

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 Building Number Sense, the Mathematics Strategy featured in this *FOCUS* book?

Number sense is an understanding of numbers and the relationships between them. As students build number sense, they become familiar with a variety of representations for whole numbers and parts of whole numbers.

Students learn to express numbers in a variety of forms. Three common ways to express numbers are in standard form, in word form and in expanded form. Students in the upper years learn to use exponents, in addition to the other common forms, to express numbers.

Students in years one to three develop counting skills and become familiar with ordinal numbers. They practise counting to identify numbers that come before or after another number. They also learn to use ordinal numbers to identify an item's position in a row or a list.

Students in years four to eight learn several ways to represent the parts of a whole. Students in year four are introduced to fractions. They learn to understand the parts of a fraction and to recognise the quantity represented by a fraction. Students in the upper years examine the relationship between fractions, decimals and percentages. They also learn to perform mathematical operations with fractions and decimals.

Students in year eight are introduced to prime and composite numbers, and they learn to determine a number's prime factorisation. They also practise following the order of operations when solving problems with parentheses, exponents or square roots.

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.

MATHEMATICS STRATEGY TIPS FOR THE TEACHER

Numbers can be used to count, to show order and to identify how many.

Whole numbers have one or more digits, and each digit has a specific place value. Students at this level identify numbers with up to two digits and learn to describe the value of digits in the ones and tens places.

Say the name of a number, such as *seventeen*, and ask a volunteer to write the numeral on the board. Then write 1- and 2-digit numbers on the board in standard form, and ask students to read the numbers aloud. Continue until all students appear to be confident with identifying, saying and writing numbers.

Next, write a list of 1- and 2-digit numbers in a column on the board. In a second column, write the corresponding word forms in a different order. Then ask volunteers to draw lines to match the standard form and word form of each number. Challenge students by writing 1- and 2-digit numbers on the board and asking volunteers to write the matching number words.

Draw a place-value chart on the board that includes the tens place and the ones place. Write a 2-digit number in the chart, placing each digit in its own place-value column. Have students identify the number and the value of each digit. For example, the number 23 is *twenty-three*, and the value of the digits is *2 tens and 3 ones*. Continue with other 2-digit numbers. Then say a number aloud, and ask volunteers to write the number in the chart. When there are at least five numbers in the chart, give a clue about one of the numbers, and ask students to identify which number or numbers match the clue. For example, if you say, "I'm thinking of a number that has 2 tens", possible answers include 24 and 23.

Learn About

Building Number Sense: Place Value and Writing Numbers

Numbers have digits. Some numbers have one digit. Some have more than one digit. Each digit has a **place value**. A digit's place in a number tells its value. Look at the chart. It shows the place values of the digits in 56. The 5 in 56 has a value of 5 tens, and 5 tens equals 50.

tens (10)	ones (1)
5	6

Numbers can be written in words. The numeral 3 is written as three.

Tanya has 21 stuffed toys. Look at the number 21. Which digit is in the tens place? What is the value of this digit?



tens (10)	ones (1)
2	1

The ones digit is on the right. The tens digit is on the left.
The 2 is on the left.
The 2 is in the tens place.
2 tens = 20



Each digit in a number has a **place value**. A digit's place in a number tells its value. Numbers can be written in words. The number 3 is written as three.

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Say a number of tens, and ask students to write or say the number represented by the tens. For example, if you say *3 tens*, students will write or say *30*. When students are comfortable identifying the number of tens up to 90, challenge them with a number of tens and ones. For example, if you say *3 tens and 4 ones*, students will say or write the number *34*.

Learn About

Building Number Sense: Counting and Ordinal Numbers

Counting is listing numbers in order. Counting shows what number comes before or after. Look at the counting list below. The number 3 comes just before 4. It comes just after 2.

1, 2, 3, 4, 5

Number words such as *first*, *second* and *third* show the position of something in a row or line. The third circle in this line is shaded.



Here are the numbers and words for the numbers 1 to 10.

1	2	3	4	5	6	7	8	9	10
one	two	three	four	five	six	seven	eight	nine	ten
first	second	third	fourth	fifth	sixth	seventh	eighth	ninth	tenth

Ashley stamped shapes on her notebook. What place in the row is the shaded shape?



The shaded shape is four places to the right.
The **fourth** shape in the row is shaded.



Counting is listing numbers in order. Counting shows what number comes before or after. Number words such as *first*, *second* and *third* show the position of something in a row or line.

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Write the numbers 1 to 10 on cards, and place the cards in a box. Have a student pick two cards from the box without looking. Then have the student count from the lower number to the higher number that he or she picked. Repeat the activity several times, and then expand the numbers in the box to 20.

Students at this level should be able to identify ordinal words and positions from *first* to *fifth*. Some students will be able to identify *sixth* to *tenth*, or more. Write the ordinal words *first* to *fifth* on separate index cards. Mix up the cards, and assign one card to each of five students. Have the students organise themselves in order and hold up their cards for others to read. Then ask all students to read the ordinal words aloud, noting whether the group has succeeded in placing themselves in the correct order. Continue with other groups of students, increasing the number of ordinal words used according to the abilities of the students.

Have students use the numbers 1 to 20 to practise counting in order from least to greatest. State a number, and ask students to count forward the next few numbers. Then ask volunteers to identify the number just before and the number just after a stated number.

A calendar can be used to reinforce students' understanding of ordinal numbers. Ask students to identify specific days on the calendar, such as *the first Monday*, *the fourth Wednesday* or *the fifth Tuesday*.

Draw students' attention to the number chart in the middle of the Learn About page. Point to a numeral, and ask students to say the number word and ordinal number that correspond to that numeral. Then make three sets of cards to show the numerals 1 to 10, the number words one to ten, and the ordinal numbers first to tenth. Have students work together to match each numeral with its number word and ordinal number.