the future. Science fiction has a relationship with the principles of science—these stories involve laws or theories of science. Science fiction texts also include a human element, explaining what effect new discoveries will have on us in the future. Science fiction texts are often set in the future, in space, on a different world, or in a different universe or dimension.

**FANTASY** is a genre of fiction in which the stories are often placed in imaginary worlds or universes. Many times, animals and other imaginary creatures possess human qualities and can speak to other animals and creatures. Furthermore, many characters have special or magical powers and utilize scientific principles not yet discovered. A major theme in fantasy stories is the struggle between good versus evil.

List some qualities of A WRINKLE IN TIME that categorize the story as Science Fiction:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

List some qualities of A WRINKLE IN TIME that categorize the story as Fantasy:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

One question Madeleine L'Engle is asked a lot is why she began the book with the words "It was a dark and stormy night..." According to L'Engle, the phrase "a dark and stormy night" is one that is used to start lots of scary stories. Those words let you know the story is going to incite some fear!

Using your knowledge of Science Fiction and Fantasy genres, start a story of your own that incorporates elements of both genres...and begins with the phrase "It was a dark and stormy night."

**It was a dark and stormy night...** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# EXPLORING NEW WORLDS: POST-SHOW ACTIVITY

## Science Student Worksheet

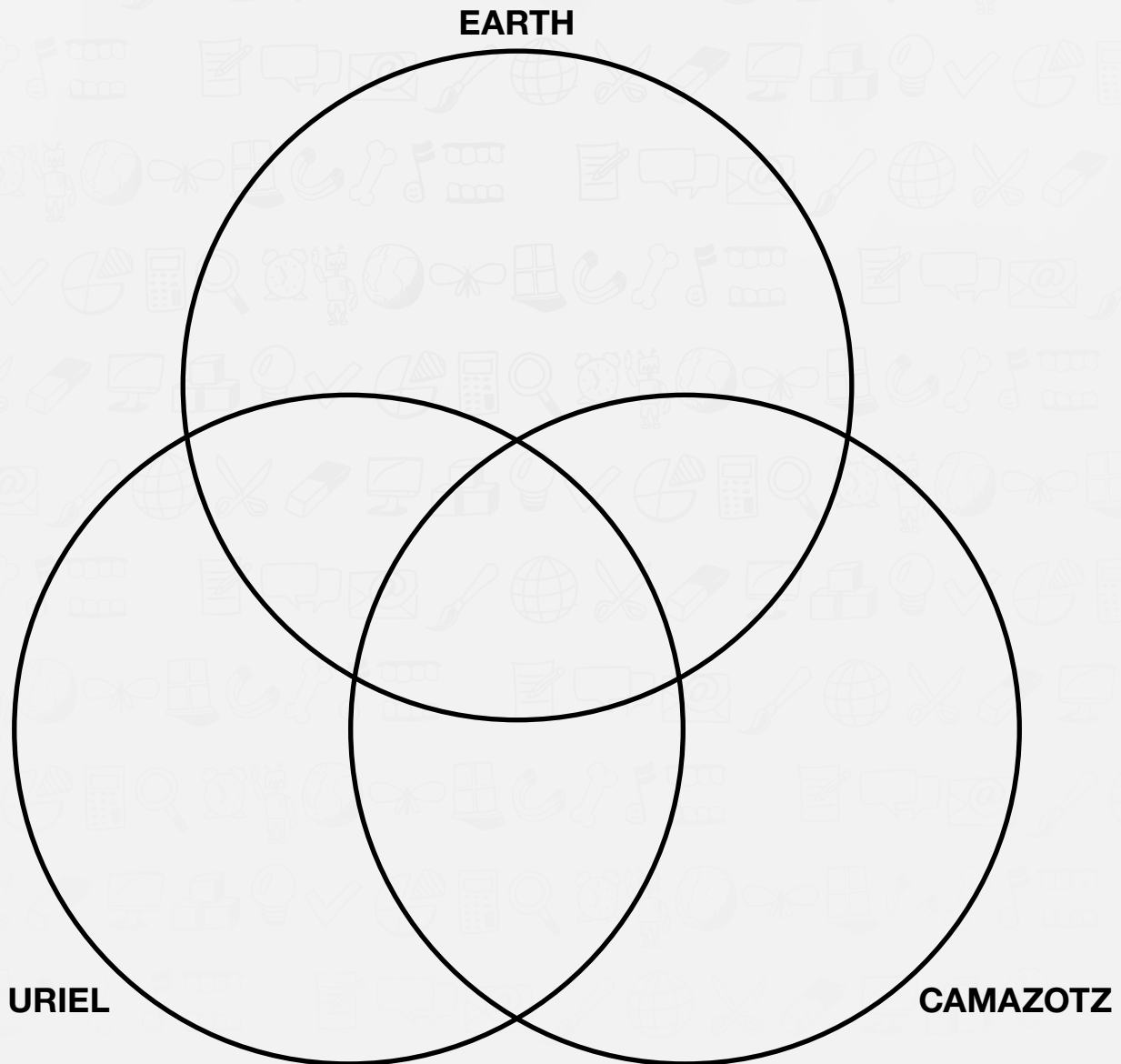
Adapted from: Scholastic Book Files A Reading Guide to "A Wrinkle in Time™", by Manuela Soares, 2003. [www.scholastic.net/kids/homework/pdfs/A\\_Wrinkle\\_in\\_Time.pdf](http://www.scholastic.net/kids/homework/pdfs/A_Wrinkle_in_Time.pdf) ,

**In A WRINKLE IN TIME, Meg, Charles, and Calvin travel to two different planets: Uriel and Camazotz.**

Their first stop is the planet Uriel, a Utopian world filled with joyous, Centaur-like beings who live always in a state of light and love.

On Camazotz, all the houses look the same. In identical front yards, children are bouncing balls and skipping rope in unison. The doors to each house open at the same time, and the paperboy comes by, throwing the paper to exactly the same spot at every house.

In the Venn Diagram below, fill in the different characteristics of the planet Uriel and Camazotz, as well as those of the planet Earth. In the areas where the circles connect, place the traits that these planets share with one another.



# EXPLORING NEW WORLDS: POST-SHOW ACTIVITY (CONT.) Science Student Worksheet

*Adapted from: Scholastic Book Files A Reading Guide to "A Wrinkle in Time™", by Manuela Soares, 2003. www.scholastic.net/kids/homework/pdfs/A\_Wrinkle\_in\_Time.pdf ,*

Using the form below, make up your own planet in another galaxy. Describe the setting and the creatures that live there. What is life like on your imaginary world?

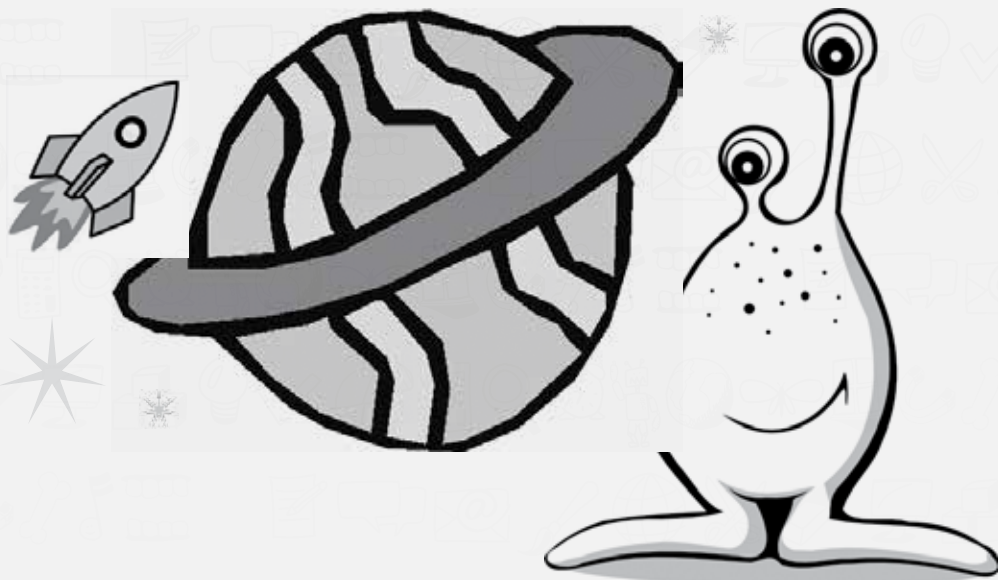
Planet's name: \_\_\_\_\_

Planet's Environment: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Planet's Intelligent Life Forms: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Describe a day living on this new Planet: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

What do the inhabitants believe is good and what do they think is evil? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



# WRINKLING THROUGH TIME: AN ACTIVITY WITH TESSERACTS

## Math Student Information and Worksheet

Taken from: *Mathematical Analysis*, by Jessica Weare. 1998. <http://www.math.brown.edu/~banchoff/Yale/project12/math.html>; *Scholastic Book Files A Reading Guide to "A Wrinkle in Time"*, by Manuela Soares, 2003. [www.scholastic.net/kids/homework/pdfs/A\\_Wrinkle\\_in\\_Time.pdf](http://www.scholastic.net/kids/homework/pdfs/A_Wrinkle_in_Time.pdf), <http://www.kidsmathgamesonline.com/pictures/shapes/tesseract.html>

In *A WRINKLE IN TIME*, tesseracts are used to travel through time and space. L'Engle says the science behind tesseracts is real. "I read a lot about particle physics and quantum mechanics, and I have a few scientist friends who will let me pick their brains. I came across the word 'tesseract' in a science article and kind of got fascinated by it."

Below is an excerpt of *A Wrinkle in Time* from Chapter 5 of the book (pages 74-90), in which Mrs. Whatsit and Mrs. Who introduce mathematical concepts and ideas to Meg, Calvin, and Charles Wallace:

*"Now we will tesser, we will wrinkle again. Do you understand?"*

*"No," Meg said flatly.*

*"That is because you think of space only in three dimensions," Mrs. Whatsit told her. "We travel in the fifth dimension. This is something you can understand, Meg. Don't be afraid to try."*

*[...] "We have learned to take short cuts wherever possible."*

*"Sort of like in math?" Meg asked.*

*"Like in math." Mrs. Whatsit looked over at Mrs. Who.*

*"Take your skirt and show them."*

*"La experiencia es la madre de la ciencia. Spanish, my dears. Cervantes. Experience is the mother of knowledge." Mrs. Who took a portion of her white robe in her hands and held it tight.*

*"You see," Mrs. Whatsit said, "if a very small insect were to move from the section of skirt in Mrs. Who's right hand to that in her left, it would be quite a long walk for him if he had to walk straight across."*



*Swiftly Mrs. Who brought her hands, still holding the skirt, together.*

*"Now, you see," Mrs. Whatsit said, "he would be there, without that long trip. That is how we travel."*



# WRINKLING THROUGH TIME: AN ACTIVITY WITH TESSERACTS (CONT.)

## Math Student Information and Worksheet

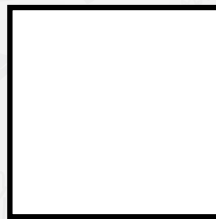
Adapted from: <http://www.its.caltech.edu/~atomic/snowcrystals/kids/kids.htm>

By creating the ellipse with the line of Mrs. Who's skirt, L'Engle's utilizes the idea of two points' possibly being the same point in the next higher dimension.

*"Okay," Charles said. "What is the first dimension?"*

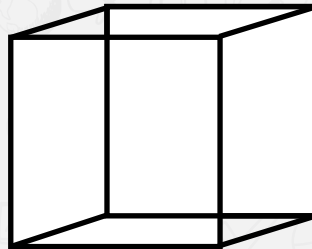
*Note: The "zero" dimension is a single point "Well--a line"  
"Okay. And the second dimension?"*

*"Well, you'd square the line. A flat square would be in the second dimension."*



*"And the third?"*

*"Well, you'd square the second dimension. Then the square wouldn't be flat any more. It would have a bottom, and sides, and a top."*



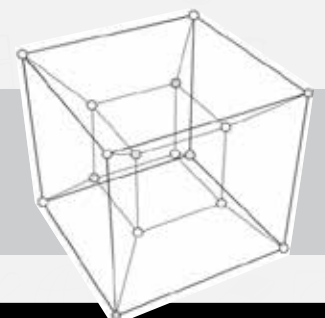
*"[To create the fourth dimension] Well, I guess if you want to put it into mathematical terms you'd square the square. But you can't take a pencil and draw it the way you can the first three. I know it's got something to do with Einstein and time. I guess maybe you could call the fourth dimension Time."*

*"That's right," Charles said. "Good girl. Okay, then, for the fifth dimension you'd square the fourth, wouldn't you?"*

*"I guess so."*

*"Well, the fifth dimension's a tesseract. You add that to the other four dimensions and you can travel through space without having to go the long way around. In other words, to put it into Euclid, or old-fashioned plane geometry, a straight line is not the shortest distance between two points."*

Traditionally, the tesseract is a term used to describe the hypercube. This picture features a tesseract hypercube. A tesseract is four dimensional representation of a cube. A square is 2D, a cube is 3D and a tesseract is 4D.



# WRINKLING THROUGH TIME: AN ACTIVITY WITH TESSERACTS (CONT>)

## Math Student Information and Worksheet

Taken from: *Mathematical Analysis*, by Jessica Weare. 1998. <http://www.math.brown.edu/~banchoff/Yale/project12/math.html>; *Scholastic Book Files A Reading Guide to "A Wrinkle in Time"*, by Manuela Soares, 2003. [www.scholastic.net/kids/homework/pdfs/A\\_Wrinkle\\_in\\_Time.pdf](http://www.scholastic.net/kids/homework/pdfs/A_Wrinkle_in_Time.pdf), <http://www.kidsmathgamesonline.com/pictures/shapes/tesseract.html>

use the information included to help you illustrate an example of a tesseract, a hypercube.

1. Draw a point

**How many sides does it have?** \_\_\_\_\_

(hint: this is a trick question!)

2. Draw a line segment.

**How many sides does it have?** \_\_\_\_\_

3. Draw a square.

**How many sides does it have?** \_\_\_\_\_

**How many faces does it have?** \_\_\_\_\_

(hint: To find the number of "faces," think of holding it up in front you like a mirror. The number of "faces" will be the number of images that you see of yourself as you rotate the object. Note - there are no two sided mirrors.)

4. Draw a cube. (you can do this by drawing two interlocking squares, and then connecting them together.)

**How many sides does it have?** \_\_\_\_\_

**How many faces does it have?** \_\_\_\_\_

5. BONUS - After discussing the previous objects in Chapter 5 of the book, Mrs. Which and Mrs. Who introduce an object that is even more complex than a cube, a tesseract. Can you think of what a tesseract might look like?

It is difficult to draw, but based a pattern that we just discovered about faces and sides, can you guess how many sides there are in a tesseract? \_\_\_\_\_

What about the number of faces? \_\_\_\_\_

(hint: we built a cube by taking two interlocking squares and connecting them with four other line segments.

For building a tesseract, we would need to use two interlocking cubes and then connect them together using eight new line segments)

# BELIEF IN ONESELF

## Social Emotional WEInEss Student Worksheet

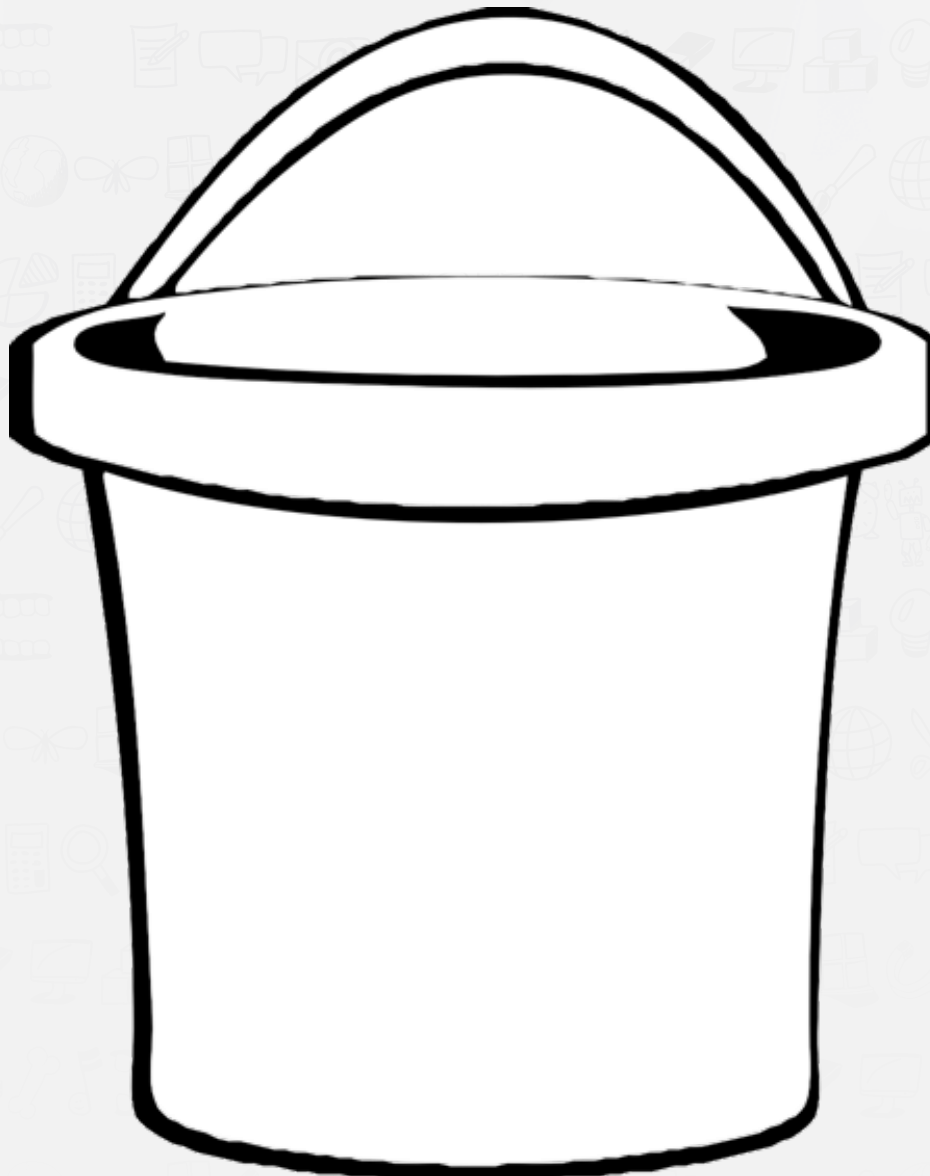
*Adapted from: Copyright Elkind+Sweet Communications / Live Wire Media. Reprinted by permission. Copied from www.GoodCharacter.com.*

Meg finally realizes that if she wants to save Charles Wallace from IT, she has to let go of other people's hands and do it herself. And once she sets her mind to it, she succeed! Meg discovers that she had the potential to stand on her own two feet all along... all she needed was to believe in herself.

Self-esteem can be compared to a full bucket of water. Whenever we develop negative beliefs about ourselves, our bucket forms a hole and our self-esteem drips out.

**On the outside of your bucket, list examples of things you or others do or say that cause holes in your self-esteem bucket.**

**On the inside of your bucket, come up with a list of things you can do to protect, raise, or reinforce your self-esteem bucket. See if you can make your list on the inside of your bucket bigger than the list on the outside of your bucket!**



# WHO SAID IT?

1. "But It makes me mad when people feel sorry for us—for you, I mean."
2. "I'm passionately fond of Russian caviar—there's some in the cupboard."
3. "The last guy who said that got my sister's fist in his face."
4. "Oh, good, I passed the creepy-weirdo x-ray eyes test."
5. "Kitalpha. And Mergez! Caroli has told me so much about you."
6. "I wish I could be normal. I hate the way lo am."
7. "Romantic piffle. The moon is a hunk of dead rock made of silicon, iron, magnesium..."
8. "Patience, child. We stopped here because we show you what you will be up against."
9. "But we aren't stars! We're just kids!"
10. "Nothing good was ever named IT!"
11. "He is a man who abandoned his family to go on a wild adventure."
12. "I have restored her body, but her spirit may take longer to heal."

## POST-SHOW QUESTIONS

1. Why must Meg go alone to Camazotz? How is her relationship with Charles Wallace important to her ability to free him?
2. What is the most important thing that happens to each of the children? Are Meg, Calvin, and Charles Wallace changed by what happens to them? How?
3. What did you think of the ending of the play? Were you surprised? What do you think the future holds for Meg, Charles Wallace, and Calvin?
4. Which of the planets the children visited did you like the most, and why? If you could pick another world for the children to travel to, what would it be like, and why?



## WHO SAID IT? (ANSWERS)

1. "But It makes me mad when people feel sorry for us—for you, I mean." . . . . . MEG
2. "I'm passionately fond of Russian caviar—there's some in the cupboard." . . . . . MRS. WHATSIT
3. "The last guy who said that got my sister's fist in his face." . . . . . CHARLES WALLACE
4. "Oh, good, I passed the creepy-weirdo x-ray eyes test." . . . . . CALVIN
5. "Kitalpha. And Mergez! Caroli has told me so much about you." . . . . . MRS. WHO
6. "I wish I could be normal. I hate the way lo am." . . . . . MEG
7. "Romantic piffle. The moon is a hunk of dead rock made of silicon, iron, magnesium..." . . . . MRS. WHO
8. "Patience, child. We stopped here because we show you what you will be up against." . . MRS. WHATSIT
9. "But we aren't stars! We're just kids!" . . . . . MEG
10. "Nothing good was ever named IT!" . . . . . CALVIN
11. "He is a man who abandoned his family to go on a wild adventure." . . . . MAN WITH THE RED EYES
12. "I have restored her body, but her spirit may take longer to heal." . . . . . AUNT BEAST