A Teacher's Guide

The Ire of Iron Claw

Book 2 of the Gadgets and Gears Series

By Kersten Hamilton Illustrated by James Hamilton



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A Common Core State Standards & Next Generation Science Standards Aligned Educator's Guide

Grades 4 - 7

Synopsis: In this second book of an inventive series filled with cool scientific details, the loyal dachshund Noodles, the boy inventor Wally Kennewickett, and his scientific genius family and staff of automatons join forces with Nikola Tesla to defeat sky pirates, cross Europe in a giant mechanical spider, and defy evil magicians. The Wild, Wild West meets Tom Swift; perfect for fans of M.T. Anderson's Pals in Peril, Michael Buckley's NERDS, and Jon Scieszka's upcoming Frank Einstein series.

Written by: Debbie Gonzales Designed by: Moriah Ellig

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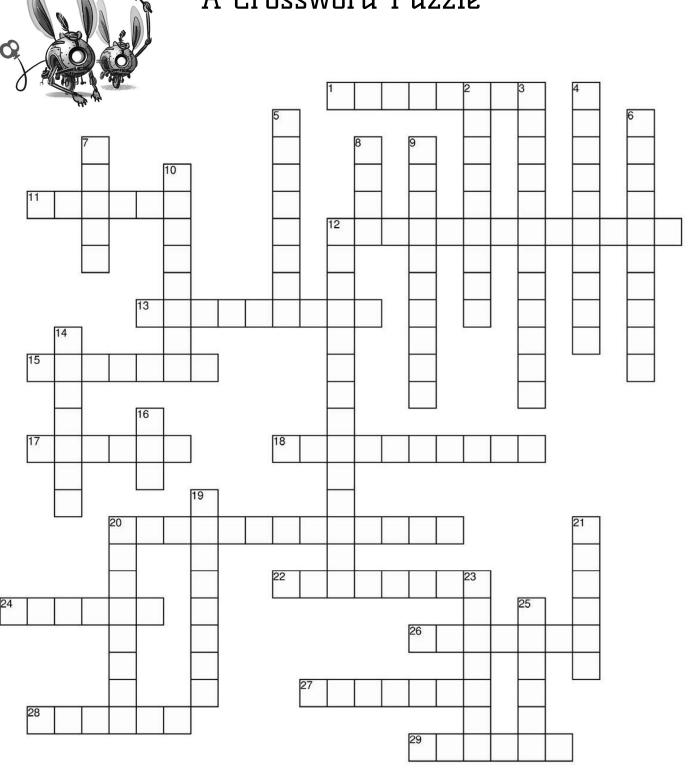
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Lavish Lexicon

A Crossword Puzzle



Lavish Lexicon - A Crossword Puzzle Clues

Across:

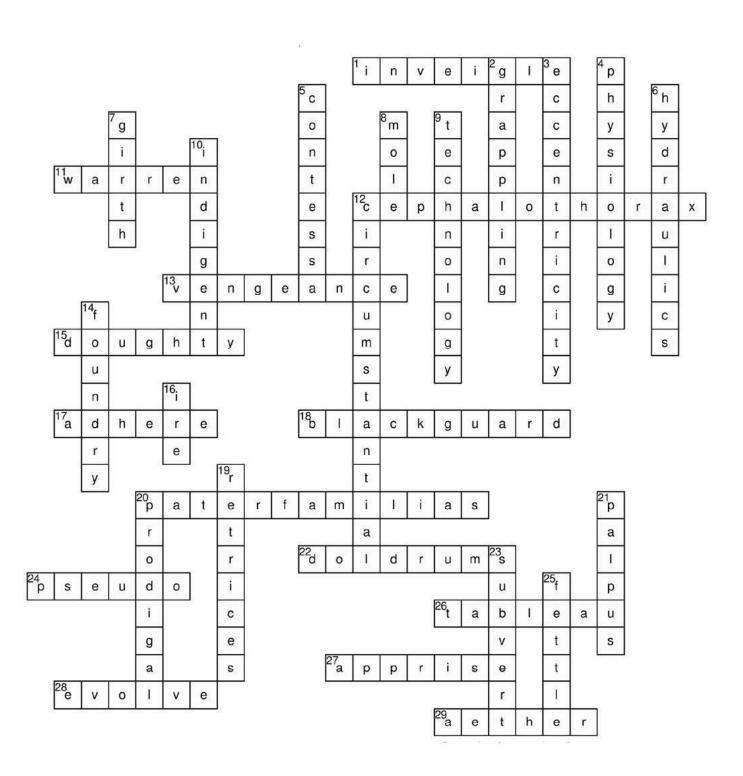
- 1. To entice or coax (pg. 13)
- 11. Underground home of rabbits (pg. 89)
- 12. Portion of the spider to which the legs are attached (pg. 50)
- 13. Retaliation for another's act (pg. 2)
- 15. Brave and persistent (pg. 88)
- 17. Stick fast to something (pg. 110)
- 18. Person with rotten heart (pg. 123)
- 20. Man who is the head of a family (pg. 48)
- 22. Ocean area near equator where lack of wind traps boats for days (pg. 117)
- 24. False (pg. 50)
- 26. A building or room set on a high spot commencing an excellent view (pg. 8)
- 27. Tell someone about (pg. 105)
- 28. To develop from something simple into something more complex (pg. 75)
- 29. Space between solid matter in the universe (pg. 41)

Down:

- 2. _____ hook (pg. 124)
- 3. Strange and unusual behavior (pg. 100)
- 4. The way a living creature's body functions (pg. 70)
- 5. Italian countess (pg. 27)
- 6. The branch of science concerned with conveyance of pressurized liquids through pipes (pg. 138)
- 7. Measurement around the middle of something (pg. 35)
- 8. A person you know and trust who is betraying you (pg. 8)
- 9. The science of mechanical and industrial arts (pg. 85)
- 10. Person too poor to provide for or shelter for themselves (pg. 37)
- 12. _____ evidence (pg. 99)
- 14. Establishment in which molten metal is poured into molds (pg. 155)
- 16. Anger (word found in the title)
- 19. Tail feathers (pg. 82)
- 20. Someone who is wasteful or spends extravagantly (pg. 52)
- 21. One of a pair of appendages beside the mouth of an arachnid (pg. 51)
- 23. Overthrow completely (pg. 2)
- 25. Fine _____ (pg. 149)



Lavish Lexicon - A Crossword Puzzle Answer Guide





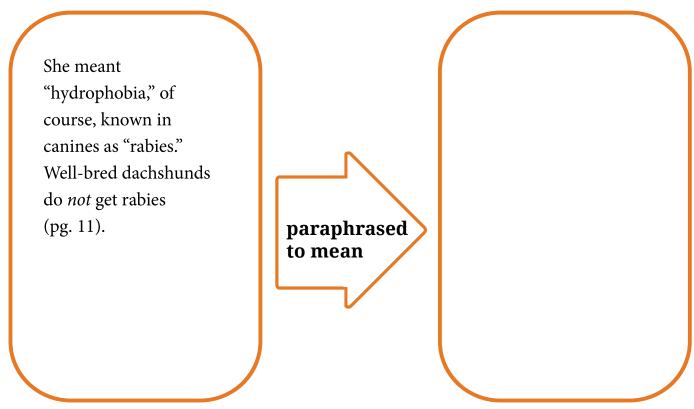
Noodles' Perspective

A Study of Point of View

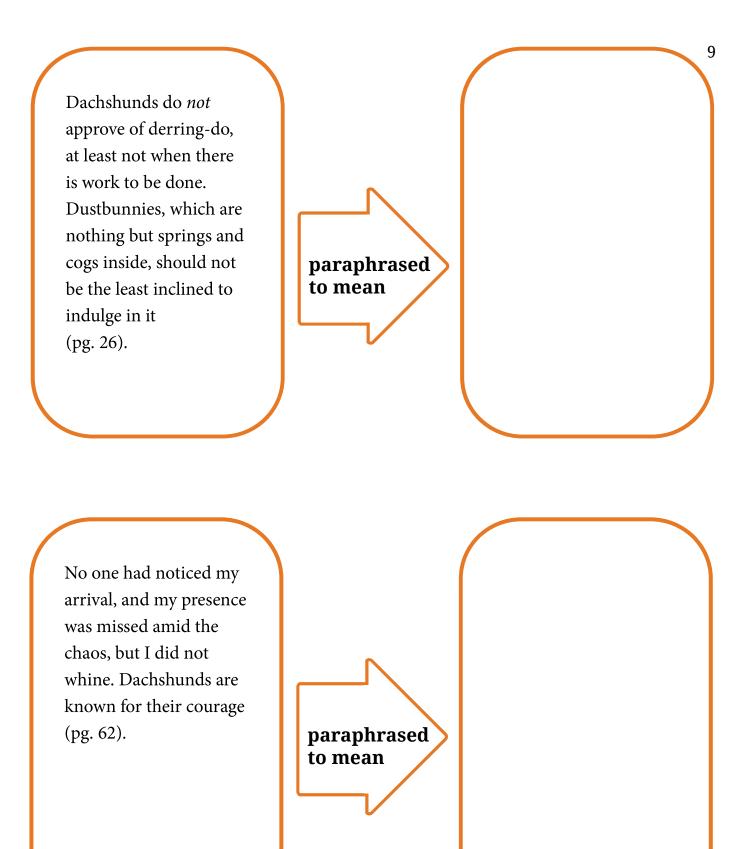
Noodles is an extremely intelligent dachshund, a wise and perceptive canine, indeed. Being that the story is told from his point of view, the reader can get a sense of his personality by the comments he makes about being a dachshund. It's interesting to note that the dachshund is one of the top dog breeds in the U.S. – known for their playfulness, determination and ferocity. Sounds like Noodles, right?

In this lesson, the student is asked to paraphrase the phrases presented on pages 11-12 in this guide. To "paraphrase" means to express the meaning of the speaker using different words, to a reword something written by someone else. Consider setting, scene, and plot when determining how to paraphrase the cited quotations. Use the book as a reference, if need be.

The boxes on the left contain cited quotations from the text. Read them, interpret their meaning, and write a paraphrase in the box on the left. Get creative and have some fun with this!



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With a mighty squirm, I was through the netting. Dachshunds do not abandon their best friends (pg. 156).

> paraphrased to mean

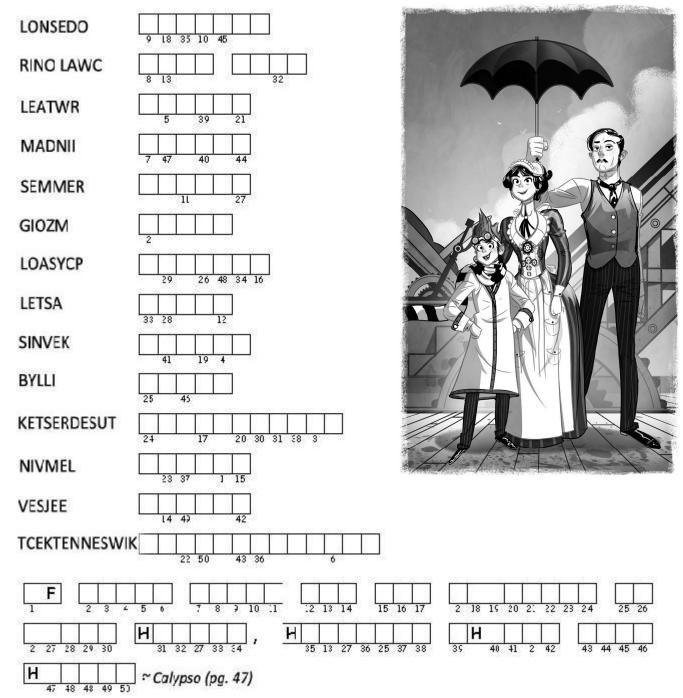


10



The Cast of Characters A Dropped Phrase Puzzle

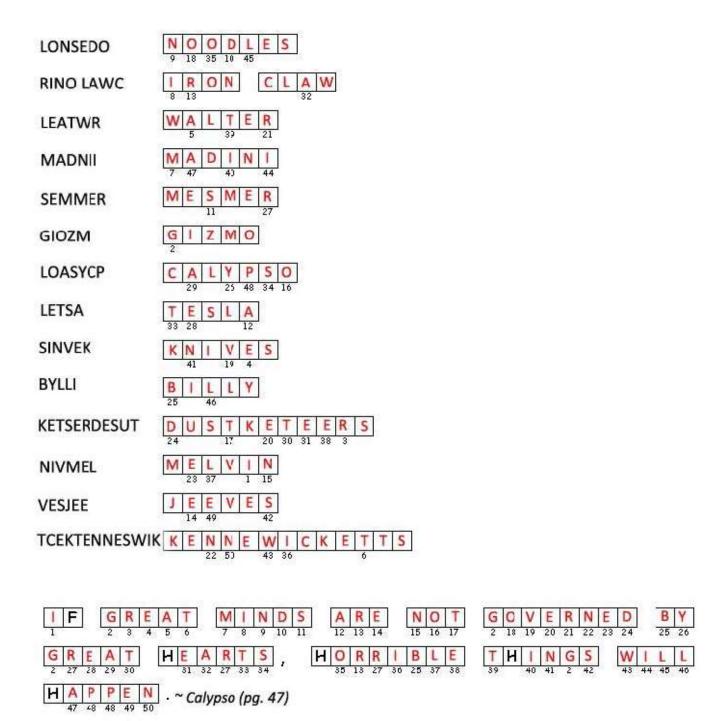
Unscramble the characters names below. Use the numbers beneath the letter boxes to solve the quote at the bottom of the page.



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The Cast of Characters Answers

A Dropped Phrase Puzzle



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The Life and Times of the Kennewicketts

A Bingo Game

Objective: To describe characters, settings, and major events in a story in a gamelike manner.

Materials:

- The Ire of Iron Claw
- Cardstock
- Scissors
- The Ire of Iron Claw Bingo Board (Guide, pg. 16)
- The Ire of Iron Claw Game Cards (Guide, pg. 17-19)
- The Ire of Iron Claw Bingo Answer Sheet (Guide, pg. 20)
- 9 game pieces (pennies, buttons, beans, etc.) per player

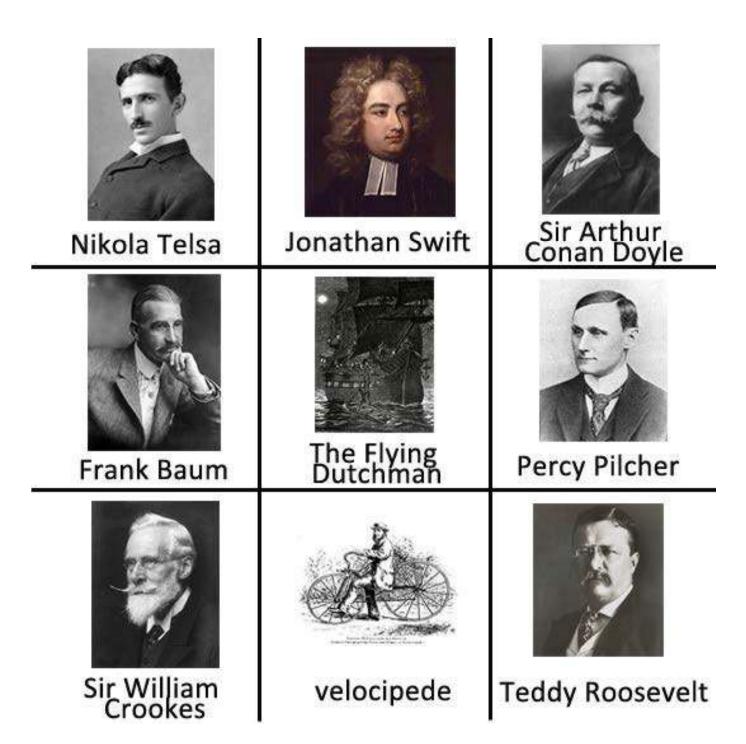


Procedure:

- Depending on how many players will be competing, print 2 to 4 The Ire of Iron Claw Bingo Boards on cardstock.
- Print double copies of The Ire of Iron Claw Game Cards.
- Use scissors to trim around the borders of the game board and the cards.
- To play the game, mix up game cards and stack them, face down.
- Each player manages their own game board and collection of game pieces.
- A player begins by choosing a card from the top of the stack. If the card matches a space on their board, they may mark the match with a game piece.
- · Return card face down near original stack.
- As the game continues, a player loses a turn if they choose a card that has already been covered on their board.
- The winner has either blocked out 3 spaces in a row or covered all of the spaces, depending how the players decide they'd like to play.
- Definitions and description can be verified using the Ire of Iron Claw Bingo Answer Sheet.

Writing Prompt: Ire of Iron Claw is set during a time in history in which scientific discovery, engineering, and the creation of literary works flourished – a rich era of innovation and creativity. Write an essay examining the historical aspects in the book. Analyze how the book's historical setting contributed to Will's characterization as well as the overall thrust of the story. Cite examples from the text in your essay.

The Ire of Iron Claw Bingo Game Board



Wrote Sherlock Holmes

make port and is oomed to sail the oceans forever.

Wrote Gulliver's Travels

the first real bicycle

his invention was

Wrote the Nizard of Oz.

ne of the inventors f the hang-glider.

who discovered x-rays, electric notors, radio, and much more! ectical enginee

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vacuum tubes

ientist who was the pioneer of

The Ire of Iron Claw Bingo Game Answers

Nikola Telsa	Scientist and electrical engineer who discovered x-rays, electric motors, radio, and much, much more.
Jonathan Swift Wrote Gulliver's Travels.	
Sir Arthur Conan Doyle	Wrote Sherlock Holmes.
Frank Baum	Wrote Wizard of Oz.
The Flying Dutchman	Legendary ghost ship that can never make port and is doomed to sails the oceans forever.
Percy Pilcher	One of the inventors of the hang- glider.
Sir William Crookes	Scientist who was the pioneer of vacuum tubes.
velocipede	Known as the 'bone-shaker,' this invention was the first real bicycle.
Teddy Roosevelt	Once served as the president of the United States.





Knives' Thumb A Robotics Project

I craned my neck, trying to get one last look at Wally. And then I noticed Knives's hand was following us along the road, razorlike fingetips tapping on the cobbles as it came. For an instant I thought that Calypso had made yet another modification – and then I heard the tiny, tinny battle song of the Dustketeers (pg. 155).

Note: In this lesson, students will use the instructions below as a guide for their own design of a robotic claw. Instruct students to define a simple design problem, one that reflects a specific need, similar to Knives's razorlike fingertips. The structure for Knives's hand reflects his design purpose – to cut and prepare food. In this project, students are encouraged to modify the construction format presented below based on a robot hand design purpose of their choosing.

For a further challenge, encourage the students to adapt the procedures involved in making a robotic hand to design a pigeon's claw similar to Iron Claw's. Use the planning worksheet provided in this guide for this project.

As a follow up activity, students are instructed to write and present an informative, scientific paper in which they justify their design purpose, describe the construction process, and evaluate the functionality of their design.

Objective: To design structures specifically to serve particular functions taking into account how materials can be shaped and used.

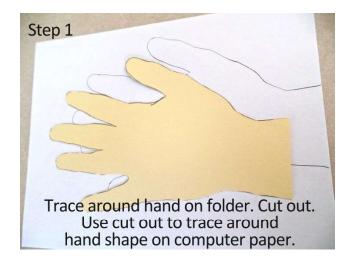
Materials:

- · File folder
- · A sheet of computer paper
- · Drinking straws
- Cello tape
- Scissors
- Ruler
- Yarn
- Fine-tipped marker
- Iron Claw Planning Worksheet (Guide, pg. 22)

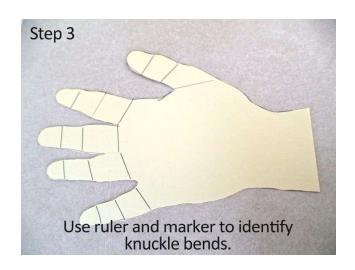
Written by: Debbie Gonzales

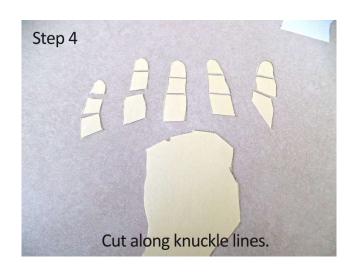


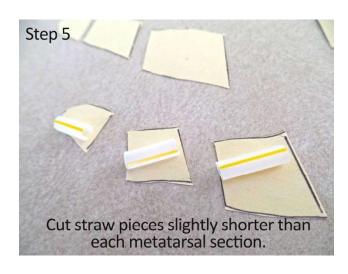
Procedure: 18









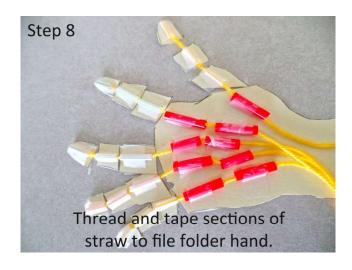


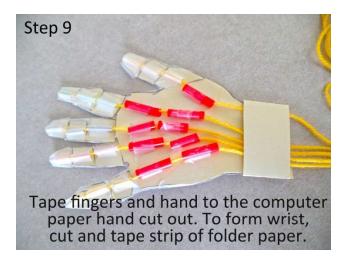


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Procedure: 19



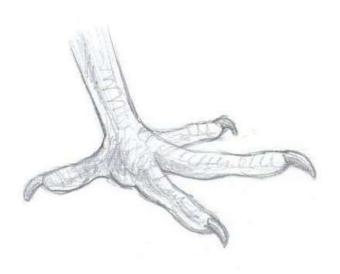








Iron Claw's Claw A Project Planner



List the additional materials required to construct a pigeon's claw.

Explain the robotic hand design modifications required to construct a pigeon's claw.

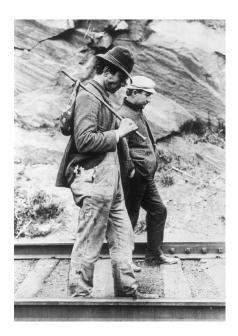
Describe the steps required to construct a pigeon's claw.



The Hobo

History on the Move

Oliver nodded. "Indigence is not always an indication of ill breeding," he said. "It can be the mark of misfortune, or simply a call of adventure. I don't suppose that we could travel as hobos – (pg. 104)."



From the 1880's to the 1930's hobos were a familiar sight along the railroads and back roads of America. They were travelers, always looking for a cheap way to get from here to there. Hoping to find work, opportunities, and also a bit of adventure, they lived on the road, hopping freight trains and stowing away in boxcars. The train workers were never happy about these stowaways, and men were even hired to keep watch and kick them off the trains if they were caught. Hobos weren't lazy though; they were workers. They were just workers who wandered as they went, never staying in one place for long.

- Layers of Learning



Explore the world of the hobo. Research the hobo jungle. Learn about the hobo code of honor. Discover what life was like for the hobo. Use your research to analyze the author's reasoning to cast hobos as important characters in the story. Explain the meaning behind Oliver's words in the quote printed at the top of the page. List your references and cite examples from the text in your essay.

Access the links below to discover fascinating information about the hobo.

- The Hobo's Life by Geocaching
- Hobos by Layers of Learning: From Our Homeschool to Yours
- How to Be a Hobo by The Art of Manliness
- Hoboglyphs: Secret Transient Symbols & Modern Nomad Codes by Web Urbanist

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Academic Standards Alignment

The Common Core State Standards

English Language Arts Standards Reading: Literature		Crossword Puzzle	Point of View	Dropped Phrase	Bingo	Robotics	The Hobo
CCSS.ELA- Literacy.RL.4.1	Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.		х				
CCSS.ELA- Literacy.RL.4.3	Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text (e.g., a character's thoughts, words, or actions).		х				
CCSS.ELA- Literacy.RL.4.4	Determine the meaning of words and phrases as they are used in a text, including those that allude to significant characters found in mythology (e.g., Herculean).	х		х			
CCSS.ELA- Literacy.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.				х		
CCSS.ELA- Literacy.RL.4.10	By the end of the year, read and comprehend literature, including stories, dramas, and poetry, in the grades 4-5 text complexity band proficiently, with scaffolding as needed at the high end of the range.	х	х	х	х	х	х
CCSS.ELA- Literacy.RL.5.1	Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.		х				
CCSS.ELA- Literacy.RL.5.3	Compare and contrast two or more characters, settings, or events in a story or drama, drawing on specific details in the text (e.g., how characters interact).		х				
CCSS.ELA- Literacy.RL.5.4	Determine the meaning of words and phrases as they are used in a text, including figurative language such as metaphors and similes.	х		х	х		
CCSS.ELA- Literacy.RL.5.10	By the end of the year, read and comprehend literature, including stories, dramas, and poetry, at the high end of the grades 4-5 text complexity band independently and proficiently.	х	х	х	х	х	х
CCSS.ELA- Literacy.RL.6.1	By the end of the year, read and comprehend literature, including stories, dramas, and poetry, at the high end of the grades 4-5 text complexity band independently and proficiently.		х				

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cossword Puzzle

English Language Arts Standards Reading: Literature (cont.)

English Language Arts Standards Reading: Literature (cont.)		Crossword Puzzle	Point of View	Dropped Phrase	Bingo	Robotics	The Hobo
CCSS.ELA-Literacy.RL.6.3	Describe how a particular story's or drama's plot unfolds in a series of episodes as well as how the characters respond or change as the plot moves toward a resolution.		X				
CCSS.ELA- Literacy.RL.6.4	Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of a specific word choice on meaning and tone.	х		x	х		
CCSS.ELA- Literacy.RL.6.10	By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6-8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	х	х	х	х	х	х
CCSS.ELA- Literacy.RL.7.4	Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of rhymes and other repetitions of sounds (e.g., alliteration) on a specific verse or stanza of a poem or section of a story or drama.	X		X	X		
CCSS.ELA- Literacy.RL.7.10	By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6-8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	X	Х	X	X	X	х

English Language Arts Standards Reading: Foundational Skills

CCSS.ELA- Literacy.RF.4.3	Know and apply grade-level phonics and word analysis skills in decoding words.	x	х		
CCSS.ELA- Literacy.RF.4.3.a	Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.	X	X		
CCSS.ELA- Literacy.RF.5.3	Know and apply grade-level phonics and word analysis skills in decoding words.	х	х		
CCSS.ELA-Literacy. RF.5.3.a	Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.	X	X		

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English Language Arts Standar	rds
Writing	

English Language Arts Standards Writing		Crossword Puzzle	Point of View	Dropped Phrase	Bingo	Robotics	The Hobo
CCSS.ELA- Literacy.W.4.2	Write informative/explanatory texts to examine a topic and convey ideas and information clearly.				х	х	х
CCSS.ELA- Literacy.W.4.3	Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.		Х				
CCSS.ELA- Literacy.W.4.3.a	Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally.		Х				
CCSS.ELA- Literacy.W.4.8	Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.				X	х	X
CCSS.ELA- Literacy.W.5.2	Write informative/explanatory texts to examine a topic and convey ideas and information clearly.				х	х	х
CCSS.ELA- Literacy.W.5.3	Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.		Х				
CCSS.ELA- Literacy.W.5.3.a	Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally.		х				
CCSS.ELA- Literacy.W.5.8	Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.				х		
CCSS.ELA- Literacy.W.6.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.				х	х	х
CCSS.ELA- Literacy.W.6.3	Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.		Х				
CCSS.ELA- Literacy.W.6.3.a	Engage and orient the reader by establishing a context and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically.		X				
CCSS.ELA-Literacy.W.7.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.				х	х	х
CCSS.ELA- Literacy.W.7.3	Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.		X				
CCSS.ELA- Literacy.W.7.3.a	Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically.		х				

Next Generation Science Standards

From Molecules to Organisms: Structures and Processes Develop and use a model to describe the function of a		Crossword Puzzle	Point of View	Dropped Phrase	Bingo	Robotics	The Hobo
S-LS1-3	Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.					Х	
XC-SF-MS-1	Complex and microscopic structures and systems can be visualized, modeled, and used to describe how their function depends on the shapes, composition, and relationships among its parts; therefore, complex natural and designed structures/systems can be analyzed to determine how they function.					х	
XC-SF-MS-2	Structures can be designed to serve particular functions by taking into account properties of different materials, and how materials can be shaped and used.					х	
XC-P-LE-1	Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.					х	

Engineering Design

3-5-ETS1-1	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.					х		
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