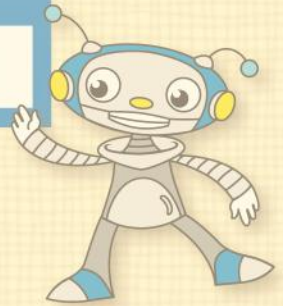


# QUICKCHECK™

## MATH



## PATTERNING AND ALGEBRA

Describe and Extend a Variety of Numeric and Geometric Patterns



Strand

Book title



Grade level  
Grade 3



Student Activities

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



**Extend or identify the missing terms in a repeating pattern involving two attributes**

- Relate each repeating pattern to its extension..... 1
- Relate each repeating pattern to its extension..... 2
- Connect each repeating pattern to its missing terms..... 3
- Connect each repeating pattern to its missing terms..... 4
- Relate each pattern to its different representation ..... 5

**Extend or identify the missing terms in growing and shrinking patterns**

- Connect each growing pattern to its next three terms.... 6
- Connect each growing pattern to its extension..... 7
- Connect each shrinking pattern to its next three terms... 8
- Connect each growing or shrinking pattern to its missing terms ..... 9

**Represent growing and shrinking patterns**

- Relate each growing pattern using toothpicks to the number pattern that describes it..... 10
- Relate each pattern to the number of toothpicks needed to make its next term..... 11
- Relate each growing pattern to a pattern that uses the same pattern rule ..... 12
- Relate each growing pattern to its representation ..... 13
- Relate each problem to its solution ..... 14
- Relate each problem to its solution ..... 15

**Extend or identify the missing terms in a pattern involving addition, subtraction, or multiplication**

- Relate each pattern on a number line to its next three terms ..... 16
- Relate each pattern on a number line to its missing terms ..... 17
- Connect each pattern to its missing terms ..... 18
- Connect each pattern to its missing terms ..... 19
- Relate each pattern to its pattern rule..... 20
- Relate each pattern rule to its pattern..... 21

**Demonstrate an understanding of equality between pairs of expressions**

- Connect each quantity to its equivalent ..... 22
- Connect each quantity to its value ..... 23
- Connect each quantity to its equivalent ..... 24

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.



Teacher Section

**How to Use QUICKCHECK Math and Tips for Success** ..... 25

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

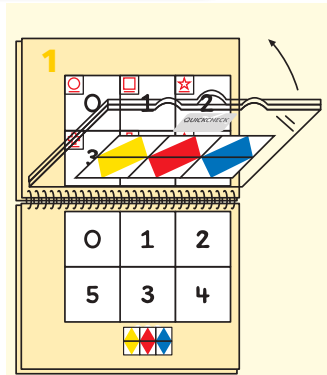
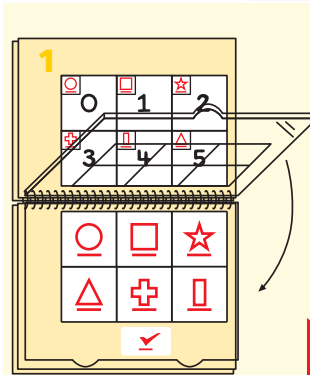
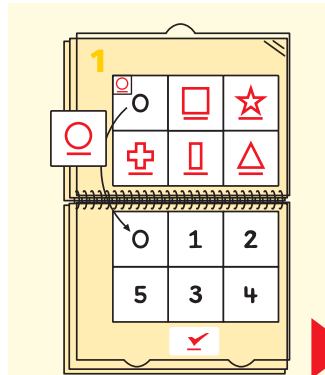
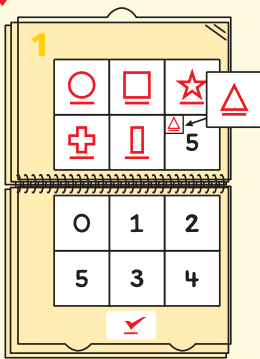
How to use



**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](http://www.ebbp.ca). Click on QUICKCHECK Math in Motion.



**Relate each repeating pattern to its extension.**

■ This activity is the first of five that deal with extending or identifying the missing elements in repeating patterns that involve two attributes. Say: "Use letters to identify the core of one of the repeating patterns."

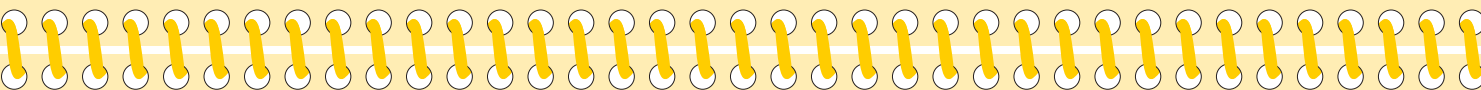
The activity extension provides new information for teachers or, ideas for further development of the activity.



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.



+ 23 activities




## 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

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 1 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 21



Additional proposals  
for the teacher



## LEARNING CONNECTION ACTIVITY SUGGESTIONS

### Mathematical Process Expectations: Problem Solving and Communicating

#### Investigate the recursive nature of patterns

- What kind of pattern is the following? Does the pattern use addition or subtraction? What is the pattern rule?

Josiane earned \$25.00 a day for babysitting. She started babysitting on July 27. Describe this pattern in two ways: with numbers and on a number line.

- What kind of pattern is the following? Does the pattern use addition or subtraction? What is the pattern rule?

Zane has \$60.00 to pay for his lunch for two weeks. Lunch costs \$8.00 per day. Does he have enough money? Describe this pattern in two ways: using money and on a number line.

- What kind of pattern is the following? Does the pattern use addition or subtraction? What is the pattern rule?

Mrs. Dixon teaches Music class on Mondays and Gym class on Fridays.

- Identify your own real life pattern word problem. Describe it in two different ways so you know the kind of answers that you are looking for. Then, show your problem to a partner and ask the following questions: "What kind of pattern is this? Does the pattern use addition or subtraction? What is the pattern rule? Did you expect your partner's answer or did he or she come up with something new?"

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.



**Demonstrate an understanding of equality between pairs of expressions**

The following problems give students the opportunity to show the relationship between addition and subtraction. No calculators are allowed during this activity.

1. Which addition question would help Rob check his answer? Rob's question is  $85 - 39 = 47$ . Prove whether his answer is correct or incorrect.
2. Which addition question would help Rana check her answer? Rana's question is,  $121 - 95 = 26$ . Prove whether her answer is correct or incorrect.

The following questions give students the opportunity to describe equality between pairs of expressions that use multiplication.

1. Using square pattern blocks, build arrays or draw arrays to show the following:
  - $6 \times 3 = 18 \times 1$
  - $4 \times 6 = 2 \times 12$
  - Make up your own question and describe the equality of expressions using arrays. Now give your question to a partner to solve.

The following questions give students the opportunity to use models in problems to determine the missing number in an addition or subtraction equation, using one and two digit numbers.

Use base ten blocks and numbers to solve the following.

1.  $66 + 27 = 60 + 20 + \square$
2.  $53 + 39 = 12 + \square + 50$
3.  $\square + 60 + 40 = 64 + 47$
4.  $82 - 39 = \square + 30$
5.  $\square + 41 = 95 - 25$
6. Make up your own question and give it to a partner to solve using base ten blocks and numbers.

## Canada

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Credits page



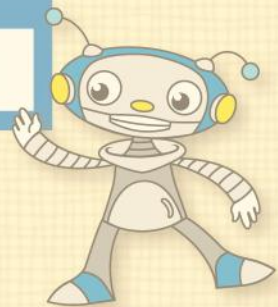
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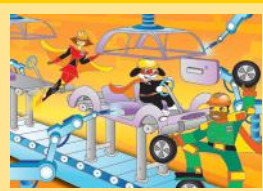


The 5 mathematical strands for the Grade 3 level



**NUMBER SENSE AND NUMERATION**

Solve Problems Involving Addition, Subtraction, Multiplication, and Division of Single and Multi-Digit Whole Numbers



**MEASUREMENT**

Compare, Describe, and Order Objects, Temperature, and Time Using Standard Units



**GEOMETRY AND SPATIAL SENSE**

Describe Shapes, Figures, Location, and Movement



**PATTERNING AND ALGEBRA**

Describe and Extend a Variety of Numeric and Geometric Patterns



**DATA MANAGEMENT AND PROBABILITY**

Read, Describe, and Interpret Data Presented in Charts and Graphs Including Vertical and Horizontal Bar Graphs



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