INTRODUCTION

What is the *FOCUS* series?

FOCUS is a mathematics-strategy practice series. Each student book in the series provides brief instruction and concentrated practice for students in one targeted Mathematics Strategy. *FOCUS* also allows students the opportunity for self-assessment of their performance. It allows teachers the opportunity to identify and assess a student's level of mastery.

Six Mathematics Strategies featured in the *FOCUS* series:

- Building Number Sense
- Using Estimation
- Using Algebra
- Using Geometry
- Determining Probability and Averages
- Interpreting Graphs and Charts

The *FOCUS* series spans eight year levels, from year one to year eight. The introductory passages in each lesson are written at or below year level, allowing students to focus on the mathematics without struggling with the reading.

Book	Reading Level
Book A	at or below year one readability
Book B	at or below year two readability
Book C	at or below year three readability
Book D	at or below year four readability
Book E	at or below year five readability
Book F	at or below year six readability
Book G	at or below year seven readability
Book H	at or below year eight readability

What is Using Geometry, the Mathematics Strategy featured in this *FOCUS* book?

Geometry involves the mathematical study of figures, lines and angles. Students begin their work with geometry by learning to identify common plane figures and solid figures. Most plane figures are polygons. Polygons are identified by their number of sides and angles, and solid figures are identified by their number of faces and edges and the shape of the faces. In the early years, students learn to identify polygons that have lines of symmetry. As students progress through the year levels, they learn to calculate the sum of a polygon's angle measures. They also learn to count the number of visible faces on a solid figure or a group of solid figures.

Students calculate various measures for plane figures and solid figures. They learn to calculate the perimeter, circumference and area of plane figures. Starting in year five, students learn to calculate the volume of solid figures such as rectangular prisms, cylinders and spheres. The figures and the calculations increase in complexity as students move through the year levels.

In years seven and eight, students use the Pythagorean theorem to find missing side lengths on right-angle triangles. They also learn about the relationships between the angles formed by two parallel lines and a transversal. Students use their knowledge of supplementary angles, corresponding angles and vertical angles to identify missing angle measures and to solve problems.

What is in each student book?

There are 48 student books in the *FOCUS* series. There is one student book for each of the six Mathematics Strategies, at each of the eight mathematics levels. Each student book contains:

- *To the Student*
  This introduces the program and should be read and discussed with students to make sure they understand what they are to do in the book.

- *Table of Contents*

- *Learn About* (**Modelled Practice**)
  These two pages provide basic instruction and modelling in the understanding and application of the Mathematics Strategy. The Learn About should be read and discussed with students to make sure they understand the Mathematics Strategy. Additional tips for helping students understand and use the Mathematics Strategy are included in the Mathematics Strategy Tips for the Teacher on pages 12–13 of this teacher guide.

- *Lesson Preview* (**Guided Practice**)
  These two pages include a sample problem and two selected-response questions with explanations of why each of the eight answer choices is correct or not correct. The Lesson Preview should be read, worked through and discussed with students to make sure they understand how to answer strategy-based questions.

- *20 Lessons* (**Independent Practice**)
  Each two-page lesson contains one passage, four strategy-based selected-response questions and one strategy-based constructed-response writing question.

Selected-response questions: In each lesson, students apply the Mathematics Strategy and then choose the correct answers for four selected-response (multiple-choice) strategy-based questions. You should model how to answer these kinds of questions using information on the Lesson Preview pages.

Constructed-response writing questions: In each lesson, students apply the Mathematics Strategy to solve a strategy-based question. You should model how to answer these kinds of questions by using one of the sample answers provided in the Answer Key.

- *Tracking Chart*
  Students use this chart for noting their completion of and performance in each lesson.

- *Self-Assessments*
  These five forms allow students the opportunity for self-assessment of their performance.

- *Answer Form*
  Students may use this form to record their answers to the eighty selected-response questions and to indicate that they have answered each of the twenty constructed-response writing questions.

What is in each teacher guide?

There are 48 teacher guides in the *FOCUS* series, one for each student book. Each teacher guide contains:

- suggested instructions for using the *FOCUS* series effectively in the classroom

- Mathematics Strategy Tips for the Teacher, a facsimile of the Learn About on pages 2–3 of the student book, with tips for additional discussion related to understanding and using the Mathematics Strategy

- four reproducibles: three Teacher Assessments to be used for individual student assessment in the Mathematics Strategy and one Class or Group Performance Graph to be used for class or group assessment in the Mathematics Strategy

- summary of research that supports the *FOCUS* series

- a completed Answer Form for the eighty selected-response questions in the student book

- an Answer Key for the eighty selected-response questions, plus sample answers for the twenty constructed-response writing questions in the student book

How should I use the Mathematics Strategy Tips for the Teacher?

These pages contain a facsimile of the Learn About on pages 2–3 of the student book, along with extended information about the Mathematics Strategy, which you can use as a basis for in-depth discussion to make sure students understand the strategy and how to use it.

Where do students record their answers?

Students should fill in their answers to the selected-response questions on the Answer Form on page 53 of the student book. If students use the Answer Form, they may detach it from the book. Alternatively, students may fill in the correct answers directly on the student book page.

Students should write their answers to the constructed-response questions directly on the lines provided in the student book. Students who use the Answer Form for the selected-response questions should fill in the circle on the Answer Form to show that they have answered the constructed-response question, which is the fifth question in each lesson.

If the student is having difficulty applying the Mathematics Strategy, work through a lesson or two with the student, using the process modelled on page 5 of the Lesson Preview in the student book. Discuss with the student why each answer choice is correct or not correct.

If the student is still having difficulty applying the Mathematics Strategy, provide additional instruction. You may review with the student the instruction of the specific Mathematics Strategy in the *Strategies to Achieve Mathematics Success Series* (*STAMS*®).

When the student returns to the *FOCUS* book, track the student's performance on a lesson-by-lesson basis. You may wish to pair students who are having difficulty with students who are not having difficulty.

Teacher Assessment 2
(reproducible on page 15 of teacher guide)

Use this assessment to visually graph a student's performance in each group of lessons in the *FOCUS* book. Use information from Teacher Assessment 1 after the student has completed each group of lessons and the answers have been corrected. For each lesson, shade the vertical bar to show the number of correct responses out of 5 possible correct responses. The shaded bars provide a visual depiction of the student's mastery in that group of lessons. The completed bar graph provides a visual depiction of the student's mastery in the whole *FOCUS* book.

Teacher Assessment 3
(reproducible on page 16 of teacher guide)

Use this assessment to analyse a student's mastery at any point in the *FOCUS* book. It is recommended that you use this assessment after a student has completed each group of five lessons and the answers have been corrected. Use what you have determined from any one-on-one conferences, along with the appropriate Teacher Assessments and student Self-Assessment. On Teacher Assessment 3, note the student's performance in the Mathematics Strategy at that point and note an action plan based on the performance. After the action plan has been instituted, note the student's progress. Use these assessments as often as needed, including at the end of each *FOCUS* book.

Class or Group Performance Graph
(reproducible on page 17 of teacher guide)

Use this graph to visually compare levels of student mastery in the *FOCUS* book. You may complete the graph for the whole class or for a group of students using the book. When each student has completed the first group of five lessons, use information from Teacher Assessment 1 to shade the total number of correct responses for Group 1.

Complete the graph in the same way for Groups 2, 3 and 4, using a different colour texta or pen to shade the total number of correct responses for each group. When the whole graph has been completed, it will provide a visual comparison of the students' levels of mastery for the whole *FOCUS* book.

Lesson 9 *(page 22)*

1. C   2. C   3. B   4. D

5. Solution: There are 4 squares and 3 circles in the picture.

Sample Explanation: *I counted the number of squares and circles in the picture.*

Lesson 10 *(page 24)*

1. D   2. D   3. C   4. D

5. Solution: She used 5 triangle shapes.

Sample Explanation: *I drew triangles like the one shown inside of the pentagon until the entire pentagon was covered by triangles. It took 5 triangles to cover the pentagon.*

Lesson 11 *(page 26)*

1. C   2. A   3. A   4. C

5. Solution: Ken now has a rectangle.

Sample Explanation: *The folded figure has opposite sides of equal length, so it is a rectangle.*

Lesson 12 *(page 28)*

1. B   2. D   3. D   4. B

5. Solution: The sheds are shown by two triangles that are put together to form a square.

Sample Explanation: *One triangle on top of another shows the shed on Map C. The triangles form a shape with four equal sides. The shape is a square.*

Lesson 13 *(page 30)*

1. A   2. B   3. B   4. A

5. Solution: The folded figure would look like this: . It has 4 sides.

Sample Explanation: *I examined the drawing and found that folding the figure in half would create a figure that looked like either the left or right half of the figure. I drew a copy of the right side of the figure. The folded figure has 4 sides. (Accepted answer:)*

Lesson 14 *(page 32)*

1. D   2. B   3. C   4. D

5. Solution: The frosting on top of the cake looked like this: .

Sample Explanation: *First, I drew a circle to show Elle's shape. Then I drew a triangle inside of the circle to show Jack's shape.*

Lesson 15 *(page 34)*

1. B   2. A   3. C   4. D

5. Solution: There are a total of 20 shapes on Shirt C. There are 6 rectangles, 6 squares, 4 circles and 4 triangles.

Sample Explanation: *First, I looked at the shirt and counted the total number of shapes. Then I counted the number of each type of shape.*

Rectangles: 6

Squares: 6

Circles: 4

Triangles: 4

Lesson 16 *(page 36)*

1. C   2. D   3. B   4. C

5. Solution: Ben will need 300 centimetres of wood to make the picture frame.

Sample Explanation: *I know that a rectangle has two pairs of matching side lengths. So, the picture has two sides that are 60 centimetres long and two sides that are 90 centimetres long. I added the side lengths to find the distance around the picture.*

60 + 60 + 90 + 90 = 300 centimetres

Lesson 17 *(page 38)*

1. A   2. D   3. C   4. B

5. Solution: The distance around the wall is 10 metres.

Sample Explanation: *I know that a rectangle has 2 pairs of equal sides. So, the wall has two sides that are 2 metres long and two sides that are 3 metres long. I added the length of all four sides to find the distance around the wall.*

2 + 2 + 3 + 3 = 10 metres