

2010
Saskatchewan
Additional Learning Resources

Foundations of Mathematics and Pre-calculus

10



Foundations of Mathematics and Pre-calculus 10:

Additional Learning Resources

Prepared by:

Curriculum and E-Learning Branch

Ministry of Education

2010

Foundations of mathematics and pre-calculus 10: additional learning resources

ISBN 978-1-926841-20-5

1. Mathematics – Study and teaching (Secondary) – Bibliography.

I. Saskatchewan. Ministry of Education. Curriculum and E-Learning. Learning Resources.

510.7016

016.5107

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Foreword

This list of learning resources identifies high-quality resources that have been recommended by the Ministry of Education to support the curriculum, *Foundations of Mathematics and Pre-calculus 10*. This list will be updated as new resources are recommended and older ones are no longer available. A list of core learning resources can be found on the Ministry of Education website.

(CAN) indicates that a Canadian contributed to the development of the resource and/or that it includes Canadian content. (SK) indicates that a Saskatchewan person contributed to the development of the resource and/or that it includes Saskatchewan content. Resources evaluated and recommended as support for the Western and Northern Canadian Protocol curriculum frameworks and Saskatchewan's provincial curricula have the designation (WNCP) before the annotation.

Other resources beyond those recommended in this list may effectively support the curriculum, *Foundations of Mathematics and Pre-calculus 10*. It remains the responsibility of educators to preview and select materials that best meet the needs of their school or community. Educators should choose resources in accordance with their school division's learning resources selection policy.

Pricing of the learning resources contained in this document is subject to change without notice.

Manipulatives are an essential component of an effective mathematics program, leading to the development of deeper understanding of mathematical concepts. Included are charts outlining the types of manipulatives needed, and the suggested quantity recommended (where appropriate). Some manipulatives may be collected; others may be constructed; and many may be purchased. The main distributors for these materials are Exclusive Educational Products at www.exclusiveeducational.ca and Spectrum Nasco Educational Supplies Ltd. at <https://education.spectrum-nasco.ca/>. Please consult these companies' catalogues for purchasing information.

The Ministry of Education expresses its appreciation to publishers, producers, and distributors who have provided learning resources for evaluation, and gratefully acknowledges the contributions made by educators who served as evaluators.

Manipulatives

Item	Suggested Quantity
3-D objects, including spheres, right cones, cylinders, prisms, and pyramids	-1 set per small group (plastic with detachable lid work well for volume and for capacity)
Alge-tiles	- 1 small set per pair of students
Callipers	- metric and imperial - 1 manual per student (packages of 6 plastic at about \$2.00 each) - 1 or 2 digital per classroom
Clinometres	- 1 per small group (can be constructed by students as an activity)
Congruent small square tiles	- 100 per small group
Dynamic Geometric Software (such as Geometric Supposer or Geogebra)	
Empty containers	- A variety per small group - Different shapes and sizes for capacity, volume, and/or surface area
Graphing calculator and/or software	- 1 per student
Linking cubes	- 100 per small group or pair
Metre stick and yard sticks	- 1 per small group of students
Protractors and other tools for measuring angles	- 1 protractor per student - Small assortment of a variety of tools used to measure angles (can be purchased as full circle or semi-circle)
Rulers	- 1 per student (imperial and metric) - Small assortment of rulers available for carpentry, sewing, etc.
Scientific calculators	- 1 per student
Tape measures (imperial and metric)	
Scissors, string, rope, rice or sand (commercial beads for measurement capacity), drinking straws, needle and thread, small washers or weights, oranges, etc.	

Print, Audio-visual, and Other Resources

Agnesi to Zeno: Over 100 Vignettes from the History of Math

Author: Smith, Sanderson M.

Annotation

Chronologically ordered vignettes discuss the cultural and historical development of mathematics and how mathematics is used in our daily lives. Each vignette includes a brief biography, an explanation of the mathematician's contribution, and an insight into the historical and political perspective of the time. Activities involve research, communication, and analytical thinking as students apply the mathematicians' concepts. This resource includes a table of contents, a bibliography, an index, and an answer key.

K	1	2	3	4	5	6	7	8	9	10	11	12
										√	√	√

Suggested Use

General Reference

Publisher

Key Curriculum Press

Distributor

Spectrum Educational Supplies Ltd.

150 Pony Dr

NEWMARKET ON L3Y 7B6

(800) 668-0600

(905) 898-0031

Fax: (800) 668-0602

Email: customerservice@spectrumed.com

Website: <https://education.spectrum-nasco.ca/>

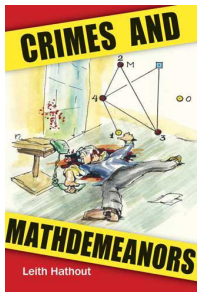
Price: \$36.10 pbk.

Pagination: 266 p.

ISBN: 978-1-55953-107-8

Copyright: 1996

Year Recommended: 2002



Crimes and Mathdemeanors

Author: Hathout, Leith

Illustrator: Hofmann, Karl H.

Annotation

Ravi is a 14-year-old genius who likes to help the police solve cases. Each chapter is a detective story with a mathematical puzzle at its core that Ravi is able to solve. The reader is invited to solve the mystery on his or her own. The author also explains the mathematics that is used to find the solution to the puzzle.

K	1	2	3	4	5	6	7	8	9	10	11	12
										√	√	√

Suggested Use

Student Resource

Publisher

A. K. Peters Ltd.

Distributor

Login Canada
 300 Saulteaux Cr
 WINNIPEG MB R3J 3T2
 (800) 665-1148
 Fax: (800) 665-0103
 Email: orders@lb.ca
 Website: <http://lb.ca>

Price: \$16.50 pbk.

Pagination: 150 p.

ISBN: 978-1-56881-260-1

Copyright: 2007

Year Recommended: 2010

Fantasia Mathematica: Being a Set of Stories, Together with a Group of Oddments and Diversions, All Drawn from the Universe of Mathematics

Author: Fadiman, Clifton

Annotation

Featuring a collection of stories, poems, and essays, this anthology presents an amusing approach to mathematics. Intriguing selections, from the poignant to the comical, include a horse that collapses into a four-dimensional cube and Mephisto's search for mathematical truth. Excerpts from novels, an assemblage of humorous jokes and anecdotes, and literary works of the science fiction genre combine in this collection of mathematically flavoured literature.

K	1	2	3	4	5	6	7	8	9	10	11	12
										√	√	√

Suggested Use

General Reference

Publisher

Copernicus Books

Distributor

Login Canada
300 Saulteaux Cr
WINNIPEG MB R3J 3T2
(800) 665-1148
Fax: (800) 665-0103
Email: orders@lb.ca
Website: <http://lb.ca>

Price: \$21.95 pbk.

Pagination: 298 p.

ISBN: 978-0-387-94931-4

Copyright: 1997

Year Recommended: 2004

The Geometer's Sketchpad. Version 5

Annotation

(WNCP, CAN) In this updated version, students can use this software program to build and investigate mathematical models, objects, figures, diagrams, and graphs. New features include transformable pictures, hot text, a marker tool, expanded algebraic and geometric capabilities, and integrated support.

The reference manual is a print and bound document of the software reference. It is also included electronically with the Sketchpad software.

System requirements for *Windows*:

- Pentium base system or equivalent
- *Windows XP* or later (including *Vista* and *Windows 7*)
- 300 MB free disk space

System requirements for *Macintosh*:

- PowerPC or Intel based system
- *Mac OS 10.4* or later
- 300 MB free disk space

K	1	2	3	4	5	6	7	8	9	10	11	12
										√	√	√

Suggested Use

Student Resource

Publisher

Key Curriculum Press

Distributor

Spectrum Educational Supplies Ltd.

150 Pony Dr

NEWMARKET ON L3Y 7B6

(800) 668-0600

(905) 898-0031

Fax: (800) 668-0602

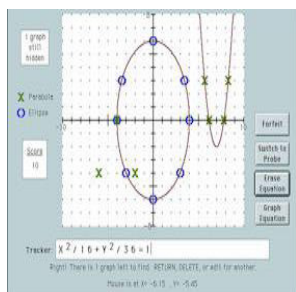
Email: customerservice@spectrumed.com

Website: <https://education.spectrum-nasco.ca/>

Copyright: 1996

Year Recommended: 2010

Title	Product Number	Price
Printed Reference Manual	90800	\$52.75 pbk.
School/Institution Licence	90772	1 @ \$73.90 each 5 @ \$31.70 each 20 @ \$26.40 each 50 @ \$21.15 each 100 @ \$15.85 each



Green Globes & Graphing Equations

Authors: Dugdale, Sharon and Kibbey, David

Annotation

(WNCP) This resource has two components: a basic graphing utility and an interactive series of games. The graphing utility allows the user to graph linear, quadratic, polynomial, rational, absolute value, and trigonometric relations. The games require students to relate points on the graph and the equations of functions and/or relations. At its highest level, students must first probe using equations of vertical and horizontal lines to determine the location of points, and then must determine the exact equations that they represent. This tool provides a hands-on experience for the students when learning the connections between relations and the resulting graphs.

A teacher's guide accompanies the software and provides ideas and worksheets.

System requirements for *Windows*:

- PC ME10
- PC 2000
- PC NT
- PC XP
- PC Vista
- CPU PC: 486
- Memory PC: 8 MB

System requirements for *Macintosh*:

- Mac 9.X
- CPU Mac: 68040
- Memory Mac: 8 MB

Additional system requirements are OS X Classic Mode only. The product is not Intel Mac compatible.

K	1	2	3	4	5	6	7	8	9	10	11	12
										√	√	√

Suggested Uses

Student Resource
Teacher Reference

Publisher/Distributor

Sunburst Technology
1550 Executive Dr
ELGIN IL 60123
(800) 321-7511
Email: service@sunburst.com
Website: <http://commerce.sunburst.com>

Copyright: 2009

Year Recommended: 2009

Title	Product Number	Price
School Licence	T04348	\$59.95 U.S.
Lab Pack of 10	T04350	\$159.95 U.S.
Network Version	T04353	\$699.95 U.S.
Site Unlimited	T04354	\$699.95 U.S.

Introducing Mathematics

Authors: Sardar, Ziauddin, Ravetz, Jerry, and Van Loon, Borin

Annotation

This learning resource traces the history of mathematics in comic strip format. The authors describe the discoveries and concepts from mathematicians of the ancient world to modern times. Mathematical topics such as geometry, calculus, number systems, and statistical reasoning are also explored. This book offers a lighthearted look at how mathematical advancements create further unanswered questions. The resource includes an index and a list of suggested literature.

K	1	2	3	4	5	6	7	8	9	10	11	12
										√	√	√

Suggested Use

General Reference

Publisher

Icon Books Limited

Distributor

Penguin Group (Canada)
90 Eglinton Ave E, Suite 700
TORONTO ON M4P 2Y3
(800) 399-6858
Fax: (800) 363-2665
Email: online@ca.penguin.com
Website: www.penguin.ca

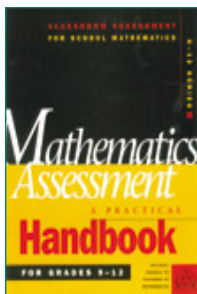
Price: \$17.00 pbk.

Pagination: 176 p.

ISBN: 978-1-84046-637-9

Copyright: 2005

Year Recommended: 2006



Mathematics Assessment: A Practical Handbook for Grades 9-12. 4th ed.

Editors: Bush, William S. and Greer, Anja S.

Annotation

This resource considers new ways to assess students, focuses on assessment tasks, offers ways to plan and conduct a classroom assessment program, and discusses the scoring, grading, reporting, and use of assessment data. The editors provide opportunities for teachers to reflect on their teaching practice and how they use mathematical assessment in the classroom.

The book includes a table of contents, a listing of resources, and an index.

K	1	2	3	4	5	6	7	8	9	10	11	12
									√	√	√	√

Suggested Use

Professional Resource

Publisher/Distributor

National Council of Teachers of Mathematics
1906 Association Dr
RESTON VA 20191-1502
(800) 235-7566
(703) 620-9840
Fax: (703) 476-2970
Email: orders@nctm.org
Website: www.nctm.org

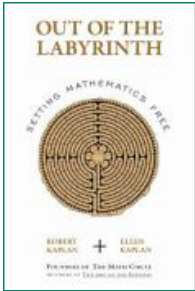
Price: \$33.95 U.S. pbk.

Pagination: 149 p.

ISBN: 978-0-87353-476-5

Copyright: 2005

Year Recommended: 2009



Out of the Labyrinth: Setting Mathematics Free

Authors: Kaplan, Robert and Kaplan, Ellen

Annotation

Written as a guide for parents and educators, this book argues that mathematics should be taught as the highest form of intellectual play rather than as a step-by-step acquisition of skills and facts. The authors emphasize that mathematics is meant to be explored, and that it does not require special talent or ability.

K	1	2	3	4	5	6	7	8	9	10	11	12
√	√	√	√	√	√	√	√	√	√	√	√	√

Suggested Use

Professional Resource

Publisher/Distributor

Oxford University Press
70 Wynford Dr
DON MILLS ON M3C 1J9
(800) 387-8020
(416) 441-2941
Fax: (800) 665-1771
Email: customer.service.ca@oup.com
Website: www.oupcanada.com

Price: \$27.95 hdc.

Pagination: 256 p.

ISBN: 978-0-19-514744-5

Copyright: 2007

Year Recommended: 2007

The Pattern and Function Connection

Author: Fulton, Brad S. and Lombard, Bill

Annotation

Through study and analysis of patterns, this resource provides support for building logical understanding of relations, linear and nonlinear functions, and function rotation. Authentic applications are posed in the suggested activities, discussions, journal topics, and homework assignments.

K	1	2	3	4	5	6	7	8	9	10	11	12
								√	√	√	√	√

Suggested Use

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Publisher

Key Curriculum Press

Distributor

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(800) 668-0600

(905) 898-0031

Fax: (800) 668-0602

Email: customerservice@spectrumed.com

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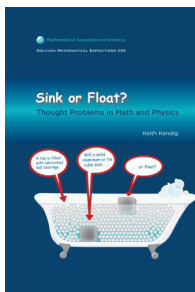
Price: \$29.95 pbk.

Pagination: 161 p.

ISBN: 978-1-55953-395-9

Copyright: 2001

Year Recommended: 2004



Sink or Float?: Thought Problems in Math and Physics

Author: Kendig, Keith

Annotation

Sink or Float? is a collection of over 250 problems drawn from mathematics and the real world. Kendig aims to show how much can be learned by using everyday common sense. The problems are concrete and understandable. Students must know some math and some physics to solve the problems. All the problems are in multiple-choice format with answers at the back of the book. Included in the book are boxes that contain historical notes or little-known facts. The book has a table of contents, answers, a glossary, references, a problem index, and a subject index.

K	1	2	3	4	5	6	7	8	9	10	11	12
										√	√	√

Suggested Uses

Student Resource
Teacher Resource

Publisher/Distributor

Mathematical Association of American
1529 18th Street NW
WASHINGTON DC 20036-1358
(800) 741-9415
Fax: (202) 265-2384
Email: maahq@maa.org
Website: www.maa.org

Price: \$61.95 U.S. hdc.

Pagination: 392 p.

ISBN: 978-0-88385-339-9

Copyright: 2008

Year Recommended: 2010



Teaching Mathematics through Problem Solving: Grades 6-12

Editor: Schoen, Harold L.

Annotation

This volume and its companion are professional research-based resources that promote a problem-solving approach to mathematics instruction. This approach engages students in making sense of problematic tasks in which mathematical concepts are embedded. The writers address issues and perspectives related to this approach, provide suggestions to select and use appropriate tasks and learning tools, and provide examples of the use of this approach in various classroom settings.

K	1	2	3	4	5	6	7	8	9	10	11	12
						√	√	√	√	√	√	√

Suggested Use

Professional Resource

Publisher/Distributor

National Council of Teachers of Mathematics
1906 Association Dr
RESTON VA 20191-1502
(800) 235-7566
(703) 620-9840
Fax: (703) 476-2970
Email: orders@nctm.org
Website: www.nctm.org

Price: \$38.95 U.S. pbk.

Pagination: 270 p.

ISBN: 978-0-87353-541-0

Copyright: 2003

Year Recommended: 2006

A Visual Approach to Functions

Author: Van Dyke, Frances

Annotation

Consisting of individual lessons with blackline masters and teacher notes, this resource introduces linear, exponential, and quadratic functions encountered in algebra. Each chapter features a graph and a series of statements describing a function that are explored prior to the introduction of tables or algebraic notation. Subsequent chapter lessons introduce coordinates, quantitative graphs, and tables. To deepen conceptual understanding of a function, the activities emphasize verbal, numeric, visual, and algebraic representation. Ideas for incorporating graphing calculators are included at the end of each chapter.

K	1	2	3	4	5	6	7	8	9	10	11	12
									√	√	√	√

Suggested Use

Professional Resource

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Key Curriculum Press

Distributor

Spectrum Educational Supplies Ltd.
150 Pony Dr
NEWMARKET ON L3Y 7B6
(800) 668-0600
(905) 898-0031
Fax: (800) 668-0602
Email: customerservice@spectrumed.com
Website: <https://education.spectrum-nasco.ca/>

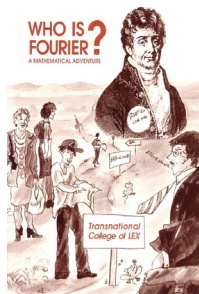
Price: \$29.95 pbk.

Pagination: 170 p.

ISBN: 978-1-55953-537-3

Copyright: 2001

Year Recommended: 2004



Who Is Fourier?: A Mathematical Adventure

Author: Transnational College of LEX

Translator: Gleason, Alan

Annotation

Originally, the idea for this learning resource was conceived as a means of relating the mathematical insights of university students to their colleagues. Students, who each explored a different aspect of Fourier, write detailed explanations of their discoveries in each chapter. Mathematical concepts in trigonometry, exponentiation, differentiation, and integration are explored through real-life examples. The authors then use these examples to illustrate a direct application of these areas of mathematics to complex Fourier analysis. This resource provides insight into the development of mathematical understanding through the eyes of students. The book includes a table of contents, an index, and a bibliography.

K	1	2	3	4	5	6	7	8	9	10	11	12
										√	√	√

Suggested Use

General Reference

Publisher/Distributor

LEX America/Language Research Foundation
 90 Sherman St
 CAMBRIDGE MA 02140
 (617) 354-1140
 Fax: (617) 354-1150
 Email: publisher@lexlrf.org
 Website: www.lexlrf.org/

Price: \$29.95 U.S. pbk.

Pagination: 426 p.

ISBN: 978-0-9643504-0-8

Copyright: 1995

Year Recommended: 2002

Zap-A-Graph

Annotation

(WNCP, CAN) This is a graphing program for use in learning and reviewing graphs of relations and functions. It uses transformations, derived functions, and composition of functions. Relations can be input without recasting into function form.

System requirements for PC:

- *Windows 3.1, 3.11 or Windows 95*
- 1 MB RAM

System requirements for *Macintosh*:

- *Macintosh System 6.0 or higher*
- 1 MB RAM

Note: A provincial *Windows* licence is negotiable, at a mutually reasonable rate, either for a permanent licence or on an annual subscription basis.

K	1	2	3	4	5	6	7	8	9	10	11	12
										√	√	√

Suggested Uses

Student Resource
Teacher Reference

Publisher/Distributor

Brain Waves Software Inc.
2103 Galetta Side Rd, RR 1
FITZROY HARBOUR ON KOA 1X0
Email: bwaves@istar.ca
(613) 623-3327
Fax: (613) 623-8686

No order number is required.

Copyright: 1996

Year Recommended: 1999

Title	Price
<i>Macintosh OS Single User</i>	\$79.00
<i>Macintosh 10-user Site Licence</i>	\$229.00
<i>Macintosh 40-user Site Licence</i>	\$449.00
<i>Windows Single User</i>	\$79.00
<i>Windows 10-user Site Licence</i>	\$229.00
<i>Windows 40-user Site Licence</i>	\$449.00

Digital Resources

The Saskatchewan Ministry of Education provides a forum through the Digital Resources page for teachers to access and share educationally appropriate Internet sites. The URL Database of websites can be found on the Ministry of Education website at www.education.gov.sk.ca/digital-resources.

Information on sites that are recommended and linked to curriculum outcomes can be found by accessing this database. Teachers are encouraged to share Internet sites with others in the province by registering in the URL Database. After an account has been created, teachers are able to suggest new Internet sites as well as access and review sites submitted by other teachers. The reviews are used to help determine a recommendation and links to curricula. Educators can register at the above address.

The General Reference Centre (GRC) provides access to general Internet sites that relate to curricula. The GRC can be found on the Ministry of Education website.

Current Internet sites that provide information for mathematics educators follow:

Devlin's Angle at www.maa.org/devlin/devangle.html

(CORE) Keith Devlin's monthly rant/column examines mathematics topics. In each rant or column, Devlin provides mathematics educators the opportunity to reflect on practice and current thinking on mathematics.

GeoGebra at www.geogebra.org/cms/

(CORE) *GeoGebra* provides free mathematics software for learning and teaching. Included on the website are tutorials, applets, an online instruction book, and a wiki.

InfoTrac at www.education.gov.sk.ca/Databases-for-schools

(CORE) *Infotrac* contains electronic databases of more than 2,300 full-text magazines, journals, and reference sources. Examples of databases include Junior Edition, Student Edition, General Reference Centre Gold, and CPI.Q (Canadian Periodicals).

Math Central at <http://mathcentral.uregina.ca/index.php>

(CORE) *Math Central* is a clearinghouse of mathematical resources for students and teachers.

National Council of Teachers of Mathematics at www.nctm.org

(CORE) The National Council of Teachers of Mathematics (NCTM) is committed to promoting excellence and innovation in mathematics teaching and learning for all. It publishes the journals *Teaching Children Mathematics*, *Mathematics: Teaching in the Middle School*, and *Mathematics Teacher*.

National Library of Virtual Manipulatives at <http://nlvm.usu.edu/en/nav/vLibrary.html>

(CORE) This website provides educators with electronic resources to augment student learning in the areas of shape and space, number, algebra, measurement, data analysis, and probability.