

2011
Saskatchewan
Core Learning Resources

Workplace and Apprenticeship Mathematics

20



Workplace and Apprenticeship Mathematics 20:

Core Learning Resources

Prepared by:

Curriculum and E-Learning Branch

Ministry of Education

2011

Workplace and apprenticeship mathematics 20: core learning resources

ISBN 978-1-926841-60-1

1. Applied mathematics – Study and teaching (Secondary) – Bibliography.

2. Finance, Personal – Mathematics – Study and teaching (Secondary) – Bibliography.

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

570.7016

016.5107

All rights for images of books or other publications are reserved by the original copyright owners.

Table of Contents

Foreword	v
Manipulatives.....	vii
Print, Audio-visual, and Other Resources	1
Out of Print but Still Useful Resources.....	8
Digital Resources	9

Foreword

This list of learning resources identifies high-quality resources that have been recommended by the Ministry of Education to support the curriculum, *Workplace and Apprenticeship Mathematics 20*. This list will be updated as new resources are recommended and older ones are no longer available. A list of additional 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. (FNMI) indicates that a First Nations, Métis, or Inuit person contributed to the development of the resource and/or that it includes First Nations, Métis, or Inuit 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, *Workplace and Apprenticeship Mathematics 20*. It remains the responsibility of educators to preview and select materials that align with curriculum and 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 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 is a chart outlining the types of manipulatives needed, the suggested uses, 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 right cylinders and cones	- 1 set per small group (plastic with detachable lid works well for volume and for capacity)
Balances Weights and weigh scales (imperial and metric)	- 1 balance scale and one weigh scale per 2 students
Calculator with trigonometric functions and square root	- 1 per student
Callipers	- metric and imperial - 1 per student (packages of 6 manual plastic at about \$2.00 each) - 1 or 2 digital per classroom
Carpenter squares	- metric and imperial - 1 per small group (available in a variety of sizes and kinds such as folding squares and adjustable T-squares)
Compass	- 1 per student
Dynamic geometric software (such as Geometric Supposer or Geo-gebra)	
Measuring cups, teaspoons, and tablespoons	- metric and imperial - 1 set per small group or pair of students
Measuring tapes	- metric and imperial - 1 manual per pair of students - 1 or 2 long ones (100 or more feet used in track meets) - 1 digital per small group
Metre sticks and yard sticks	- metric and imperial - 1 per pair of students
Micrometres	- 1 per small group
Mira	- 1 per small group (may already be in the school)

Print, Audio-visual, and Other Resources

Constructive Assessment in Mathematics: Practical Steps for Classroom Teachers

Author: Clarke, David

Annotation

(CORE) Reinforcing the central purpose for assessing students, the three parts of this resource expand upon how assessment can foster learning by valuing students' strengths and identifying concepts not yet mastered. *Constructive Assessment in Mathematics* addresses integrating assessment into teaching and instruction, the selection and implementation of assessment strategies, and communicating assessment information to educational partners. This resource demonstrates the constructive and integral approach to assessment described in the curriculum.

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

Suggested Use

Professional 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/>

Price: \$23.65 pbk.

Pagination: 87 p.

ISBN: 978-1-55953-201-7

Copyright: 1997

Year Recommended: 2004

Mathematics: Making Financial Decisions 11

Authors: Brosseau, Jeff; Irvine, Jeff; and Miller, Tess

Annotation

(CORE, CAN) This student resource provides current investigations in consumer mathematics. The real-world examples and applications contain Canadian content. The chapters focus on budgeting, interest annuities, mortgages, and exponential growth. Throughout the resource, sets of discussion problems and accompanying case studies provide an authentic learning context for applying the learned concepts. Each chapter concludes with a profile of a career that utilizes the studied mathematical concepts. An appendix and a glossary list the mathematical terms and the resource's references to technology.

An included interactive ebook provides the student text in PDF form with search capabilities.

For each chapter, the teacher's resource contains a suggested plan that outlines sample responses to the student investigations, assessment strategies, and remedies for common student errors.

The included CD-ROM package contains a student ebook, teaching notes, an assessment resource kit, and blackline masters.

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

Suggested Uses

Student Resource

Publisher/Distributor

McGraw-Hill Ryerson Limited

300 Water Street

WHITBY ON L1N 9B6

(800) 565-5758

Fax: (800) 463-5885

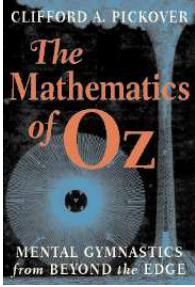
Email: cs_queries@mcgrawhill.ca

Website: www.mcgrawhill.ca/

Copyright: 2001

Year Recommended: 2003

Title	ISBN	Price
Student Textbook	978-0-07-086488-7	\$101.72 hdc.
Teacher's Resource	978-0-07-089681-X	\$383.49 loose-leaf



The Mathematics of Oz: Mental Gymnastics from Beyond the Edge

Author: Pickover, Clifford A.

Annotation

(CORE) Dorothy is again uprooted from her home! In *The Mathematics of Oz: Mental Gymnastics from Beyond the Edge*, Dorothy must solve an array of brainteasers in order to escape the clutches of her abductors, a group of mathematically obsessed aliens. Each short chapter is a mathematical adventure in which Dorothy is presented with a mystery, a puzzle, or a problem to solve. The author rates the problems in terms of difficulty. One does not have to complete all of the chapters or complete them sequentially. Quotes from *The Wizard of Oz* and cartoon diagrams add appeal to the resource.

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

Suggested Use

Professional Resource

Publisher/Distributor

Cambridge University Press
 66 Pine Street South
 PORT HOPE ON L1A 3G1
 (800) 872-7423
 Fax: (905) 885-9332
 Email: orders@cambridge.org
 Website: www.cambridge.org

Price: \$20.95 pbk.

Pagination: 338 p.

ISBN: 978-0-521-70084-9

Copyright: 2007

Year Recommended: 2008



Mathematics Teacher

Annotation

(CORE) Published nine times a year, this journal from the National Council of Teachers of Mathematics (NCTM) provides a range of in-depth articles and features including practical lesson ideas, teaching strategies, and problems to investigate with students. These features and articles offer an important source of professional development to readers.

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

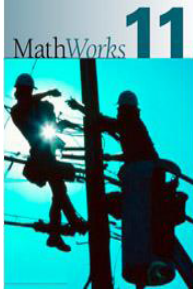
Email: orders@nctm.org

Website: www.nctm.org

Price: \$76.00 U.S. with NCTM membership

ISSN: 1075-5836

Year Recommended: 2010



MathWorks 11

Authors: Bedwin, Christa; Borgen, Katharine; Kaiser, Angela; Healy, Mark; Pruner, Michael; Salvatore, Paul; and Sufrin, David

Annotation

(CORE, CAN, WNCP) *MathWorks 11* enables students to make connections between school mathematics and the workplace. The student text consists of seven chapters. Each chapter includes a project where students apply the mathematical concepts in a real-world scenario. Profiles of Canadians highlight the importance of math in the workplace, and how math is specifically used in a selection of jobs. Other features include mental math and estimation, building skill levels, extending thinking, and reflecting on learning.

The teacher's guide includes teaching strategies, complete worked solutions, alternate solutions, sample chapter tests, graphic organizers, blackline masters, and ideas for assessment.

Also available is a CD version of the student text and teacher resource.

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

Suggested Uses

Student Resource

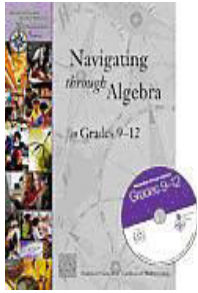
Publisher/Distributor

Pacific Educational Press
 Faculty of Education
 University of British Columbia
 6365 Biological Sciences Rd
 VANCOUVER BC V6T 1Z4
 (604) 822-5385
 Fax: (604) 822-6603
 Email: pep@interchange.ubc.ca
 Website: <http://pep.educ.ubc.ca/>

Copyright: 2011

Year Recommended: 2011

Title	ISBN	Price
Student Resource (Book)	978-1-895766-92-9	\$65.00
Student Resource (Digital CD)	978-1-986714-10-8	\$40.00
Student Resource Digital Licence	978-1-986714-11-5	\$75.00 per person for a 5-year term
Student Resource Package (Book and CD)	978-1-986714-12-2	\$77.00
Teacher Resource (Book)	978-1-986714-15-3	\$150.00
Teacher Resource (CD)	978-1-986714-16-0	\$100.00
Teacher Resource Package (Book and CD)	978-1-986714-17-7	\$162.00



Navigations Series

Editor: House, Peggy A.

Annotation

(CORE) These activity-based learning resources introduce, develop, and extend student thinking and reasoning in various mathematical concepts. Several related activities suited to the developmental stages of students are provided.

Accompanying the interactive investigations is a CD-ROM containing blackline masters, professional readings, and applets for the students to manipulate.

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

Suggested Use

Student 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

Copyright: 2004

Year Recommended: 2005

Title	ISBN	Price
<i>Navigating through Algebra in Grades 9-12</i>	978-0-87353-502-1	\$33.95 U.S. pbk.
<i>Navigating through Data Analysis and Probability in Grades 9-12</i>	978-0-87353-524-3	\$39.95 U.S. pbk.
<i>Navigating through Geometry in Grades 9-12</i>	978-0-87353-514-4	\$39.95 U.S. pbk.
<i>Navigating through Measurement in Grades 9-12</i>	978-0-87353-546-0	\$13.00 U.S. pbk.
<i>Navigating through Number and Operations in Grades 9-12</i>	978-0-87353-585-5	\$13.00 U.S. pbk.
<i>Navigating through Probability in Grades 9-12</i>	978-0-87353-525-1	\$13.00 U.S. pbk.

Problem Solving Strategies: Crossing the River with Dogs and Other Mathematical Adventures. 2nd ed.

Authors: Johnson, Ken and Herr, Ted

Annotation

(CORE) This resource is designed to demonstrate various methods that can be used to solve the same problem. Each chapter concentrates on the application of a particular strategy. The corresponding sets of problems provide a multitude of authentic applications for this strategy. The importance of students communicating their different solutions and their logical reasonings is stressed throughout this resource.

An instructor's resource book that includes an answer key supplements this resource.

Please note that this resource contains imperial measurements.

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

Suggested Use

Professional 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: 2001

Year Recommended: 2003

Title	ISBN	Price
<i>Problem Solving Strategies</i>	978-1-55953-370-6	\$51.95 hdc.
Instructor's Resource Book	978-1-55953-371-4	\$49.95 pbk.

Out of Print but Still Useful Resources



Changing the Faces of Mathematics: Perspectives on Indigenous People of North America

Editors: Hanks, Judith Elaine and Fast, Gerald R.

Annotation

(CORE, FNMI) This resource is a collection of essays related to teaching mathematics in a culturally relevant way to North American Aboriginal people. It discusses ways of helping Aboriginal students make meaningful connections between school mathematics and their culture. The authors stress the need to present mathematical concepts within the context of daily life scenarios, and they illustrate ways to involve students in culturally related mathematical activities. Examples include suggestions for teaching numbers and operations concepts using traditional games, and introducing students to a variety of number systems specific to North American Aboriginal people. Many geometrical concepts and patterns are immersed in arts and crafts associated with the culture. Some activities lend themselves to co-operative group or partner work, while others are better structured as independent study. A section on portfolios and the paradigm shift in mathematics assessment is included.

Note: Because this is an American resource, some terminology is inconsistent with what is culturally appropriate in Canada. For example, the term *Eskimo* rather than *Inuit* appears in one of the essays. Also, many of the pedagogical principles presented in this essay apply to all students across cultures.

This title is currently out of print, but it may be available in school libraries or on www.amazon.com or www.ABE.com.

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

Suggested Use

Professional Resource

Publisher

National Council of Teachers of Mathematics

Pagination: 238 p.

ISBN: 978-0-87353-506-9

Copyright: 2002

Year Recommended: 2005

Digital Resources

The Ministry of Education is planning to post recommended websites on its new website, *Saskatchewan Curriculum – Education: The Future within Us*.

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 with the opportunity to reflect on practice and current thinking on mathematics.

Fiscal Agents at www.fiscalagents.com/toolbox/index.shtml

(CORE) The website contains investment and planning calculators to assist students in exploring financial options and opportunities.

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.