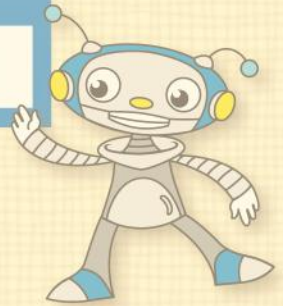


QUICKCHECK™

MATH



PATTERNING AND ALGEBRA

Identify, Describe and Extend
Repeating, Growing and Shrinking Patterns



Book title



Strand



Grade level
Grade 2



IDENTIFY, DESCRIBE AND EXTEND REPEATING, GROWING AND SHRINKING PATTERNS

Student Activities

The title of the resource relates to an Overall Expectation of the Math Curriculum.



Identify and extend repeating patterns

- Relate each repeating pattern using one attribute to its extension 1
- Relate each repeating pattern to its missing term 2
- Relate each repeating pattern involving two attributes to its extension 3
- Relate each repeating pattern involving two attributes to its extension 4
- Relate each repeating pattern involving two attributes to its missing term 5

Identify growing and shrinking patterns that use repeated addition and subtraction of ones, twos, fives, 10s, and 25s

- Connect each growing pattern to its missing parts 6
- Connect each growing pattern by five or ten to its extension 7
- Connect each growing pattern by ten to its missing part 8
- Connect each growing pattern by 10s or 25s to its missing part 9
- Compare each growing pattern to its pattern rule 10
- Connect each shrinking pattern to its missing part 11
- Connect each shrinking pattern to its extension 12
- Relate each pattern to its corresponding extension 13

Identify growing and shrinking patterns that use repeated addition and subtraction

- Connect each growing pattern to its extension 14
- Connect each missing term to its growing pattern 15
- Compare each growing pattern to its corresponding pattern 16
- Connect each shrinking pattern to its extension 17
- Compare each shrinking pattern to its missing term 18
- Connect each shrinking pattern to its extension 19

Groups of activities are organized around key Math concepts as they relate to the expectation noted in the title.



The learning outcome for each activity is listed. This makes it easier for teachers to target specific concepts for teaching, diagnostic or formative assessment purposes.



Patterns that can be represented

- Connect each growing pattern to its representation 20
- Connect each growing pattern to its corresponding pattern representation 21
- Connect each pattern to its representation 22
- Connect each pattern representation to its representation 23
- Connect each pattern to its representation 24

Teacher Section

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Learning Connection Activity Suggestions
Mathematical Process Expectations:
Problem Solving and Communicating 26

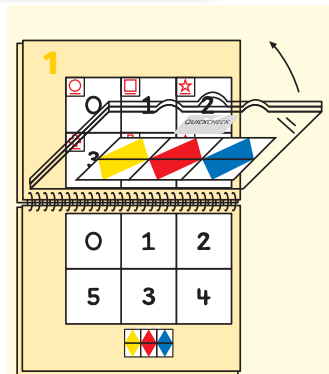
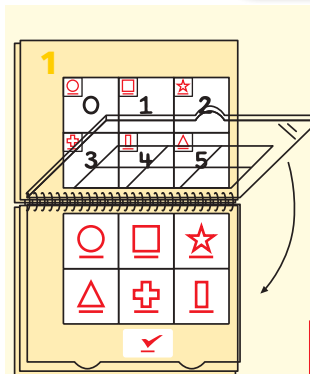
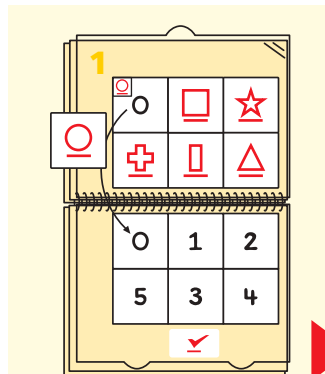
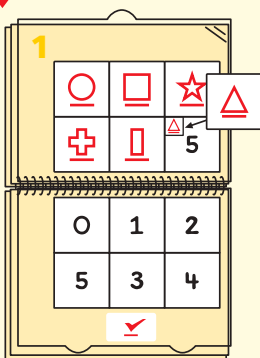
How to use



GETTING READY TO USE QUICKCHECK

You need a Student Resource and a case with six tiles

Teachers will find helpful tips and Learning Connections Activity Suggestions at the back of each resource.



- Open the Student Resource to Activity 1.
- Put the empty tile case over the Student Resource.
- The CHECKMARK will cover the answer key.
- There are six squares in the top section.
- Place each tile on the square that has the same icon.

- Lift each tile to reveal the image underneath.
- Transfer each tile to its corresponding image below.

- Close the cover of the tile case.

- Flip the tile case up.
- The answer key will appear.
- The tile pattern should match the answer key.

• Watch students using QUICKCHECK Math on our website at www.ebbp.ca. Click on QUICKCHECK Math in Motion.

Relate each repeating pattern using one attribute to its extension.

■ This activity is the first of five that deals with repeating patterns.

The activity extension provides new information for teachers or, ideas for further development of the activity.

The activity title states the targeted learning outcome: Teachers know the purpose of the activity at a glance.

Students begin each activity by matching the shape icons on the tiles, to those in the squares of the top grid of the resource.

Students move each tile from the top grid to the correct square in the bottom grid until all the tiles have been transferred.

Students close the cover of the plastic case and flip it up to see if the pattern revealed on the back of the tiles matches this answer key.

If ■ appears below the activity title: Educators will then find new information or ideas for further development of the activity.




How to Use QUICKCHECK Math

- Use QUICKCHECK Math with your students whenever you would normally use a worksheet or workbook.
 - Use it at any point in your math lesson:
 - Before/getting started
 - During/working on it
 - After/practice and consolidation.
 - You can use QUICKCHECK Math as a small group or guided activity, in pairs to promote discussion, or as an independent activity in a Math Centre.

Tips for Success

Review "Getting Ready to Use QUICKCHECK" on the first page of this book.

The CHECKMARK  at the bottom of the plastic tile case shows students how to orient the case as they place it on the book on top of each activity.

To teach your students how to use QUICKCHECK Math, try a three-step approach.

- Match:** Place all the tiles in the top grid by matching icons.
- Think and Play:** Lift each tile to reveal the image beneath and then transfer the tile to the corresponding image in the lower grid.

- Use QUICKCHECK Math as an assessment tool. The Student Activities found on the cover list learning outcomes that will help target specific concepts for **diagnostic** or **formative** assessment purposes. This Student Resource is used in conjunction with the QUICKCHECK Math Grade 2 Ongoing Assessment Teacher Resource.

Activity Extension:

If ■ appears below the activity title:

Educators will then find new information or ideas for further development of the activity.

- Check:** Close the case cover. Flip the case up and check that the tile pattern matches the answer key.

When information appears below the title of an activity, use it to guide instruction and discussion, or to provide a hands-on extension of the activity.

Fold the Student Resource in half or stand it up and use the visual information as the stimulus for activities you create on your own.

See
Activity 8



Additional proposals
for the teacher



LEARNING CONNECTION ACTIVITY SUGGESTIONS

Mathematical Process Expectations: Problem Solving and Communicating

Identify growing and shrinking patterns that use repeated addition and subtraction of ones, twos, fives, 10s, and 25s

Using ones, twos, fives, 10s or 25s have students create a growing pattern of at least five terms on paper. Now, have them write a shrinking pattern that relates to the growing pattern they created. "With a partner, take turns explaining the patterns you created and how they relate to each other. Now, with your partner, discuss ways of representing your patterns using manipulatives or graphs. Choose one way and create a representation of each of your patterns."

Identify growing and shrinking patterns that use addition and subtraction

"Create a growing pattern of at least five terms that includes +2, +5, or +10 in the pattern. Now create a shrinking pattern using -2, -5 or -10."

"Can you create two equivalent patterns using addition? You can check if the two patterns you made are equal by adding all the terms of the pattern together or by seeing that corresponding terms in each sequence are equal."

Example: $3 + 1, 3 + 2, 3 + 3, 3 + 4, 3 + 5 = 4 + 0, 4 + 1, 4 + 2, 4 + 3, 4 + 4$
 $4 + 5 + 6 + 7 + 8 = 4 + 5 + 6 + 7 + 8$
 $30 = 30$

These learning connection activity suggestions are organized around the same key math concepts addressed in the 24 activities. They relate to some of the Mathematical Process Expectations used in the Math Curriculum.



Challenge

Create a growing pattern that uses two of +2, +5 or +10 in it.



Patterns result from repeating an operation or repeating a change to an attribute of objects

Have students make a pattern that contains two repeating attributes of objects. "Write the pattern rule." Starting with 100, have students create a pattern by repeating an operation. Have them show the repeating attribute—the part of a pattern that remains constant—in red and the variable attribute—the part of the pattern that changes—in black.

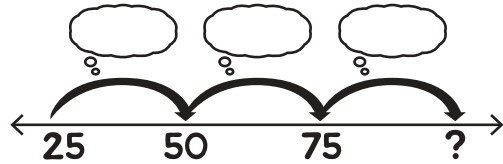
The same pattern can be represented in different ways

"Can you create a pattern using ten playing cards. Complete this three times. First make a repeating pattern, then make a growing pattern, and finally make a shrinking pattern."

Haleigh bought an apple from the store for 25 cents. Have students use a T-chart to show how much 2, 3, 4 and 5 apples cost. "Can you also show how much 7, 8 and 10 apples cost? What about 9 apples? Show the pattern using an open number line. What stays the same in this pattern?"

Example:

Apple	Cost
1	25 ¢
2	50 ¢
3	75 ¢
4	\$ 1.00



Canada

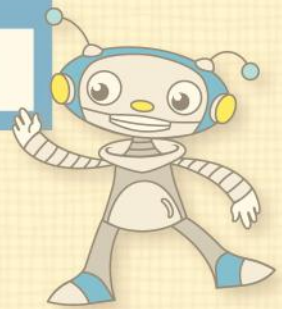
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The 5 mathematical strands for the Grade 2 level



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Solve Addition and Subtraction Problems of One and Two-Digit Whole Numbers and Explore Multiplication and Division



MEASUREMENT

Compare, Describe and Order Objects and Time Using Measurable Attributes



GEOMETRY AND SPATIAL SENSE

Compose and Decompose Shapes and Figures



PATTERNING AND ALGEBRA

Identify, Describe and Extend Repeating, Growing and Shrinking Patterns



DATA MANAGEMENT AND PROBABILITY

Read and Describe Data Presented in Tally Charts, Pictographs, Line Plots and Bar Graphs



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