# MATH

**GRADE 7**

## COMPLETE GRADE 7 MATH CURRICULUM

**ON EDITION**

### IN THE BOOK:

- ✓ 100% alignment with provincial curriculum
- ✓ Clear and concise instructions
- ✓ Questions ranging from easy to expert

**Enhance Your Learning:**
**www.dynamicmath.ca**

**DYNAMIC MATH**

Dear Parents,

Helping kids understand and apply mathematics knowledge and skills is a collective responsibility of parents, teachers, and principals.

Students need to learn mathematics in a way that will serve them throughout their lives. Understanding mathematics can provide our students with many job and career opportunities.

This is why students need to know why mathematics works the way it does, how to use it with confidence and competence when solving problems.

Understanding mathematics enables us to:

- Solve problems, make sound decisions and perform calculations with ease
- Explain how we solved a problem and why we made a particular decision
- Understand patterns and trends so that we can make predictions
- Understand Financial Literacy to manage time and money
- Handle everyday situations that involve numbers and feel confident

Before your child can learn mathematics, he or she needs to believe in his or her ability to do so. That's where you come in!

Parents, you are your child's first role model for learning. When you engage with your child in a supportive, relaxed atmosphere, your child will enjoy exploring the world of mathematics.

Dynamic Math is committed to helping parents and students. We understand that not everyone learns the same way, and not everyone feels the same about math. This is why we are continually working to create math resources that help students of all abilities, while supporting the many learning styles and varying levels of enthusiasm towards math.

From our clear concise instructions and straightforward guided examples to our additional practice material and tests, there's something to suit everyone. Combined with our video tutorials, students will be able to get a tutor-like experience from anywhere and at a fraction of the cost of standard tutoring or after-school help programs.

# DYNAMIC MATH

## ONTARIO GRADE 6 MATH

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To ensure we are bringing the best product to market, Dynamic Math recruited some Ontario Math teachers/instructors currently teaching math in various school districts across the province. Here are some of their comments after completing their reviews.

### Elyse L, B.Ed, B.A. – Teacher - York Catholic District School Board

"The Dynamic Math books cover the contents of the Ontario Curriculum in a clear and concise manner. The straightforward examples provide ample opportunities for learning through differentiated methods. The books definitely help to consolidate learning".

"Dynamic math not only covers the updated Ontario curriculum but also provides ample opportunities for student practice and growth."

### Melissa A. Manzo - Professor and Coordinator - George Brown College

"The coding chapter in this workbook does an excellent job explaining the material and making connections to everyday life, as required by the new Ontario curriculum".

### Natalie, Teacher - York Catholic District School Board

"Dynamic Math has proven to provide a comprehensive overview of all curriculum expectations and big ideas required for a student to be successful in the intermediate grades across Ontario."

"I believe that the resources will provide elementary school teachers a concrete means to supplement lesson planning. Dynamic Math offers a wide variety of meaningful mathematical applications, an abundance of practice problems, and fantastic coding tutorials and exercises."

### Keli J, Teacher - Pickering College

The Dynamic Math books are detailed and provide step by step instructions. Each chapter has a myriad of examples and a great variety of questions, incorporating all the aspects of the new curriculum. The books are very accessible for students due to the clear and concise layout and flow of each unit.

### Colin Garnham – Professor of Mathematics – George Brown College

As a teacher in a math upgrading program, all students would benefit from the clear and concise resources developed by Dynamic Math. Using these resources, my adult student's numeracy skills would be superior, math would come more easily to them and they would once again love math!

# Ontario Math Curriculum

## Old vs New Comparison

### Content and Structure

| | |
|---|---|
| In the 2005 curriculum, students found it difficult to connect learning from year to year. There are different expectations for English-language and French-language learners. | In the 2020 curriculum, there will be clear connections to show how math skills build from year to year. There will be one curriculum in both English and French – the same learning experience for all Ontario students. |

### Real-life Connections

| | |
|---|---|
| In the 2005 curriculum, there are outdated examples for students. | In the 2020 curriculum, there will be relevant, real-life examples that help connect math to everyday life, such as developing infographics, creating a budget, e-transfers and learning to code. |

### Number Facts

| | |
|---|---|
| In the 2005 curriculum, students are not required to memorize key number facts. | In the 2020 curriculum, there will be more focus on fundamental math concepts, such as learning multiplication facts of 0 × 0 to 12 × 12, to enhance problem solving and mental math. |

### Spatial Sense

| | |
|---|---|
| In the 2005 curriculum, younger grades have limited learning about spatial reasoning, for example making connections between measurement and geometry. | In the 2020 curriculum, there will be use of spatial relationships and shapes to help young children prepare to learn later math. Across all grades, students will understand basic number concepts, patterning and geometric concepts. |

### Fractions

| | |
|---|---|
| In the 2005 curriculum, fraction concepts are confusing in early grades. | In the 2020 curriculum, there will be concepts about equal sharing to make fractions easier to understand, starting in Grade 1. |

### Mathematics confidence

| | |
|---|---|
| In the 2005 curriculum, building mathematics confidence is implied. | In the 2020 curriculum, there will be tools and strategies that are part of the curriculum to help students develop confidence, cope with challenges and think critically. |

### Coding

| | |
|---|---|
| In the 2005 curriculum, there are no explicit references to coding. | In the 2020 curriculum, starting in Grade 1, there will be coding skills to improve problem solving and develop fluency with technology. |

### Financial Literacy

| | |
|---|---|
| In the 2005 curriculum, financial literacy concepts are limited to basic understanding of money and coins. | In the 2020 curriculum, there will be mandatory financial literacy learning in Grades 1 to 8, including understanding the value and use of money over time, how to manage financial well-being and the value of budgeting. |

# Table of Contents
## Ontario Grade 7 Mathematics

# INTRODUCTION

In Grade 7 mathematics, students continue to build on what they have already learned and are introduced to several new concepts. While working through the different topics, students reinforce their understanding of Social and Emotional Learning (SEL) skills, using applications and activities from each content area.

# <u>CONTENT</u>

Students will build on the mathematics they learned in Grade 6. They will cover previous content in greater depth and with wider applications. New topics are added in some areas.

Topics include working with numbers up to a magnitude of one billion. **In Number Sense**, they work with factors and multiples, as well as exponents and scientific notation. This area also includes squares and square roots of numbers.

Students will work the **Ratio, Rate, Proportions, and Percent**. In **Number Operations**, students will work with operations on integers, decimals, and fractions. The order of operations is extended in this chapter.

**Financial Literacy** includes money transactions, financial goals, and percent applications, including discounts. There is a section on foreign currency, as well as one on planning and budgeting.

Students will continue to work with **Patterns, Variables, Equations, and Inequalities,** including patterns in tables and charts. Variables, equations, and inequalities are extended from the previous year.

The chapter on **Measurement** includes additional work with perimeter and area, volume, and capacity. The radius, diameter, and area of a circle are introduced as one of the new topics.

**Geometric and Spatial Sense** deals with triangles, polygons, 3-D solids, and transformations of shapes. Plotting points in the four quadrants, lines of symmetry, and dilations have been added.

**Data and Probability** continues work with samples and populations, displaying and interpreting data, and measures of central tendency. Independent and dependent events with sample spaces are introduced. The concept of probability includes applications in business and everyday life through the use of experimental and theoretical probability.

The section covering each content area begins with a description of the concept, followed by examples with by clear step-by-step solutions. Students are then provided with questions that range from easy to difficult. Each chapter contains a set of extra practice questions on key concepts from each section in the chapter. Each chapter ends with a chapter test. Answers to all exercises and chapter tests are provided.

## SOCIAL EMOTIONAL LEARNING

Social and emotional skills (SES) are important when working with mathematics. Learning can be enriched when students are taught social and emotional skills that include self-awareness. These skills are enhanced in mathematics through the development of problem-solving tactics and the selection of appropriate tools and strategies in approaching a problem. As content areas are taught in this course, it is recommended that the series of activities and questions provided be incorporated into the instructional sequence where appropriate.

Chapter 10 goes into more details on these skills and includes examples with answers or explanations. Each set of examples is followed by a set of exercises.

### Communicating

By using numbers, symbols, pictures, graphs, diagrams, and words, you can express mathematical ideas and understanding. This can be done orally, visually, and in writing. This process is called **communicating.** It is important that you are able to **communicate** to express, describe, explain, and apply mathematical ideas in several different ways. Using this as a tool should help you in creating and interpreting relationships.

### Representing

We **represent** mathematical relationships with the use of drawings, physical models, equations, charts, and graphs. Being able to represent mathematical ideas in different ways and making connections among them to solve problems are important skills.

### Connecting and Relating

**Relating** mathematical concepts to each other is called **connecting**. It also includes making mathematical connections to the real world.

### Reasoning and Proving

**Reasoning** involves an understanding about the relationships that apply to numbers, shapes, or operations. It could be thought of as systematic thinking. In applying this skill, you will make use of all your other mathematical skills.

## CODING

Learning how computers follow instructions is an important part of **coding** in mathematics. It involves writing a set of instructions that a computer understands in order to get a specific outcome. In Grade 7, we continue to build on your knowledge of coding. We will focus on creating efficient code through the use of loops and other control structures. We will introduce the use of sub-programs to simplify more complex programs. Chapter 11 goes into more detail and includes activities related to coding based on content in other chapters in the book.

# CHAPTER 1 OPERATIONS WITH DECIMALS AND PERCENT

If you need additional help, there are more resources available at www.dynamicmath.ca.

## 1.1 Rounding and Estimation

**Rounding Numbers**

Rounding numbers involves place value and the value of digits. We round up when a digit to the right of the one of interest is 5 or greater and round down when it is less than 5.

To round numbers, use the following procedure.

1. Go to the column immediately to the right of the digit in the place value asked for.
2. Round up if the digit in that column is 5 or greater (5 to 9) and round down if the number is less than 5 (0 to 4).
3. Replace the digits to the right with 0's. If the digits are to the right of the decimal point, remove them.

Example:    Round 2463.71

| thousands | hundreds | tens | ones | decimal | tenths | hundredths |
|-----------|----------|------|------|---------|--------|------------|
| 2 | 4 | 6 | 3 | . | 7 | 1 |

A. to the nearest 100

Go to the tens column. It is a 6.

Round the hundreds up from 4 to 5.

Replace the digits to the right of the hundreds with 0s.

The answer is 2500.

B. to the nearest 10

Go to the ones column. It is a 3.

Replace the digits to the right of the tens with 0s.

The answer is 2460.

C. to the nearest 1

Go to the tenths column. It is a 7.

Round the ones up from 3 to 4.

Delete the digits to the right of the ones.

The answer is 2464.

D. to the nearest tenth

Go to the hundredths column. It is a 1.

Delete the digits to the right of the tenths

The answer is 2463.7.

**Estimating Numbers**

Estimating numbers involves making a judgment about their approximate values, usually by using rounding. Estimation is used to quickly find the approximate value and to check if an answer is reasonable.

Examples

1. Estimate the sum of 32 and 69.

Rounding each number to the nearest 10, we get 30 and 70.

An approximate value for the sum is 100.

2. Estimate the cost of 7 CDs at $14.90 each.

Rounding $14.90, we get $15.

An approximate cost is $7 \times 15 = \$105$.

3. Estimate the product of 38 and 51.

Rounding to the nearest 10, we get 40 and 50.

An approximate product is $40 \times 50 = 2000$.

## Exercises 1.1

1. Round 7638 to

   a. the nearest thousand.                        b. the nearest hundred.

   c. the nearest ten.

2. Round 2364.608 to

   a. the nearest thousand.                        b. the nearest hundred.

   c. the nearest ten.                             d. the nearest one.

   e. the nearest tenth.

3. Estimate the product of 627 and 592 to the nearest 100.

4. Estimate the product of $7\frac{9}{10}$ and $20\frac{1}{12}$ to the nearest whole number.

5. Estimate the sum of 42.3, 122.9, and 12.2 to the nearest whole number.

6. Estimate the product of 29.28, 32.1 and 49.0 to the nearest whole number.

7. The school soccer team paid $1385 for 19 team uniforms. Approximately how much did each uniform cost?

8. If 18 oranges cost $5.76, approximately how much did one orange cost?

9. A concert was attended by 289 girls, 210 boys and 97 adults Approximately how many were in attendance in total?

10. Matthew needed to know approximately how much money was needed for himself and his classmates to attend a movie. If tickets cost $8.75 each and there were 21 in the class, approximately how much would it cost?

Exciting Extras

11. A number, rounded to the nearest ten, is 2480. If it was rounded up, what number(s) could have been in the ones column?

12. A number, rounded to the nearest hundredth, is 45.28. If it was rounded down, what number(s) could have been in the thousandths column?

13. Kathy had 19 files on a computer disk. If the files used up 485 kb of memory and there were another 921 kb available, approximately how many kb of memory were on the disk in total?

14. Jake counted 33 lines on each page of an essay that he had written. There are about 8 words on each line. If he handed in 11 pages, approximately how many words, in total, were in his essay?

## 1.2  Multiples and Factors

A **prime number** is an integer <u>greater than 1</u> that has only two different factors: itself and one.

Example:
   2, 3, 5, and 7 are prime numbers, since their only factors are 1 and themselves (for example, the only factors of 3 are 1 and 3). 6 is <u>not</u> prime since it has two different sets of integer factors: 1 and 6 or 2 and 3.

A **factor** of a number is a <u>divisor</u> of that number (it divides evenly into it).

Examples:     1, 2, 5, and 10 are all factors of 10 since they all divide evenly into it.

A prime factor of a number is a factor of that number that is also a prime number.

Examples:     1, 2, 5, and 10 are all factors of 10 since they all divide evenly into it.
               2 and 5 are prime factors of 10, since they are factors and they are prime numbers.

A **multiple** of a number is the product of that number times another whole number greater than 0.

Example:     Multiples of 5 are $(5 \times 1) = 5$; $(5 \times 2) = 10$; $(5 \times 3) = 15$; $(5 \times 4) = 20$; ...

A **composite number** is not a prime number and can be factored in more than one way. All numbers that are not prime are composite (with the exception of 1).

Example: 15 is a composite number since it can be factored as $15 \times 1$ or $5 \times 3$.

**Finding the Factors of a Number**

To find all the factors of a number, ask yourself which numbers will divide evenly into the original number.

   If a number divides evenly into the original number, it is a factor of the number.

   If a number does not divide evenly into the original number, it is not a factor of the number.

   Always start with the number 1.

   You never need to divide by a number greater than half the original number.

Examples:    Find all the factors of 18.

$18 \div 1 = 18$    1 is a factor            $18 \div 6 = 3$        6 is a factor

$18 \div 2 = 9$      2 is a factor            $18 \div 7 = 2.57...$ 7 is *not* a factor

$18 \div 3 = 6$      3 is a factor            $18 \div 8 = 2.25$   8 is *not* a factor

$18 \div 4 = 4.5$   4 is *not* factor       $18 \div 9 = 2$        9 is a factor

$18 \div 5 = 3.6$   5 is *not* a factor

Factors of 18 are 1, 2, 3, 6, 9, and 18.

**Finding the Prime Factors of a Number**

A factor tree can help you find the prime factors of a number.

Example:    All factors of 18 are shown below. Look at the factors and circle the prime numbers.

Factors of 18 are 1, ②, ③, 6, 9, 18

The prime factors of 18 are 2 and 3 as they are the only factors that are also prime numbers.

A factor tree might also help find the prime factors of 18. When using a factor tree, write each number that is *not prime* as a product of 2 numbers. There may be different factor trees that can be created.

Factor Tree 1                         Factor Tree 2
        18                                    18
② × 9                                6 × ③
  ③ × ③                          ② × ③
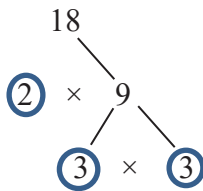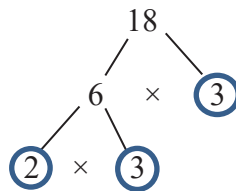
Once you have created your tree, circle all the prime numbers.

Circling all the prime numbers allows you to write the original number as a product of its prime factors. In this case, $18 = 2 \times 3 \times 3$ and the prime factors of 18 are 2 and 3.

Examples:   Show the following numbers as <u>products</u> of <u>prime</u> factors.

$12 = 2 \times 2 \times 3$

$50 = 2 \times 5 \times 5$

## Examples with Solutions

1. Which of the following numbers are <u>not</u> prime?

**1, 3, 4, 5, 7, 9, 11, 15**

1 is not prime since it is not greater than 1.

4, 9, and 15 are not prime. They are composite, since they have more than one pair of factors. For example, 9 can be factored as
$9 \times 1$ or $3 \times 3$.

2. List all factors of 20.

The set of all factors consists of all numbers that divide evenly into 20.

Answer: 1, 2, 4, 5, 10, 20

3. List all multiples of 7 less than 40.

Multiples of 7 consist of numbers that are the product of 7 times 1, 2, 3, 4, ...

We want multiples of 7 less than 40

$7 \times 1, 7 \times 2, 7 \times 3, 7 \times 4, 7 \times 5$, ($7 \times 6$ is 42, which is larger than 40).

Answer: 7, 14, 21, 28, 35

4. Show 90 as a product of <u>prime</u> factors.

Factor 90 until all factors are broken down into prime factors.

$90 = 9 \times 10 = 3 \times 3 \times 2 \times 5$

## Exercises 1.2

1. Identify whether or not each number is prime. Give a reason for your answer. The first one is done for you.

| Number | Yes/No | Reason |
|--------|--------|--------|
| a.  22 | No | Factors are 1, 2, 11, and 22. It has more factors than just 1 and 22. |
| b.  31 | | |

    c.  77

    d.  57

    e. 43

    f.  51

2. List all factors of each number. Then list the prime factors only.

| Number | All Factors | Prime Factors Only |
|---|---|---|
| a.   30 | | |
| b.  100 | | |
| c.   75 | | |
| d.   90 | | |
| e.  135 | | |
| f.   38 | | |

3.  List all multiples of the following numbers that meet each condition.

| Number | Multiples of the Number |
|---|---|
| a.   All multiples of 11 that are greater than 40 and less than 100 | |
| b.   All multiples of 5 between 11 and 41 | |
| c.   All multiples of 9 less than 100 | |
| d.   All multiples of 20 less than 200 | |
| e.   All multiples of 13 less than 100 that are odd numbers | |

4.  Write each number as a product of prime factors.

| Number | Product of Primes | Number | Product of Primes |
|---|---|---|---|
| a.  30 | | f.  1000 | |
| b.  12 | | g.  90 | |
| c.  26 | | h.  216 | |
| d.  36 | | i.  196 | |
| e.  250 | | j.  242 | |

Exciting Extras

5.  List all factors that are <u>common </u>to both 9 and 30.

6.  List all factors that are <u>common</u> to 10, 14, and 70.

7.  List all numbers less than 100 which are multiples of <u>both </u>15 and 10.

8.  List all numbers less than 50 which are multiples of <u>both</u> 3 and 5.

9.  I am a multiple of both 9 and 15. I am less than 200 and more than 150. Who am I?

10.  I am a multiple of 3, 5, and 10. I am less than 100. Who am I?

11.  I am a multiple of 3, 5, and 7 and am between 300 and 400. Who am I?

12.   I am a number less than 50. If I am a multiple of both 2 and 14, who am I?

# CHAPTER 11
# CODING

**Coding at the Grade 7 Level**

In Grade 7, we continue to build on your knowledge of coding. We will focus on creating efficient code through the use of loops and other control structures. We will introduce the use of sub-programs to simplify more complex programs.

The examples and exercises in this chapter will rely on your knowledge of other topics that we explored in previous chapters. We recommend that you complete those chapters before doing this chapter on coding.

This chapter provides explanations, examples, and practice questions that do not require the use of a computer or other technology. It also includes references to some optional online resources and tools that you can use to practice writing your own code using a free coding platform. Internet access will be needed to participate in the optional online part of this chapter.

The free coding platform that is used is called *Scratch.* This program makes use of coding blocks that you can drag and drop to create your own code and execute it on the screen. We use screenshots of these coding blocks throughout this chapter.

It is okay if access to the Internet is not possible, as all the topics are covered directly in this book. You will probably enjoy this unit more if you are able to create your own code and test it online.

*Scratch is part of the MIT Media Lab and is free to use. ([https://scratch.mit.edu](https://scratch.mit.edu))*

## 11.1   The Structure of Efficient Code

When we are coding, we are writing a set of instructions (an **algorithm**) that a computer can understand. It is important to remember that a computer can't think for itself. It will always execute the exact code in the order it is written. If we want the computer to only execute certain parts of the code based on certain conditions, then we can use **conditional statements**. Using conditional statements also allows us to produce a range of outcomes based on a set of conditions.

Whether we are writing code that is designed to produce a single outcome or writing complex conditional statements, it is important to make our code as efficient as possible.

Writing efficient code can be accomplished through the use of **control structures** like **loops** when we have repeating events, and **nested events** when we have a loop that repeats (a loop inside another loop). This will make our code much more efficient, which means the computer will execute the code more quickly.

### Examples with Solutions

1.  Dexter is walking in a square pattern, as shown in the diagram below. Code A and Code B produce the same outcome, but Code B is more efficient because it makes use of a loop instead of repeating many lines of code over and over again.
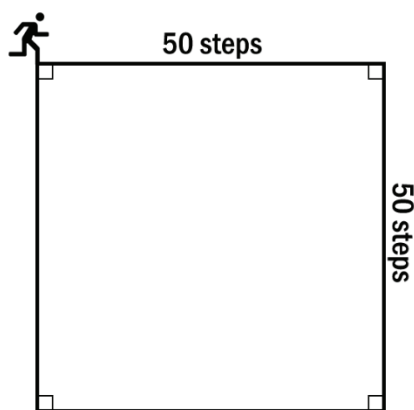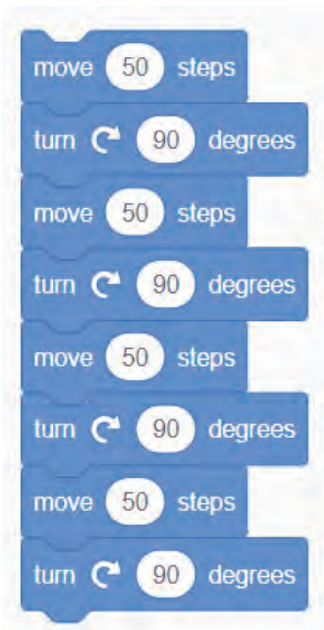
**Code A**          **Code B**

# ANSWERS TO

# EXERCISES AND

# CHAPTER TESTS

## CHAPTER 1

**Exercises 1.1** (page 3)
**1. a)** 8000   **b)** 7600   **c)** 7640   **2. a)** 2000
**b)** 2400   **c)** 2360   **d)** 2365   **e)** 2364.6
**3.** 360 000   **4.** 160   **5.** 177   **6.** 47 040   **7.** $70
**8.** $0.30   **9.** 600   **10.** $180.00   **11.** 5, 6, 7, 8, 9
**12.** 0, 1, 2, 3, 4   **13.** 1400   **14.** 3000

**Exercises 1.2** (page 8)
**1. a)** No; Factors are 1, 2, 11, and 22.   **b)** Yes;
Only factors are 1 and 31. **c)** No; Factors are 1,
77, 7, and 11.   **d)** No; Factors are 1, 57, 3 and
19.   **e)** Yes; Only factors are 1 and 43.   **f)** No;
Factors are 1, 51, 3, and 17.

**2.**

| | All factors | Prime factors |
|---|---|---|
| **a)** | 1, 2, 3, 5, 6, 10, 15, 30 | 2, 3, 5 |
| **b)** | 1, 2, 4, 5, 10, 20, 25, 50, 100 | 2, 5 |
| **c)** | 1, 3, 5, 15, 25, 75 | 3, 5 |
| **d)** | 1, 2, 3, 5, 6, 9, 10, 15, 30, 18, 45, 90 | 2, 3, 5 |
| **e)** | 1,3,5,9,15,27,45,135 | 3,5 |
| **f)** | 1,2,19,38 | 2,19 |

**3. a)** 44, 55, 66, 77, 88, 99   **b)** 15, 20, 25, 30,
35, 40   **c)** 9, 18, 27, 36, 45, 54, 63, 72, 81, 90,
99   **d)** 20, 40, 60, 80, 100, 120, 140, 160, 180
**e)** 13, 39, 65, 91   **4. a)** $2 \times 3 \times 5$   **b)** $2 \times 2 \times 3$
**c)** $2 \times 13$   **d)** $2 \times 2 \times 3 \times 3$   **e)** $2 \times 5 \times 5 \times 5$
**f)** $2 \times 2 \times 2 \times 5 \times 5 \times 5$   **g)** $3 \times 3 \times 2 \times 5$
**h)** $2 \times 2 \times 2 \times 3 \times 3 \times 3$   **i)** $2 \times 2 \times 7 \times 7$
**j)** $2 \times 11 \times 11$   **5.** 1, 3   **6.** 1, 2   **7.** 30, 60, 90
**8.** 15, 30, 45   **9.** 180   **10.** 30, 60, 90   **11.** 315
**12.** 14, 28, 42

**Exercises 1.3** (page 13)
**1. a)** 121   **b)** 243   **c)** 625   **d)** 81   **e)** 64
**f)** 100 000   **g)** 45   **h)** 176   **i)** 243   **j)** 0.125
**k)** 32.5   **l)** 1.728   **2. a)** $6^2$   **b)** $30^3$   **c)** $13^4$
**d)** $3^6$   **e)** $100^3$   **f)** $5^7$   **g)** $(0.4)^3$   **h)** $(3.7)^4$   **i)** $(\frac{2}{3})^5$
**3. a)** $5 \times 5$; $5^2$   **b)** $3 \times 3 \times 3$; $3^3$   **c)** $5 \times 5 \times 5$; $5^3$
**d)** $2 \times 2 \times 2 \times 5 \times 5 \times 5$; $2^3 \times 5^3$
**e)** $3 \times 3 \times 3 \times 3 \times 3$; $3^5$   **f)** $7 \times 7 \times 7$; $7^3$
**g)** $3 \times 7 \times 7$; $3 \times 7^2$   **h)** $5 \times 3 \times 3 \times 3 \times 3$; $5 \times 3^4$
**4. a)** $2.37 \times 10^2$   **b)** $3.8 \times 10^4$   **c)** $1.254 \times 10^5$
**d)** $2.544 \times 10^6$   **e)** $1.8 \times 10^7$   **f)** $2.505 \times 10^6$

**5. a)** 2340   **b)** 105   **c)** 352 000   **d)** 24 600 000
**e)** 1010.1   **f)** 530   **6. a)** 3   **b)** 2.15   **c)** 5
**d)** 0.53   **e)** 1.06   **f)** $10^6$   **7.** $4.2 \times 10^5$ m
**8.** $9.0 \times 10^6$ m

**Exercises 1.4** (page 19)
**1. a)** 4   **b)** 121   **c)** 484   **d)** 2025   **e)** 14 400
**f)** 302 500   **g)** 2.25   **h)** 4.41   **2. a)** 3   **b)** 7
**c)** 8   **d)** 12   **e)** 15   **f)** 50   **g)** $\frac{1}{2}$   **h)** $\frac{2}{3}$   **3. a)** 6
**b)** 7   **c)** 30   **d)** 60   **4.** 11 metres   **5.** 81   **6.** $343
**7.** $40   **8.** 121 square units

**Exercises 1.5** (page 24)
**1. a)** 0.3   **b)** 0.09   **c)** 0.019   **d)** 0.103   **e)** 0.6
**f)** 0.5   **g)** 0.75   **h)** 0.875   **i)** 0.666…
**j)** 0.636363…   **k)** 0.0333…   **l)** 0.2333…
**m)** 0.818181…   **n)** 0.6333…   **2. a)** 3.09
**b)** 6.007   **c)** 7.04   **d)** 1.06   **e)** 2.727272…
**f)** 10.232323…   **3. a)** $\frac{37}{100}$   **b)** $\frac{9}{100}$   **c)** $81\frac{1}{10}$
**d)** $56\frac{3}{1000}$   **e)** $100\frac{1}{100}$   **f)** $28\frac{13}{1000}$
**g)** $7\frac{777}{1000}$

**4.**
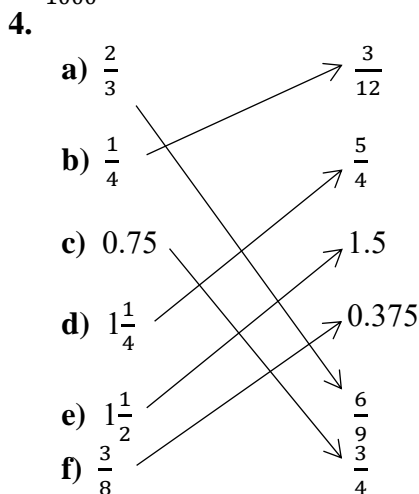


**5. a)** 6   **b)** 8   **c)** 15   **d)** 27   **e)** 8   **f)** 8   **g)** 3
**h)** 14   **i)** 1   **6. a)** 1.444… or 2.888…
**b)** 0.111 or 0.444 or 0.999

**Exercises 1.6** (page 31)
**1. a)** $\frac{7}{20}$   **b)** $\frac{101}{1000}$   **c)** $1\frac{3}{100}$   **d)** $5\frac{1}{200}$   **e)** $4\frac{7}{9}$   **f)** $6\frac{1}{11}$
**2. a)** 0.007   **b)** $2.\overline{3}$   **c)** 0.35   **d)** 0.36   **e)** $4.\overline{72}$
**f)** 0.5625   **3. a)** $1\frac{4}{7}$   **b)** $1\frac{4}{5}$   **c)** $2\frac{1}{3}$   **d)** $3\frac{4}{7}$   **e)** $2\frac{1}{10}$
**f)** $16\frac{2}{3}$   **4. a)** $\frac{15}{7}$   **b)** $\frac{28}{5}$   **c)** $\frac{113}{11}$   **d)** $\frac{213}{10}$   **e)** $\frac{131}{11}$

# Dynamic Math Videos

The Dynamic Math Program supports the teacher to confidently teach their students with:

- a curriculum aligned **Math book**
- **online teacher resources** such as worksheets and extra tests with answer keys
- a **digital flipbook**
- **a library of videos** to help the student in their math journey.

Our program is designed to have the videos support our Math books which are clear, concise and 100% aligned to the provincial curriculum.

Many schools purchase class sets of our Math books and licenses to provide access to the videos. The videos are designed to help the student get 'unstuck' when they are doing their homework. Each video matches the related section in the Math book so that it is easy for the student to find.

Through the licensing process, access to all available grades is offered to each subscriber, allowing students to go back to previous years to review and enhance their understanding or work ahead for advanced learning.

The video program is not designed for each student to watch all available videos for their grade level. Some students may only need to watch some videos throughout the year as they already have a strong grasp of the math concepts being taught in the classroom. Students can do this at home for homework and will not fall behind as they have some extra guidance.

This combination of book and video instruction improves learning outcomes and makes students more confident.

In summary, please consider the following:

**Video Benefits** for you and your students

- They will help support you in teaching Math to your students.
- The videos will help your students to reinforce what you taught them in the classroom.
- They will be more confident when doing their homework.
- They will equip parents to help the student at home.
- They will dramatically increase the success of your students to learn math.

**At a Glance**

- Videos available for Grades 4-10, 50-80 Videos per grade, 2 to 7 minutes in length
- The videos match the chapters and units in our Math books and help instruct students learn how to complete the questions in the books.
- Videos are 100% aligned to the provincial curriculum.

# DYNAMIC CLASSROOM MATH PROGRAM

The Dynamic Classroom Math book series provides students with curriculum-based resources written by Canadian Math teachers. Our complete series of Math books will take students step by step through the entire provincial curriculum, providing clear instruction, guided examples, and lots of practice questions. All of our Dynamic Math books are fully supported with additional online resources available at **www.dynamicmath.ca**.

### BOOKS

The Dynamic Classroom Math books are 100% aligned to the mathematics curriculum for each province. Our Math books include:

- Clear and concise instructions that explain each topic and how to approach the questions
- Step-by-step guided examples that show students how to answer questions
- Practice questions that range from easy to advanced
- Chapter tests to help assess students' knowledge and understanding
- An answer key for all exercises and tests

### VIDEO

Dynamic Classroom has a growing library of Math video lessons that will help your child with over-the-shoulder instruction. Each video aligns with a specific section in our Math book for that grade. Visit our website to access a free trial and for more information about subscriptions.

### EXTRA ONLINE CONTENT

In an effort to help teachers in the classroom and equip students to enhance learning, we offer additional online content. Visit our website for extra resources and the latest updates.

## OUR MISSION

We work to create clear, concise, and straightforward educational resources for teachers and parents to teach confidently and effectively, and to empower students to achieve learning goals in the classroom and at home.

**Dynamic MATH**