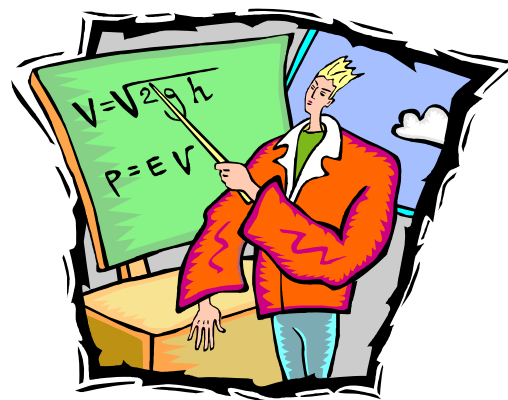


Pre-calculus 20, 30: Recommended Resources for the Renewed Curricula



*A list of professional materials available for borrowing
from the Stewart Resources Centre – February 2013*



The STF Stewart Resources Centre – CHECK US OUT!

In order to serve you better, we have compiled the following list of resources that directly address some of your professional needs. We hope you find this publication helpful, and we would be pleased to hear from you if you would like us to continue producing more specialized resource lists, or if you have suggestions on how we can improve our service to you. We want to serve you better!

We make it easy for you to use the Stewart Resources Centre:

- For rural schools, we mail our resources directly to you and provide a postage-paid mailing label for you to use to mail the resources back to us. (Audio-visual resources are excluded from the Canada Post library mailing rate, so you will need to pay postage to return these items.)
- For schools in Saskatoon, your resources arrive at your school through the weekly inter-school mail delivery. Materials may also be returned to us using this courier system.
- You don't need to know the exact titles for resources you need. Provide a topic and an approximate grade level at which you would like to use the materials, and we will do the rest!
- We are accessible 24 hours a day through the STF website: www.stf.sk.ca You may search our catalog online or e-mail us your resource requests at: src@stf.sk.ca
- Call us! STF members may call the Stewart Resources Centre toll-free at 1-800-667-7762, ext. 6323, or we can be reached at 373-1660, ext. 6323 for local calls.
- Visit us in person! We are open 8:30 a.m. to 5:00 p.m. from Monday to Friday.



PRE-CALCULUS 20



Indicates item is a Ministry of Education's Core Learning Resource.

510.9 S659

Agnesi to Zeno : over 100 vignettes from the history of math / Smith, Sanderson M.

Berkeley, CA: Key Curriculum Press, 1996.

Subjects: Mathematics – History. Mathematicians – Biography.

Summary: 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.



510.7 C456

Changing the faces of mathematics : perspectives on Indigenous people of North America /

Hankes, Judith Elaine. Fast, Gerald R.

Reston, VA: NCTM, 2002.

Subjects: Mathematics – Study and teaching – Social aspects. Indians of North America – Education. Mathematical ability.

Summary: This resource is a collection of essays related to teaching mathematics in a culturally relevant way to First Nations people of North America. Examples include suggestions for teaching numbers and operations concepts using traditional games, and for introducing students to a variety of number systems specific to North American First Nations people.



510 C597

Constructive assessment in mathematics : practical steps for classroom teachers / Clarke, David.

Berkeley, CA: Key Curriculum Press, 1997.

Subjects: Mathematics – Study and teaching. Mathematics – Textbooks. Mathematics – Examinations. Mathematical ability – Testing.

Summary: Reinforcing the central purpose for assessing students, the three parts of this resource expand upon how assessment can foster student learning by valuing their strengths and identifying concepts not yet mastered. Integrating assessment into teaching and instruction, the selection and implementation of assessment strategies, and communicating assessment information to educational partners are addressed.

793.74 H365

Crimes and mathdemeanors / Hathout, Leith. Hofmann, Karl Heinrich.

Wellesley, MA: A. K. Peters, 2007.

Subjects: Detective and mystery stories. Mathematical recreations.

Summary: 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.

- Annotations have been excerpted from book descriptions provided by the publishers and from bibliographies distributed by the Saskatchewan Ministry of Education.

808.80356 F216

Fantasia mathematica : being a set of stories, together with a group of oddments and diversions, all drawn from the universe of mathematics / Fadiman, Clifton.

New York, NY: Copernicus, 1997.

Subjects: Mathematics – Literary collections.

Summary: 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.

510 S244

Introducing mathematics / Sardar, Ziauddin. Van Loon, Borin.

New York, NY: Icon Books, 1999.

Subjects: Mathematics – Popular works.

Summary: 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.

510.71 N277

Mathematics assessment : a practical handbook for grades 9-12 / Greer, Anja S.

Reston, VA: NCTM, 1999.

Subjects: Mathematics – Study and teaching (Secondary) – Evaluation.

Summary: 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.



793.74 P597

The mathematics of Oz : mental gymnastics from beyond the edge / Pickover, Clifford A.

New York, NY: Cambridge University Press, 2002.

Subjects: Mathematical recreations.

Summary: 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.

Navigations Series



512 N325

Navigating through algebra in grades 9-12 / Burke, Maurice Joseph.

Reston, VA: NCTM, 2001.

Subjects: Algebra – Study and teaching (Secondary).

Summary: This book focuses on algebra as a language of process, expands the notion of variable, develops ideas about the representation of functions, and extends students' understanding of algebraic equivalence and change. In the activities, students apply properties of functions by using median salary data, explore the meaning of equivalent equations, and use recursive or iterative forms to represent relationships.



516.0071 N325

Navigating through geometry in grades 9-12 / Day, Roger.

Reston, VA: NCTM, 2001.

Subjects: Geometry – Study and teaching (Secondary).

Summary: This book concentrates on topics such as the use of transformations, coordinates and matrices, and congruence and similarity. Activities that take students through geometric tasks require some use of technology, including interactive geometry software and a calculator or a computer with software that produces geometric images and graphs. The supplemental CD-ROM features interactive electronic activities, master copies of activity pages for students, and additional readings for teachers.



510.712 N325

Navigating through measurement in grades 9-12 / Burke, Maurice J.

Reston, VA: NCTM, 2005.

Subjects: Measurement – Study and teaching (Secondary). Geometry – Study and teaching (Secondary).

Summary: Throughout history, the need for more sophisticated measurements has led to the discovery of more sophisticated mathematics. This book highlights this important idea in activities that help students explore an array of measurement strategies and techniques. Investigations probe ancient methods for performing such tasks as measuring the speed of ships at sea and estimating the distance of the sun from the earth. Students apply simple formulas to measure complex shapes, explore iterative processes that lead to measurement formulas, and develop an original formula for measuring the size of a tree. The supplemental CD-ROM features interactive electronic activities, master copies of activity pages for students, and additional readings for teachers.



510.712 N325

Navigating through number and operations in grades 9-12 / Burke, Maurice J.

Reston, VA: NCTM, 2006.

Subjects: Geometry – Study and teaching (Secondary). Measurement – Study and teaching (Secondary).

Summary: This book's activities probe rational and irrational numbers and investigate properties of integers and complex numbers. They explore numbers and operations embedded in physical objects and show how simple problems can lead to sophisticated considerations. Students examine the usefulness of irrational numbers in designing musical scales and of prime numbers in devising encryption schemes, for example, and they discover powerful ideas from graph theory in a concrete context of dikes, towers, and enclosed regions. The supplemental CD-ROM features interactive electronic activities, master copies of activity pages for students, and additional readings for teachers.



519.2 N325

Navigating through probability in grades 9-12 / Bright, George W.

Reston, VA: NCTM, 2004.

Subjects: Mathematical statistics – Study and teaching (Middle school). Probabilities – Study and teaching (Middle school).

Summary: This book assists high school teachers in honing their students' thinking by introducing them to two approaches to probability and exploring both approaches in real-world contexts. The first approach, which interprets probability as relative frequency over the long run, uses actual or simulated data from many experiments to arrive at empirical probabilities. The second approach analyzes outcomes abstractly to arrive at theoretical probabilities. The supplemental CD-ROM features interactive electronic activities, master copies of activity pages for students, and additional readings for teachers.

510.71 K17

Out of the labyrinth : setting mathematics free / Kaplan, Robert. Kaplan, Ellen

New York, NY: Oxford University Press, 2007.

Subjects: Mathematics – Study and teaching.

Summary: Written as a guide for parents and educators, this book argues that math 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 math is meant to be explored and savoured, and that it does not require special talent or ability.

512 F974

The pattern and function connection / Fulton, Brad S. Lombard, Bill.

Emeryville, CA: Key Curriculum Press, 2001.

Subjects: Algebra – Study and teaching (Middle school).

Summary: 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.



510.76 J67

Problem solving strategies : crossing the river with dogs and other mathematical adventures

(2nd ed.) / Johnson, Ken. Herr, Ted.

Problem solving strategies : crossing the river with dogs and other mathematical adventures (2nd ed.) : instructor's resource book / Johnson, Ken. Herr, Ted.

Emeryville, CA: Key Curriculum Press, 2001.

Subjects: Problem solving. Mathematics.

Summary: 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 are stressed throughout this resource. The accompanying instructor's resource book and answer key supplements this resource.

510.76 K33

Sink or float? : thought problems in math and physics / Kendig, Keith.

Washington, DC: Mathematical Association of America, 2008.

Subjects: Physics – Study and teaching. Problem solving. Mathematics – Study and teaching.

Summary: This book is a collection of over 250 problems drawn from mathematics and the real world. The author 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.

510.712 T253

Teaching mathematics through problem solving : grades 6-12 / Schoen, Harold L. (Ed.).

Reston, VA: National Council of Teachers of Mathematics, 2003.

Subjects: Mathematics – Study and teaching (Secondary). Problem-based learning.

Summary: This volume is a professional research-based resource that promotes 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 on how to select and use appropriate tasks and learning tools, and provide examples of the use of this approach in various classroom settings.

512 V217

A visual approach to functions / Van Dyke, Frances.

Emeryville, CA: Key Curriculum Press, 2002.

Subjects: Graphic methods. Mathematics – Study and teaching (Secondary). Algebraic functions. Algebra – Study and teaching (Secondary).

Summary: 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 is explored prior to the introduction of tables or algebraic notation. Subsequent chapter lessons introduce coordinates, quantitative graphs, and tables. Ideas for incorporating graphing calculators are included at the end of each chapter.

515.2433 W628

Who is Fourier? : a mathematical adventure / Gleason, Alan.

Boston, MA: Language Research Foundation, 2001.

Subjects: Fourier analysis.

Summary: 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.

PRE-CALCULUS 30



Indicates item is a Ministry of Education's Core Learning Resource.

510.9 S659

Agnesi to Zeno : over 100 vignettes from the history of math / Smith, Sanderson M.

Berkeley, CA: Key Curriculum Press, 1996.

Subjects: Mathematics – History. Mathematicians – Biography.

Summary: 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.

510.712 S635

Big ideas from Dr. Small : creating a comfort zone for teaching mathematics grades 9-12 /

Small, Marian. Lin, Amy.

Toronto, ON: Nelson, 2011.

Subjects: Mathematics – Study and teaching (Secondary).

Summary: This resource provides suggestions to secondary level teachers on how to teach the curriculum while focusing on the big ideas of mathematical concepts. By considering the big ideas when planning instruction and assessment, students are able to relate the new knowledge to previously learned concepts.



510.7 C456

Changing the faces of mathematics : perspectives on Indigenous people of North America /

Hankes, Judith Elaine. Fast, Gerald R.

Reston, VA: NCTM, 2002.

Subjects: Mathematics – Study and teaching – Social aspects. Indians of North America – Education. Mathematical ability.

Summary: This resource is a collection of essays related to teaching mathematics in a culturally relevant way to First Nations people of North America. Examples include suggestions for teaching numbers and operations concepts using traditional games, and for introducing students to a variety of number systems specific to North American First Nations people.



510 C597

Constructive assessment in mathematics : practical steps for classroom teachers / Clarke, David.

Berkeley, CA: Key Curriculum Press, 1997.

Subjects: Mathematics – Study and teaching. Mathematics – Textbooks. Mathematics – Examinations. Mathematical ability – Testing.

Summary: Reinforcing the central purpose for assessing students, the three parts of this resource expand upon how assessment can foster student learning by valuing their strengths and identifying concepts not yet mastered. Integrating assessment into teaching and instruction, the selection and implementation of assessment strategies, and communicating assessment information to educational partners are addressed.

793.74 H365

Crimes and mathdemeanors / Hathout, Leith. Hofmann, Karl Heinrich.

Wellesley, MA: A. K. Peters, 2007.

Subjects: Detective and mystery stories. Mathematical recreations.

Summary: 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.

808.80356 F216

Fantasia mathematica : being a set of stories, together with a group of oddments and diversions, all drawn from the universe of mathematics / Fadiman, Clifton.

New York, NY: Copernicus, 1997.

Subjects: Mathematics – Literary collections.

Summary: 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.

510 S244

Introducing mathematics / Sardar, Ziauddin. Van Loon, Borin.

New York, NY: Icon Books, 1999.

Subjects: Mathematics – Popular works.

Summary: 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.

510.71 N277

Mathematics assessment : a practical handbook for grades 9-12 / Greer, Anja S.

Reston, VA: NCTM, 1999.

Subjects: Mathematics – Study and teaching (Secondary) – Evaluation.

Summary: 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.



793.74 P597

The mathematics of Oz : mental gymnastics from beyond the edge / Pickover, Clifford A.

New York, NY: Cambridge University Press, 2002.

Subjects: Mathematical recreations.

Summary: 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.



512 P923

McGraw-Hill Ryerson pre-calculus 12 / Balzarini, Eric. Johnson, Blaise.

Toronto, ON: McGraw-Hill Ryerson, 2012.

Subjects: Mathematics – Study and teaching (Secondary). Mathematics – Textbooks. Mathematics – Problems, exercises, etc. Calculus – Textbooks.

Summary: The student text consists of four units. Throughout the chapters are project corner boxes that will assist students to gather information for their projects. Each unit culminates with the project wrap-up. The chapters include career information based on the skills that will be learned.

Opportunities are provided for students to make connections between math and the real world, or to make connections to what students already know or may be studying in other classes.

Navigations Series



512 N325

Navigating through algebra in grades 9-12 / Burke, Maurice Joseph.

Reston, VA: NCTM, 2001.

Subjects: Algebra – Study and teaching (Secondary).

Summary: This book focuses on algebra as a language of process, expands the notion of variable, develops ideas about the representation of functions, and extends students' understanding of algebraic equivalence and change. In the activities, students apply properties of functions by using median salary data, explore the meaning of equivalent equations, and use recursive or iterative forms to represent relationships.



516.0071 N325

Navigating through geometry in grades 9-12 / Day, Roger.

Reston, VA: NCTM, 2001.

Subjects: Geometry – Study and teaching (Secondary).

Summary: This book concentrates on topics such as the use of transformations, coordinates and matrices, and congruence and similarity. Activities that take students through geometric tasks require some use of technology, including interactive geometry software and a calculator or a computer with software that produces geometric images and graphs. The supplemental CD-ROM features interactive electronic activities, master copies of activity pages for students, and additional readings for teachers.



510.712 N325

Navigating through measurement in grades 9-12 / Burke, Maurice J.

Reston, VA: NCTM, 2005.

Subjects: Measurement – Study and teaching (Secondary). Geometry – Study and teaching (Secondary).

Summary: Throughout history, the need for more sophisticated measurements has led to the discovery of more sophisticated mathematics. This book highlights this important idea in activities that help students explore an array of measurement strategies and techniques. Investigations probe ancient methods for performing such tasks as measuring the speed of ships at sea and estimating the distance of the sun from the earth. Students apply simple formulas to measure complex shapes, explore iterative processes that lead to measurement formulas, and develop an original formula for measuring the size of a tree. The supplemental CD-ROM features interactive electronic activities, master copies of activity pages for students, and additional readings for teachers.



510.712 N325

Navigating through number and operations in grades 9-12 / Burke, Maurice J.

Reston, VA: NCTM, 2006.

Subjects: Geometry – Study and teaching (Secondary). Measurement – Study and teaching (Secondary).

Summary: This book's activities probe rational and irrational numbers and investigate properties of integers and complex numbers. They explore numbers and operations embedded in physical objects and show how simple problems can lead to sophisticated considerations. Students examine the usefulness of irrational numbers in designing musical scales and of prime numbers in devising encryption schemes, for example, and they discover powerful ideas from graph theory in a concrete context of dikes, towers, and enclosed regions. The supplemental CD-ROM features interactive electronic activities, master copies of activity pages for students, and additional readings for teachers.



519.2 N325

Navigating through probability in grades 9-12 / Bright, George W.

Reston, VA: NCTM, 2004.

Subjects: Mathematical statistics – Study and teaching (Middle school). Probabilities – Study and teaching (Middle school).

Summary: This book assists high school teachers in honing their students' thinking by introducing them to two approaches to probability and exploring both approaches in real-world contexts. The first approach, which interprets probability as relative frequency over the long run, uses actual or simulated data from many experiments to arrive at empirical probabilities. The second approach analyzes outcomes abstractly to arrive at theoretical probabilities. The supplemental CD-ROM features interactive electronic activities, master copies of activity pages for students, and additional readings for teachers.

510.71 K17

Out of the labyrinth : setting mathematics free / Kaplan, Robert. Kaplan, Ellen

New York, NY: Oxford University Press, 2007.

Subjects: Mathematics – Study and teaching.

Summary: Written as a guide for parents and educators, this book argues that math 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 math is meant to be explored and savoured, and that it does not require special talent or ability.

512 F974

The pattern and function connection / Fulton, Brad S. Lombard, Bill.

Emeryville, CA: Key Curriculum Press, 2001.

Subjects: Algebra – Study and teaching (Middle school).

Summary: 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.



510.76 J67

Problem solving strategies : crossing the river with dogs and other mathematical adventures (2nd ed.) / Johnson, Ken. Herr, Ted.

Problem solving strategies : crossing the river with dogs and other mathematical adventures (2nd ed.) : instructor's resource book / Johnson, Ken. Herr, Ted.

Emeryville, CA: Key Curriculum Press, 2001.

Subjects: Problem solving. Mathematics.

Summary: 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 are stressed throughout this resource. The accompanying instructor's resource book and answer key supplements this resource.

510.76 K33

Sink or float? : thought problems in math and physics / Kendig, Keith.

Washington, DC: Mathematical Association of America, 2008.

Subjects: Physics – Study and teaching. Problem solving. Mathematics – Study and teaching.

Summary: This book is a collection of over 250 problems drawn from mathematics and the real world. The author 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.

510.712 T253

Teaching mathematics through problem solving : grades 6-12 / Schoen, Harold L. (Ed.).

Reston, VA: National Council of Teachers of Mathematics, 2003.

Subjects: Mathematics – Study and teaching (Secondary). Problem-based learning.

Summary: This volume is a professional research-based resource that promotes 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 on how to select and use appropriate tasks and learning tools, and provide examples of the use of this approach in various classroom settings.

512 V217

A visual approach to functions / Van Dyke, Frances.

Emeryville, CA: Key Curriculum Press, 2002.

Subjects: Graphic methods. Mathematics – Study and teaching (Secondary). Algebraic functions.

Algebra – Study and teaching (Secondary).

Summary: 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 is explored prior to the introduction of tables or algebraic notation. Subsequent chapter lessons introduce coordinates, quantitative graphs, and tables. Ideas for incorporating graphing calculators are included at the end of each chapter.

515.2433 W628

Who is Fourier? : a mathematical adventure / Gleason, Alan.

Boston, MA: Language Research Foundation, 2001.

Subjects: Fourier analysis.

Summary: 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.



Saskatchewan Teachers' Federation
2317 Arlington Avenue
Saskatoon SK S7J 2H8
Telephone: 306-373-1660 or 1-800-667-7762
Facsimile: 306-374-1122
Email: src@stf.sk.ca Website: www.stf.sk.ca