2014-2015 Junior High Academic Decathlon Study Guide

All books are available online through Amazon.com. Any additional online product sites are listed with each resource.

Team Event: Logic Test

Students should study how to solve a wide variety of logic problems including verbal logic, quantitative reasoning, and nonverbal logic. Students may use any Penny Press, Dell Logic, or Variety Puzzles books as study guides. Logic puzzle books are available through Amazon and Barnes and Nobles. Also, the Dollar Store is a good source for Sudoku and Variety Puzzle books. In addition, directions for solving different types of logic problems and samples are available at www.teacherspayteachers.com/Store/Education-Test-Creators.

The Logic Test may contain, but is not limited to, any of the following types of problems:

- Sudoku
- Kenken
- Cryptograms
- Algebra word problems
- Anagrams
- Spatial reasoning
- Patterns & graphs
- Probability
- Lateral thinking
- Logic grids
- Venn diagrams
- Rebus puzzles
- True/False logic

The following websites provide excellent sample problems:

- http://www.brainbashers.com
- http://www.mensa.org/workout.php
- http://www.mensaforkids.org
- http://puzzlersparadise.com
- http://www.sudoku.org.uk
- http://www.mathisfun.com/puzzles
- http://www.allstarpuzzles.com
- http://www.braingle.com/brainteasers

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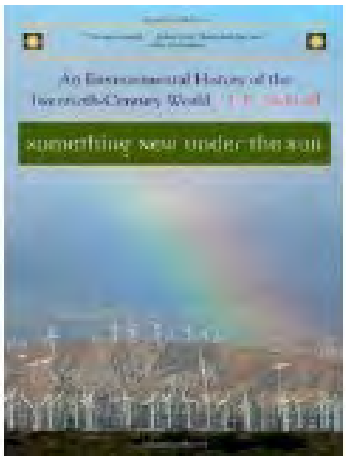
Team Event: Super Quiz

History/Social Studies:

Something New Under the Sun: An Environmental History of the Twentieth-Century World, by J.T. McNeill



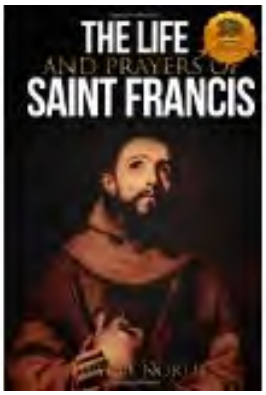
Part 2: Engines of Change, Chapters 9-12

Paperback: 448 pages
Publisher: W. W. Norton & Company; Reprint edition (April 17, 2001)
Language: English
ISBN-10: 0393321835
ISBN-13: 978-0393321838

Available in paperback and Kindle versions.

Religion

The Life and Prayers of Saint Francis, by Wyatt North



Paperback: 69 pages
Publisher: Wyatt North Publishing, LLC 2012
Language: English
ISBN-10: 1484938984
ISBN-13: 978-1484938980

Available in paperback and Kindle versions.
Additional product site: www.WyattNorth.com

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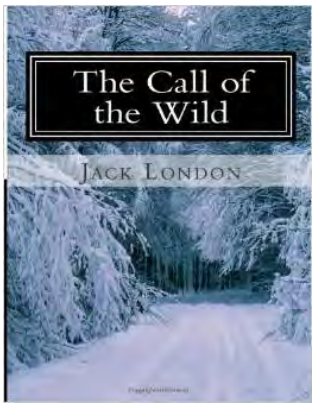
Literature

***The Call of the Wild*,** by Jack London



Paperback: 64 pages
Publisher: CreateSpace Independent Publishing Platform (November 3, 2013)
Language: English
ISBN-10: 1493663437
ISBN-13: 978-1493663439

Available in paperback and Kindle version.

Note: Any unabridged version of this book may be used.

Fine Arts

***The Annotated Mona Lisa*,**
A Crash Course in Art History from Prehistoric to Post-Modern,
by Carol Strickland, Ph.D.

Photography, Video & New Media Arts,
Photo-Based Imagery, and Photo Realism:
Pages 86, 88, 92-95, 152-153, 184-87, 195-196

Paperback: 216 pages
Publisher: Andrews McMeel Publishing; 2 edition (October 1, 2007)
Language: English
ISBN-10: 0740768727
ISBN-13: 978-0740768729

Available in paperback.
Additional product site: www.andrewsmcmeel.com.

Note: The page numbers listed above correspond only to the 2nd edition version of the book. The first edition of the book, which was used several years ago for Academic Decathlon, does not contain all of the information for this year's competition. Order only 2nd editions, with the black background for the cover.

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Science

DK Science – The Definitive Visual Guide, by Adam Hart – Davis

Ecology:
Pages 198-203, 278-279, 332-335, 412-419

Paperback: 512 pages
Publisher: DK ADULT; Reprint edition (September 19, 2011)
Language: English
ISBN-10: 0756689015
ISBN-13: 978-0756689018

Available in paperback and e-book versions.
Additional product site: www.us.dk.com

Note: This is the same resource that was used for the Academic Decathlon individual Science test in 2014.

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Individual Subject Tests:

Religion

Youcat, by Cardinal Christoph Schonborn

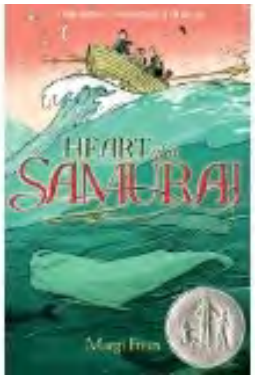
Part 2: How We Celebrate the Christian Mysteries

Paperback: 300 pages
Publisher: Ignatius Press; Later Printing Used edition (April 1, 2011)
Language: English
ISBN-10: 1586175165
ISBN-13: 978-1586175160

Available in paperback and Kindle versions.
Note: This is the same resource that was used for the Academic Decathlon individual religion test in 2014.

Literature

Heart of a Samurai, by Margi Preus

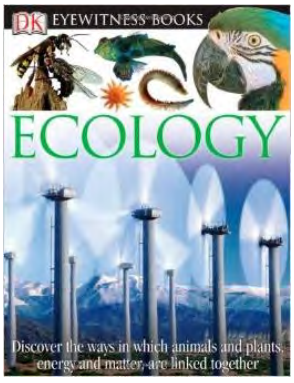


Paperback: 336 pages
Publisher: Amulet Paperbacks (February 1, 2012)
Language: English
ISBN-10: 1419702009
ISBN-13: 978-1419702006

Available in paperback and Kindle versions.

Science

DK Eyewitness Books: Ecology, by Brian Lane and Steve Pollock



Series: DK Eyewitness Books
Hardcover: 72 pages
Publisher: DK CHILDREN (September 5, 2005)
Language: English
ISBN-10: 0756613876
ISBN-13: 978-0756613877

Available in hardcover and E-book versions.
Additional product site: www.us.dk.com

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Fine Arts

The Annotated Mona Lisa, by Carol Strickland, Ph.D.

Architecture:
Pages 1-2, 5-11, 14-19, 24-29, 37-39, 49, 59, 63-65, 89-90, 126-127, 146 -147, 180-183, and 194.

Paperback: 216 pages
Publisher: Andrews McMeel Publishing; 2 edition (October 1, 2007)
Language: English
ISBN-10: 0740768727
ISBN-13: 978-0740768729

Available in paperback.
Additional product site: www.andrewsmcmeel.com.

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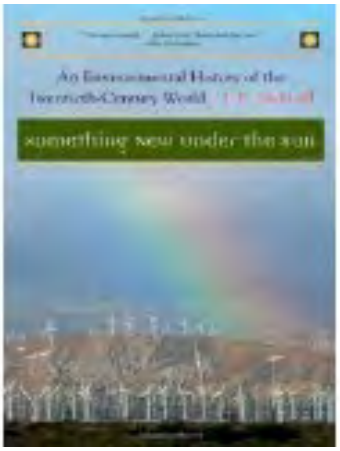
Social Studies

Something New Under the Sun: An Environmental History of the Twentieth-Century World, by J.T. McNeill



Part I: The Music of the Spheres, Chapters 1-8

Paperback: 448 pages
Publisher: W. W. Norton & Company; Reprint edition (April 17, 2001)
Language: English
ISBN-10: 0393321835
ISBN-13: 978-0393321838

Available in paperback and Kindle versions.

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Current Events

www.infoplease.com/news/2014/current-events

World News, U.S. News, and Disasters and Science News from **July, 2014 through January, 2015**

www.infoplease.com/us/supreme-court/supreme-court-members.html

Current members of the U.S. Supreme Court

www.infoplease.com/us/government/cabinet-members-barack-obama.html

Current cabinet members for President Barack Obama

www.infoplease.com/world/leaders/

Current world leaders for countries mentioned in the current event articles from **July, 2014 to January, 2015**.

www.cia.gov/library/publications/the-world-factbook/

Capital cities and major economic centers of countries mentioned in the current event articles from **July, 2014 to January, 2015.** The CIA World Factbook is an excellent online resource for information on foreign countries.

www.whitehouse.gov/the-press-office/2015/president-barack-obamas-state-union-address

State of the Union Address, January, 2015

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English

Any 8th grade English textbook that includes the following Common Core Standards may be used as a study resource.

Conventions of Standard English:

CCSS.ELA-LITERACY.L.8.1

Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking.

CCSS.ELA-LITERACY.L.8.1.A

Explain the function of verbals (gerunds, participles, infinitives) in general and their function in particular sentences.

CCSS.ELA-LITERACY.L.8.1.B

Form and use verbs in the active and passive voice.

CCSS.ELA-LITERACY.L.8.1.C

Form and use verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood.

CCSS.ELA-LITERACY.L.8.1.D

Recognize and correct inappropriate shifts in verb voice and mood.

CCSS.ELA-LITERACY.L.8.2

Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing.

CCSS.ELA-LITERACY.L.8.2.A

Use punctuation (comma, ellipsis, dash) to indicate a pause or break.

CCSS.ELA-LITERACY.L.8.2.B

Use an ellipsis to indicate an omission.

CCSS.ELA-LITERACY.L.8.2.C

Spell correctly.

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English

Knowledge of Language:

CCSS.ELA-LITERACY.L.8.3

Use knowledge of language and its conventions when writing, speaking, reading, or listening.

CCSS.ELA-LITERACY.L.8.3.A

Use verbs in the active and passive voice and in the conditional and subjunctive mood to achieve particular effects (e.g., emphasizing the actor or the action; expressing uncertainty or describing a state contrary to fact).

Vocabulary Acquisition and Use:

CCSS.ELA-LITERACY.L.8.4

Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on *grade 8 reading and content*, choosing flexibly from a range of strategies.

CCSS.ELA-LITERACY.L.8.4.A

Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.

CCSS.ELA-LITERACY.L.8.4.B

Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., *precede, recede, secede*).

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Math

Any Algebra I textbook that includes the following Common Core Standards may be used as a study resource.

Expressions and Equations Work with radicals and integer exponents:

CCSS.MATH.CONTENT.8.EE.A.1

Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.

CCSS.MATH.CONTENT.8.EE.A.2

Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.

CCSS.MATH.CONTENT.8.EE.A.3

Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as 3 times 10^8 and the population of the world as 7 times 10^9, and determine that the world population is more than 20 times larger*.

CCSS.MATH.CONTENT.8.EE.A.4

Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology

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Math

Understand the connections between proportional relationships, lines, and linear equations.

CCSS.MATH.CONTENT.8.EE.B.5

Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

CCSS.MATH.CONTENT.8.EE.B.6

Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis.

Analyze and solve linear equations and pairs of simultaneous linear equations.

CCSS.MATH.CONTENT.8.EE.C.7

Solve linear equations in one variable.

CCSS.MATH.CONTENT.8.EE.C.7.A

Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).

CCSS.MATH.CONTENT.8.EE.C.7.B

Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

CCSS.MATH.CONTENT.8.EE.C.8

Analyze and solve pairs of simultaneous linear equations.

CCSS.MATH.CONTENT.8.EE.C.8.A

Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

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Math

CCSS.MATH.CONTENT.8.EE.C.8.B

Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6*.

CCSS.MATH.CONTENT.8.EE.C.8.C

Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair*.

***Define, evaluate, and compare functions*.**

CCSS.MATH.CONTENT.8.F.A.1

Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.

CCSS.MATH.CONTENT.8.F.A.2

Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change*.

CCSS.MATH.CONTENT.8.F.A.3

Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line*.

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Math

Use functions to model relationships between quantities.

CCSS.MATH.CONTENT.8.F.B.4

Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (*x, y*) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.

CCSS.MATH.CONTENT.8.F.B.5

Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

CCSS.MATH.CONTENT.8.G.B.6

Explain a proof of the Pythagorean Theorem and its converse.

CCSS.MATH.CONTENT.8.G.B.7

Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.