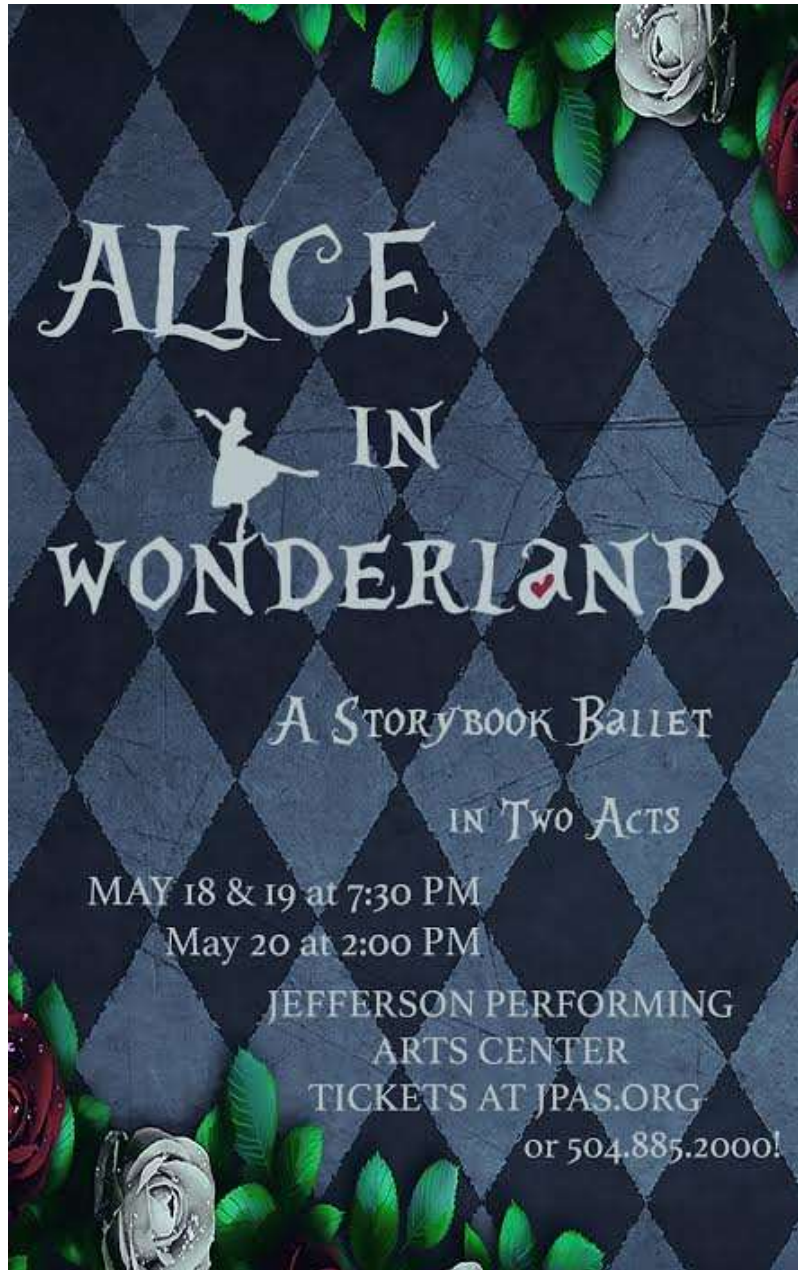


The Jefferson Performing Arts Society

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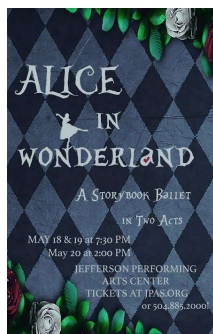
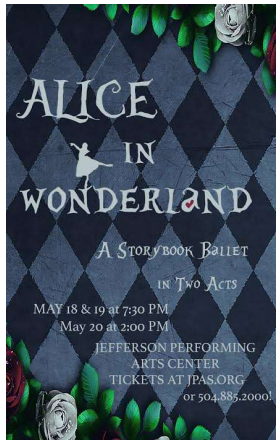


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Teacher's Notes

Adapted by Carl Davis for the **English National Ballet**
Music by **Pyotr Ilyich Tchaikovsky**

Alice in Wonderland is a ballet in two acts retelling the classic Lewis Carroll story in the form of dance, set to unforgettable music by Pyotr Ilyich Tchaikovsky. Enter into the majestic setting of the classic tale and see the familiar story come to life in an all-new way!

In 1995, English National Ballet commissioned a score for a full length ballet, based on Lewis Carroll's immortal masterpiece, Alice in Wonderland. The one stipulation and challenge was for a score to be based on the music of Tchaikovsky. Carl Davis accepted the challenge and a smash hit was born!

The centre of the score is derived from Tchaikovsky's Album for the Young. Davis also drew on Tchaikovsky's Theatre Music, Tone Poems and Operas, as well as the beautiful waltz from the Fifth Symphony for The Garden of Living Flowers. This highly successful production was revived many times, including performances at the Company's London Coliseum seasons.

English National Ballet's Alice in Wonderland is one of many adaptations of Lewis Carroll's classic tale. **Lewis Carroll** was the nom de plume of Charles L. Dodgson. Born on January 27, 1832 in Daresbury, Cheshire, England, Charles Dodgson wrote and created games as a child. At age 20 he received a studentship at Christ Church and was appointed a lecturer in mathematics. Dodgson was shy but enjoyed creating stories for children. Within the academic discipline of mathematics, Dodgson worked primarily in the fields of geometry, linear and matrix algebra, mathematical logic, and recreational mathematics, producing nearly a dozen books under his real name. Dodgson also developed new ideas in

linear algebra (e.g., the first printed proof of the Kronecker-Capelli theorem,) probability, and the study of elections (e.g., Dodgson's method); some of this work was not published until well after his death. His mathematical work attracted renewed interest in the late 20th century. Martin Gardner's book on logic machines and diagrams, and William Warren Bartley's posthumous publication of the second part of Carroll's symbolic logic book have sparked a reevaluation of Carroll's contributions to symbolic logic,

RETRIEVED FROM: <http://www.alice-in-wonderland.net/resources/analysis/story-origins/>

MATRIX ALGEBRA <http://www.sosmath.com/matrix/matrix0/matrix0.html>

ILLUSTRATIONS BY CHARLES DODGSON

<http://www.nls.uk/exhibitions/treasures/alice-in-wonderland/alice-by-dodgson>
<http://blogs.common.georgetown.edu/engl-355-fall2013/2013/09/23/alices-illustrations/>

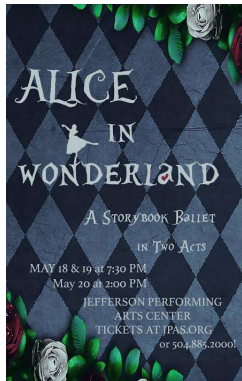
More information on Charles Dodgson can be found here:

<http://www.biography.com/people/lewis-carroll-9239598>

As mathematics was a life-long passion of Charles Dodgson, several of the lessons in this companion explore mathematical concepts, including proportion, ratio, area and perimeter. Lessons begin in story with a comparison between the novel that began it all, "The Adventures of Alice in Wonderland," and the Disney adaptation, **Disney's Alice in Wonderland, Jr.** This is followed by **Art, Math and Set Design: Alice in Minecraft Land**. In this lesson, students explore the art of John Tenniel, the original animators of Disney's Studios (otherwise known as The Nine Old Men) and develop their own Minecraft illustrations while learning about area, perimeter and ratios. The following lesson, **The Science of Color Meets the White Rabbit and the March Hare**, looks at the possible inspiration for Lewis Carroll's White Rabbit and March Hare, further explores Disney animator Ward Kimbell and introduces the work of modern-day English artist Helen Ahpornsiri. Students learn the scientific differences between rabbits and hares, the importance of complementary colors and how these colors influence human physiology and create their own complementary color illustrations comparing rabbits and hares.

The rabbit-hole went straight on like a tunnel for some way, and then dipped suddenly down, so suddenly that Alice had not a moment to think about stopping herself before she found herself falling down a very deep well.

Either the well was very deep, or she fell very slowly, for she had plenty of time as she went down to look about her and to wonder what was going to happen next...



Louisiana Educational Content Standards and Benchmarks

The arts facilitate interconnection. They provide tangible, concrete opportunities for students and teachers to explore academic concepts. The arts are even more critical now with the introduction of Louisiana Common Core. Common Core is replacing the system of Grade Level Expectations and Standards and Benchmarks previously used to measure student achievement. Here is some background information on Louisiana Common Core:

COMMON CORE STATE STANDARDS

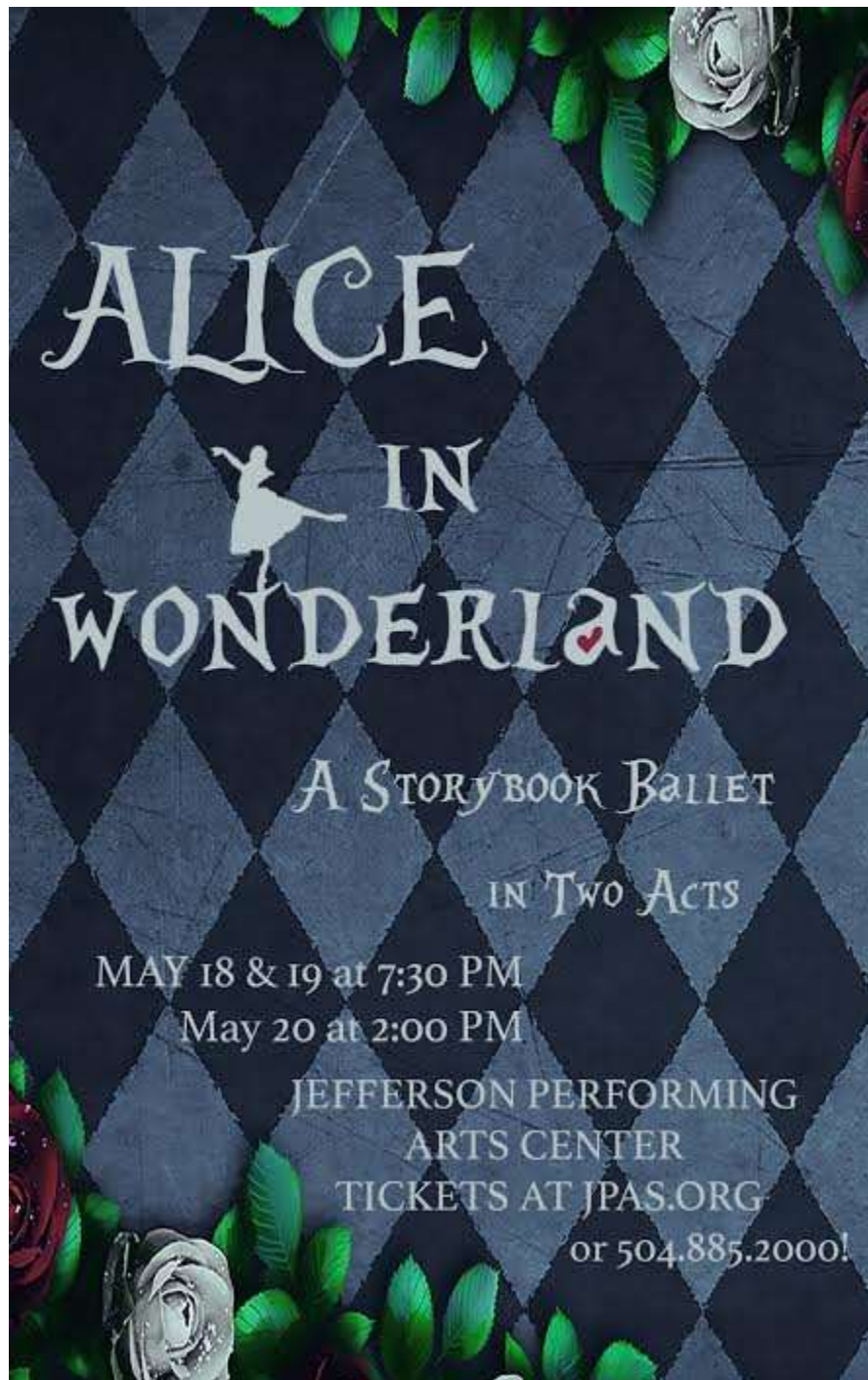
Academic standards define the knowledge and skills that students are expected to learn in a subject in each grade. In 2010, Louisiana adopted Common Core State Standards in English language arts and math. The Common Core State Standards define what students need to learn in reading, writing and math in each grade to stay on track for college and careers. Please visit this site for more information:
<http://www.louisianabelieves.com/academics/louisiana-student-standards-review>

All Common Core connections were retrieved from:

<http://www.louisianabelieves.com/docs/default-source/academic-standards/la-student-standards---k-12-ela.pdf?sfvrsn=2>

<http://www.louisianabelieves.com/docs/default-source/academic-standards/la-student-standards---k-12-mathematics.pdf?sfvrsn=4>

BACKGROUND





GRAMOPHONE

THE WORLD'S BEST CLASSICAL MUSIC REVIEWS

[Home](#) » [Reviews](#) » Tchaikovsky arr C Davis Alice In Wonderland

Three grand Tchaikovsky scores are evidently not enough! A telephone call in 1995 from Derek Deane, then the artistic director of English National Ballet, brought Carl Davis the invitation to put together this full-length ballet based on *Alice in Wonderland*. The combination of a fundamentally English subject with very Russian music seems surprising, and Davis's attempt to justify it by reference to English governesses in the Tsarist Court hardly convinces. His account of how he set about the task also suggests that the challenge was not easily met. Eventually, though, he settled on the *Album for the Young* as an appropriate base-source for a subject very much aimed at the young. He then ranged widely, using material from *The Tempest*, *The Seasons*, *Hamlet*, a rarely performed number from *The Sleeping Beauty* itself, and much else. For the grand waltz, without which no Tchaikovsky ballet would be complete, he went to the Fifth Symphony.

Though Davis evidently assembled the whole, the orchestrations are by David Matthews.

RETRIEVED FROM: <https://www.gramophone.co.uk/review/tchaikovsky-arr-c-davis-alice-in-wonderland>



ALICE IN WONDERLAND - ENGLISH NATIONAL BALLET

Reviews:

"Maria Kochetkova is a charming and spirited Alice." The Sunday Times

"The best dancing came from Sarah McIlroy's enjoyably evil Queen of Hearts and Maria Kochetkova's sweetly droopy Dormouse." The Financial Times

RETRIEVED FROM:

<http://mariakochetkova.com/balletrusse/alice-in-wonderland>



[South China Morning Post](#) EDITION: INTERNATIONAL

Ballet will recreate Alice's wonderland

PUBLISHED: Tuesday, 09 December, 2008, 12:00am

UPDATED: Tuesday, 09 December, 2008, 12:00am

Staff Reporter

A golden opportunity has arisen to introduce the whole family to the delights of classical ballet via a dazzling interpretation of a beloved children's story.

One of the highlights of the 2009 Hong Kong Arts Festival is the staging of Alice in Wonderland, a magical performance by the English National Ballet that is set to appeal to anyone aged from four to 104. This charming work is blessed with fabulous sets, extravagant costumes and wonderfully inventive choreography.

The ballet also features the music of Russian composer Pyotr Ilyich Tchaikovsky, with the score arranged and adapted by world-famous composer and conductor Carl Davis.

Although Alice in Wonderland is well known in Britain, where it is danced exclusively by the English National Ballet, it is relatively unknown in Asia.

'It makes a refreshing change that Hong Kong would like to see this very family-oriented ballet,' said Wayne Eagling, artistic director of the English National Ballet.

When Davis and choreographer Derek Deane originally developed this adaptation in 1996, their goal was to make a popular ballet for the whole family, Eagling said. 'People know Alice in Wonderland - it's an easy story to follow, fun and enduring' he said. 'If somebody never goes to the ballet, it's a good thing to bring them to see - you can even bring your husband who doesn't normally like ballet.'

The show breathes life into a classic work of children's literature - Alice's Adventures in Wonderland.

Written by Victorian academic Lewis Carroll, the story was first published in 1866 and famously illustrated by renowned contemporary artist Sir John Tenniel and, some years later, by Harry Theaker.

Ballet-goers are told a surreal tale about a little girl with blonde hair, a blue dress and striped stockings.

After drifting off to sleep on her sister's lap, Alice awakes to find a talking white rabbit, muttering 'I'll be late, I'll be late' as he checks his fob watch. She follows him down a rabbit hole and tumbles into an absurd world of talking cards, sinister corridors and flamingo croquet. She encounters extraordinary creatures, including a crotchety caterpillar puffing on a hookah, a Mad March Hare and a bad-tempered queen.

Carroll's famous characters, both human and animal, are all richly costumed by Sue Blane, famous for her costume designs for the outrageous original film and musical versions of the cult classic *The Rocky Horror Show*. The audience can look forward to seeing dancers dressed as packs of cards with extraordinary square tutus, among other delights.

The March 4 to 8 performances are not only a first for Hong Kong but also constitute the ballet's Asian premiere. Ballet-goers are guaranteed a glowing production that is genuinely family oriented.

'It's great fun, with characters such as the White Rabbit, the Cheshire Cat and the Queen of Hearts, and it's very charming,' Eagling said.

Lovers of this wonderful tale can rest assured that the ballet follows Carroll's classic children's story faithfully. 'The music is tailored to fit the story telling and works very well,' he said.

At the same time, the audience is promised imaginative choreography and serious classical ballet. The ballet also features ingenious staging and breathtaking magical illusions by Paul Kieve, who also puts his magical skills

to work as Daniel Radcliffe's private magic tutor for his role in the Harry Potter films.

Weird and wonderful characters take part in larger-than-life tea parties, beautiful roses are painted luscious colours and the corps de ballet performs visually stunning dances throughout as flowers and packs of cards.

High spots include a duet by the Knave of Hearts with the heroine, and breathtaking footwork by the White Rabbit.

Staging a large-scale ballet that is packed with surprises is no mean feat.

'It is quite challenging for the backstage crew, with lots of scene changes, floating cups and magic,' Eagling said. 'We take a larger crew than normal on tour, with 85 people altogether, including dancers and the backstage team.'

The English National Ballet is, however, using the services of a local orchestra, the Hong Kong Sinfonietta, which will be conducted by Gavin Sutherland.

'Ballets need live music - and Alice in Wonderland has lovely music - so this should be a very enjoyable evening.'

Eagling is no stranger to this part of the world, having danced in Hong Kong and, more recently, choreographed The Last Emperor, a ballet which was performed especially for the 1997 handover by the Hong Kong Ballet.

RETRIEVED FROM: <http://www.scmp.com/article/663106/ballet-will-recreate-alices-wonderland>

The Disney Adaptation: Alice in Wonderland JR.

Travel down the rabbit hole and join Alice, one of literature's most beloved heroines, in her madcap adventures. Featuring updated songs from Disney's thrilling animated motion picture, *Disney's Alice in Wonderland JR.* is a fast-paced take on the classic tale. The ever-curious Alice's journey begins innocently enough as she chases the White Rabbit. Her adventures become increasingly more strange as she races the Dodo Bird, gets tied up with Tweedle Dee and Tweedle Dum, raps with a bubble-blowing Caterpillar and beats the Queen of Hearts at her own game!

Roles include three Cheshire Cats and dozens of other wonderfully wacky characters—a chorus of kids playing in the park, rock lobsters, talking fish, royal cardsmen, unbirthday partiers, as well as a group of mean-girl flowers.

RETRIEVED FROM: <http://www.mtishows.com/disneys-alice-in-wonderland-jr>

Story

On a perfect summer day in the park, Alice sees a White Rabbit hurrying by. Curious to know where he is going, Alice follows him into the dark tunnel, thus beginning her adventure. After the Doorknob counsels Alice to drink from a bottle then eat a cookie, Alice shrinks, thus allowing her to fit through a keyhole, beginning her adventures with the Wonderland creatures. The White Rabbit leads Alice into twin jabbering clowns, Tweedle Dee and Tweedle Dum, who teach her some manners. Then, she plays a wild game of musical chairs at the Mad Hatter's tea party. Following the advice of the Cheshire Cat, she ends up at the Mad Hatter's tea part along with the evil Queen of Hearts. Waking up, Alice realizes the entire story has been a dream!

RETRIEVED FROM: http://www.guidetomusicaltheatre.com/shows_a/Alice-disney.html

Character Breakdown

Alice

Alice, Small Alice and Tall Alice are differently sized versions of the same character. She is a spunky girl who enjoys adventures and is on a journey of self-discovery.

Small Alice

Alice, Small Alice and Tall Alice are differently sized versions of the same character. She is a spunky girl who enjoys adventures and is on a journey of self-discovery.

Tall Alice

Alice, Small Alice and Tall Alice are differently sized versions of the same character. She is a spunky girl who enjoys adventures and is on a journey of self-discovery.

The Cheshire Cat

The Cheshire Cat is played by three separate actors who play the head, the body, and the tail of the cat. The Cheshire Cat serves as the Narrator for the story.

White Rabbit

The White Rabbit is an energetic, worrisome character that hardly ever stops moving.

Tweedle Dum

Tweedle Dum and Tweedle Dee are a pair of goofballs similar to old comedy teams like Abbott & Costello or Laurel & Hardy.

Tweedle Dee

Tweedle Dum and Tweedle Dee are a pair of goofballs similar to old comedy teams like Abbott & Costello or Laurel & Hardy.

Mathilda

Mathilda is Alice's older sister and a non-singing role.

The Flowers

The Flowers (Rose, Petunia, Lily, Violet, Daisy) are the snooty, mean girls who think they are the most important people in the whole world.

Caterpillar

Caterpillar, part sensei, part diva, the Caterpillar is comprised of five actors who play the head, body and all those hands, which move in synchronized gestures to help emphasize a point. The Caterpillar is one cool character. He provides the heart for the story and really convinces Alice to be herself.

Mad Hatter

The Mad Hatter is the life of the tea party.

March Hare

The March Hare is the counterpart to the Mad Hatter and also enjoys a good party. A little less crazy than the Mad Hatter, the March Hare is a happy fun character who enjoys playing.

Queen Of Hearts

The Queen of Hearts is the big mean bully of the story. The Queen of Hearts has a commanding presence and is a little scary, but funny at the same time.

King Of Hearts

The King of Hearts is the often forgotten ruler of Wonderland. He has some very high-level vocabulary.

Doorknob

The Doorknob is a wonderful character based somewhat on Jimmy Durante.

Dodo Bird

The Dodo Bird is the Captain of the Queen's Navy. He is in command of the lobsters and other animals and is another of Wonderland's vibrant characters.

Ensemble

The Chorus (Kids Playing in the Park, Rock Lobsters, Talking Fish, Royal Cardsmen, Unbirthday Partiers, etc.) are featured in all of the production numbers.

RETRIEVED FROM: <http://www.mtishows.com/disneys-alice-in-wonderland-jr>

Music and Lyrics by **Sammy Fain and Bob Hilliard, Oliver Wallace and Cy Coban, Allie Wrubel and Ray Gilbert, Mack David, Al Hoffman and Jerry Livingston**

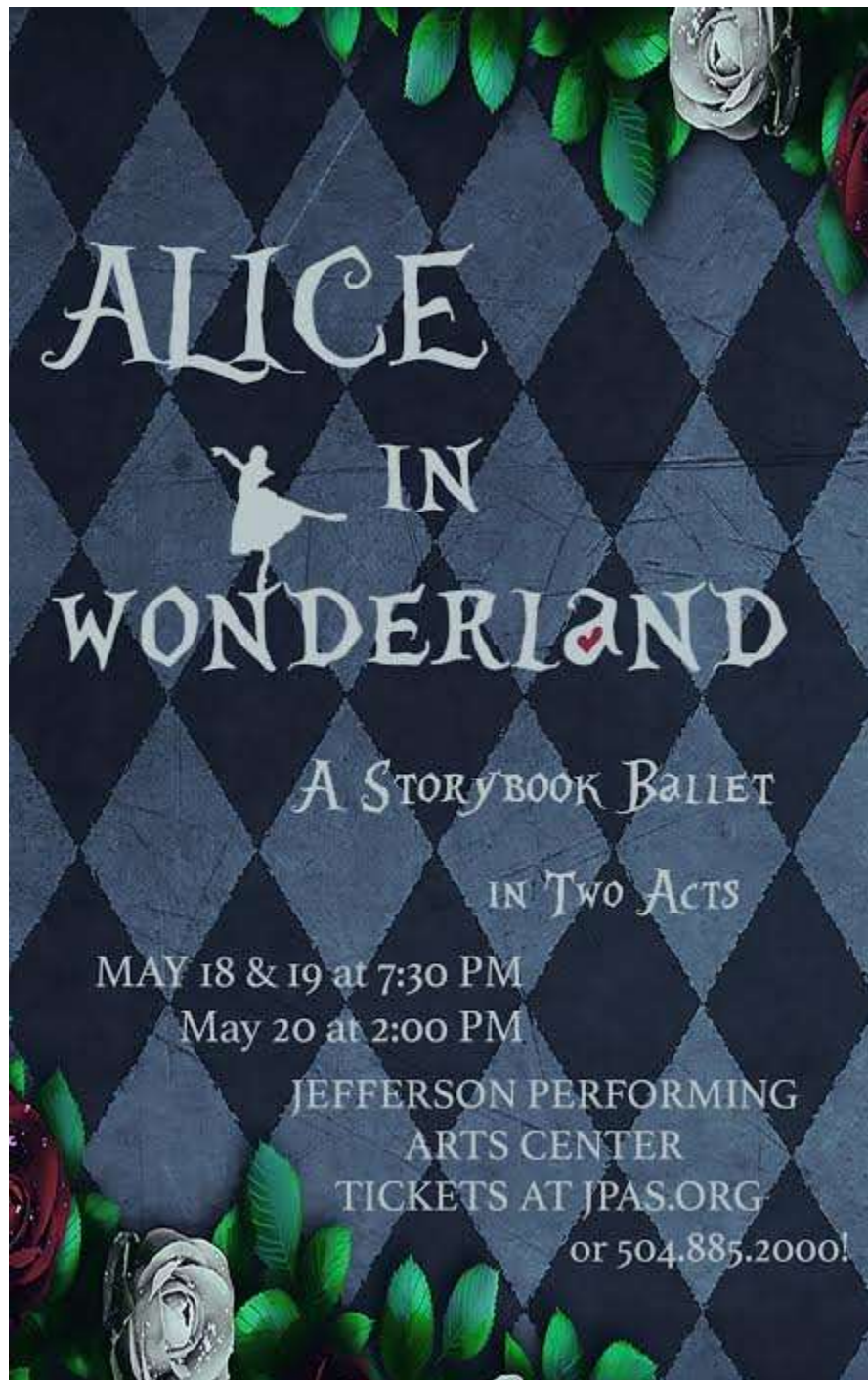
Music Adapted and Arranged and Additional Music and Lyrics by **Bryan Louiselle**

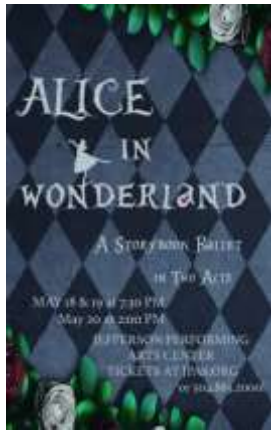
Song list

- Dodgsonland (Part 1)
- Dodgsonland (Part 2)
- I'm Late!
- Very Good Advice
- Ocean of Tears
- The Caucus Race
- How D'ye Do and Shake Hands
- The Golden Afternoon
- Zip-a-Dee-Doo-Dah
- The Unbirthday Song (Part 1)
- The Unbirthday Song (Part 2)
- I'm Late (Reprise)
- Painting the Roses Red
- Painting the Roses Red (Reprise)
- Simon Says (Part 1)
- Simon Says (Part 2)
- The Unbirthday Song (Reprise)
- Whooooo Are Youuuuu?
- Alice in Wonderland (Finale)

RETRIEVED FROM: <http://www.mtishows.com/disneys-alice-in-wonderland-jr-390>

LESSONS





Alice's Adventures, Comparing and Contrasting

By Karel Sloane-Boekbinder

Begin by explaining students will be making comparisons between two versions of the same story; review the definitions of comparison and

contrast:

comparison

[*kuh m-par-uh-suh n*]

noun

1. the act of comparing.
2. the state of being compared.
3. a likening; illustration by similitude; comparative estimate or statement.
4. *Rhetoric.* the considering of two things with regard to some characteristic that is common to both, as the likening of a hero to a lion in courage.

contrast

[*verb kuh n-trast, kon-trast; noun kon-trast*]

verb (used with object)

1. to compare in order to show unlikeness or differences; note the opposite natures, purposes, etc., of:

Contrast the political rights of Romans and Greeks.

verb (used without object)

2. to exhibit unlikeness on comparison with something else; form a contrast.

noun

4. the act of contrasting; the state of being contrasted.
5. a striking exhibition of unlikeness.
6. a person or thing that is strikingly unlike in comparison:

The weather down here is a welcome contrast to what we're having back home.

Follow this by distributing the **Alice's Adventures** comparison/contrast Venn diagrams to students.

Next, read the first chapter of the Lewis Carroll novel "The Adventures of Alice in Wonderland." As they read, ask students to use the Venn diagram to take notes about the book chapter. Follow this by reading the opening section of **Disney's Alice in Wonderland, Jr.** As they read, ask students to use the Venn diagram to take notes about the play.

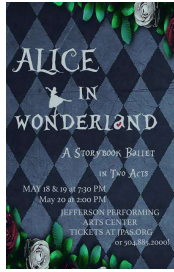
Once students have read both the book chapter and the play, ask them to complete the Venn diagram by filling in the middle. To fill in the middle of the Venn diagram, students can consider the following questions:

- *What characters are the same?

- *What settings are the same?

- *What events are the same?

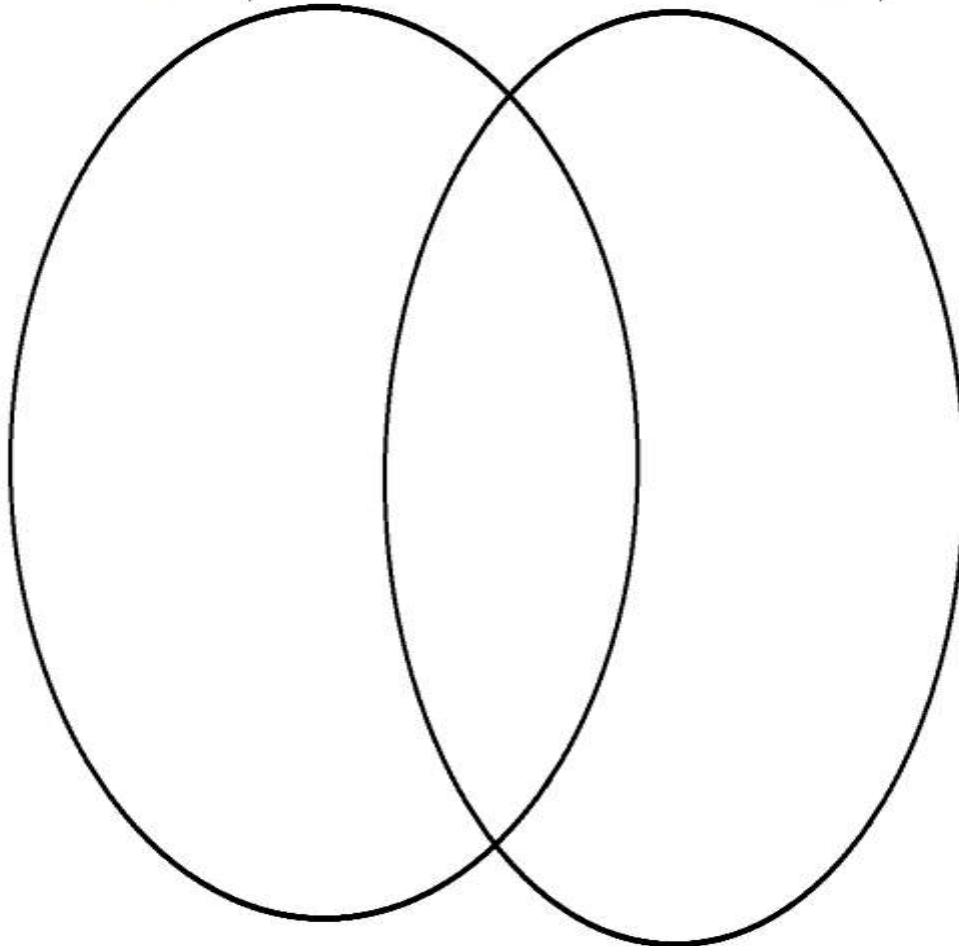
Next, ask students to examine the notes they took about the book and the script. As a class, discuss the similarities and differences of between the two works (the characters, settings and events.)



NAME _____

Alice in Wonderland, the book

Alice in Wonderland, Jr. the play



ALICE'S ADVENTURES IN WONDERLAND

Lewis Carroll

Drawings by John Tenniel

CHAPTER 1

Down the Rabbit-Hole

Alice was beginning to get very tired of sitting by her sister on the bank, and of having nothing to do: once or twice she had peeped into the book her sister was reading, but it had no pictures or conversations in it, 'and what is the use of a book,' thought Alice 'without pictures or conversation?'

So she was considering in her own mind (as well as she could, for the hot day made her feel very sleepy and stupid), whether the pleasure of making a daisy-chain would be worth the trouble of getting up and picking the daisies, when suddenly a White Rabbit with pink eyes ran close by her.



There was nothing so *very* remarkable in that; nor did Alice think it so *very* much out of the way to hear the Rabbit say to itself, 'Oh dear! Oh dear! I shall be late!' (when she thought it over afterwards, it occurred to her that she ought to have wondered at

this, but at the time it all seemed quite natural); but when the Rabbit actually *took a watch out of its waistcoat-pocket*, and looked at it, and then hurried on, Alice started to her feet, for it flashed across her mind that she had never before seen a rabbit with either a waistcoat-pocket, or a watch to take out of it, and burning with curiosity, she ran across the field after it, and fortunately was just in time to see it pop down a large rabbit-hole under the hedge.

In another moment down went Alice after it, never once considering how in the world she was to get out again.

The rabbit-hole went straight on like a tunnel for some way, and then dipped suddenly down, so suddenly that Alice had not a moment to think about stopping herself before she found herself falling down a very deep well.

Either the well was very deep, or she fell very slowly, for she had plenty of time as she went down to look about her and to wonder what was going to happen next. First, she tried to look down and make out what she was coming to, but it was too dark to see anything; then she looked at the sides of the well, and noticed that they were filled with cupboards and book-shelves; here and there she saw maps and pictures hung upon pegs. She took down a jar from one of the shelves as she passed; it was labelled 'ORANGE MARMALADE', but to her great disappointment it was empty: she did not like to drop the jar for fear of killing somebody, so managed to put it into one of the cupboards as she fell past it.

'Well!' thought Alice to herself, 'after such a fall as this, I shall think nothing of tumbling down stairs! How brave they'll all

think me at home! Why, I wouldn't say anything about it, even if I fell off the top of the house!' (Which was very likely true.)

Down, down, down. Would the fall *never* come to an end! 'I wonder how many miles I've fallen by this time?' she said aloud. 'I must be getting somewhere near the centre of the earth. Let me see: that would be four thousand miles down, I think—' (for, you see, Alice had learnt several things of this sort in her lessons in the schoolroom, and though this was not a *very* good opportunity for showing off her knowledge, as there was no one to listen to her, still it was good practice to say it over) '—yes, that's about the right distance—but then I wonder what Latitude or Longitude I've got to?' (Alice had no idea what Latitude was, or Longitude either, but thought they were nice grand words to say.)

Presently she began again. 'I wonder if I shall fall right *through* the earth! How funny it'll seem to come out among the people that walk with their heads downward! The Antipathies, I think—' (she was rather glad there *was* no one listening, this time, as it didn't sound at all the right word) '—but I shall have to ask them what the name of the country is, you know. Please, Ma'am, is this New Zealand or Australia?' (and she tried to curtsey as she spoke—fancy *curtseying* as you're falling through the air! Do you think you could manage it?) 'And what an ignorant little girl she'll think me for asking! No, it'll never do to ask: perhaps I shall see it written up somewhere.'

Down, down, down. There was nothing else to do, so Alice soon began talking again. 'Dinah'll miss me very much to-night, I should think!' (Dinah was the cat.) 'I hope they'll remember her saucer of milk at tea-time. Dinah my dear! I wish you were

down here with me! There are no mice in the air, I'm afraid, but you might catch a bat, and that's very like a mouse, you know. But do cats eat bats, I wonder?' And here Alice began to get rather sleepy, and went on saying to herself, in a dreamy sort of way, 'Do cats eat bats? Do cats eat bats?' and sometimes, 'Do bats eat cats?' for, you see, as she couldn't answer either question, it didn't much matter which way she put it. She felt that she was dozing off, and had just begun to dream that she was walking hand in hand with Dinah, and saying to her very earnestly, 'Now, Dinah, tell me the truth: did you ever eat a bat?' when suddenly, thump! thump! down she came upon a heap of sticks and dry leaves, and the fall was over.

Alice was not a bit hurt, and she jumped up on to her feet in a moment: she looked up, but it was all dark overhead; before her was another long passage, and the White Rabbit was still in sight, hurrying down it. There was not a moment to be lost: away went Alice like the wind, and was just in time to hear it say, as it turned a corner, 'Oh my ears and whiskers, how late it's getting!' She was close behind it when she turned the corner, but the Rabbit was no longer to be seen: she found herself in a long, low hall, which was lit up by a row of lamps hanging from the roof.

There were doors all round the hall, but they were all locked; and when Alice had been all the way down one side and up the other, trying every door, she walked sadly down the middle, wondering how she was ever to get out again.

Suddenly she came upon a little three-legged table, all made of solid glass; there was nothing on it except a tiny golden key, and Alice's first thought was that it might belong to one of the

doors of the hall; but, alas! either the locks were too large, or the key was too small, but at any rate it would not open any of them.

However, on the second time round, she came upon a low curtain she had not noticed before, and behind it was a little door about fifteen inches high: she tried the little golden key in the lock, and to her great delight it fitted!



Alice opened the door and found that it led into a small passage, not much larger than a rat-hole: she knelt down and looked along the passage into the loveliest garden you ever saw. How she longed to get out of that dark hall, and wander about among those beds of bright flowers and those cool fountains, but she could not even get her head through the doorway; 'and even if my head *would* go through,' thought poor Alice, 'it would be of very little use without my shoulders. Oh, how I wish I could shut up like a telescope! I think I could, if I only know how to begin.' For, you see, so many out-of-the-way things had happened lately, that Alice had begun to think that very few things indeed were really impossible.

There seemed to be no use in waiting by the little door, so she went back to the table, half hoping she might find another key on it, or at any rate a book of rules for shutting people up like telescopes: this time she found a little bottle on it, ('which certainly was not here before,' said Alice,) and round the neck of the bottle was a paper label, with the words 'DRINK ME' beautifully printed on it in large letters.

It was all very well to say 'Drink me,' but the wise little Alice was not going to do *that* in a hurry. 'No, I'll look first,' she said, 'and see whether it's marked "*poison*" or not'; for she had read several nice little histories about children who had got burnt, and eaten up by wild beasts and other unpleasant things, all because they *would* not remember the simple rules their friends had taught them: such as, that a red-hot poker will burn you if you hold it too long; and that if you cut your finger *very* deeply with a knife, it usually bleeds; and she had never forgotten that, if you drink much from a bottle marked '*poison*,' it is almost certain to disagree with you, sooner or later.

However, this bottle was *not* marked 'poison,' so Alice ventured to taste it, and finding it very nice, (it had, in fact, a sort of mixed flavour of cherry-tart, custard, pine-apple, roast turkey, toffee, and hot buttered toast,) she very soon finished it off.



'What a curious feeling!' said Alice; 'I must be shutting up like a telescope.'

And so it was indeed: she was now only ten inches high, and her face brightened up at the thought that she was now the right size for going through the little door into that lovely garden. First, however, she waited for a few minutes to see if she was going to shrink any further: she felt a little nervous about this; 'for it might end, you know,' said Alice to herself, 'in my going out altogether, like a candle. I wonder what I should be like

then?' And she tried to fancy what the flame of a candle is like after the candle is blown out, for she could not remember ever having seen such a thing.

After a while, finding that nothing more happened, she decided on going into the garden at once; but, alas for poor Alice! when she got to the door, she found she had forgotten the little golden key, and when she went back to the table for it, she found she could not possibly reach it: she could see it quite plainly through the glass, and she tried her best to climb up one of the legs of the table, but it was too slippery; and when she had tired herself out with trying, the poor little thing sat down and cried.

'Come, there's no use in crying like that!' said Alice to herself, rather sharply; 'I advise you to leave off this minute!' She generally gave herself very good advice, (though she very seldom followed it), and sometimes she scolded herself so severely as to bring tears into her eyes; and once she remembered trying to box her own ears for having cheated herself in a game of croquet she was playing against herself, for this curious child was very fond of pretending to be two people. 'But it's no use now,' thought poor Alice, 'to pretend to be two people! Why, there's hardly enough of me left to make *one* respectable person!'

Soon her eye fell on a little glass box that was lying under the table: she opened it, and found in it a very small cake, on which the words 'EAT ME' were beautifully marked in currants. 'Well, I'll eat it,' said Alice, 'and if it makes me grow larger, I can reach the key; and if it makes me grow smaller, I can creep under the

door; so either way I'll get into the garden, and I don't care which happens!'

She ate a little bit, and said anxiously to herself, 'Which way? Which way?', holding her hand on the top of her head to feel which way it was growing, and she was quite surprised to find that she remained the same size: to be sure, this generally happens when one eats cake, but Alice had got so much into the way of expecting nothing but out-of-the-way things to happen, that it seemed quite dull and stupid for life to go on in the common way.

So she set to work, and very soon finished off the cake.

RETRIEVED FROM: <http://www.cleavebooks.co.uk/grol/alice/won01.htm>

138 W. R.: ALL: (shouting him off)

Well... Late! YOU'RE LATE!!!!

(The WHITE RABBIT jumps into a rabbit hole. ALICE follows him but stops short of the hole.)

CHESHIRE CAT 1

Alice followed the White Rabbit to the edge of the Rabbit Hole.

ALICE

Should I or shouldn't I? You know what they say: "If you don't explore, you'll never discover." But my sister Mathilda always says, "Look before you leap." Well, I'm looking and it looks pretty deep and dark and I can't see the bottom and maybe it goes all the way to the center of the earth and I'll be burnt to a crisp in the molten core like the bad marshmallow we've all heard so much about!

(pause)

Or not.

(pause)

Ok, I looked. Now it's time to leap!

(ALICE jumps down the rabbit hole and falls a long way. Her dress acts as a parachute.)

CHESHIRE CAT 1

Alice jumped into the dark rabbit hole—

CHESHIRE CAT 2

And fell for what seemed like three and a half weeks.

CHESHIRE CAT 3

More like four and a quarter.

CHESHIRE CAT 2

She fell and fell and fell.

CHESHIRE CAT 1


But she wasn't alone!

(As ALICE falls through the dark, WONDERLAND CHARACTERS fall past her and offer advice.)

Easy Schottische ♩=150

15

CHORUS:



fol-low it. That ex-plains the trou-ble that you're al-ways

Trou - ble that you're al - ways in. _____

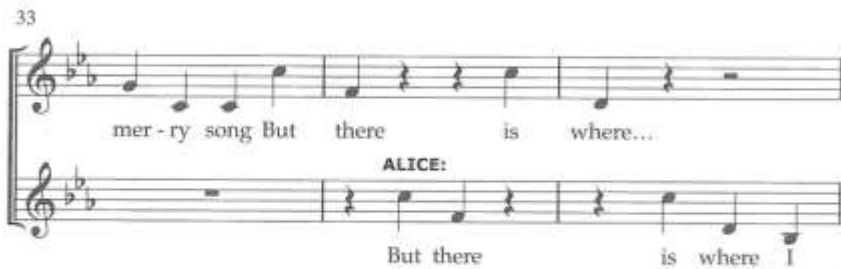
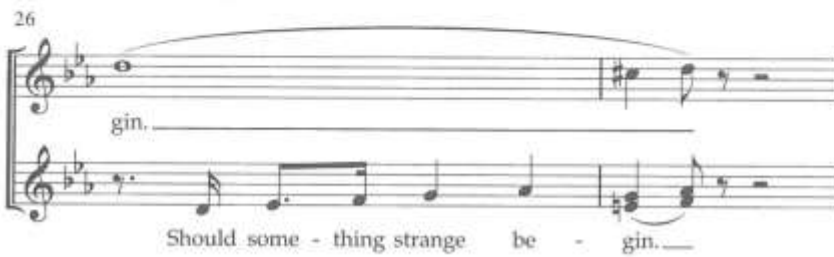
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pa - tient is ver - y good ad-vice, But the

22

wait - ing makes me cur - i - ous. But you'll

Alice in Wonderland JR. – Student Book



36

CHORUS: *rit.*

But you ver - y sel-dom
give my-self ver - y good ad-vice

39

a tempo ALL:

fol - low it Will she (I) ev - er learn to

42

do the things she (I) should?

4x

MAD HATTER

The price of your hat is not always the measure of your brain.

QUEEN OF HEARTS

Be careful what you wish for, you might just get it.

DODO BIRD

Necessity is the mother of invention.

ROSE

Beauty without virtue is a flower without perfume.

WHITE RABBIT

Tempus fugits!

CATERPILLAR

Don't worry, be happy!

46-52

ALICE: **CHORUS:**

I give my-self very good ad-vice But you

56

ver-y sel-dom fol-low it Will she ev-er learn to

ALICE:

Will I ev-er learn

60

big fall-off

do the things she should? to do the things I Ahhh!

(ALICE lands, at first daintily, but then with a big thud, on her bottom.)

CHESHIRE CAT 1

Finally...

CHESHIRE CAT 3

Alice landed...

CHESHIRE CAT 2

Right in front of a little door.

SCENE 2

ALICE

This is where the White Rabbit went. I have to get in.

(ALICE tugs on the DOORKNOB, which yelps in pain.)

DOORKNOB

Yeeooooowww! Leggo my schnazzola already!

ALICE

Oh, I'm sorry. I have to find the White Rabbit.

DOORKNOB

Who taught you to go around pulling on people's proboscises...
essess... ss.

ALICE

You're not a person, you're a piece of housing material.

DOORKNOB

Well, doorknobs have feelings too.

ALICE

I'm very sorry I pulled on your proboscis, but I have to find the
White Rabbit.

DOORKNOB

You're far too big to enter Wonderland.

ALICE

Oh no, no! But I just have to get in, I just have to!

(ALICE starts to cry.)

DOORKNOB

Don't cry, please don't cry. Maybe if you drank some of the magic
potion in that convenient, floating-nearby bottle, you might fit in.

*(CHESHIRE CAT 2 brings out a bottle with a large label that
says "DRINK ME" and floats it in front of ALICE.)*

ALICE

Remember, Alice: Look before you leap. I really don't know what's
in this bottle, but it looks so pretty. But it could be poison, or
mayonnaise, or floor polish, or a frothy combination of all three!
But I have to find the White Rabbit. Oh well, if you don't explore,
you'll never discover. Bottom's up!

*(ALICE drinks from the bottle. Instantly, she shrinks in size.
SMALL ALICE replaces ALICE.)*

CHESHIRE CAT 1

With one gulp of that drink, Alice shrank to three inches tall!

CHESHIRE CAT 2

You mean three inches short.

CHESHIRE CAT 3

It was a very tall three inches.

SMALL ALICE

Oh, look at me. I'm the right size!

DOORKNOB

I believe someone forgot about the key waaaaaay up there on that shelf.

(CHESHIRE CAT 3 stands on a chair, holding up a key.)

SMALL ALICE

Now I'm too small to reach the key! Oh no, no, no.

(ALICE starts to cry again.)

DOORKNOB

Please try to suppress your emotional outbursts. Have a cookie.

*(CHESHIRE CAT 2 reveals a big cookie jar labeled "EAT ME" to
SMALL ALICE.)*

SMALL ALICE

Well, it looks delicious. But how do I know what's in it? Don't be silly, Alice – what harm can one cookie do?

*(SMALL ALICE takes a bite and starts to grow. TALL ALICE
replaces SMALL ALICE.)*

CHESHIRE CAT 1

Alice grew so big with just one tiny bite...

CHESHIRE CAT 2

That she filled the entire room.

TALL ALICE

Now I'm too big!

DOORKNOB

Sorry kid, you'll never fit in Wonderland now. Try Pittsburgh.

TALL ALICE

But I want to see the White Rabbit.

(ALICE cries and cries and cries.)

CHESHIRE CAT 1

Alice cried and cried and cried and cried—

CHESHIRE CAT 2

And cried and cried and cried and cried—

CHESHIRE CAT 3

And cried and cried and cried and cried.

CHESHIRE CAT 1,2,3

Until the entire room was filled with an ocean of tears!

TALL ALICE

What should I do?

DOORKNOB

Hurry, take another drink from the bottle. It's our only hope!

(CHESHIRE CAT 1 runs the bottle over to TALL ALICE. She drinks it down and is replaced by SMALL ALICE, who starts swimming.)

CHESHIRE CAT 1

Alice shrank back down and swam into the ocean of tears—

CHESHIRE CAT 2

Doing the backstroke through the keyhole—

CHESHIRE CAT 3

And swam all the way to Wonderland!

(As SMALL ALICE swims, the WONDERLAND CHARACTERS swim by her. ROCK LOBSTERS row the DODO BIRD in a boat.)

Definition of COMPARISON retrieved from: <http://www.dictionary.com/browse/comparison>

Definition of CONTRAST retrieved from: <http://www.dictionary.com/browse/contrast?s=t>

English Language Arts/Literacy Standards:

Grade 1

Key Ideas and Details

RL.1.1: Ask and answer questions about key details in a text.

RL.1.2: Retell stories, including key details, and demonstrate understanding of their central message or lesson.

RL.1.3: Describe characters, settings, and major events in a story, using key details.

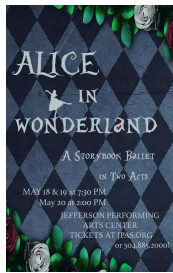
Craft and Structure

RL.1.6: Identify who is telling the story at various points in a text.

Integration of Knowledge and Ideas

RL.1.7: Use illustrations and details in a story to describe its characters, setting, or events.

RL.1.9: Compare and contrast the adventures and experiences of characters in stories.



Art, Math and Set Design: Alice in Minecraft Land

By Karel Sloane-Boekbinder

Images of Student Work by Aaron (grade 4) and Theo (grade 1)

Set designers use many things as their inspiration to design and construct sets. This inspiration also requires research. Inspiration for set designs can come from research of particular time periods, vintage photographs, paintings, genres of visual art and the works of particular visual artists. The inspiration for this lesson comes from three sources: original illustrations by John Tenniel, the animation illustrations from Disney's "Alice In Wonderland" (1951) and illustration concepts from the videogame **Minecraft**.

In this lesson, we will explore art and math. To do this, we will learn about John Tenniel, the original animators of Disney's Studios (otherwise known as The Nine Old Men) and by bringing Alice into the imaginative world of Minecraft. Students will have the opportunity to develop their own Minecraft illustrations inspired by the work of John Tenniel and Disney Studios as well as learn about area, perimeter and ratios.

To develop and build the sets for the JPAS production of "Alice in Wonderland, Jr.," **Assistant Technical Director** Kristin Blatchford researched the visual art of John Tenniel and the art of Disney Studios. John Tenniel created work for several of Lewis Carroll/Charles Dodgson's literary works, including "Alice's Adventures in Wonderland" and "Through the Looking Glass."

Begin by sharing information about Sir John Tenniel and his illustrations. Place each information page on an ELMO or a SMART board where it can be visible to the whole class. As a class, read and discuss the information.

Sir John Tenniel

English artist

Sir John Tenniel English artist



Born

February 28, 1820

[London, England](#)

Died

February 25, 1914

[London, England](#)

Sir John Tenniel, (born February 28, 1820, [London, England](#)—died February 25, 1914, London), English illustrator and satirical artist, especially known for his work in [Punch](#) and his illustrations for *Alice's Adventures in Wonderland* (1865) and *Through the Looking-Glass* (1872).



Tenniel attended the Royal Academy schools and in 1836 sent his first picture to the exhibition of the Society of British Artists. In 1845 he contributed a 16-foot [cartoon](#) to the competition of designs for mural decoration of the new Palace of Westminster and received £100 and a commission for a fresco in the Upper Waiting Hall (or “Hall of Poets”) in the [House of Lords](#). In 1850 he was invited to succeed [Richard Doyle](#) as joint cartoonist with [John Leech](#) for *Punch*, a periodical Tenniel worked on for most of his life. Gradually he took over altogether the weekly [drawing](#) of the political “big cut.” In his drawings for *Punch* Tenniel lent new dignity to the [political cartoon](#). His most famous [cartoon](#) was probably “Dropping the Pilot” (1890), on the subject of Bismarck’s resignation. Tenniel was knighted in 1893 and retired from *Punch* in 1901. He illustrated many books; his drawings for *Alice’s Adventures in Wonderland* and *Through the Looking-Glass* are remarkably subtle and clever and are extremely well-suited to Lewis Carroll’s text. These illustrations won him an international reputation and a continuing audience.

RETRIEVED FROM: <http://www.britannica.com/biography/John-Tenniel>

About John Tenniel and the illustrations

John Tenniel as illustrator



Sir John Tenniel (1820 – 1914), an English illustrator and political cartoonist for the magazine ‘Punch’, made the illustrations for both Alice in Wonderland books.

For many aspects of the illustrations, he got precise instructions from author [Charles Dodgson](#). Therefore, we can be fairly sure that the pictures give an accurate representation of how Dodgson imagined the characters and the events.

It is said that Dodgson had driven Tenniel almost crazy by providing him with so much details and instructions, and therefore he almost turned down the request when he was asked to illustrate the sequel. However, whether this really is true, is debatable. Surviving letters seem to suggest Dodgson was quite willing to accept the artist’s

ideas, and in the illustrations the typical style of Tenniel is recognizable. He may even have added [his own subtle references](#) in the illustrations.

The influence Tenniel had on Dodgson is illustrated by the fact that Dodgson recalled the first edition of his book, only because Tenniel expressed dissatisfaction about the quality of the printing of the pictures. Also, Dodgson [dropped an entire chapter from his book](#) on Tenniel’s suggestion.

It did, however, indeed take long for Tenniel to accept the job of illustrating ‘Through the Looking Glass and what Alice found there’, probably because he had a very busy schedule. Dodgson therefore was forced to consider other illustrators. Fortunately, none of these plans came through and finally, after two and a half years of persuading, Tenniel did agree to illustrate the second book as well, being it only ‘in the time he could find’.

Creating the illustrations

According to Rodney Engen, Tenniel’s biographer, his method for creating the illustrations of the Alice books was the same as the method he used for *Punch*, namely preliminary pencil drawings, further drawings in ‘ink and Chinese white’ to simulate the wood engraver’s line, then transference to the wood-block by the use of tracing paper. Then the drawings were engraved to the highest standards, in this instance by the Dalziel Brothers.

Carroll appears to have ordered many (expensive!) changes to them. The final stage in the reproduction process was to make electrotypes from the wood-engravings, using them as masters. The electrotypes were used for the actual printing.

Because of the difficult process of creating wood-blocks involved, sometimes concessions had to be made as to the overall design of the illustration. For example, a character might be moved into a different position – which probably happened with the ape in the illustration of the Dodo with the thimble.

And, once wood had been removed, it could not be put back without a great deal of difficulty. A small number of Alice wood-blocks have had alterations or repairs made to them, that are in some cases detectable from the proofs which have been taken directly from the blocks. For example, the wood-block of the Hatter at the trial scene, the section showing the Hatter's cup with a piece bitten out, had to be repaired and re-engraved.

(Source: *Edward Wakeling's paper on John Tenniel*)

In 1981, the original wood-blocks were discovered in a bank vault where they had been deposited by the publisher. They are now at the British Library.

(source: *Jo Elwyn Jones and J. Francis Gladstone, The Alice Companion, 1998, p.252*)

RETRIEVED FROM: <http://www.alice-in-wonderland.net/resources/background/tenniel-and-his-illustrations/>

Illustration

My hero

My hero: Sir John Tenniel by Chris Riddell

John Tenniel's white rabbit – the shading, the intricate lines of cross-hatching, the folds of the sleeve – was one of the reasons I became an illustrator



Detail of John Tenniel's White rabbit. Click to enlarge. Photograph: Mary Evans Picture Library

Chris Riddell

Saturday 11 January 2014 03.30 EST Last modified on Tuesday 26 January 2016 12.10 EST

Before I knew a thing about him, John Tenniel was a hero of mine, or rather, I should say, his [white rabbit](#) was. As a child I copied Tenniel's illustrations from *Alice's Adventures in Wonderland* obsessively, particularly his drawing of the white rabbit in waistcoat and frockcoat, umbrella tucked under one arm and a fob watch in paw, a look of suppressed panic in his eye. I loved analysing the shading, intricate lines of cross-hatching, the folds of the sleeve, the tilt of the head, that wide-eyed rabbit stare. Tenniel was one of the reasons I became an illustrator.

Later, I began to notice old Punch cartoons with that familiar cross-hatch style, and a particular look to the figures. The British lion, Britannia, a forlorn Bismarck getting off a ship – they could all have stepped out of the pages of Wonderland. Then I saw in the corner an elegant monogram: "JT".

Born in 1820, Tenniel began his career as a painter – one of his murals, [*Saint Cecilia*](#), adorns the House of Lords. But in 1850 he joined Punch as the magazine's principal political cartoonist, a post he held for 50 years. It was this work that caught Charles Dodgson's eye and led him to approach Tenniel to illustrate his book *Alice's Adventures Under Ground*. Published subsequently by Macmillan as [*Alice's Adventures in Wonderland*](#) with 34 exquisitely engraved line drawings, the book became a classic that eventually eclipsed Tenniel's work as a cartoonist.

- [*Goth Girl and the Ghost of a Mouse*](#) by Chris Riddell (Macmillan Children's Books) won the Costa children's book award on 6 January.

RETRIEVED FROM: <http://www.theguardian.com/books/2014/jan/11/my-hero-john-tenniel-chris-riddell>

Next, share information about Disney's "Nine Old Men." The members were Ward Kimball, Frank Thomas, Ollie Johnston, Milt Kahl, Marc Davis, Eric Larson, Wolfgang Reitherman, John Lounsbery and Les Clark. Place each information page on an ELMO or a SMART board where it can be visible to the whole class. As a class, read and discuss the information.

Follow this by sharing information about Minecraft. Many students may already be familiar with this popular gaming platform and this may become a very lively discussion. Place each Minecraft information page on an ELMO or a SMART board where it can be visible to the whole class. As a class, read and discuss the information.

Once all the information and imagery of the illustrators and Minecraft has been reviewed, review the math information about perimeter, area and ratio. Place each information page on an ELMO or a SMART board where it can be visible to the whole class. As a class, read and discuss the information.

Flashback Friday: Disney's Nine Old Men

By Official Disney Store Blogger, Apr 06, 2012 2:50 PM

If there is a defining achievement of The Walt Disney Company that stands out, it would have to be the classic animated films that have endured in the hearts of people for decades. The iconic characters that have come to life from these tales of triumph and imagination appear across the globe in theme parks, homes, stores, books, and so much more. We all know Walt Disney was the master mind behind the whole operation, but who else was there to help see Walt's dreams made into a reality?

Introducing **Disney's Nine Old Men**, the core Disney animators at The Walt Disney Company who worked alongside Walt to create some of the most famous animated features still revered today, from *Cinderella* to *Dumbo*.

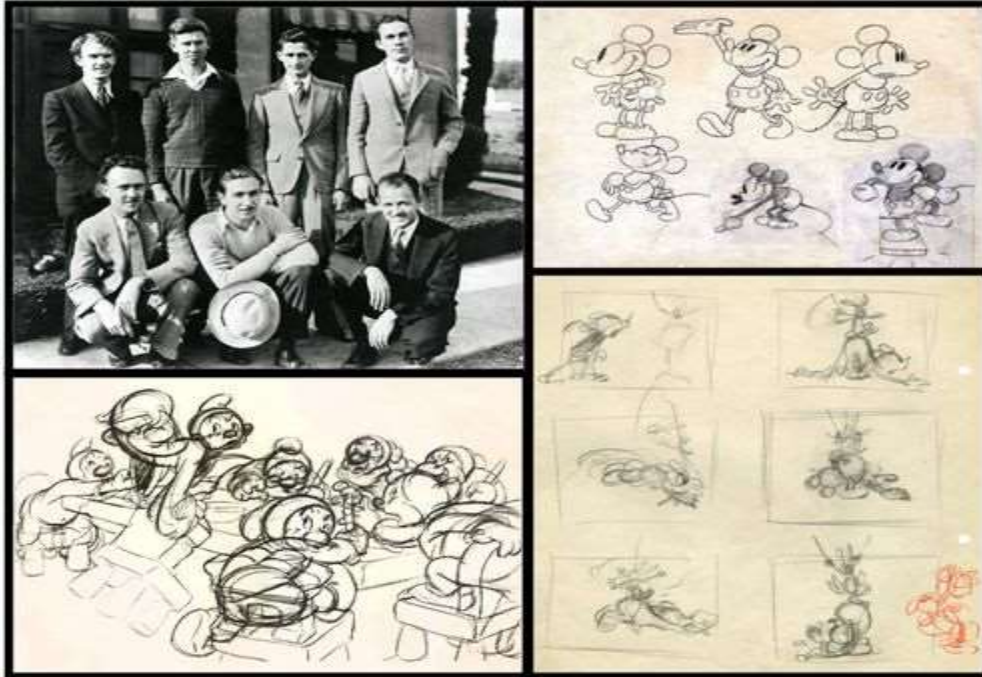


But where did the title "Nine Old Men" originate from?

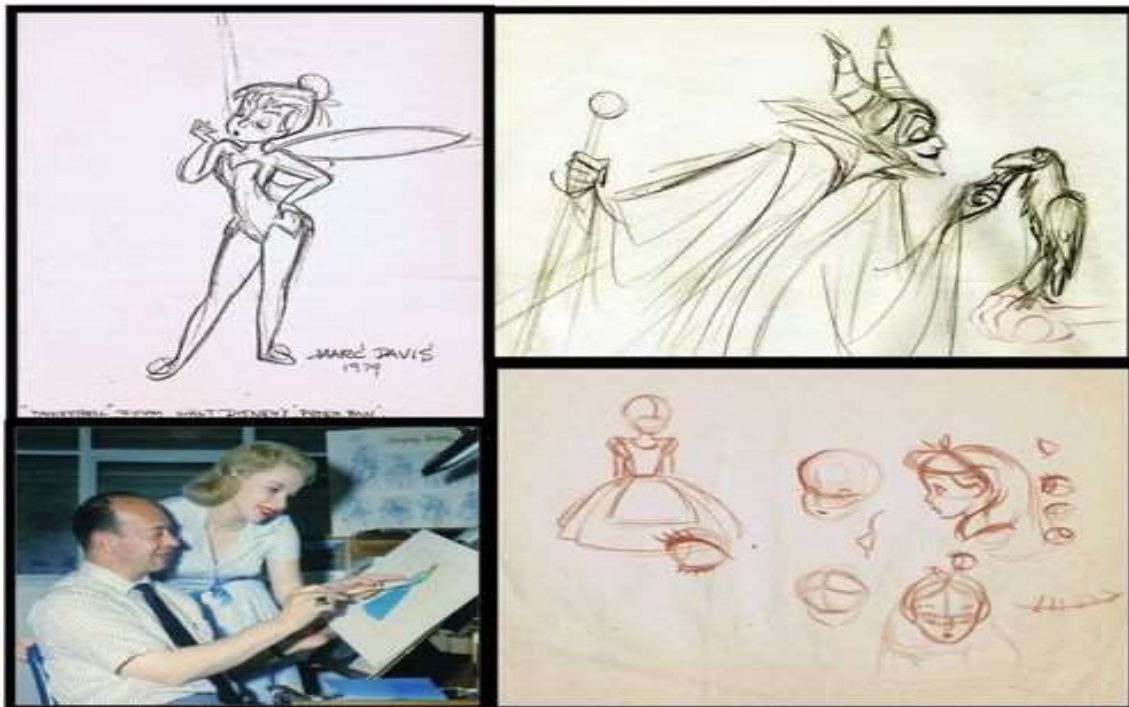
Why, from Mr. Disney himself, of course! Walt jokingly addressed this group of animators as such as a reference to Robert S. Allen and Drew Pearson's 1937 book about the nine justices of the Supreme Court of the United States, entitled "The Nine Old Men." It is also said that President Franklin D. Roosevelt used the same nickname for the nine justices, from which Walt picked it up for his right-hand men.

Scroll down to see a picture of each of the Nine Old Men and their associated Disney animation work.

Les Clark – the first of the group to join Disney (1927), Les became the second animator to draw Mickey Mouse, the first being the original animator, Ub Iwerks. Mickey Mouse was his specialty! He also worked on *Snow White and the Seven Dwarfs*, *Pinocchio*, *Dumbo*, and *Cinderella* among numerous others.



Marc Davis – beginning his career at Disney in 1935 with *Snow White and the Seven Dwarfs*, Marc would contribute heavily to not only animation, but to Disney Imagineering. You can see Marc's work when you ride Disneyland's Pirates of the Caribbean and Haunted Mansion. Other animation feats include Flower from *Bambi* and Tinker Bell from *Peter Pan*.



Ollie Johnston – along with his lifelong friend, Frank Thomas, Ollie joined the Disney team in 1935. The duo was commonly referred to as “Frank and Ollie” as they were inseparable as colleagues and friends. After retiring from Disney in 1978, the two would continue on to co-author a numbers of books on the art of animation. Notable characters he animated include Pinocchio from *Pinocchio*, Mr. Smee from *Peter Pan*, and the Evil Stepsisters from *Cinderella*.



Milt Kahl – just call him the Disney villain expert! Milt created some of Disney’s most memorable villains, including Sher Khan in *The Jungle Book* and Madame Medusa from *The Rescuers*. But he also helped create some of Disney’s most loveable characters as well, including both Lady and Tramp from *Lady and the Tramp* and the bouncy Tigger.



Ward Kimball – after joining Disney in 1934, Ward would find his niche specializing in wacky and exaggerated characters, such as the incredibly mysterious and mischievous Cheshire Cat, the crazy Mad Hatter, and ever-confusing Tweedledee and Tweedledum in *Alice in Wonderland*.



Eric Larson – known for creating some of Disney's favorite furry friends like Peg in *Lady and the Tramp*, Eric's influence can be seen in a later generation of Disney classic films as he was responsible for recruiting and training many of the talented young animators who joined the Studio in the 70s and 80s. Eric also worked Pongo and Perdita from *101 Dalmatians*.



John Lounsbery – becoming a part of the Disney crew in 1935, John was known for his loose, organic, and dynamic style of animation that beautifully brought to life the ballet-dancing alligator and hippo in *Fantasia* and the elephants of *The Jungle Book*.



Wolfgang Reitherman – lovingly known as “Woolie,” Wolfgang directed all the animated Disney films from Walt’s death in 1966 until his retirement in 1981, an incredible undertaking. Woolie directed such films as *Sleeping Beauty*, *101 Dalmatians*, and *The Jungle Book*.



Frank Thomas – the other half to the “Frank and Ollie” duo, Frank animated some of Disney’s most iconic villains, including Lady Tremaine and Captain Hook. As a result, one of the many books he would co-author with Ollie was entitled, “Disney Villains.” Frank animated such famous scenes as Lady and the Tramp eating spaghetti and Pinocchio singing at the marionette theatre.



Truly a group of Disney legends! These Nine Old Men are said to have created the modern art of animation, all with a great level of humility and adherence to Walt’s vision to create beautiful, magical, and timeless animation for people everywhere. Thank you for bringing such wonder and imagination to the world, gentlemen!

Check back at *The Buzz* for answers to the trivia questions later today! Have a magical weekend!

Liz

RETRIEVED FROM: <http://blog.disneystore.com/blog/2012/04/flashback-friday-disneys-nine-old-men.html>

WHAT IS MINECRAFT ALL ABOUT?

By Bec Oakley



WHAT IS MINECRAFT?

Minecraft is a game where you dig (mine) and build (craft) different kinds of 3D blocks within a large world of varying terrains and habitats to explore.

In this world the sun rises and sets as you go about your work, gathering materials and making tools. There is rain and the occasional lightning storm, and animals that you can tame, farm or use for food. Depending on which mode you're playing in, you might also need to fight for your survival against hunger, danger and bad guys.



Despite the similarity of a world made of simple low-res blocks, the game really isn't like playing with online Lego... it's like building something out of Lego after you made and moulded the plastic and dyed it with plants that you grew yourself, and then going on an adventure inside it through forests and deserts while monsters are chasing you.

If you're having a hard time understanding what the game's all about, it might help to think of it less as a game and more as a toy. There aren't a lot of preset goals or steps to take - what kids do with it is really only limited by their imaginations. But here's the basic idea of what it's like to play Minecraft....

When you start a game in survival mode, you're standing in a random spot surrounded by trees, grass, snow, mountains or water. The sun will be in the sky and you might hear the gentle sounds of animals nearby.

Your first job is to find and punch down a tree to collect wood, which you can turn into planks to make a crafting table. This allows you to convert your leftover wood into a pickaxe, so you can start digging down into the ground to collect coal and cobblestone. Once you have those you can make some torches and better tools and weapons, which will be very important in protecting you from the creatures that come out in the night... speaking of which, you need to hurry and make some kind of shelter before that sun starts to set. That's day one in your Minecraft world, which is about 10-20 minutes in real time.

The next few days you'll be busy building a more substantial house to protect you from the monsters, putting together a furnace for smelting, finding sheep so you can make a bed, crafting tools and weapons, making chests to keep all your stuff in and securing some kind of food source so you don't die.

After that, now that you're getting good at keeping yourself alive you might spend some time exploring caves and mining for valuable ores. Or maybe you love fighting monsters and start building elaborate weapons and traps. You might even go off on an adventure to find villages and temples and abandoned mine shafts, or decide to build a city or start a farm. The opportunities and decisions start to become endless, limited only by your skills and imagination.



HOW DO YOU PLAY?

Minecraft is what's called a sandbox game, where the player creates the game themselves by manipulating the world within it (like kids playing in the sand). There are no specific steps or goals, so everyone playing the game is having a different experience.

Each time a new game is started it creates a new Minecraft world. You can have many of these worlds if you want, so that each time you play you can choose a different one to roam around in. The worlds are vast and filled with different types of terrain (biomes) and creatures (mobs), as well as things to explore like caves and ravines.

Players can also customize the way they experience each world using a bunch of different options. They can play by themselves (single player) or with others (multiplayer). There are two game modes to choose from - creative (where players have an unlimited number of blocks and items to build with and can't die) or survival (players must find and build all of the things they need to avoid death by hunger, injury or attack from hostile creatures). There are also different levels of difficulty, each with its own unique features and challenges.

NUMBER OF PLAYERS	
SINGLEPLAYER Playing the game by yourself, in a Minecraft world that just lives on your computer or console	MULTIPLAYER Playing the game with others on a server - a computer running a Minecraft world that many people can access at once
GAME MODE	
CREATIVE You have an unlimited supply of things you need, you can't die, you don't get hungry... and you can fly	SURVIVAL You need to mine or craft all of the things that you need to stay alive
GAME DIFFICULTY	
PEACEFUL There are no bad guys (hostile mobs), you don't get hungry and it's more difficult to die	EASY / NORMAL / HARD There are bad guys - they're harder to kill and can inflict progressively more damage with each step up in level

Each time the game is played there might be a different number of players or combination of mode and difficulty. There are also unofficial modifications that can be made to the game:

- Mods - Bits of code that change the way the standard Minecraft game looks or acts (e.g. adding new animals or giving a player more powers).
- Resource packs - Groups of image and sound files that change the way the game looks and feels (e.g. making all the grass purple).

Minecraft is unlike other video games because 'playing the game' can mean something different to each player. The basic movement and actions through the game are the same for everyone however, depending on which platform the game is played (computer, iPad, iPhone, Xbox or Playstation). Players walk around, jump, dig and punch things with their hand as they go about their day building, mining or farming for resources and food, and crafting these into other useful things like tools and weapons... so they can do some more building, mining or farming.

And that's pretty much it. Simple, right?

RETRIEVED FROM: <http://minemum.com/what-is-minecraft>

Next distribute **Alice in Minecraft Land** Chessboard graph paper, the “Chessboard” ratio calculation sheet and markers or colored pencils. Explain students will be developing their own Minecraft illustration of a famous scene in the Disney movie (NOTE: this scene is absent from the Disney, Jr. play.) They will also be calculating ratios based upon what they draw. Display Sir John Tenniel’s illustration of a chessboard on an ELMO or a SMART board where it can be visible to the whole class. As a class, discuss the illustration. Ask students to consider the main elements of the illustration (a tree with lots of branches; the squares of the chessboard.)

Display each JPAS student sample of a chessboard on an ELMO or a SMART board where it can be visible to the whole class. One sample was made by a student in 1st grade; the other, a student in 4th grade. As a class, discuss the illustrations one at a time. Ask students to consider the main elements of each illustration (a tree with lots of branches; the squares of the chessboard.) Also discuss the perimeter, area and ratios (use the “Chessboard” ratio sheet as a guide.)

Display Sir John Tenniel’s illustration of a chessboard again where it can be visible to the whole class. Using Sir John Tenniel’s illustration of a chess board and the student samples as inspiration, ask students to create their own Minecraft chess boards.

Ask students to use the following steps: Step 1: Plot coordinates on your graph paper; Step 2: Use the coordinates and sketch outlines for your setting (rectangles and squares;) Step 3: record perimeters for each and Step 4: Calculate and record the area for each part of the setting you have drawn. Once they have calculated perimeter and area, ask them to calculate ratios and record them on their “Chessboard” ratio sheets.

Next distribute **Alice in Minecraft Land** rabbit hole graph paper, the “Rabbit hole” ratio calculation sheet markers or colored pencils. Explain students will be developing their own Minecraft illustration of a famous scene in the Disney movie. Display the illustration created by Disney’s Nine Old Men of the rabbit hole that leads to Wonderland on an ELMO or a SMART board where it can be visible to the whole class. As a class, discuss the illustration. Ask students to consider the main elements of the illustration (a tree with roots and branches; flowers; a dirt hill with a hole.)

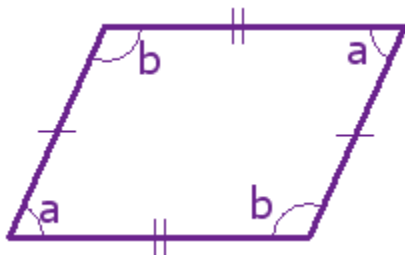
Display each JPAS student sample of the rabbit hole on an ELMO or a SMART board where it can be visible to the whole class. One sample was made by a student in 1st grade; the other, a student in 4th grade. As a class, discuss the illustrations one at a time. Ask students to consider the main elements of each illustration (a tree with roots and branches; flowers; a dirt hill with a hole.)

Display the Disney illustration of a rabbit hole again where it can be visible to the whole class. Using Disney's illustration of a rabbit hole and the student samples as inspiration, ask students to create their own Minecraft rabbit holes.

Ask students to use the following steps: Step 1: Plot coordinates on your graph paper; Step 2: Use the coordinates and sketch outlines for your setting (rectangles and squares;) Step 3: record perimeters for each and Step 4: Calculate and record the area for each part of the setting you have drawn. Once they have calculated perimeter and area, ask them to calculate ratios and record them on their "Rabbit hole" ratio sheets.

Visual artists, architects and set designers all use basic shapes, such as squares and rectangles, to help them develop designs. These basic shapes can be used to help architects and set designers consider the perimeter and area of objects as they convert the 2-dimensional objects into 3-dimensional structures. Here are some examples of how to discover the area of basic shapes.

A **Parallelogram** is a 4-sided flat shape with straight sides where **opposite sides are parallel**.

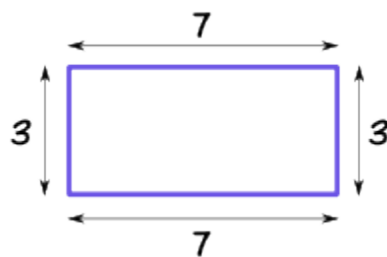


Also:

- opposite sides are equal in length, and
- opposite angles are equal (angles "a" are the same, and angles "b" are the same)

NOTE: Squares, Rectangles and Rhombuses are all Parallelograms!

Perimeter is the distance around a two-dimensional shape.

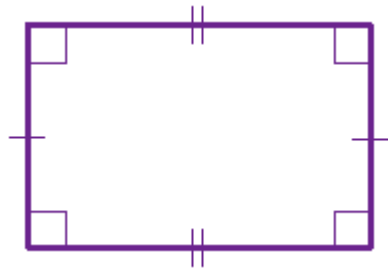


Example: the perimeter of this rectangle is $3+7+3+7 = 20$

The perimeter of a circle is called the circumference.

Area is the size of a surface.

A rectangle is a four-sided flat shape where every angle is a [right angle](#) (90°).



□ means "right angle"
| and || show equal sides



Each internal angle is 90°

Opposite sides are [parallel](#) and of equal length (so it is a [Parallelogram](#)).

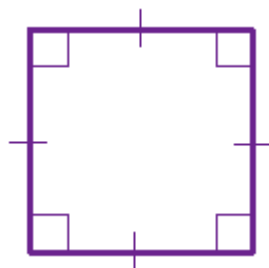


$\text{Area} = w \times h$

w = width

h = height

A Square is a flat shape with 4 equal sides and every angle is a right angle (90°)



□ means "right angle"
| show equal sides



All sides are equal in length



Each internal angle is 90°

$$\text{Area} = a^2$$

a = length of side



Opposite sides are parallel (so it is a Parallelogram).



Ratios

A ratio **compares values**.

A ratio says how much of one thing there is compared to another thing.

3 : 1



There are 3 blue squares to 1 yellow square

Ratios can be shown in different ways:

Using the ":" to separate the values: **3 : 1**

Instead of the ":" we can use the word "to": **3 to 1**

Or write it like a fraction:
$$\frac{3}{1}$$

A ratio can be scaled up:

3 : 1



Here the ratio is also 3 blue squares to 1 yellow square, even though there are more squares.

Using Ratios

The trick with ratios is to always multiply or divide the numbers **by the same value**.

Example:

4 : 5 is the same as $4 \times 2 : 5 \times 2 = 8 : 10$

4 : 5
x2 x2
8 : 10

Recipes

Example: A Recipe for pancakes uses 3 cups of flour and 2 cups of milk.

So the ratio of flour to milk is **3 : 2**

To make pancakes for a LOT of people we might need 4 times the quantity, so we multiply the numbers by 4:

$3 \times 4 : 2 \times 4 = 12 : 8$

In other words, 12 cups of flour and 8 cups of milk.

The ratio is still the same, so the pancakes should be just as yummy.

"Part-to-Part" and "Part-to-Whole" Ratios

The examples so far have been "part-to-part" (comparing one part to another part).

But a ratio can also show a part compared to the **whole lot**.

Example: There are 5 pups, 2 are boys, and 3 are girls

Part-to-Part:

The ratio of boys to girls is $2:3$ or $\frac{2}{3}$



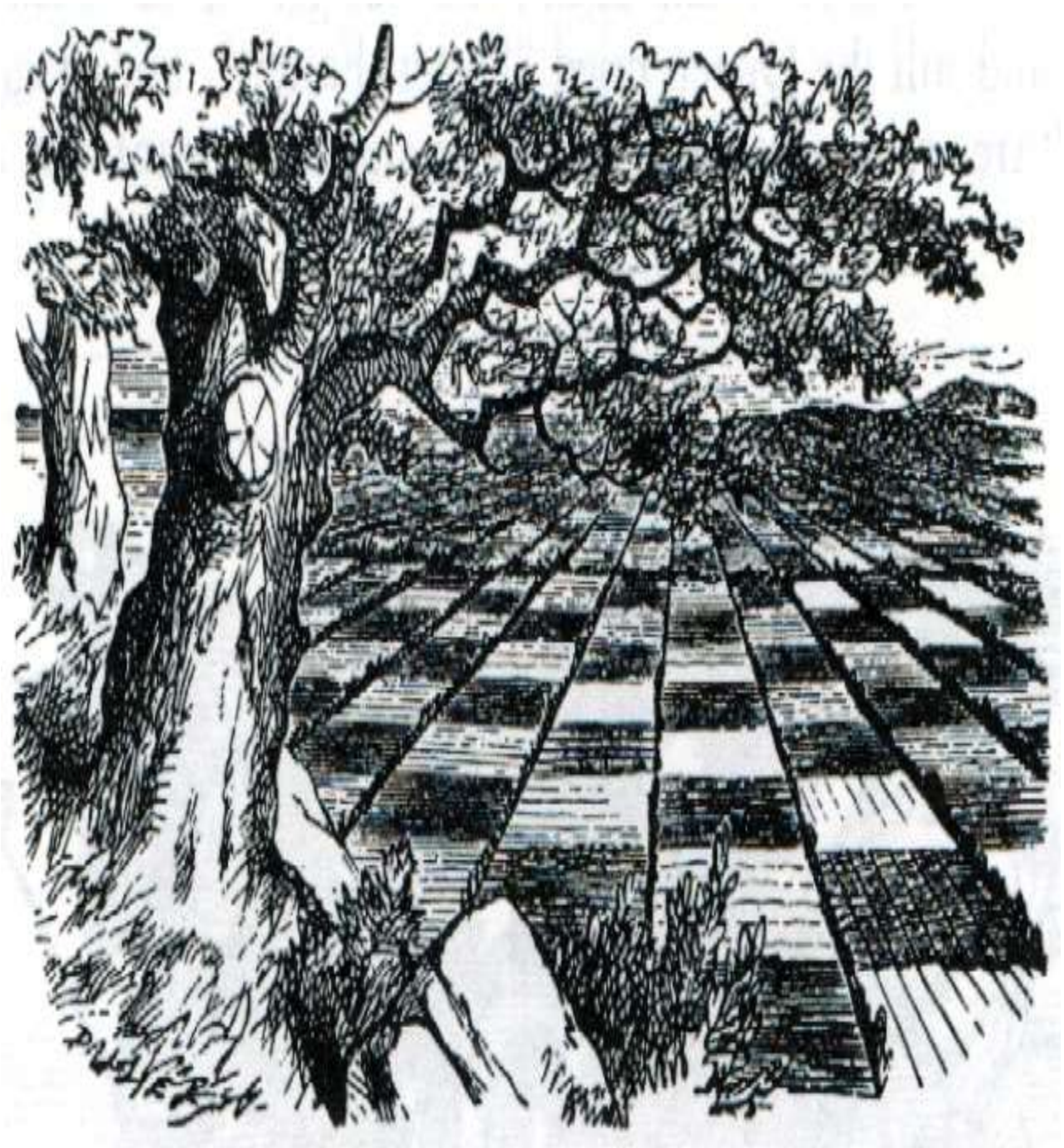
The ratio of girls to boys is $3:2$ or $\frac{3}{2}$

Part-to-Whole:

The ratio of boys to **all** pups is $2:5$ or $\frac{2}{5}$

The ratio of girls to **all** pups is $3:5$ or $\frac{3}{5}$

Sir John Tenniel, Chessboard Illustration:



RETRIEVED FROM: <http://www.victorianweb.org/art/illustration/tenniel/lookingglass/2.3.html>

Disney's "Nine Old Men", Rabbit Hole Illustration:

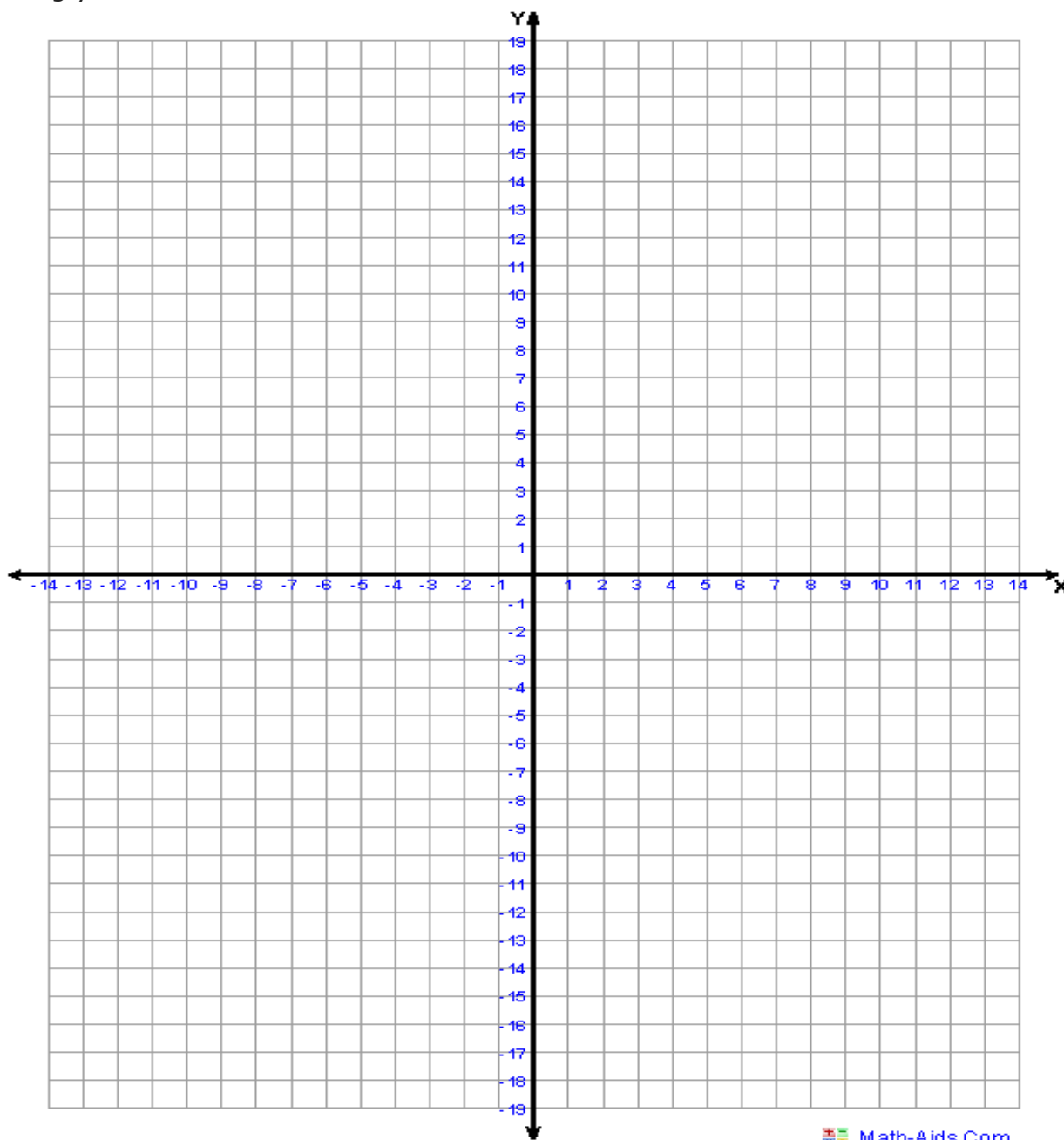


IMAGE RETRIEVED FROM: <http://www.cornel1801.com/disney/Alice-Wonderland-1951/movie-film.html>



NAME _____

Using the graph paper, begin to develop your own Alice in Wonderland chess board (inspired by the illustration of John Tenniel.) Use the student samples to inspire you. Step 1: Plot coordinates on your graph paper; Step 2: Use the coordinates and sketch outlines for your setting (rectangles and squares;) Step 3: record perimeters for each and Step 4: Calculate and record the area for each part of the setting you have drawn.





NAME _____

Using your Minecraft chess board, calculate the ratio for:

- 1) Tree top to tree trunk
 - a) Number of blocks for tree top
 - b) Number of blocks for tree trunk

The ratio of tree top to tree trunk is _____ : _____

- 2) Tree trunk to tree limb
 - a) Number of blocks for tree trunk
 - b) Number of blocks for tree limb

The ratio of tree trunk to tree limb is _____ : _____



NAME _____

Using your Minecraft rabbit hole, calculate the ratio for:

3) Tree top to tree trunk

a) Number of blocks for tree top (leaves)

b) Number of blocks for tree trunk

The ratio of tree top to tree trunk is _____ : _____

4) Flower stem to flower petals (outside of flower)

c) Number of blocks for flower stem

d) Number of blocks for flower petals (outside of flower)

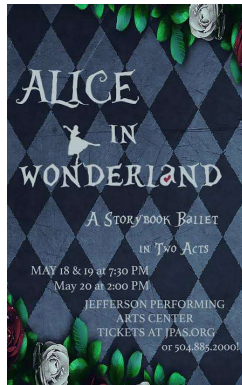
The ratio of flower top to flower stem is _____ : _____

5) Flower outside (petals) to flower inside (center)

a) Number of blocks for flower outside (petals)

b) Number of blocks for flower inside (center)

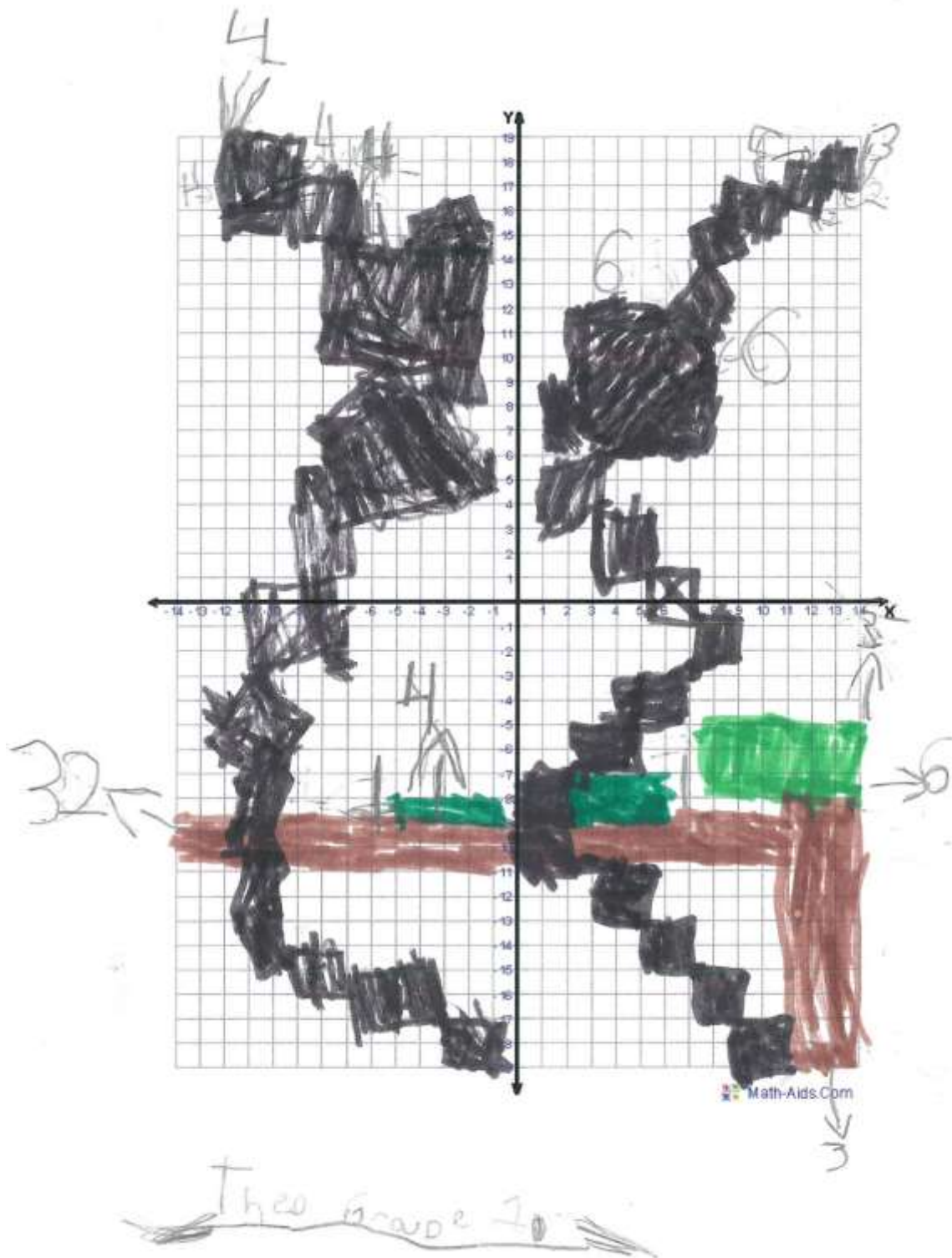
The ratio of flower petals to flower center is _____ : _____



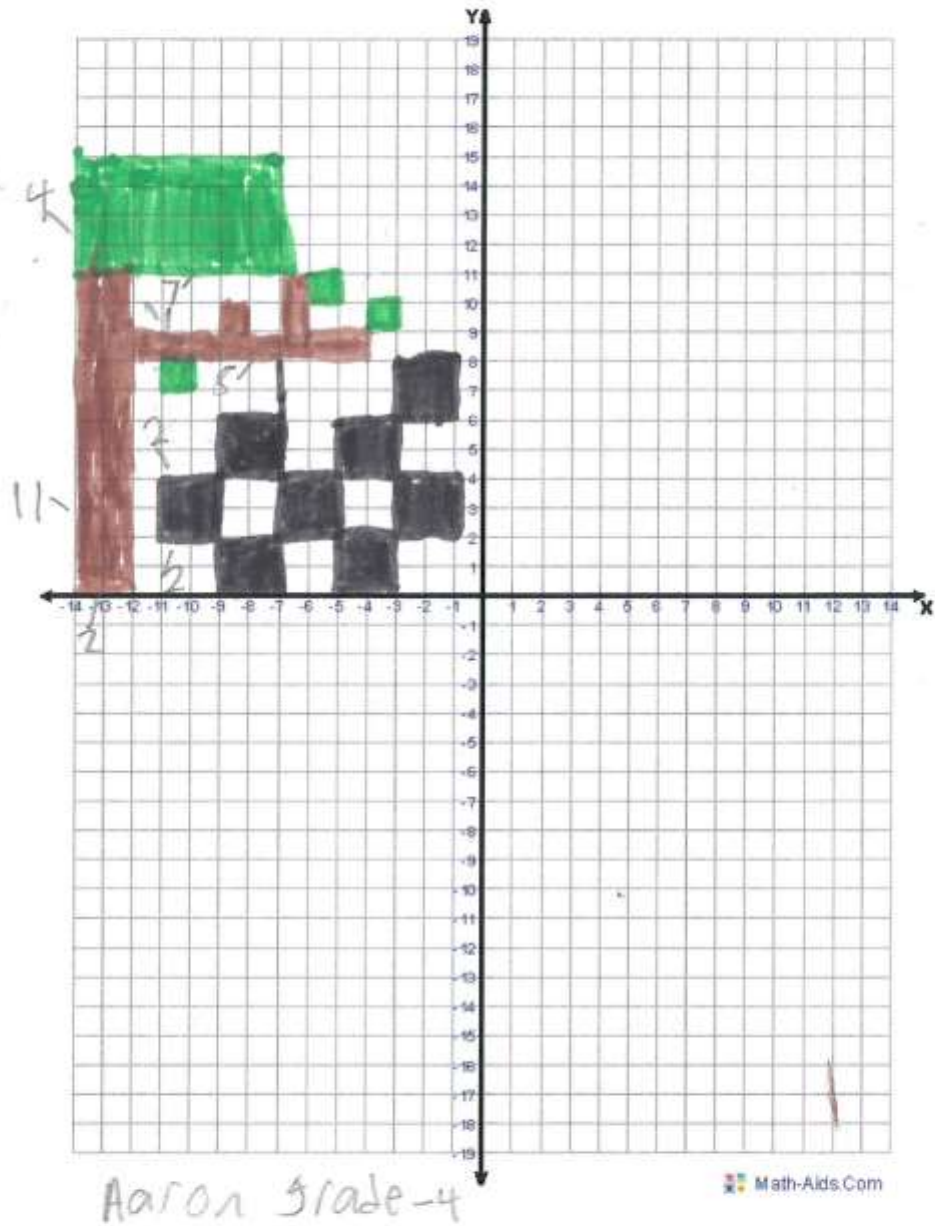
Art, Math and Set Design: Alice in Minecraft Land

Student Sample Sheets

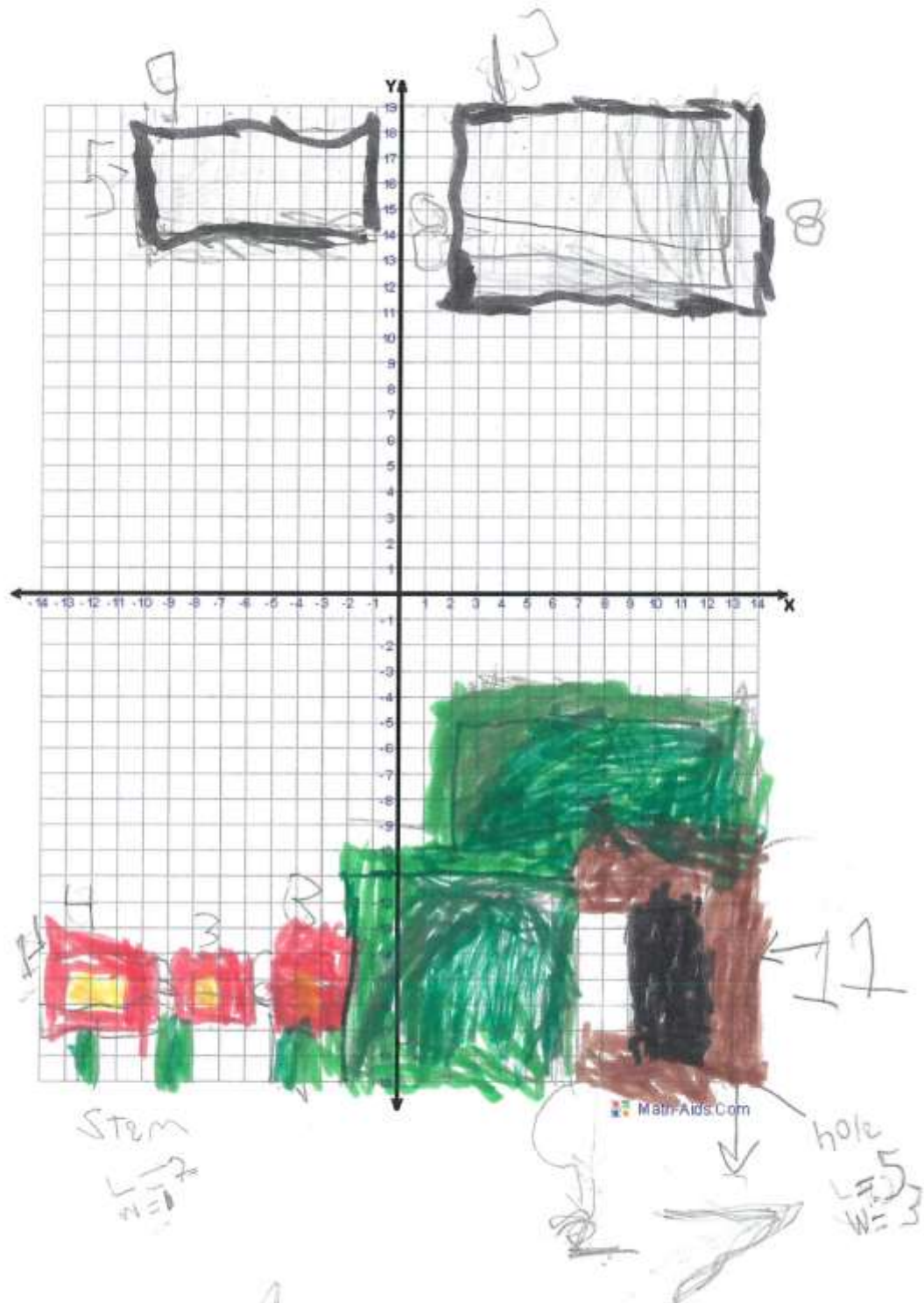
Student Sample: Tenniel Chessboard, Grade 1



Student Sample: Tenniel Chessboard, Grade 4

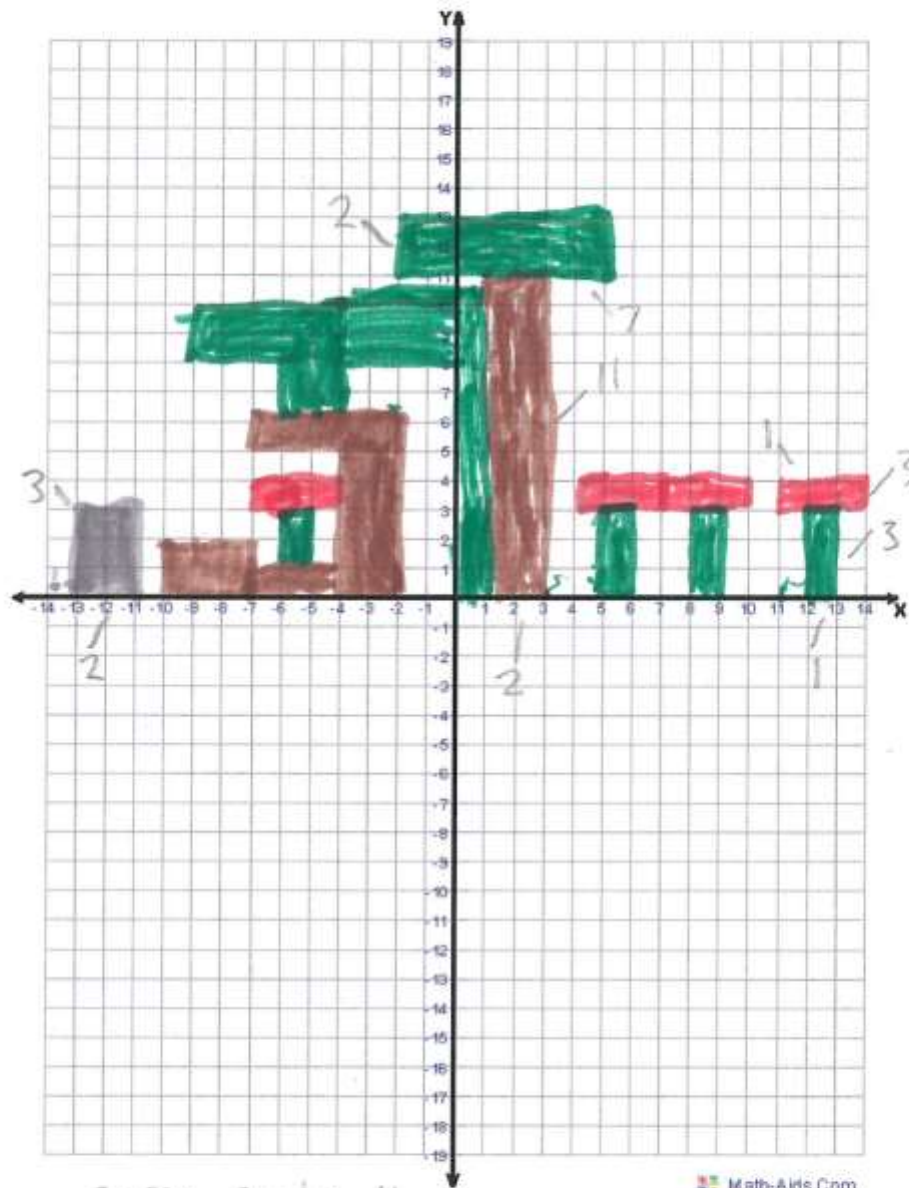


Student Sample: Disney Rabbit Hole, Grade 1



Theo Grade 1.

Student Sample: Disney Rabbit Hole, Grade 4



Paron grade-4

Math-Aids.Com

Definition of **parallelogram** RETRIEVED FROM:

<https://www.mathsisfun.com/definitions/parallelogram.html>

Definition of **perimeter** RETRIEVED FROM: <https://www.mathsisfun.com/definitions/perimeter.html>

Definition of **area** RETRIEVED FROM: <http://www.mathsisfun.com/area.html>

Definition of **ratio** RETRIEVED FROM: <http://www.mathsisfun.com/numbers/ratio.html>

Mathematics Standards » Grade 1

Operations and Algebraic Thinking 1.OA

A. Represent and solve problems involving addition and subtraction.

1. Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, **drawings**, and equations with a symbol for the unknown number to represent the problem.2
2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, **drawings**, and equations with a symbol for the unknown number to represent the problem.

Measurement and Data 1.MD

A. Measure lengths indirectly and by iterating length units.

1. Order three objects by length; **compare the lengths of two objects indirectly by using a third object.**

Mathematics Standards » Grade 4

Operations and Algebraic Thinking 4.OA

A. Use the four operations with whole numbers to solve problems.

2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.

Measurement and Data 4.MD

A. Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

2. Use the four operations to solve word problems involving **distances**, intervals of time, liquid volumes, **masses of objects**, and money, including problems involving simple fractions or decimals, and problems that require

expressing measurements given in a larger unit in terms of a smaller unit. **Represent measurement quantities using diagrams** such as number line diagrams that feature a measurement scale.

3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.

C. Geometric measurement: understand concepts of angle and measure angles.

5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint...

Geometry 4.G

A. Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines.

Identify these in two-dimensional figures.

Mathematics » Grade 7

The Number System 7.NS

d. Apply properties of operations as strategies to add and subtract rational numbers.

Expressions and Equations 7.EE

B. Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

3. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (**whole numbers**, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.

Geometry 7.G

A. Draw, construct, and describe geometrical figures and describe the relationships between them.

1. Solve problems involving scale drawings of geometric figures, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

2. Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

B. Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

6. Solve real-world and mathematical problems involving area, volume and surface area of two- and three dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

Mathematics Standards » Algebra II

Linear, Quadratic, and Exponential Models★ F-LE

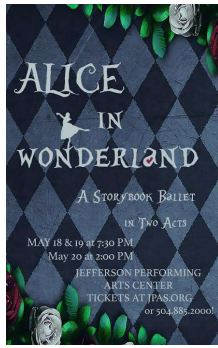
A. Construct and compare linear, quadratic, and exponential models and solve problems.

2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

4. For exponential models, express as a logarithm the solution to $ab^{ct} = d$ where a , c , and d are numbers and the base b is 2, 10, or e ; evaluate the logarithm using technology.

B. Interpret expressions for functions in terms of the situation they model.

5. Interpret the parameters in a linear, quadratic, or exponential function in terms of a context.



JPAS Alice in Wonderland:

The Science of Color Meets the White Rabbit and the March Hare

At the opening of “Alice in Wonderland,” Alice and her sister are sitting along the bank of a river, amidst grass and trees. It is a rural setting. They are perhaps in a park, at the edge of a garden or in the yard of an estate. The writer doesn’t tell us. The full **Alice’s Adventures in Wonderland**, by Lewis Carroll, with John Tenniel’s illustrations can be read here:

http://sabian.org/alice_in_wonderland1.php

As Alice’s Adventures unfold, we meet a variety of characters, including the White Rabbit and the March Hare. We begin this lesson by investigating Lewis/Dodgson’s possible inspiration for these characters. This is followed by a short scientific comparison of real-life rabbits and hares. This comparison is then linked to an overview of the characteristics of the rabbits that are found in Louisiana (and the confusion surrounding the swamp hare (which really is a rabbit.)) This link is then connected to artists’ renderings of a hare and a rabbit. The hare, designed by an English artist Helen Ahpornsiri, is created from leaves, primarily ferns. The rabbit image is designed by Disney animator Ward Kimball; Mr. Kimball also designed the March Hare: <http://www.imdb.com/title/tt0043274/fullcredits/> After looking at the imagery of Helen Ahpornsiri and Ward Kimball, students will have opportunities to create their own illustrations.

Begin by sharing information about Charles Dodgson’s possible inspiration for the White Rabbit. Place each information page on an ELMO or a SMART board where it can be visible to the whole class. As a class, read and discuss the information.



ATLAS OBSCURA BEVERLEY, ENGLAND

Beverley Messenger Rabbit



Lewis Carroll's White Rabbit or something else altogether?

On one side of a stone archway inside St. Mary's Church, North Bar Within, Beverley, England, there is a familiar looking carving of a perky upright rabbit, or perhaps a hare, holding a messenger bag, long suspected of being the inspiration for Lewis Carroll's (aka Charles Ludwidge Dodgson) White Rabbit in Alice in Wonderland. Although not mentioned in his journals, it is possible that a young Dodgson

saw the 18" carving during one of his family's outings in the area.

The carving itself is most likely a representation of the messenger hare in the well known cautionary fable written by Odo of Cherinton, who was a Catholic preacher and writer in the 13th century. His tales had a lot in common with Aesop, with animal protagonists adapted to illustrate Christian moral principals.

The hare features in a tale wherein a group of lazy townspeople realize at the last minute that they are late to pay their rent, and they seek out and catch a hare, which are known for speed and agility. After placing their rent in a pouch tied to the hare, they instruct it to race to their landlord, but of course it takes off in another direction and is never seen again.

In Alice in Wonderland, the White Rabbit's tardiness and panic are said to be inspired by Dean Liddell, the father of the real-life Alice (Alice Pleasance Liddell, who it should be noted artist and naturalist John Ruskin was also quite obsessed with). Dean Liddell was notoriously late for appointments.

Lewis Carroll's family spent time in the Beverley area when visiting with his grandfather as a child, and he sent Alice's illustrator John Tenniel far and wide in search of visual inspiration. But unless some new evidence comes to light the connection between the Beverley messenger hare and the White Rabbit remains a mystery.

It has also been suggested that he may also have been inspired by a carving of two rabbits being chased into a rabbit hole carved into the wooden choir at Ripon Cathedral, where his father was a canon when Carroll was a young man. Carroll is known to have worked on Through

the Looking Glass while in Ripon, and the Queen of Hearts and Cheshire Cat make appearances in the south transept in honor of the connection.

RETRIEVED FROM: <http://www.atlasobscura.com/places/beverley-messenger-rabbit>

Now share information about Disney illustrator Ward Kimball. Explain that Mr. Kimball was the illustrator who created both the White Rabbit and the March Hare. Place the information page on an ELMO or a SMART board where it can be visible to the whole class. As a class, read and discuss the information.

Now, watch the short video clip of Disney in action (the video features the March Hare):

<https://drive.google.com/a/jpas.org/file/d/0BwmUw5u9dIsoQlInRS1BUXBabU0/view>

Explain that Walt Disney often filmed actors as models for his animated features. Cast as characters: Kathryn Beaumont as Alice, Ed Wynn as Mad Hatter, Richard Haydn as Caterpillar, Sterling Holloway as Cheshire Cat, Jerry Colonna as March Hare, Verna Felton as Queen of Hearts, J. Pat O'Malley as Tweedledum and Tweedledee; Walrus; Carpenter; Mother Oyster, Bill Thompson as White Rabbit; The Dodo, Heather Angel as Alice's sister, Joseph Kearns as Doorknob, Larry Grey as Bill the Lizard, Card Painter, Queenie Leonard as Bird In Tree, Snooty Flower, Dink Trout as King of Hearts, Doris Lloyd as Rose, Jimmy MacDonald as The Dormouse, The Mellomen as Cards, Don Barclay as Other Cards.

Next, display an image of Mr. Kimball's White Rabbit on an ELMO or a SMART board where it can be visible to the whole class. As a class, discuss the image. Pay particular attention to the colors. There are two sets of complementary colors: red and green and yellow and purple. Ask students to describe where Mr. Kimball has used these colors.

Lead this discussion to an examination of the color wheel. Place the color wheel information page on an ELMO or a SMART board where it can be visible to the whole class. As a class, read and discuss the information on each page.

Follow this with a discussion on the science of seeing. Explain that there is a science behind the colors artists use. Share the definition of contrast in art:

contrast

[*verb* *kuh* n-**trast**, **kon**-trast; *noun* **kon**-trast]

verb (used with object)

noun

7. opposition or juxtaposition of different forms, lines, or colors in a work of art to intensify each element's properties and produce a more dynamic expressiveness.

8. *Photography*. the relative difference between light and dark areas of a print or negative.

9. *Television*. the brightness ratio of the lightest to the darkest part of the television screen image.

As a class, examine the information on how the eyes work. Place the information pages on an ELMO or a SMART board where they can be visible to the whole class. As a class, read and discuss the information on each page. Consider wavelengths—what makes complementary colors so dynamic? (hint: pairing a short & long wavelength together.)

Explain that students are going to be creating their own illustrations of rabbits and hares. Their illustrations are going to be inspired by real-life rabbits and hares and art illustrations. Both animals are featured in **Alice and Wonderland**. Sometimes, in real life, however, people confuse the two animals. Share information about real-life rabbits and hares. As a class, examine the information sheets on rabbits and hares. Place the information pages on an ELMO or a SMART board where they can be visible to the whole class. As a class, read and discuss the information on each page.

Next, review Mr. Kimball's White Rabbit on an ELMO or a SMART board where it can be visible to the whole class. As a class, review complementary colors: red and green and yellow and purple (and, why they are dynamic.)

Continue by introducing the work of English artist Helen Ahpornsiri—her image of a hare. Place the information page on an ELMO or a SMART board where it can be visible to the whole class. As a class, read and discuss the information. Examine the colors Ms. Ahpornsiri uses. Are they complementary? Ask the class to consider the materials Ms. Ahpornsiri uses to make her illustration. Next, share her bio information page with the class.

Bio

Ward Kimball joined Disney Studios in 1934 as an animator. He eventually became involved in all aspects of animation production, most notably as the designer of Jiminy Cricket for the film "Pinocchio." He was also responsible for the redesign of Mickey Mouse. Walt Disney recognized Kimball's achievements by making him one of the "Nine Old Men", Disney's semi-official group of advisors. Kimball retired from Disney in 1972, but still maintained ties with the studio. He joined other leading Disney animators in 1978 for a whistle-stop tour to promote Mickey Mouse's 50th birthday. In addition to animation, Kimball was both an avid musician and train enthusiast. In 1948 he formed the Firehouse Five Plus Two, a Dixieland jazz band composed of fellow Disney employees. He also maintained a full-sized train and tracks at his home in California, and was a past president of the Train Collectors Association. Not only did his love of trains get him the job of designing the World of Motion display at EPCOT, it also got another train collector started--Walt Disney himself. Kimball received many honors during his lifetime, and in 1989 was named a Disney Legend.

- *IMDb Mini Biography By: [Mike Konczewski](#)*

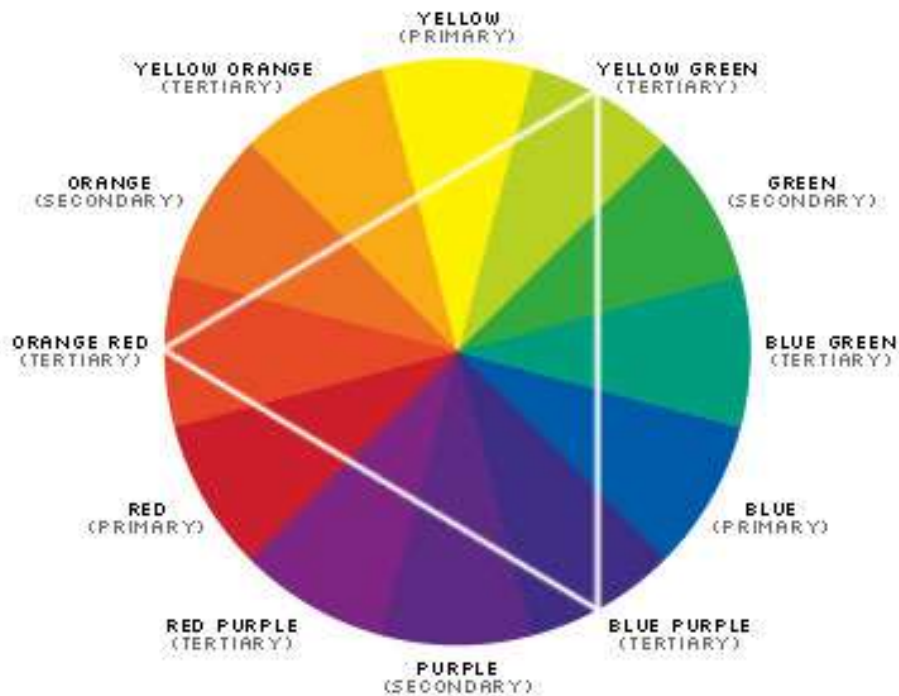
Was part of the inner circle of Disney animators, known as the "nine old men". The other members were [Frank Thomas](#), [Ollie Johnston](#), [Milt Kahl](#), [Marc Davis](#), [Eric Larson](#), [Wolfgang Reitherman](#), [John Lounsbery](#) and [Les Clark](#).

RETRIVED FROM: <http://www.imdb.com/name/nm0453832/bio>

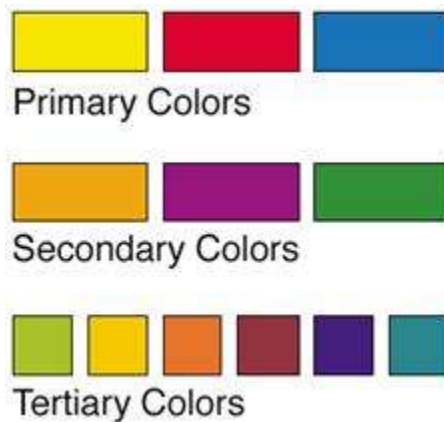


IMAGE RETRIEVED FROM: <http://www.cornel1801.com/disney/Alice-Wonderland-1951/movie-film.html>

Color Theory



A *primary* color is a color that cannot be made from a combination of any other colors. A *secondary* color is a color created from a combination of two primary colors. *Tertiary* color is a combination of three colors (primary or secondary).



Printers and artists have different definitions for primary colors. The traditional primary colors that painters have used are red, yellow, and blue. Modern printing press secondary colors are magenta, yellow, and cyan. These two primary color systems obviously do not agree. *Additive* and *subtractive* are the two primary methods for reproducing a range of color.

Additive Color

Additive color synthesis is the creation of color by mixing colors of *light*. Human vision relies on light sensitive cells in the retina of the eye. There are two basic kinds of sensors. These are rods and cones. Rods are cells which can work at very low intensity, but cannot resolve sharp images or color. Cones are cells that can resolve sharp images and color, but require much higher light levels to work. The combined information from these sensors is sent to the brain and enables us to see.

There are three types of cone. Red cones are sensitive to red light, green cones are sensitive to green light, and blue cones are sensitive to blue light. The perception of color depends on an imbalance between the stimulation level of the different cell types

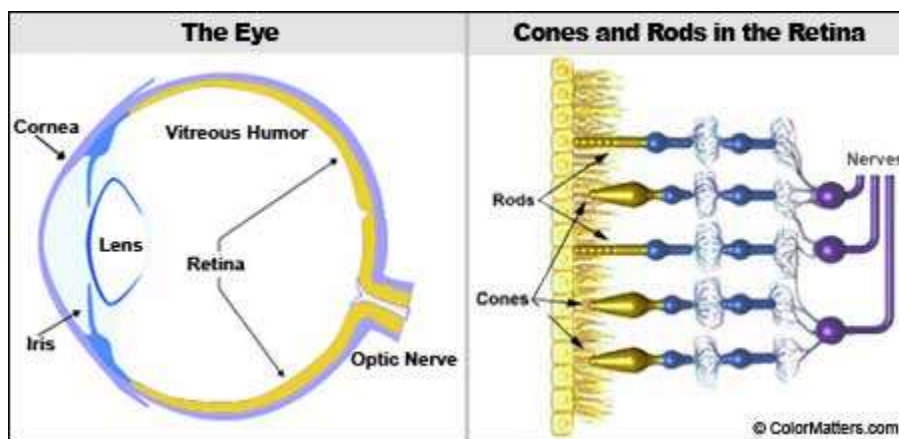
RETRIEVED FROM: https://cs.nyu.edu/courses/fall02/V22.0380-001/color_theory.htm

Look Inside the Eye

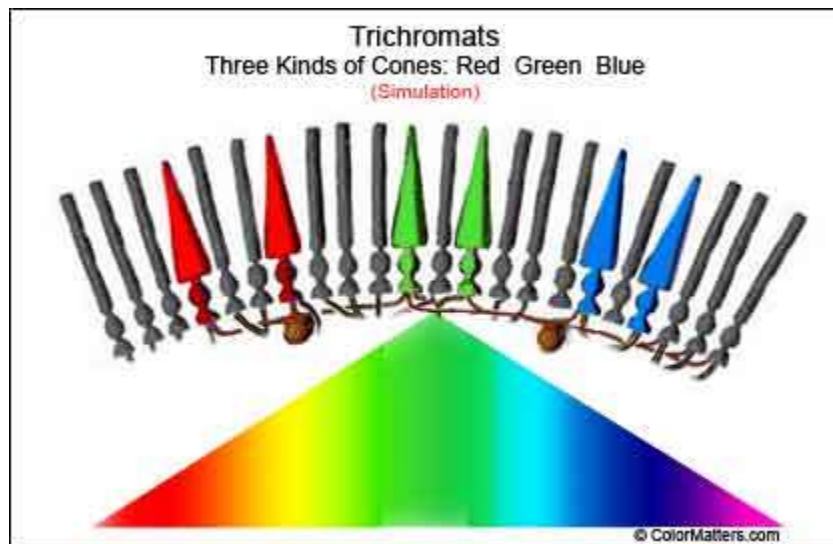
Color vision can be defined by what kind of color-detecting equipment exists inside the eye of a human or non-human animal. Some species see no colors, some see a few colors, some see all colors, and some see colors that are not visible to the typical human eye.

The color-detecting equipment inside an eye is called a "cone."

(The rods are for night vision.)



The number of visible colors is defined by the kinds of cones in the eye.



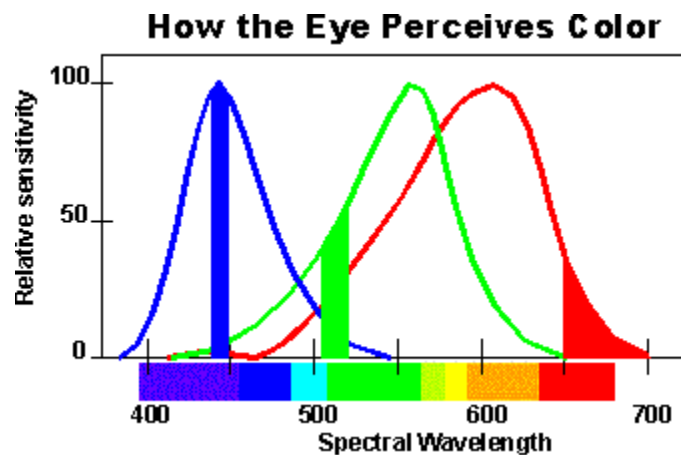
RETRIEVED FROM: https://www.tes.com/lessons/kgLfVRbLb2a_KQ/color-theory

1) How the Human Eye sees Color

The eye contains two kinds of receptors: rods and cones. While the rods convey shades of gray, the cones allow the brain to perceive color hues. Of the three types of cones, the first is sensitive to red-orange light, the second to green light and the third to blue-violet light. When a single cone is stimulated, the brain perceives the corresponding color. That is, if our green cones are stimulated, we see "green". Or if our red-orange cones are stimulated, we see "red". If both our green and red-orange cones are simultaneously stimulated, our perception is yellow.

The eye cannot differentiate between spectral yellow, and some combination of red and green. The same effect accounts for our perception of cyan, magenta, and the other in-between spectral colors.

Because of this physiological response, the eye can be "fooled" into seeing the full range of visible colors through the proportionate adjustment of just three colors: red, green and blue.

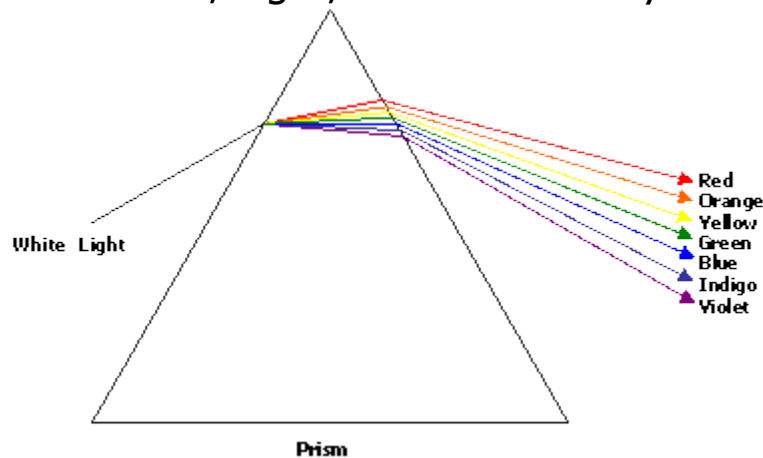


Spectral Sensitivity Curve for each of the cones in the human eye.

RETRIEVED FROM: <http://www.colorcube.com/articles/basics/basics.htm>

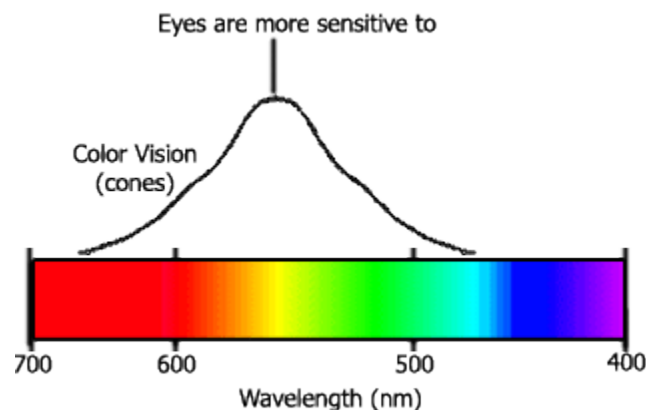
The Physics behind "Reflection with Color"

Color, Light, & the Human Eye



Each color possesses a different wavelength between approximately 400 and 700 nanometers (400 nm is around 15.74×10^{-6} inches and 700 nm 27.56×10^{-6} inches). When looking at the different colors of the rainbow, our eyes perceive many different wavelengths. Red light possesses longer waves (approximately 700 nanometers). Yellow light possesses a short wavelength (approximately 590 nanometers). When all wavelengths of visible light strike the eye all at once, white light appears.

Sensitivity of the Human Eye



Inside the human eye, there are special cells called cones and rods that sense brightness and color of visible light. Cones observe color and rods are only sensitive to a low amount of light, such as night vision. Our eyes are most sensitive to the colors between yellow and green. When a photon penetrates the human eye, the cones translate the photon's energy into a nerve signal in your brain that tells you what color you perceive. Our cones are separated into three different types of photoreceptors that are most sensitive to the colors red, green, and blue. The different cones are called

cone R, cone G, and cone B. Cone R is most sensitive to red-orange light, cone G is most sensitive to green-yellow light, and cone B is most sensitive to blue light.

RETRIEVED FROM:

http://dp.hightechhigh.org/~jrobin/Projects/44_Art_Physics_Engin/Teams/descriptions/Physics2%20-%20for%20merge.htm

Rabbits and Hares. No more confusion!

compiled by S. Elena

| [Birth](#) | [Outlook](#) | [Diets](#) | [Social Behavior](#) | [Habitat](#) | [References](#) |

On the threshold of the Easter one can ask: the Easter bunnies, are they a rabbits or hares? Sadly many people do not know the difference between these two animals. Even though those creatures look the same, in fact they belong to absolutely different species. It may sound improbable but those kinds of mammals have more differences than similarities: they are born differently, they behavior and style of life are totally different, they even prefer different food!

The difference between rabbits and hares appears at the moment they are born. First of all baby-rabbits are called kittens, while baby-hares are called leverets. Rabbits are born completely helpless, naked and blind (photos [a, b](#)). Hares are born fully furred, able to see and capable of independent movement (photos [c, d](#)). In fact hares can live on their own after one hour from they birth! Therefore their mothers feel free to leave them on the bare ground and hop away soon after the baby is born. Rabbit's mothers are much more careful and protective to their children: their line a nest with grass, bark and soft stems. Over this, they place a layer of hair plucked from their own bodies. When rabbit-mother leaves the nest, she covers the bunnies with more hair and dead plants to keep them warm and hidden from enemies.

Kittens -- new born rabbits



(a)



(b)

Leverets -- new born hares



Hares are generally larger, and have longer hind legs than rabbits and longer ears with characteristic black markings. The skulls of rabbits and hares are also different. Rabbit's fur coat remains its color year-round, while hares change color from grayish brown in summer to white in winter.

Rabbits and hares have different diets. If rabbits prefer soft stems, grass or vegetables, hares eat more hard food: bark and rind, buds, small twigs and shoot.

Rabbits usually live in burrows or tunnels in the ground, where they prefer to stay during daylight hours. They try to keep hidden. Hares on the other hand, always stay on the surface among plants and usually try to escape enemies by running.

Rabbits are very social animals; they live in colonies. Male rabbits even fight within a group to become the dominant male. The dominant male rabbit then mates with most of the females in the area. In opposite, hares live most of the time by themselves. They come together in pairs for mating only. There is almost no fighting among hares - they just pair off.

It is amazing that the nature has created such different animals to look the same. But now we know the difference between them and will not be deceived anymore by those tricky long-eared creatures.

References

1. Dave G. Ducker, John P. Morris, Craig G. Stuve. Mammals of Ontario.
2. John Bourne. Control of Rabbits and Hares in Agriculture, Food and Rural Development.
3. Samantha Hunter. Hop to it: a guide to training your pet rabbit.

Barron's Educational Series, 1991.

4. Annette Lamb and Larry Johnson, Specific Types of Rabbits & Hares.
5. Canadian Museum of Nature, Ukaliq. [Naming and Classifying](#)
6. June Wingert. [What is the difference between a rabbit and a hare?](#)

RETRIEVED FROM: <http://www.orcca.on.ca/~elena/useful/bunnies.html>

Rabbit

PHOTO COURTESY OF USFWS LEWIS GORMAN



RABBITS

Louisiana has 2 species of rabbits: eastern cottontails (*Sylvilagus floridanus*) and swamp rabbits (*Sylvilagus aquaticus*). Although the cottontail is considered more of an upland species and the swamp rabbit a forested wetland (wooded) species, both species occur within our coastal areas.

The eastern cottontail is a typical rabbit with long ears, large hind legs and feet, short front legs and feet, and a short, fluffy tail that is white beneath. The upperparts vary from grayish brown to reddish brown except for the nape which is rusty, and the face and flanks which are gray. The tops of the front and hind feet are white or whitish, and a pale cream-colored eye-ring surrounds the eye. The swamp rabbit resembles the eastern cottontail but is larger and darker in coloration, usually lacking the reddish brown name and white on the tips of the feet.



PHOTO COURTESY OF: STEVECREEK.COM

Food

Cottontails eat a wide variety of grasses as well as cultivated foods such as rye grasses, vetch, chufa, oats, and soybeans. Swamp rabbits eat emergent aquatic vegetation and succulent herbaceous vegetation, such as grasses, sedges, and cane.

Reproduction

COTTONTAIL NEST



PHOTO COURTESY OF: DFW URBAN WILDLIFE

One of the main reasons why rabbits can easily withstand heavy hunting pressure is their great fecundity (reproductive potential). Rabbits will breed throughout most of the year, with the main period from February to mid-October. Adult cottontails may have as many as 6 litters per year and young of the year may contribute another 25% to the production.

Litter size for both the cottontail and swamp rabbit varies from one to seven with three to four being the norm. The nest for both species of rabbits is a slight depression in the earth that is filled with grasses mixed with rabbit hair.



Fun Fact

Although the incisors of rabbits resemble those of squirrels, rats, and mice, rabbits are not closely related to the Rodents. Rabbits are in the order Lagomorpha. Lagomorphs, as they are known, have two sets of upper incisors, whereas rodents have only one set.

Population Status

Specific population surveys are not conducted for these species; however, the Department's annual hunter harvest survey provides indices to population trend. The 2012 – 13 survey estimated that 22,100 rabbit hunters harvested 180,100 rabbits. In the absence of major habitat modifications, year to year fluctuations in rabbit populations are due primarily to summer rainfall amounts.

Biologists monitored rabbit population response to rotational burning regimes on an old field alluvial site on Sherburne WMA for 6 years. Rabbit use suggested that 2 or 3 year burning cycles were optimal for rabbits.

Resident Small Game Program

The Resident Small Game Program involves management, research and population monitoring activities for bobwhite quail, rabbits, and squirrels. Personnel also develop and participate in the wild turkey research conducted by the Department. Cody Cedotal (ccedotal@wlf.la.gov), Resident Small Game and Wild Turkey Program Leader, coordinates the Resident Small Game Program.

In order to meet public demands for resident small game, the Resident Small Game Program and Technical Services Program offer technical assistance to improve habitat on public and private lands (<http://www.wlf.louisiana.gov/assistance-private-landowners-and-m>). Program biologists also conduct research to assess and improve management. Several population monitoring surveys are conducted by regional and program biologists to develop population indices and track population trends of small game species. Personnel also represent the Department on various committees which are involved in monitoring and formulating regional and national programs which may have impacts on small game wildlife.

RETRIEVED FROM: <http://www.wlf.louisiana.gov/rabbit>



RETRIEVED FROM: <http://helenahpornsiri.com/>

<https://www.instagram.com/helenahpornsiri/>

<http://www.designfaves.com/2016/03/colorful-wildlife-collages-made-using-pressed-leaves>

Bio

Helen Ahpornsiri creates intricately crafted, curiously cut and quietly inked creations. Living and picture making in the East Sussex countryside of England provides much of the inspiration for her work. For the most part, she works with pressed ferns to create creatures and objects.

Piecing Things Together: The Fern Art of @helenahpornsiri

To see more of Helen's tiny masterpieces, follow [@helenahpornsiri](#) on Instagram.

The biggest occupational hazard of working with tiny ferns? "I have to be careful not to sneeze or move too quickly," illustrator Helen Ahpornsiri ([@helenahpornsiri](#)) explains. "The leaves go everywhere." Many of Helen's creations consist of anywhere from 50 to 100 individual fern pieces from as many as 20 species collected from her garden in East Sussex, England. Helen transforms her foraged treasures into tiny masterpieces with a wooden flower press she received as a child. "I used to love opening it and finding pieces of summer in the winter," she recalls. Her advice to other small business owners on Instagram is simple: "Just keep posting pictures," Helen says. "It's always great to see progress, so people can see how things are coming along, almost like a story being told."

RETRIEVED FROM: <http://helenahpornsiri.tumblr.com/>

Once examination of all information on the science of color, rabbits, hares, the work of Ward Kimball and Helen Ahpornsiri is complete, give students the opportunity to create their own rabbit and hare illustrations. As a class, re-examine the color wheel. What are the complementary colors? Which complementary colors have we studied so far? Explain that students will now use another complementary color pair, orange and blue, to create their illustrations. Follow these steps:

Select the leaves of local plants and place them in water. We worked with leaves from the Louisiana state flower (magnolia,) the Louisiana state tree (bald cypress,) resurrection fern and dwarf palm.



Use two primary colors (red and yellow) to make a secondary (orange.)



Pour the complementary color (blue) of the color that was just mixed together (orange.)



Change the viscosity of the paint by adding glue. Use a 3 : 1 ratio: 3 parts paint, 1 part glue; mix together.



Create a sketch of the hare.



Dry off the leaves and select ones to use for print making.



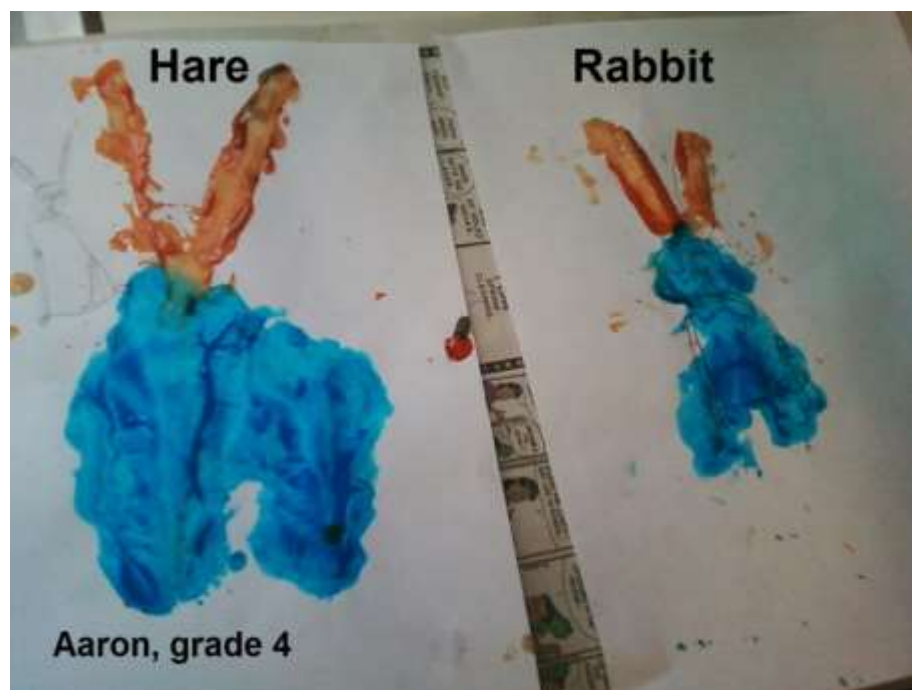
Carefully apply the home-make printer's ink with a brush to the leaves and create prints in the sketch outline.



Sketch a rabbit and repeat the print-making process with the leaves--resurrection fern and cypress make great texture for fur.



Compare the images of the hare and the rabbit.





Hare RETRIEVED from: <http://helenahpornsiri.com/> Rabbit RETRIEVED from:
<http://stateofreadiness.net/2015/01/30/saturday-1-31-2015-down-the-rabbit-hole/>

English Language Arts Standards » Literacy Standards » Grade 3

Integration of Knowledge and Ideas

RI.3.7: Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

RI.3.8: Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).

RI.3.9: Compare and contrast the most important points and key details presented in two texts on the same topic.

Research to Build and Present Knowledge

W.4.7: Conduct short research projects that build knowledge through investigation of different aspects of a topic.

English Language Arts Standards » Literacy Standards » Grade 4

Integration of Knowledge and Ideas

RL.4.7: Make connections between the text of a story or drama and a visual or oral presentation of the text, identifying where each version reflects specific descriptions and directions in the text.

Mathematics Standards » Grade 1

Measurement and Data 1.MD

A. Measure lengths indirectly and by iterating length units.

1. Order three objects by length; compare the lengths of two objects indirectly by using a third object.

Mathematics Standards » Grade 4

Operations and Algebraic Thinking 4.OA

Measurement and Data 4.MD

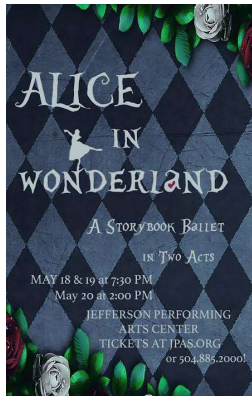
A. Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

2. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

Geometry 4.G

A. Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Identify these in two-dimensional figures.



ADDITIONAL RESOURCES

More About John Tenniel and his Illustrations

<http://www.victorianweb.org/art/illustration/tenniel/index.html>

<http://www.victorianweb.org/art/illustration/tenniel/pva65.html>

<https://medium.com/alice-s-adventures-in-wonderland/sir-john-tenniel-s-classic-illustrations-of-alice-in-wonderland-2c3bbdca3a77#.80w0dymwy>

<http://www.victorianweb.org/art/illustration/tenniel/alice/gallery1.html>

Alice and Bob in Wonderland

<http://bcfamily.ca/daily-dish-loving-the-wonderful-alice>

http://www.nature.com/scitable/blog/pop/the_quantum_cheshire_cat

https://www.maa.org/external_archive/devlin/devlin_03_10.html

<http://www.npr.org/templates/story/story.php?storyId=124632317>

<http://io9.gizmodo.com/5907235/a-math-free-guide-to-the-math-of-alice-in-wonderland>

IMAGES

<http://bcfamily.ca/wp-content/uploads/2010/03/2010-march-13-alice.jpg>

<http://amiquote.tumblr.com/post/554545307/lewis-carroll-alice-in-wonderland>

A STEM project from the U.K., Alice and Bob in Wonderland are animations produced by the Perimeter Institute for Theoretical Physics. They are based around the questions that Alice has about the physical world and how these can lead to "powerful ideas" in physics, such as energy-mass equivalence and relativity.

Topics include time travel, the structure of the atom, the age of the Universe, gravity, energy and mass. They are best suited as starting points to introduce topics within secondary physics.

Video topics include "Why Can't We Walk through Walls?," "Can We Travel through Time?," "How Can Atoms Exist?" and "What Keeps Us Stuck to the Earth?"

<https://www.stem.org.uk/elibrary/collection/4133/alice-and-bob-in-wonderland>

http://physicsworld.com/blog/perimeter_institute_10th_anniv/

<https://www.brainpickings.org/2015/10/12/what-to-think-about-machines-that-think-brockman-edge-question/>

Using Alice in Wonderland to make Sense of Science: <https://www.brainpickings.org/2014/01/30/alice-in-quantumland-robert-gilmore/>

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Alice for the iPad, Features Full Screen Physics

An interactive version of **Alice in Wonderland** created Atomic Antelope for the iPad. The book includes 52 pages of storyline with 20 animated scenes. <http://appmodo.com/17687/alice-for-the-ipad-features-full-screen-physics/>

<http://aplusphysics.com/community/index.php?/blogs/entry/1178-alice-in-wonderland-modern-physics/>

<https://www.newscientist.com/article/mg20427391-600-alices-adventures-in-algebra-wonderland-solved/>

<https://www.sciencedaily.com/releases/2011/06/110610125655.htm>

<http://www.livescience.com/47074-quantum-cheshire-cats-created.html>

More Math in Minecraft Lessons

<http://www.eschoolnews.com/2014/12/01/minecraft-lesson-ideas-243/>