NELSON

TEACHER'S RESOURCE

3/4

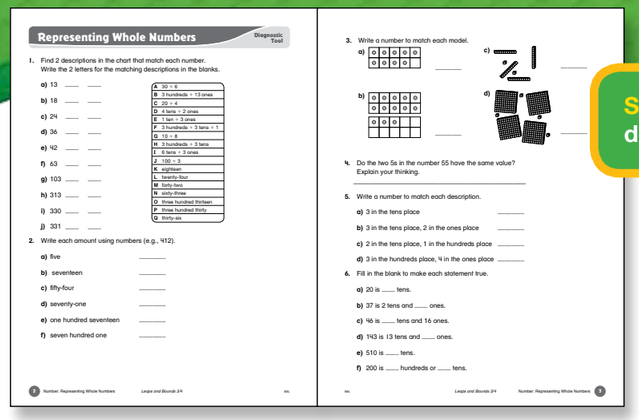
Leaps and Bounds TOWARD Math Understanding

Sampler:
Number
(Topics 1–3, Draft Material)

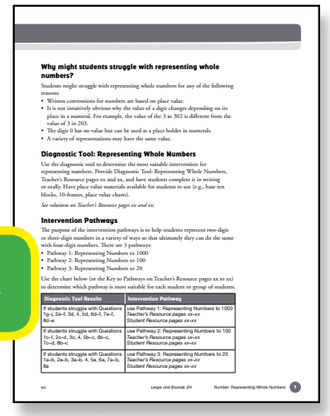
Marian Small

Leaps AND Bounds TOWARD Math Understanding

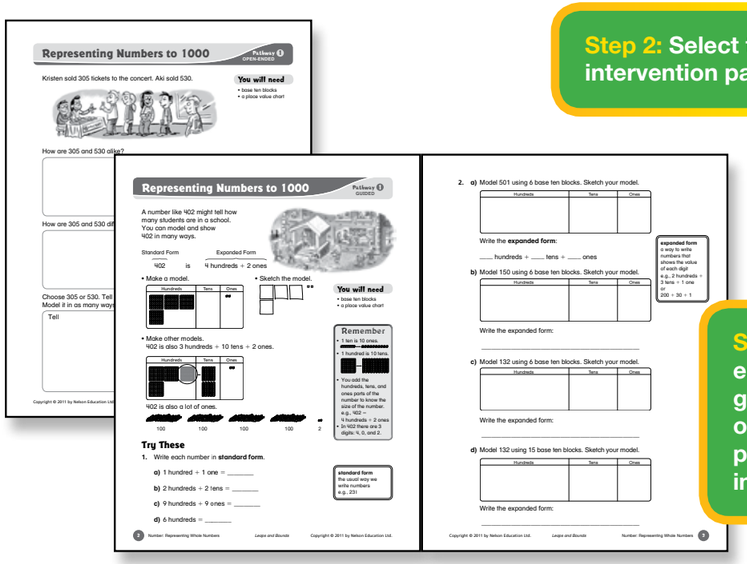
With Leaps and Bounds, mathematics intervention is as easy as 1, 2, 3!



Step 1: Administer the diagnostic assessment



Teacher's Resource



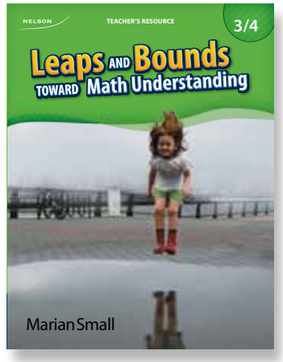
Step 2: Select the intervention pathway

Step 3: Choose an open-ended intervention or guided intervention based on your students' learning preferences or your instructional situation

Student Resource

For more information and full Table of Contents,
visit www.nelson.com/leapsandbounds

Leaps and Bounds is available in a variety of formats to suit your needs!



Teacher's Resource includes:

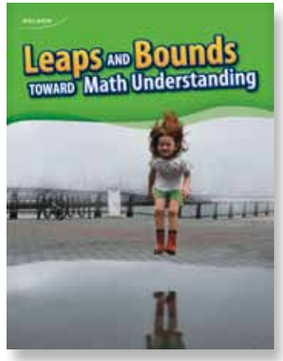
Your choice of print or digital!

- Diagnostic assessment tools to precisely identify gaps in students' understanding
- Background information on why students might struggle and what misconceptions are revealed by the diagnostic tool
- 2 or 3 pathways providing open-ended intervention and more guided intervention for each student or group of students
- Teaching notes to support differentiated instruction, including good questions

Digital Teacher's Resource includes:

Digital format includes Interactive Whiteboard activities!

- Complete Teacher's Resource in PDF format
- Masters in a modifiable format
- SMART™-accredited Interactive Whiteboard activities and games providing extra practice and additional instructional support
- PowerPoint versions of all Interactive Whiteboard activities
- Illustrations from Student Resource



Student Resource includes:

Your choice of consumable or Blackline Masters or CD-ROM!

- Intervention activities for topics in every strand to support students who are working as many as 3 levels below grade
- Built-in tips and visuals to support student understanding
- Simple, clear language accessible to ELL students

Dr. Marian Small

Senior Author of *Leaps and Bounds Toward Math Understanding*

"Research has shown that underachieving students improve both in settings that emphasize explicit instruction and modelling, and in settings where students tackle more challenging problems in their own ways. In Leaps and Bounds, *we recognize the value of both approaches—marrying conceptually-clear modelling and practice with open questions that allow students to think more broadly, so that every student has an opportunity to achieve success."*

Representing Whole Numbers

Planning for this Topic

Materials for assisting students with representing whole numbers consist of a diagnostic tool and 3 intervention pathways. The pathways for this topic differ in the sizes of the numbers being represented: numbers to 1000, numbers to 100, and numbers to 20.

Each pathway has an open-ended option and a guided option. Choose the type of intervention most suitable for your students' needs and for your situation.

Curriculum Connections

Grades 1 to 4 curriculum connections for this topic are provided online. See [url]. The curriculum outcomes are fairly consistent in covering representing numbers to 100 in Grade 2, to 1000 in Grade 3, and to 10 000 in Grade 4. For Grade 1, some aspects of representing numbers cover numbers to 50 in Ontario, whereas most other aspects go to 20 in Ontario and WNCP.

Professional Learning Connections

Prime Number and Operations, Background and Strategies
pages 63–66
Making Math Meaningful
pages 137–143
Big Ideas K–3
pages 22, 27–32
Good Questions
pages 21–2, 25, 27–28

Why might students struggle with representing whole numbers?

Students might struggle with representing whole numbers for any of the following reasons:

- Written conventions for numbers are based on place value.
- It is not intuitively obvious why the value of a digit changes depending on its place in a numeral. For example, the value of the 3 in 302 is different from the value of 3 in 203.
- The digit 0 has no value but can be used as a place holder in numerals.
- A variety of representations may have the same value.

Diagnostic Tool: Representing Whole Numbers

Use the diagnostic tool to determine the most suitable intervention for representing numbers. Provide Diagnostic Tool: Representing Whole Numbers, Teacher's Resource pages xx and xx, and have students complete it in writing or orally. Have place value materials available for students to use (e.g., base ten blocks, 10-frames, place value charts).

See solutions on Teacher's Resource pages xx and xx.

Intervention Pathways

The purpose of the intervention pathways is to help students represent two-digit or three-digit numbers in a variety of ways so that ultimately they can do the same with four-digit numbers. There are 3 pathways:

- Pathway 1: Representing Numbers to 1000
- Pathway 2: Representing Numbers to 100
- Pathway 3: Representing Numbers to 20

Use the chart below (or the Key to Pathways on Teacher's Resource pages xx to xx) to determine which pathway is most suitable for each student or group of students.

Diagnostic Tool Results	Intervention Pathway
If students struggle with Questions 1g–j, 2e–f, 3d, 4, 5d, 6d–f	use Pathway 1: Representing Numbers to 1000 *Teacher's Resource pages xx–xx* *Student Resource pages xx–xx*
If students struggle with Questions 1c–f, 2c–d, 3c, 4, 5b–c, 6b–c	use Pathway 2: Representing Numbers to 100 *Teacher's Resource pages xx–xx* *Student Resource pages xx–xx*
If students struggle with Questions 1a–b, 2a–b, 3a–b, 4, 5a, 6a	use Pathway 3: Representing Numbers to 20 *Teacher's Resource pages xx–xx* *Student Resource pages xx–xx*

Representing Whole Numbers

Diagnostic Tool

1. Find 2 descriptions in the chart that match each number.
Write the 2 letters for the matching descriptions in the blanks.

a) 13 ____ ____

b) 18 ____ ____

c) 24 ____ ____

d) 36 ____ ____

e) 42 ____ ____

f) 63 ____ ____

g) 103 ____ ____

h) 313 ____ ____

i) 330 ____ ____

j) 331 ____ ____

A	30 + 6
B	3 hundreds + 13 ones
C	20 + 4
D	4 tens + 2 ones
E	1 ten + 3 ones
F	3 hundreds + 3 tens + 1
G	10 + 8
H	3 hundreds + 3 tens
I	6 tens + 3 ones
J	100 + 3
K	eighteen
L	twenty-four
M	forty-two
N	sixty-three
O	three hundred thirteen
P	three hundred thirty
Q	thirty-six

2. Write each amount using numbers (e.g., 412).

a) five _____

b) seventeen _____

c) fifty-four _____

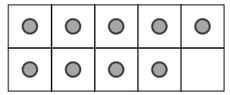
d) seventy-one _____

e) one hundred seventeen _____

f) seven hundred one _____

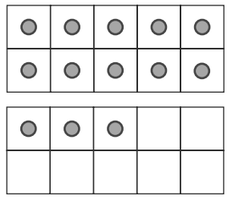
3. Write a number to match each model.

a)



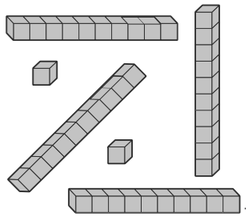
_____

b)



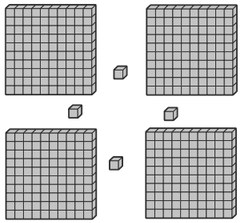
_____

c)



_____

d)



_____

4. Do the two 5s in the number 55 have the same value?
Explain your thinking.

_____

5. Write a number to match each description.

a) 3 in the tens place _____

b) 3 in the tens place, 2 in the ones place _____

c) 2 in the tens place, 1 in the hundreds place _____

d) 3 in the hundreds place, 4 in the ones place _____

6. Fill in the blank to make each statement true.

a) 20 is _____ tens.

b) 37 is 2 tens and _____ ones.

c) 46 is _____ tens and 16 ones.

d) 143 is 13 tens and _____ ones.

e) 510 is _____ tens.

f) 200 is _____ hundreds or _____ tens.

Representing Whole Numbers

Diagnostic Tool

1. Find 2 descriptions in the chart that match each number.
Write the 2 letters for the matching descriptions in the blanks.

Pathway 3	**a)** 13	E T
	b) 18	G K
Pathway 2	**c)** 24	C L
	d) 36	A Q
	e) 42	D M
	f) 63	I N
Pathway 1	**g)** 103	J S
	h) 313	B O
	i) 330	H P
	j) 331	F R

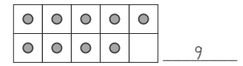
A	30 + 6
B	3 hundreds + 13 ones
C	20 + 4
D	4 tens + 2 ones
E	1 ten + 3 ones
F	3 hundreds + 3 tens + 1
G	10 + 8
H	3 hundreds + 3 tens
I	6 tens + 3 ones
J	100 + 3
K	eighteen
L	twenty-four
M	forty-two
N	sixty-three
O	three hundred thirteen
P	three hundred thirty
Q	thirty-six

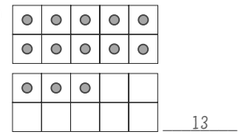
2. Write each amount using numbers (e.g., 412).

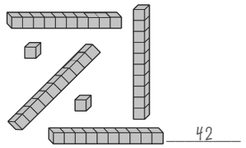
Pathway 3	**a)** five	5
	b) seventeen	17
Pathway 2	**c)** fifty-four	54
	d) seventy-one	71
Pathway 1	**e)** one hundred seventeen	117
	f) seven hundred one	701

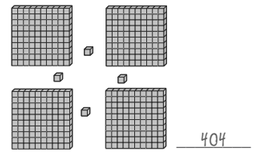
3. Write a number to match each model.

Pathway 3

a)  9

b)  13

c)  42

d)  404

Pathway 2 Pathway 1

4. Do the two 5s in the number 55 have the same value?
Explain your thinking.

Pathway 1 2 3

e.g., No, one 5 is worth 5 ones and the other 5 is worth 5 tens

5. Write a number to match each description. e.g.,

Pathway 3	**a)** 3 in the tens place	31
Pathway 2	**b)** 3 in the tens place, 2 in the ones place	32
	c) 2 in the tens place, 1 in the hundreds place	120
Pathway 1	**d)** 3 in the hundreds place, 4 in the ones place	354

6. Fill in the blank to make each statement true.

Pathway 3

a) 20 is 2 tens.

Pathway 2

b) 37 is 2 tens and 17 ones.

c) 46 is 3 tens and 16 ones.

Pathway 1

d) 143 is 13 tens and 13 ones.

e) 510 is 51 tens.

f) 200 is 2 hundreds or 20 tens.

Representing Numbers to 1000

You will need

- base ten blocks
- place value charts
- Student Resource page xx

Open-Ended Intervention

Before Using the Open-Ended Intervention

Provide base ten blocks and write the numeral 35. Ask,

- What are some things you know about this number? (e.g., *It is more than 30; it has 3 tens; it has 2 digits; it is thirty-five.*)

Tell students that 35 is called the **standard form** for the number.

- How do you read this number? (*thirty-five*)
- How would you model 35? (e.g., *3 tens blocks and 5 ones blocks*)

Write 3 tens +5 ones. Tell students that this is called the **expanded form**.

- How else could you model the number? (e.g., *2 tens blocks and 5 ones blocks*)
- How can you model 100? (e.g., *10 tens blocks*)
- How else? (e.g., *1 hundreds block*)

Write the numeral 305 and ask,

- How do you read this number? (*three hundred five*)
- How is it different from 35? (e.g., *It has a 0 in it.*)

Using the Open-Ended Intervention (Student Resource page 1)

Provide base ten blocks and place value charts and read through the tasks on the student page together. Provide time to work, ideally in pairs.

Observe student responses and use questions as necessary to bring out the following:

- what place value language they know and can use
- whether they understand the function of 0 as a place holder
- whether they have a sense of the size of the numbers
- whether they can represent the numbers
- what other number properties they notice.

Consolidating and Reflecting

Ensure understanding by asking the following questions.

Write 530.

- How would you read this number? (*five hundred thirty*)
- Why did you model 305 the way you did? (e.g., *The number has 3 hundreds and 5 ones.*)
- Why did you use only 2 types of blocks? (e.g., *Even though 305 has 3 digits, it has 0 tens so I didn't need to show any tens blocks.*)
- How else could you model it? (e.g., *2 hundreds + 10 tens + 5 ones*)
  Why did you need more blocks the second time? (e.g., *I didn't use as many big blocks.*)
- About how much is 305? 530? (e.g., *305 is a lot and 530 is even more.*)

Representing Numbers to 1000

You will need

- base ten blocks
- place value charts
- Student Resource pages xx–xx

Guided Intervention

Before Using the Guided Intervention

Provide base ten blocks and write the numeral 42.

Tell students that 42 is called the **standard form** for the number.

- How do you read this number? (*forty-two*)
  If students do not know how to read the number, tell them and ask why the name makes sense.
- How would you model 42? (e.g., *4 tens blocks and 2 ones blocks*)
  Write 4 tens + 2 ones. Tell students that this is called the **expanded form**.
- How else could you model the number? (e.g., *3 tens blocks and 12 ones blocks*)
- How can you model 100? (e.g., *10 tens blocks*)
- How else? (e.g., *1 hundreds block*)
  Write 325 and ask,
- What is this number?
- Why can you represent 325 as 3 hundreds blocks and 2 tens blocks and 5 ones blocks? (e.g., *because there are 3 hundreds and 2 tens and 5 ones*)
- How many base ten blocks is that? (*3 + 2 + 5 = 10*)
- Why can you represent 325 as 3 hundreds and 25 ones? (e.g., *because 3 hundreds and 25 ones is the same as 3 hundreds and 2 tens and 5 ones*)

Using the Guided Intervention (Student Resource pages 2–5)

Provide base ten blocks and place value charts. Guide students as they work through various representations of 402 as shown on the student page. Encourage them to make other models for 402 (e.g., *2 hundreds 20 tens 2 ones*; *2 hundreds 18 tens 22 ones*, etc.) Ensure that students can do a simple sketch using rough squares (for hundreds), lines (for tens) and squares or dots (for ones) to match a model of base ten blocks.

Have them work through the **Try These** questions in pairs or individually.

Observe whether students

- recognize how to model numbers even with 0s involved (Questions 2, 3, 4)
- can read numbers to 1000 written in words (Question 4)
- can write and relate numbers in standard form and expanded form (Questions 1, 2, 3)

Consolidating and Reflecting

Ensure understanding by asking the following questions.

- A number is worth 8 hundreds + 12 ones. How would you model it?
  (8 hundreds blocks and 12 ones blocks, or 8 hundreds blocks, 1 tens block, and 2 ones blocks, or 81 tens blocks and 2 one blocks, or 812 ones blocks)

Representing Numbers to 100

You will need

- base ten blocks
- place value charts
- linking cubes
- Student Resource page xx

Open-Ended Intervention

Before Using the Open-Ended Intervention

Provide either base ten blocks or linking cubes in groups of ten and singles. Write the number 12. Tell students that 12 is called the **standard form** for the number.

- How do you read this number? (*twelve*)
- How would you model 12? (e.g., *1 stick of 10 cubes and 2 single cubes*)
  Write 1 ten + 2 ones. Tell students that this is called the **expanded form** for the number.
- How else could you model the number? (e.g., *12 loose cubes*)
- How can you model 20? (e.g., *2 tens blocks*)
- How else? (e.g., *1 tens block and 10 loose cubes*)

Using the Open-Ended Intervention **Student Resource page xx**

Provide base ten blocks or linking cubes (in tens and ones) and place value charts. Read through the task on the student page together. Provide time to work, ideally in pairs. Encourage students to think of different ways to model the numbers, think of their sizes, and consider where they might meet these numbers in real situations.

Observe student responses. Use questions as necessary to bring out the following:

- what place value language they know and can use
- whether they have a sense of the size of the numbers
- whether they can represent the numbers in several ways
- what other number properties they notice.

Consolidating and Reflecting

Ensure understanding by asking the following questions.
Write 24.

- How would you read this number? (*twenty-four*)
- Why did you model 42 the way you did? (e.g., *The number has 4 tens and 2 ones.*)
- Why did you use 2 types of blocks? (e.g., *The first digit means tens and the second digit means ones.*)
- How else could you represent 24? (e.g., *with 1 tens block and 14 ones blocks*)
- Did you use more blocks that time? (e.g., *Yes, since I didn't use as many big ones*)
- About how much is 42? 24? (e.g., *42 is a lot if it's money and 24 is less.*)

You will need

- base ten blocks
- place value charts
- linking cubes
- Student Resource pages xx–xx

Guided Intervention

Before Using the Guided Intervention

Provide either base ten blocks or linking cubes made into groups of ten and singles. Write the number 17. Tell students that 17 is the **standard form** for the number.

- How do you read this number? (*seventeen*)
- How would you model 17? (e.g., *1 stick of 10 cubes and 7 single cubes*)
  Write 1 ten + 7 ones. Tell students that this is the **expanded form** for the number.
- How else could you model the number? (e.g., *17 loose cubes*)
- How can you model 40? (e.g., *4 tens blocks*)
- How else? (e.g., *2 ten blocks and 10 loose cubes*)

Using the Guided Intervention **Student Resource pages xx–xx**

Provide base ten blocks or linking cubes (in tens and ones), and place value charts. Guide students as they represent 42 in various ways as shown on the student page. Ensure that they know how to do a quick sketch of base ten blocks using rectangles or simple lines and dots.

Have them work through the **Try These** questions in pairs or individually. Observe whether students

- recognize how to model numbers even with 0s involved (Questions 2, 3, 4)
- can read numbers to 100 written in words (Question 4)
- can write and relate numbers in standard form and expanded form (Questions 1, 2, 3)

Consolidating and Reflecting

Ensure understanding by asking the following questions.

- A number is worth 8 tens + 12 ones. How would you model it?
  (e.g., *8 tens blocks and 12 ones* or *9 tens blocks and 2 ones* or *7 tens blocks and 22 ones*)
- What is the least number of base ten blocks you would use in your model? (*11*)
- Why might someone think that the 1 in 15 is the most important part of the number? (e.g., *1 ten is a lot more than 5 ones.*)

Pathway 3
OPEN-ENDED

Representing Numbers to 20

You will need

- counters
- 10-frames
- Student Resource page xx

Open-Ended Intervention

Before Using the Open-Ended Intervention

Provide counters and 10-frames and write the numeral 8. Ask,

- How do you read this number? (*eight*)
- How would you model 8 using a 10-frame?
  (e.g., *Fill one row and 3 of the next row.*)
- How does the model show that 8 is less than 10, but close?
  (e.g., *It almost fills a 10-frame, but not quite.*)
- What else do you know about the number 8?
  (e.g., *it's even; it's 4 and 4; it's curvy; it's the number of hot dogs in a pack*)
  Show a full 10-frame to the left of the 10-frame that shows 8 so that the model shows 18.
- How is the model for 18 different from the model for 8?
  (e.g., *You need another 10-frame that's full plus the one that you did for 8.*)

Using the Open-Ended Intervention **Student Resource page xx**

Provide counters and 10-frames and present the task on the student page. Provide time to work, ideally in pairs. Encourage students to consider how to model the number using 10-frames (or alternative ways). Have them talk about how big the number is and where they might see that number in the real world.

Observe student responses and use questions as necessary to bring out the following:

- whether they have a sense of the size of the numbers
- whether they can represent the numbers
- what other number properties they notice.

Consolidating and Reflecting

Ensure understanding by asking the following questions.

- How did you model 18?
  (e.g., *I used two 10-frames, one that's full and one with 8.*)
- How is the model for 18 different from the model for 8?
  (e.g., *18 has another 10-frame that's full.*)
- Is 18 a lot more than 12 or just a little? How can you tell?
  (e.g., *18 is a little more than 12 because they both use two 10-frames.*)

Representing Numbers to 20

Pathway 3
GUIDED

You will need

- counters
- 10-frames
- Student Resource pages xx–xx

Guided Intervention

Before Using the Guided Intervention

Provide two 10-frames and 20 counters. Ask the following questions.

- How can you make 15 using 10-frames and counters?
  (e.g., *one full 10-frame and one full row of another 10-frame*)
- How do you know this shows 15? (e.g., *It shows 10 and 5.*)
- What numbers would need two 10-frames to model them?
  (*numbers from 11 to 20*)
  Write the numeral 12.
- How do you read this number? (*twelve*)

Using the Guided Intervention **Student Resource pages xx–xx**

Provide counters and 10-frames and have students model 12 and 6 as shown on the student page. Note the standard and expanded forms for the numbers.

If students need help focusing their attention on the page, block out sections with sticky notes or paper so that they see only one section at a time.

Have them work through the **Try These** questions in pairs or individually. Observe whether students

- recognize how to model numbers even with 0s involved (Questions 1, 3, 4)
- can read numbers to 20 (Question 2)
- can write and relate numbers in standard form and expanded form. (Questions 1, 2, 3, 4)

Consolidating and Reflecting

Ensure understanding by asking the following questions.

- When did you need more than one 10-frame?
  (*when the number was more than 10*)
- How could you have looked at the number to tell? (*Numbers with 2 digits need more than one 10-frame.*)
- How easy is it to tell how much more or less than 10 a number is using a 10-frame?
  (e.g., *Easy; you just count how many counters are in the second 10-frame or how many are missing from the first one.*)
- How do the models for 15 and 5 look alike? How do they look different?
  (e.g., *both fill whole rows of 10-frames but 15 fills three rows and 5 fills one row*)

Skip Counting

Planning for this Topic

Materials for assisting students with skip counting consist of a diagnostic tool and 3 intervention pathways. The pathways differ in the sizes of the numbers being counted: numbers to 1000, numbers to 100, and numbers to 20.

Each pathway has an open-ended option and a guided option. Choose the type of intervention most suitable for your students' needs and your situation.

Curriculum Connections

Grades 1 to 4 curriculum connections for this topic are provided online. See [url].

Why might a student struggle with skip counting?

Skip counting is fundamental to representing numbers and comparing them, particularly on number lines. Many students struggle with skip counting because it requires attention to patterns in the place value system that are not always clear to students. They struggle mostly

- over transitions, where more than one digit changes (e.g., going from 109 to 110 or 99 to 100 or 375 to 400)
- when not beginning at the start (e.g., starting at 35 instead of starting at 5 when skip counting by 5s)
- when counting backward.

Sometimes these problems are alleviated with experience. Frequently students are exposed to only limited types of skip counting situations.

Professional Learning Connections

Prime Number and Operations, Background and Strategies, pages 37, 40, 67
Making Math Meaningful pages 140–141, 144
Big Ideas K–3 pages 18, 30, 33

Diagnostic Tool: Skip Counting

Use the diagnostic tool to determine the most suitable intervention focused on skip counting. Provide Diagnostic Tool: Skip Counting, Teacher's Resource pages xx to xx, and have students complete it in writing or orally. It may be useful to observe how students skip count — whether they use their fingers or say all the numbers between — to help them improve their ability.

See solutions on Teacher's Resource pages xx and xx.

Intervention Pathways

The purpose of the intervention pathways is to help students count and skip count both forward and backward, particularly over transition points, depending on students' needs. The focus is to prepare them for skip counting using a broader range of skip sizes and to count to greater numbers. There are 3 pathways:

- Pathway 1: Skip Counting to 1000
- Pathway 2: Skip Counting to 100
- Pathway 3: Skip Counting to 20

Use the chart below (or the Key to Pathways on Teacher's Resource pages xx and xx) to determine which pathway is most suitable for each student or group of students.

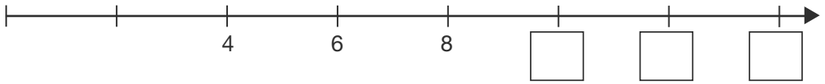
Diagnostic Tool Results	Intervention Pathway
If students struggle with 4 or more of Questions 1d, 3f–i, 4d, 6e–h	use Pathway 1: Skip Counting to 1000 *Teacher's Resource pages xx–xx* *Student Resource pages xx–xx*
If students struggle with 5 or more of Questions 1c, 2a–b, 3c–e, 4c, 5, 6c–d	use Pathway 2: Skip Counting to 100 *Teacher's Resource pages xx–xx* *Student Resource pages xx–xx*
If students struggle with 4 or more of Questions 1a–b, 3a–b, 4a–b, 6a–b	use Pathway 3: Skip Counting to 20 *Teacher's Resource pages xx–xx* *Student Resource pages xx–xx*

Skip Counting

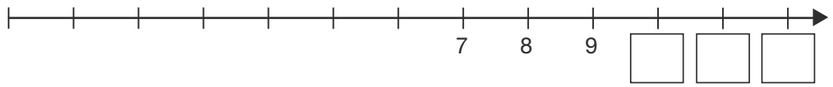
Diagnostic Tool

1. Fill in the next 3 numbers in the counting pattern.

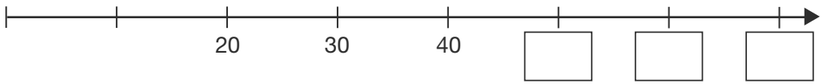
a)



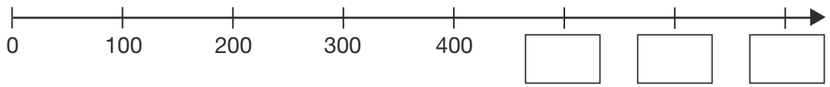
b)



c)

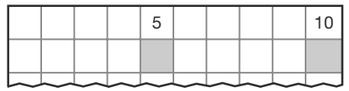


d)

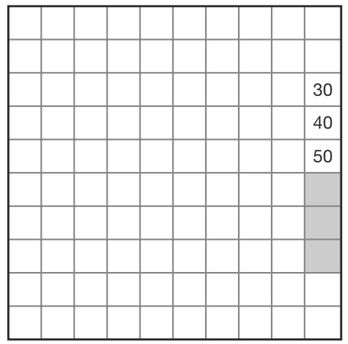


2. Fill in the numbers in the grey boxes to continue each counting pattern.

a)



b)



3. Count forward to continue the pattern for 3 more numbers.

a) 7, 8, 9, ____, ____, ____

b) 4, 6, 8, ____, ____, ____

c) 5, 10, 15, ____, ____, ____

d) 60, 70, 80, ____, ____, ____

e) 9, 19, 29, ____, ____, ____

f) 125, 150, 175, ____, ____, ____

g) 194, 196, 198, ____, ____, ____

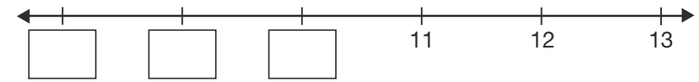
h) 220, 320, 420, ____, ____, ____

i) 403, 503, 603, ____, ____, ____

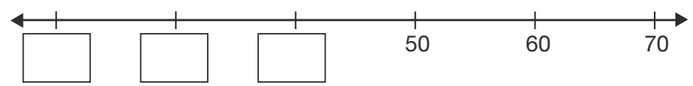
4. Fill in the 3 missing numbers in the counting pattern.

a)

b)



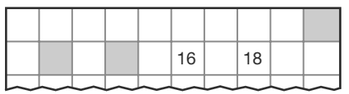
c)



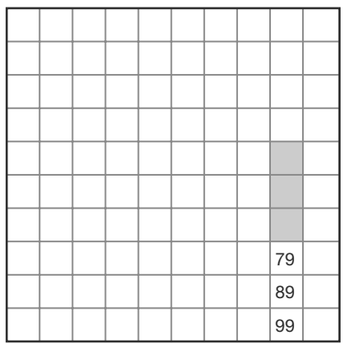
d)

5. Fill in the numbers in the grey boxes to continue the counting pattern backward.

a)



b)



6. Count backward to continue the pattern for 3 more numbers.

a) 20, 19, 18, ____, ____, ____

b) 20, 18, 16, ____, ____, ____

Skip Counting

Diagnostic Tool

Pathway 3 / Pathway 1

1. Fill in the next 3 numbers in the counting pattern.

a) 4, 6, 8, 10, 12, 14

b) 7, 8, 9, 10, 11, 12

Pathway 2

c) 20, 30, 40, 50, 60, 70

Pathway 1

d) 0, 100, 200, 300, 400, 500, 600, 700

Pathway 2

2. Fill in the numbers in the grey boxes to continue each counting pattern.

a)

				5					10
				15					20

b)

									30
									40
									50
									60
									70
									80

Pathway 3

3. Count forward to continue the pattern for 3 more numbers.

a) 7, 8, 9, 10, 11, 12

b) 4, 6, 8, 10, 12, 14

Pathway 2

c) 5, 10, 15, 20, 25, 30

d) 60, 70, 80, 90, 100, 110

e) 9, 19, 29, 39, 49, 59

Pathway 1

f) 125, 150, 175, 200, 225, 250

g) 194, 196, 198, 200, 202, 204

h) 220, 320, 420, 520, 620, 720

i) 403, 503, 603, 703, 803, 903

4. Fill in the 3 missing numbers in the counting pattern.

Pathway 3

a) 6, 8, 10, 12, 14, 16

b) 8, 9, 10, 11, 12, 13

Pathway 2

c) 20, 30, 40, 50, 60, 70

Pathway 1

d) 170, 175, 180, 185, 190, 195

5. Fill in the numbers in the grey boxes to continue the counting pattern backward.

Pathway 2

a)

									10
		12		14		16		18	

b)

									49
									59
									69
									79
									89
									99

Pathway 3

6. Count backward to continue the pattern for 3 more numbers.

a) 20, 19, 18, 17, 16, 15

b) 20, 18, 16, 14, 12, 10

Pathway 1
OPEN-ENDED

Skip Counting to 1000

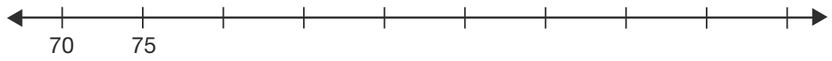
You will need

- base ten blocks (optional)
- number lines
- Student Resource page xx

Open-Ended Intervention

Before Using the Open-Ended Intervention

Sketch a number line like this one and ask the following questions.



- Suppose you were skip counting forward by 5s from 70 on the number line. What numbers would you put on the line? (e.g., *70, 75, 80, 85, 90, 95*)
- What comes after 95? (*100*) Why? (e.g., *95 is 9 tens and 5; if you go up by 5, you'll have 10 tens and that's 100*)
- Would you ever write 104 as part of skip counting by 5s from 80? Why or why not? (*no, since the numbers at the ticks are all numbers that end in 5 or 0*)
- Suppose you were skip counting forward by 25s starting at 150. What numbers would you say next? (*175 and 200*)
- Could you skip backward by the same numbers? What would be the same and what would be different? (e.g., *You would say the same numbers but in the opposite order.*)

Using the Open-Ended Intervention **Student Resource pages xx–xx**

Read through the tasks on the student page together. Students may want to count using base ten blocks (hundreds, tens, and ones) to help them over the transitions where more than one digit changes. Then they can record the counting numbers on the number lines. Provide more number lines if necessary (Blackline Master page xx). Provide time to work, ideally in pairs.

Observe student responses and use questions as necessary to see whether they

- are able to count up and down by various skip counting factors both in simple situations and over "transitions"
- recognize which digits are affected by various skip counting factors.

Consolidating and Reflecting

Ensure understanding by asking the following questions.

- Which type of skip counting did you find easiest? (e.g., *up by 100s since you just change one digit*)
- What happens to the number 299 when you skip count by 10s? Why does it happen? (e.g., *You have to change the hundreds and the tens since once you have an extra ten, you really have an extra 100.*)
- How is skip counting back by 100 like skip counting back by 10? How is it different? (e.g., *Both times it's usually just one digit that changes, either the hundreds or the ones; both times, you don't really have to subtract, you just change a digit. But you can't say as many numbers when you are counting down by 100.*)

Skip Counting to 1000

Pathway 1
GUIDED

You will need

- number lines (Blackline Master xx)
- base ten blocks
- play coins (quarters)
- Student Resource pages xx–xx

Guided Intervention

Before Using the Guided Intervention

Sketch a number line like this one. Ask the following questions.

- Suppose you were skip counting forward by 5s from 80 on the number line. What numbers would you put on the line? (e.g., *80, 85, 90, 95*)
- What comes after 95? Why? (*100;* e.g., *95 is 9 tens and 5; if you go up by 5, you'll have 10 tens and that's 100*)
- Suppose you had been skip counting by 10s starting at 80 instead. Then what numbers would you put on the line? (*90, 100, 110, …*)
- If you were skip counting back by 10s from 150, what would happen? (e.g., *You would say a lot of the same numbers as if you were skip counting up by 80.*)

Using the Guided Intervention **Student Resource pages xx–xx**

Work through the instructional section of the student page together. Provide blank number lines (Blackline Master xx) and guide students as they count forward from 462 by 100s and by 10s, back from 663 by 100s and by 10s, forward from 325 by 25s, and back from 875 by 25s. Have base ten blocks (hundreds, tens, and ones) available for counting forward and back from 10 and 100 to model the numbers.

Have students model counting forward and backward by 25s using quarters as shown on the student page.

Have students work through the **Try These** questions in pairs or individually. Observe whether students

- recognize which digits change and why when counting forward and back by 10s or 100s (Questions 1, 2, 3, 6)
- understand when the hundreds digit changes as they cycle through the endings of 25, 50, 75 and 00 when counting by 25s (Questions 1, 2, 4)
- relate skip counting to adding and subtracting. (Question 5)

Consolidating and Reflecting

Ensure understanding by asking the following questions.

- Start with 175. Show how to skip count forward by 100s, by 10s, and by 25s. (for 100s: 175, 275, 375, . . .; for 10s: 175, 185, 195, 205, 215, . . .; for 25s: 175, 200, 225, 250, 275, . . .)
- Start with 725. Show how to skip count back by 100s, by 10s, and by 25s. (for 100s: 725, 625, 525, . . . by 100; for 10s: 725, 715, 705, 695, . . .; for 25s: 725, 700, 675, 650, . . .)

Pathway 2
OPEN-ENDED

Skip Counting to 100

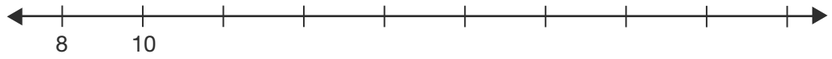
You will need

- base ten blocks
- 100 charts (Blackline Master xx)
- 100 bead chains
- number lines (Blackline Master xx)
- Student Resource page xx

Open-Ended Intervention

Before Using the Open-Ended Intervention

Sketch a number line like this one and ask the following questions.



- Suppose you were skip counting forward by 2s from 8 to label points on the number line. What numbers would you put on the number line? (e.g., *8, 10, 12, 14, ...*)
- Would you ever write 23 as part of this skip counting pattern? Why or why not? (*no since all the numbers are even*)
- What skip counting patterns might include the number 25? (e.g., *5 or 10 or 25*)
- Suppose you were skip counting forward by 5s. What would you say next if you started at 15? (*20*)
- Could you skip count back by the same numbers? How would that be different? (*Yes, you would say the same numbers, but in the opposite order.*)

Using the Open-Ended Intervention **Student Resource pages xx–xx**

Read through the tasks on the student page together. Students may want to count using base ten blocks (tens, and ones) or 100 charts (Blackline Master xx) or 100-bead chains to help them over the transitions where more than one digit changes. Then they can record the counting numbers on the number lines. Provide more number lines if necessary (Blackline Master page xx). Provide time to work, ideally in pairs.

Observe student responses and use questions as necessary to see whether they

- are able to count forward and back by various skip counting factors both in simple situations and over "transitions"
- recognize which digits are affected by various skip counting factors.

Consolidating and Reflecting

Ensure understanding by asking the following questions.

- Which type of skip counting did you find easiest? (e.g., *up by 10s since you just change one digit*)
- Why is it easier to skip count backward by 2s or 10s from 88 than by 5s? (e.g., *to skip down by 10s you just change the tens place one at a time and to skip count down by 2s, you just use the even digits. To count back by 5s, you'd have to figure out what 88 – 5 is.*)
- Why does it take longer to get to a higher number when you skip count by 5s than by 10s? (*5 is less than 10 so it takes longer to add up by 5s than by 10s.*)
- When might you skip count? (e.g., *to count a lot of objects quickly; to figure out what numbers to write on a number line*)

Skip Counting to 100

Pathway 2
GUIDED

You will need

- number lines (Blackline Master xx)
- 100 charts (Blackline Master) xx
- Student Resource pages xx–xx

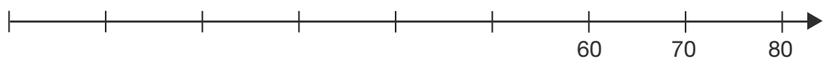
Guided Intervention

Before Using the Guided Intervention

Show a number line marked with evenly spaced tick marks and mark 10, 20, 30 on it.

Ask the following questions.

- How do you know that 40 comes next on the number line? (e.g., *It shows counting up by 10s.*)
- How would the skip counting continue? (*50, 60, 70*)
- Which digits are changing when you are skip counting forward by 10s (*the tens digit*)
- Why does that make sense? (*If you add 10, only the number of tens changes.*)
- Create a new number line with evenly spaced marks and mark 80, 70, and 60 (going backward).



- What number goes before 60 on this number line? (*50*)
- How do you know? (*It shows counting back by 10s.*)

Using the Guided Intervention **Student Resource pages xx–xx**

Read through the instructional section of the student page together. Provide blank number lines (Blackline Master xx) and guide students as they count forward by 10s from 32, forward by 5s from 45, forward by 2s from 82, and backward by 5s from 75. It may help to have 100 charts (Blackline Master xx) available for the counting forward and backward.

Have students work through the **Try These** questions in pairs or individually. Observe whether students

- recognize which digits change and why when counting up and back by 10, 5, or 2 (Questions 1, 2, 3, 4, 6)
- relate skip counting to adding and subtracting. (Question 5)

Consolidating and Reflecting

Ensure understanding by asking the following questions.

- Start with 40. Show how to skip count forward by 10, 5, and 2. (40,50, 60, ... for 10; 45, 50, 55, 60,… for 5; 40, 42, 44, 46, ... for 2)
- Start with 70. Show how to skip count backward by 10 and by 5 and 2. (70, 60, 50, … by 10; 70, 65, 60, 55,… by 5; 70, 68, 66, 64,… by 2)

Pathway 3
OPEN-ENDED

Skip Counting to 20

You will need

- counters
- 10-frames (Blackline Master xx)
- Student Resource page xx

Open-Ended Intervention

Before Using the Open-Ended Intervention

Sketch an arrangement of counters like this:

Row 1 ●●

Row 2 ●●●●

Row 3 ●●●●●●

- What pattern do you notice? (*There are 2 more counters each time.*)
- What numbers would you say to tell how many counters are in each row? (*2, 4, 6*)
- What would come next? (*8*)
- Why didn't you say 7? (e.g., *because it goes up by 2 and not 1*)

Using the Open-Ended Intervention **Student Resource pages xx–xx**

Read through the tasks on the student page together. Provide time to work, ideally in pairs. Have counters and 10-frames available for students to use.

Observe student responses and use questions as necessary to see whether they are able to count forward and backward by 1s, 2s, and 5s.

Consolidating and Reflecting

Ensure understanding by asking the following questions.

- I'm going to cover 6 of the 20 counters. Can you still figure out how many there are altogether by counting? (*Yes—just start counting after 6.*)
- Why does it take longer to count by 2s than by 5s? (*2 is less than 5 so it takes longer to add up by 2s than by 5s*)
- What patterns do you see when you skip count by 2s? (e.g., *The numbers go up or down by 2 and they are all even.*) What if you skip count by 5s? (e.g., *You always end with a 5 or 0.*)
- Why does it make more sense to skip count than to count by ones when there are a lot of things to count? (e.g., *to make it go faster; it's fast enough to count by 1s if there are only a few things*)

Skip Counting to 20

Pathway 3
GUIDED

You will need

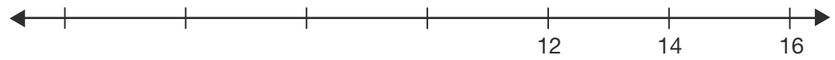
- play coins (pennies and nickels)
- counters
- 10-frames (Blackline Master xx)
- Student Resource pages xx–xx

Guided Intervention

Before Using the Guided Intervention

Display 4 nickels and ask the following questions.

- What numbers could you say to count how much these coins are worth? (*5, 10, 15, 20*)
- Why did you say only those numbers? (e.g., *You don't need to say the other numbers since nickels are worth 5¢ each.*)
- Display 6 pairs of counters. Start counting by moving 2 at a time saying 2, 4, 6 ….
- How can I continue counting to figure out the number of counters? (*6, 8, 10, 12*)
- Sketch a number line with evenly spaced marks and labels at 16, 14, 12 (going backward).



- When skip counting back by 2s, what number goes before 12? (*10*)
- How do you know? (*You just go down by 2s.*)

Using the Guided Intervention **Student Resource pages xx–xx**

Work through the instructional section of the student page together. Provide counters and 10-frames (Blackline Master xx) and guide students as they count forward by 2s from 4 and by 5s from 0. Then count back together from 16 by 2s. Talk about the patterns for 2s and 5s.

Have students work through the **Try These** questions in pairs or individually. Provide pennies for question 9. Observe whether students notice the patterns when they skip count forward and backward.

Consolidating and Reflecting

Ensure understanding by asking the following questions.

- Start with 10. Show how to skip count up by 5 and by 2. (for 5s: *10, 15, 20, …; for 2s: 10, 12, 14, 16,…*)
- Start with 20. Show how to skip count back by 5s and by 2s. (*by 5s: 20, 15, 10, 5, …; by 2s: 20, 18, 16, 14, …*)
- Why would you count tally marks by 5s and not by 2s? (*because they come in 5s*) What would you do if there were a few extra tallies but not 5? (*Count by 5s and then start counting by 1s.*)
- What numbers are in both of your skip counting patterns for 2s and for 5s? (*10, 20*)
- What patterns do you notice when you count by 2s? (e.g., *the 2, 4, 6, 8, 0 pattern*)

Comparing and Ordering Numbers

Planning for this Topic

Materials for assisting students with comparing and ordering whole numbers consists of a diagnostic tool and 3 intervention pathways. The pathways for this topic differ in the sizes of numbers being compared: numbers to 1000, to 100, and to 20.

Each pathway has an open-ended option and a guided option. Choose the type of intervention most suitable for your students' needs and for your situation.

Curriculum Connections

Grades 1 to 4 curriculum connections for this topic are provided online. See [put L&B url here]. The curriculum outcomes are fairly consistent in covering comparing and ordering numbers to 100 in Grade 2, to 1000 in Grade 3, and to 10 000 in Grade 4. For Grade 1, some aspects of comparing numbers cover numbers to 50 in Ontario, whereas most other aspects go to 20 in Ontario and WNCP.

Professional Learning Connections

Prime Number and Operations, Background and Strategies pages 37, 65–66
Making Math Meaningful pages 87–89, 143–144
Big Ideas from Dr. Small K–3 pages 19, 32
Good Questions pages 20, 26–27

Why might students struggle with comparing and ordering numbers?

Students might struggle with comparing and ordering whole numbers for any of the following reasons:

- Students might focus on individual digits when comparing numbers.
- Students might not think about the total value of a number in terms of hundreds, tens, and ones.

Diagnostic Tool: Comparing and Ordering Numbers

Use the diagnostic tool to determine the most suitable intervention for comparing and ordering numbers. Provide Diagnostic Tool: Comparing and Ordering Numbers, Teacher's Resource pages xx and xx, and have students complete it in writing or orally. Have available place value materials for students to use.

See solutions on Teacher's Resource pages xx and xx.

Intervention Pathways

The purpose of the intervention pathways is to help students compare and order two-digit or three-digit numbers in a variety of ways so that ultimately they can do the same with four-digit numbers. There are 3 pathways:

- Pathway 1: Comparing and Ordering to 1000
- Pathway 2: Comparing and Ordering to 100
- Pathway 3: Comparing and Ordering to 20

Use the chart below (or the Key to Pathways on Teacher's Resource pages xx and xx) to determine which pathway is most suitable for each student or group of students.

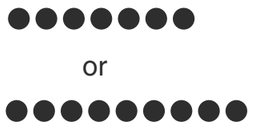
Diagnostic Tool Results	Intervention Pathway
If students struggle with 3 or more of Questions 1f–g, 2e–f, 4e–f	Pathway 1: Comparing and Ordering to 1000 *Teacher's Resource pages xx–xx* *Student Resource pages xx–xx*
If students struggle with 3 or more of Questions 1d–e, 2c–d, 4c–d	Pathway 2: Comparing and Ordering to 100 *Teacher's Resource pages xx–xx* *Student Resource pages xx–xx*
If students struggle with 4 or more of Questions 1a–c, 2a–b, 3, 4a–b	Pathway 3: Comparing and Ordering to 20 *Teacher's Resource pages xx–xx* *Student Resource pages xx–xx*

Comparing and Ordering Numbers

Diagnostic Tool

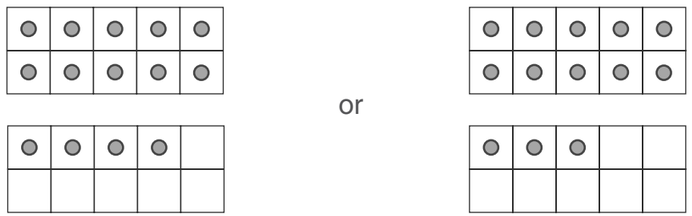
1. Circle the greater number in each pair.

a)



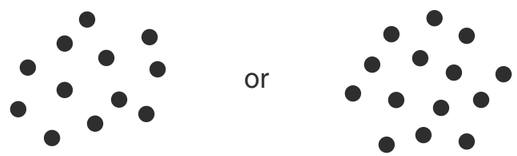
or

b)



or

c)

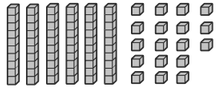


or

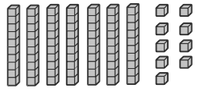
d)

or

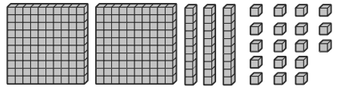
e)



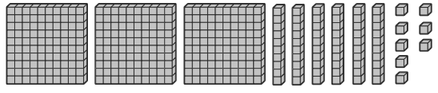
or



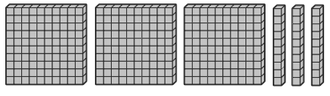
f)



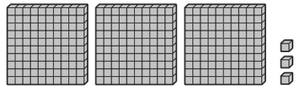
or



g)

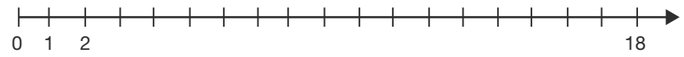


or

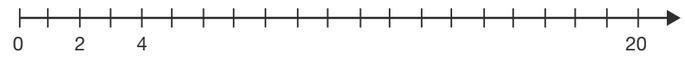


2. Put the numbers where they belong on the number line.

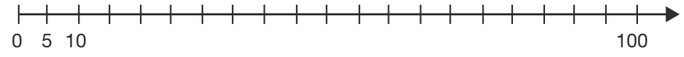
a) 3, 11, 9, 14



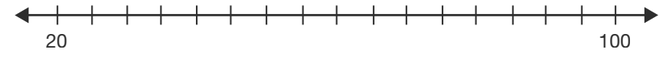
b) 8, 11, 5, 18



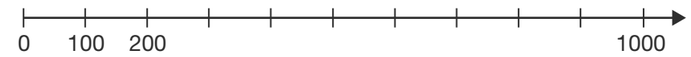
c) 35, 75, 20, 90



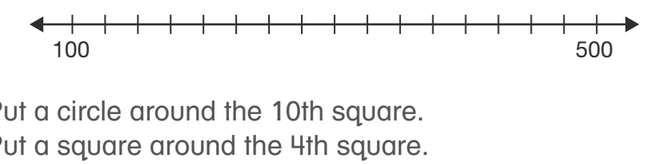
d) 29, 82, 22, 88



e) 700, 400, 600, 300



f) 325, 175, 250, 475



3. Put a circle around the 10th square.
Put a square around the 4th square.
Put a triangle around the 18th square.

4. Write the 4 numbers in order from least to greatest.

a) 7, 10, 2, 5 _____ , _____ , _____ , _____

b) 18, 12, 9, 10 _____ , _____ , _____ , _____

c) 33, 38, 29, 91 _____ , _____ , _____ , _____

d) 14, 41, 19, 40 _____ , _____ , _____ , _____

e) 32, 230, 23, 320 _____ , _____ , _____ , _____

f) 705, 507, 750, 570 _____ , _____ , _____ , _____

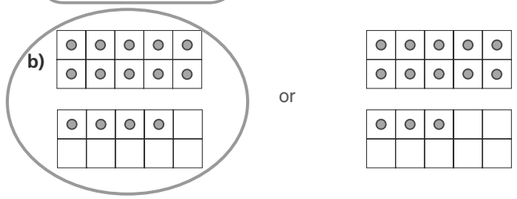
Comparing and Ordering Numbers

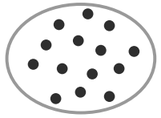
Diagnostic Tool

Pathway 3

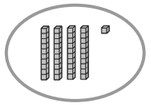
1. Circle the greater number in each pair.

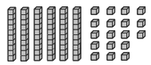
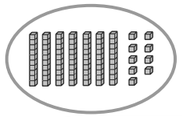
a) ●●●●●●● or ●●●●●●●●●

b)  or

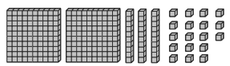
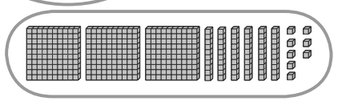
c)  or 

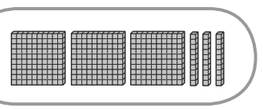
Pathway 2

d)  or 

e)  or 

Pathway 1

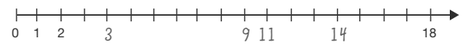
f)  or 

g)  or 

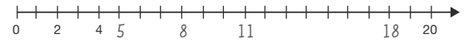
Pathway 3

2. Put the numbers where they belong on the number line.

a) 3, 11, 9, 14

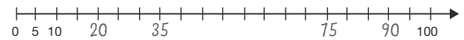


b) 8, 11, 5, 18

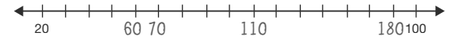


Pathway 2

c) 35, 75, 20, 90

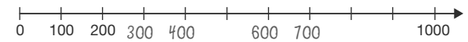


d) 29, 82, 22, 88

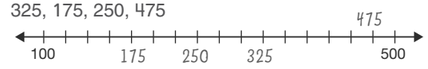


Pathway 1

e) 700, 400, 600, 300



f) 325, 175, 250, 475



Pathway 3

3. Put a circle around the 10th square.
Put a square around the 4th square.
Put a triangle around the 18th square.

4. Write the 4 numbers in order from least to greatest.

Pathway 3

a) 7, 10, 2, 5 — 2 , 5 , 7 , 10

b) 18, 12, 9, 10 — 9 , 10 , 12 , 18

Pathway 2

c) 33, 38, 29, 91 — 29 , 33 , 38 , 91

d) 14, 41, 19, 40 — 14 , 19 , 40 , 41

Pathway 1

e) 32, 230, 23, 320 — 23 , 32 , 230 , 320

f) 705, 507, 750, 570 — 507 , 570 , 705 , 750

Comparing and Ordering to 1000

You will need

- base ten blocks
- place value charts
- number lines
- Student Resource page xx

Open-Ended Intervention

Before Using the Open-Ended Intervention

Write 24 and 28 and ask the following questions.

- Suppose you were comparing 24 and 28. Which is greater? Why? (28, e.g., *because it comes after 24 when you count*)
- Suppose you were comparing 28 and 41. Which is greater? Why? (41, e.g., *because it has more tens*)
- But 41 has fewer ones. Why doesn't that matter? (e.g., *because 8 ones isn't even 1 ten and 41 is more than 1 ten more than 28*)
- What rule would you give for comparing two-digit numbers? (e.g., *I would say that the one that has more tens is greater. But if the tens are the same, the number with more ones is greater.*)

Write the number 414. Ask:

- How much is the first 4 in this three-digit number worth? (400) How much is the last 4 worth? (4) Why isn't it 400? (*because it is in the ones place and not the hundreds place*)
- What is another number with the same digits as 414? (e.g., *441*)
- Is your number greater or less than 414? How do you know? (e.g., *greater; the numbers have the same number of hundreds but 441 has more tens*)

Remind students how to write statements with "greater than" or "less than" symbols, for example, $441 > 414$ or $144 < 414$.

Using the Open-Ended Intervention **Student Resource page xx**

Provide base ten blocks place value charts (Blackline Master xx), and blank number lines (Blackline Master xx) and read through the tasks on the student page together. Provide time to work, ideally in pairs.

Observe students as they work to see

- whether they focus on the entire number or just digits to decide which number is greater
- what comparison strategies they use, e.g., skip-counting to mark number lines, one-to-one correspondence with base ten blocks, or a more abstract comparison to benchmarks.

Consolidating and Reflecting

Ensure understanding by asking the following questions.

- How did you choose the digits you used to create the numbers? (e.g., *I chose 1, 5, and 9 so that I could move around digits that were worth different amounts.*)
- How did you create your numbers so that one was much greater than the other? (e.g., *I put the greatest digit in the greatest place value for one number and I put the least digit in the greatest place value for the other number.*)

Comparing and Ordering to 1000

You will need

- base ten blocks
- place value charts (Blackline Master xx)
- blank number lines (Blackline Master xx)
- Student Resource pages xx–xx

Guided Intervention

Before Using the Guided Intervention

Provide base ten blocks and place value charts (Blackline Master xx) and ask the following questions.

- Suppose you were comparing 24 and 42. Which number is greater? Why? (42, *e.g., because it comes after 24 when you count*)
- How do you write "42 is greater than 24" with symbols? ($42 > 24$)
- Can you think of another reason why 42 is greater? (e.g., *It has more tens.*)
- But 42 has fewer ones. Why doesn't that matter? (e.g., *because 4 ones isn't even 1 ten and 42 is more than 1 ten more than 24*)
- How do you know that 24 is less? (*because 42 is greater*)
- What rule would you give for comparing two-digit numbers? (e.g., *I would say that the number that has more tens is greater. But if the tens are the same, the number with more ones is greater.*)

Write the number 414. Ask,

- How much is the first 4 in this three-digit number worth? (400) How much is the last 4 worth? (4) Why isn't it 400? (*because it is in the ones place, not the hundreds place*)

Using the Guided Intervention **Student Resource pages xx–xx**

Provide base ten blocks and place value charts (Blackline Master xx). Work through the instructional section of the student page together. Guide students as they represent 512 and 378 in various ways and use the representations to compare the numbers.

Have them work through the **Try These** questions in pairs or individually.

Observe whether students

- have a variety of strategies for comparing numbers (Questions 1–8)
- recognize which digits matter the most when considering the size of a number (Questions 1, 3, 4, 6)
- recognize that numbers to the left on a number line are less than numbers to the right (Question 5).

Consolidating and Reflecting

Ensure understanding by asking the following questions.

- Is a 4-digit number always more than a 3-digit number? Why or why not? (*yes, since a 4-digit number is at least 1000 but a 3-digit number is less than 1000*)
- A three-digit number is greater than 617. Do you know any of the digits in the number for sure? Explain your thinking. (e.g., *Not for sure, but I know the first digit is 6 or more.*)

Comparing and Ordering to 100

You will need

- base ten blocks
- place value charts (blackline master xx)
- blank number lines (blackline master xx)
- Student Resource page xx

Open-Ended Intervention

Before Using the Open-Ended Intervention

Write the numeral 35 and ask these questions:

- How do you read this number? (e.g., *thirty-five*)
- Give an example of a number that is greater than 35. (e.g., *36*)
- How do you know that your number is greater? (e.g., *36 has one more than 35.*)
- What do the digits in 35 represent? (e.g., *3 tells the number of tens and 5 tells the number of ones.*)

Using the Open-Ended Intervention **Student Resource page xx**

Read through the task on the student page together. Provide base ten blocks, place value charts (Blackline Master xx), and blank number lines (Blackline Master xx) for students to use as they wish. Provide time to work, ideally in pairs.

Students should list two-digit numbers with 3s and 9s in them and discover many numbers with 3 in them that are greater than numbers with 9 in them.

Observe students as they work to see

- whether they focus on the entire number or just digits to decide which number is greater
- how systematic they are in listing and comparing numbers that contain 3s and 9s
- what comparison strategies they use, e.g., skip counting to mark number lines, one-to-one correspondence with base ten blocks, or a more abstract comparison to benchmarks.

Consolidating and Reflecting

Ensure understnding by asking the following questions.

- When you were looking for a number with a 3 that was greater than a number with a 9, what did you look for? (e.g., *I looked mostly at the ones digits, because I knew any number with 3 in the tens was less than a number with 9 in the tens.*)
- What are some two-digit numbers that have 3 in them that are greater than 29? (e.g., *anything in the 30s*)
- Are there numbers with 3 in them that are greater than 79? (*yes*, e.g., *83 or 93*)

Comparing and Ordering to 100

You will need

- base ten blocks
- place value charts (Blackline Master xx)
- blank number lines (Blackline Master xx)
- Student Resource pages xx-xx

Guided Intervention

Before Using the Guided Intervention

Ask the following questions.

- How do you know that 27 is greater than 14? (e.g., *27 is more than 20, but 14 is less than 20.*)
- How do you write "27 is greater than 14" with symbols? (*27 > 14*)
- How do you know that 38 is less than 39? (e.g., *You say 39 after 38 when you count.*)
- Name 2 numbers that are greater than 39. How you know they are greater? (e.g., *40 and 41; You say them after 39 when you count by ones.*)
- How do you know that if 18 is less than 19, then 19 is greater than 18? (e.g., *Being greater is just the reverse of being less. If one number is less than another, the other is automatically greater.*)
- How would you model 51 with base ten blocks? (e.g., *5 tens and 1 one*)
- Where would 51 be on a number line? (e.g., *just a little past 50*)

Using the Guided Intervention **Student Resource pages xx-xx**

Provide base ten blocks place value charts (Blackline Master xx), and blank number lines (Blackline Master xx). Work through the instructional section of the student page together. Guide students as they represent 51 and 37 and use the representations to compare the numbers.

Have them work through the **Try These** questions in pairs or individually. Observe whether students

- have a variety of strategies for comparing numbers (Questions 1–8)
- recognize which digits matter the most when considering the size of a number (Questions 1, 3, 4, 7)
- recognize that numbers to the left on a number line are less than numbers to the right (Question 6).

Consolidating and Reflecting

Ensure understanding by asking the following questions.

- Is a 3-digit number always more than a 2-digit number? Why or why not? (*yes*, e.g., *A 3-digit number is always at least 100, but a 2-digit number is always less.*)
- A number is greater than 67. Do you know any of the digits in the number for sure? Explain your thinking. (e.g., *Not for sure, but I know the tens digit is at least 6.*)
- Alyson says that 63 is greater than 57, since 6 is greater than 5. Do you agree? Explain your thinking. (e.g., *Yes, since 6 tens is more than 5 tens.*)
- How can you use a number line to compare numbers? (e.g., *You see which number is farther to the right.*)

Comparing and Ordering to 20

You will need

- counters
- 10-frames (Blackline Master xx)
- number lines (Blackline Master xx)
- Student Resource page xx

Open-Ended Intervention

Before Using the Open-Ended Intervention

Ask the following questions:

- Which is more, 7 or 10? How do you know? (e.g., *10 is more since you say it after 7 when you count.*)
- How do you write "10 is greater than 7" with symbols? ($10 > 7$)
- Put 7 counters in this 10-frame and 10 in the other one. How does that help you see which number is greater? (e.g., *The frame is fuller with 10.*)
- Use a number line with ticks but no numbers. Put a dot on a tick in the middle of the line. The dot is at 7. Would 10 be far from 7 on the line? (*not too far*)
- Show where it would go. (*student puts a mark 3 spaces to the right of 7*). What other numbers are not too far apart and not too close together on the number line? (e.g., *6 and 9, 8 and 12*)
- How would their 10-frame models look different? (e.g., *The greater number uses a few more counters than the other number, but not a whole lot more.*)

Using the Open-Ended Intervention **Student Resource page xx**

Provide counters, 10-frames, and blank number lines and read the task on the student page. Provide time to work, ideally in pairs.

Observe

- whether students realize that one of the numbers is at least almost 10 more than the other
- what comparison strategies they use, e.g., counting to mark number lines, one-to-one correspondence, or a more abstract comparison to benchmarks
- what size of numbers they are comfortable comparing.

Consolidating and Reflecting

Ensure understanding by asking the following questions.

- How far apart are 1 and 9? How do you know? (*They are 8 apart;* e.g., *I counted on a number line.*)
- Suppose the first number is less than 10; what could the second number be? (e.g., *It could be 10 if the first number is 0, but otherwise it is between 10 and 20.*)
- Could the greater number be less than 10? more than 10? (*Yes.* e.g., *The numbers could be 0 and 9 or 9 and 17.*)
- How do you know that there are a lot of answers? (e.g., *because if I get one answer I could just make the second number higher and it would be an answer too*)

Comparing and Ordering to 20

You will need

- counters
- 10-frames (Blackline Master xx)
- number lines (Blackline Master xx)
- Student Resource pages xx–xx

Guided Intervention

Before Using the Guided Intervention

Ask the following questions:

- How do you know that 8 is greater than 6? (e.g., *8 is more than 7, but 6 is less than 7.*)
- How do you know that 8 is less than 9? (e.g., *You say 9 after 8 when you count.*)
- Name 2 numbers that are more than 10. Tell how you know they are more. (e.g., *11 and 14; you say them after 10 when you count.*)
- How do you know that if 18 is less than 19, that 19 is greater than 18? (e.g., *Being greater is just the reverse of being less; if one number is less than another, the other is automatically greater.*)
- How would you model 13 with counters and 10-frames? (e.g., *one full 10-frame and three in the other frame*)
- Where would 13 be on a number line? (e.g., *between 10 and 15*)

Using the Guided Intervention **Student Resource pages xx–xx**

Provide counters, 10-frames (Blackline Master xx), and blank number lines (Blackline Master xx). Work through the instructional section of the student page together. Guide students as they represent 11 and 9 in various ways and use the representations to compare the numbers.

Have them work through the **Try These** questions in pairs or individually. Observe whether students

- have a variety of strategies for comparing numbers (Questions 1–7)
- recognize that numbers to the left on a number line are less than ones to the right (Question 6).

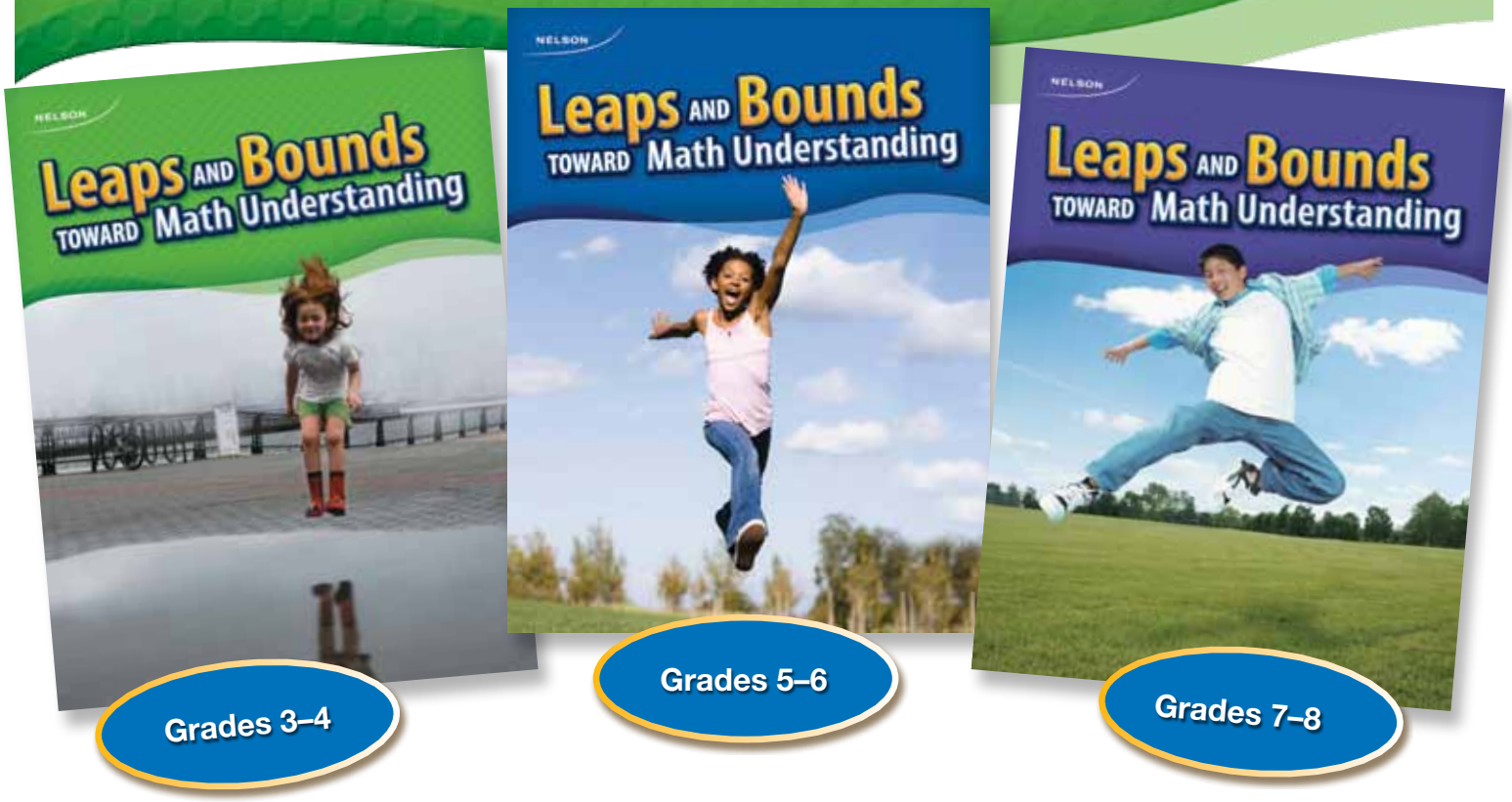
Consolidating and Reflecting

Ensure understanding by asking the following questions.

- Is a 2-digit number always more than a 1-digit number? (*Yes*, e.g., *A 2-digit number is at least 10 but a 1-digit number is less than 10.*)
- A number is greater than 7. Could it have a 4 in it? Explain your thinking. (e.g., *Yes, it could be 14.*)
- Alyson says that 13 is less than 9 since 3 is less than 9. Do you agree? Explain. (*No*, e.g., *13 is more than 10 and 9 is less than 10.*)
- How could you use a number line to compare numbers? (e.g., *You can see which number is to the right. That number is greater.*)

Leaps AND Bounds TOWARD Math Understanding

With Leaps and Bounds, mathematics intervention is as easy as 1, 2, 3!



Visit www.nelson.com/leapsandbounds for more information.

ISBN-13: 978-0-17-651026-8
ISBN-10: 0-17-651026-5

08/11

NELSON EDUCATION

1120 Birchmount Road Toronto ON M1K 5G4
416 752 9448 or 1 800 268 2222 Fax 416 752 8101 or 1 800 430 4445
email: nelson.orderdesk@nelson.com **www.nelsonschoolcentral.com**