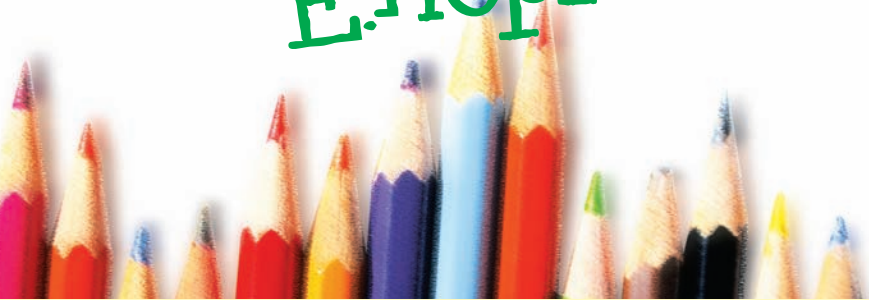


Your guide to E.nopi MATH



⦿ What is E.nopi MATH ?

The “E” in E.nopi MATH symbolizes

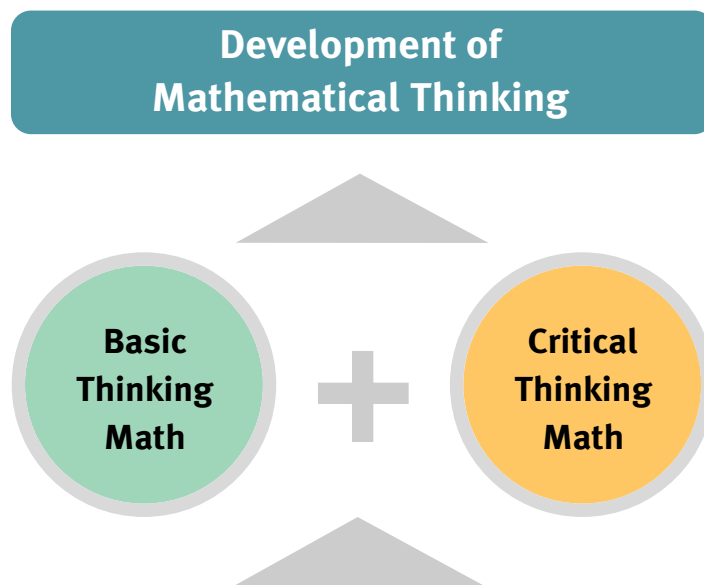
- Education service provider
- E-business leader
- Eye level with each individual student

E.nopi MATH

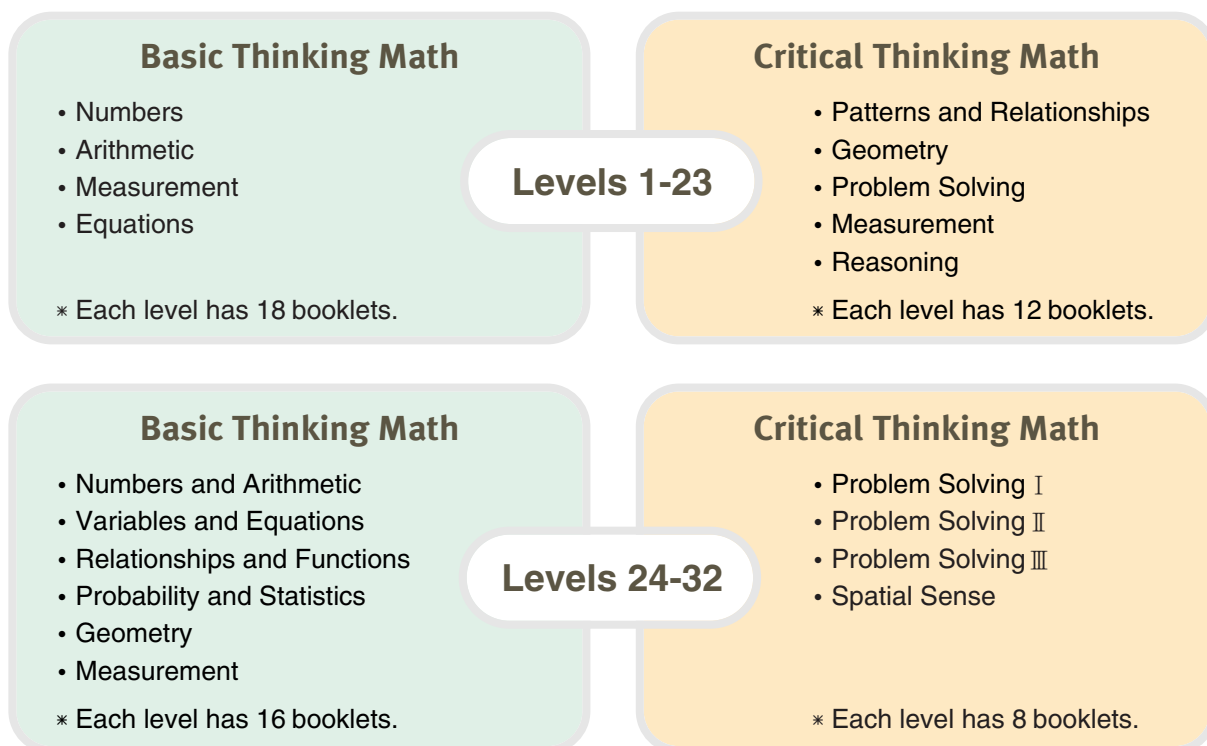
- Increases self-confidence
- Strengthens concentration
- Improves study habits
- Develops critical thinking & analytical skills
- Helps to develop mathematical thinking
- Provides a self-feedback learning system

E.nopi MATH helps improve problem-solving skills in school math.

- **Concept** Cultivate problem-solving capabilities by improving mathematical thinking



• Structure



Field of Study for E.nopi MATH

What is E.nopi's Basic Thinking Math?

Levels 1-23

Level 17

Write the mixed number $2\frac{1}{3}$ as an improper fraction. (30 points)

It's the sum of the whole number part and the fraction part!

Writing a Mixed Number as an Improper Fraction
 $(3 \times 2) + 1 = (\text{denominator}) \times (\text{whole number})$
 $2\frac{1}{3} = 2 + \frac{1}{3} = \frac{6}{3} + \frac{1}{3} = \frac{7}{3}$
 $(\text{denominator}) \times (\text{whole number}) + 1 = \text{numerator}$
 $2\frac{1}{3} = \frac{3 \times 2 + 1}{3} = \frac{7}{3}$

Numbers (Number and Operations)

Students will learn natural numbers using the concepts of number order and decimal notation. After learning about fractions and decimals, students will be able to work with rational numbers.

Level 20

Multiply. Simplify to the lowest terms. (8 points each)

- $2\frac{2}{3} \times 1\frac{7}{8} =$
- $2\frac{1}{4} \times 1\frac{5}{9} =$
- $2\frac{2}{9} \times 3\frac{3}{8} =$
- $3\frac{3}{5} \times 2\frac{2}{9} =$
- $2\frac{2}{7} \times 2\frac{1}{10} =$
- $4\frac{2}{5} \times 1\frac{4}{11} =$

Measurement

Students will learn various units of measurement and conversions of units of time, length, weight, and volume. Students will also find the area and circumference of 2-dimensional figures. This knowledge will be further extend to finding the surface area and volume of 3-dimensional figures.

Level 23

Find the surface area of a triangular prism. Fill in each . (10 points each)

- Base area (1 Base) $6 \times \square \div 2 = \square \text{ cm}^2$
- Width of the lateral $\square + 6 + \square = \square \text{ cm}$
- Lateral area $\square \times 7 = \square \text{ cm}^2$
- Surface area $\square \times 2 + \square = \square \text{ cm}^2$

When we open the prism up, we can see both lateral area and base area of area.

You can find the area of a triangular prism in the same way as the trapezoidal prism.

Yes! It's easier to find the surface area of any prism by opening it up.

Arithmetic (Number and Operations)

Students will learn and master the four operations of arithmetic: addition, subtraction, multiplication, and division.

Students will also learn to perform the four arithmetic operations with fractions and decimals.

Level 22

Fill in each . (8 points each)

- $\frac{3}{4} \times x = \frac{1}{2}$
 $(\frac{3}{4} \times x) \div \square = \frac{1}{2} \div \frac{3}{4}$
 $x = \frac{7}{2} \times \square$
 $x = \square$
- $x \div \frac{4}{7} = 2\frac{5}{8}$
 $(x \div \frac{4}{7}) \times \frac{4}{7} = \frac{5}{8} \times \square$
 $x = \frac{21}{8} \times \square$
 $x = \square$

Equations with fractions can be solved easily by converting mixed numbers into improper fractions.

Equations (Algebra)

Students will learn about equations, including the concept of equality and solve for unknowns in problems.

Levels 24-32

Level 24

1. Calculate $(-\frac{1}{2}) \times (-\frac{3}{2}) \div (-5)$ using two different methods.

a Calculate one by one from the left.

$$\left(\left(-\frac{1}{2} \right) \times \left(-\frac{3}{2} \right) \right) \div (-5) = \left(-\frac{3}{4} \right) \div (-5) = \left(-\frac{3}{4} \right) \times \left(-\frac{1}{5} \right) = \frac{3}{20}$$

b Calculate all terms at once.

$$\left(-\frac{1}{2} \right) \times \left(-\frac{3}{2} \right) \div (-5) = \frac{3}{4} \div (-5) = \frac{3}{4} \times \left(-\frac{1}{5} \right) = -\frac{3}{20}$$

We need to calculate by switching the order with the reciprocal and converting division to multiplication.

First, determine the sign.

Convert division to multiplication.

Calculate the product of three numbers at once.

Numbers and Arithmetic

Students will learn sets, integers, and rational numbers. Additionally, calculation with square roots will be introduced.

Level 31

1. The following are descriptions of the characteristics of deviation. Which is false?

- As the absolute value of deviation becomes smaller, the variable becomes closer to the mean.
- The degree of dispersal for the variables can be found by using the mean of deviation.
- Deviation is the measure of the difference between the variable and the mean.
- Deviation of variables less than the mean becomes a negative number.
- The sum of deviations is 0.

The sum of the deviations is 0. Therefore, the mean of deviations is also 0.

2. The data below show the deviations of Marcy's five math tests. Find the standard deviation. (Round your answer to the nearest hundredth.)

-3 2 9 5 -4

3. The table below shows the deviations of five students' scores obtained from target shooting practice. Find the following.

Student	A	B	C	D	E
Deviation	-4	x	4	2	8

Mean of x Variance

Probability and Statistics

Students will learn how to collect, analyze, and graph simple statistical data which can then be used to find correlations. As well, the basic properties of probability and statistics will be introduced.

Level 25

1. Solve the following equations, then check your answers.

a $-3.2x - 0.9 = -0.7x + 0.6$

Solve:

$$\begin{aligned} -3.2x - 0.9 &= -0.7x + 0.6 \\ -3.2x + 0.7x &= 0.6 + 0.9 \\ -2.5x &= 1.5 \\ x &= -0.6 \end{aligned}$$

(Left side: $-1.2 \times -0.6 = 0.72$)
(Right side: $-0.7 \times -0.6 + 0.6 = 0.6 - 0.42 = 0.18$)

b $0.17 - 0.09x = -0.07 - 0.15x$

Solve:

$$\begin{aligned} 0.17 - 0.09x &= -0.07 - 0.15x \\ -0.09x + 0.15x &= -0.07 - 0.17 \\ 0.06x &= -0.24 \\ x &= -4 \end{aligned}$$

c $0.19 - 0.3x = -0.25x - 0.3$

Solve:

$$\begin{aligned} 0.19 - 0.3x &= -0.25x - 0.3 \\ -0.3x + 0.25x &= -0.3 - 0.19 \\ -0.05x &= -0.49 \\ x &= 9.8 \end{aligned}$$

Variables and Equations

Students will learn how to identify, solve, and apply equations. Systems of equations and systems of inequalities with variables will also be learned.

Performance Assessment

1. Find the volume of the prism whose base is the trapezoid shown on the right and whose height is 11 cm.

2. Find the surface area of the cone shown on the right.

3. Find the surface area and volume of each of the following solid figures.

a

b

Measurement

Students will learn how to find angles, lengths, areas, and volumes based on concepts of geometric figures and algebraic expressions. Finding approximate values and properties of trigonometric ratios will be also introduced.

Level 31

1. The graph of $y = a(x-p)^2 + q$ with a vertex at the coordinates $(-2, -2)$ is shown on the right. By looking at the graph, find the values of a , p , and q .

2. Find the equation of a quadratic function that has its line of symmetry at $x = -3$ and passes through points $(2, 6)$ and $(-4, 3)$. Fill in the boxes.

Since the equation of the line of symmetry is given, if we find the equation of the parabola, $y = a(x-p)^2 + q$.

If we substitute point $(2, 6)$ and $(-4, 3)$ into this equation.

$$6 = a(2-p)^2 + q$$

$$3 = a(-4-p)^2 + q$$

If we solve for (1) and (2) simultaneously,

$$a = \square, p = \square$$

Therefore, the equation of the parabola we are looking for is $y = \square$.

Relationships and Functions

Students will learn functions and coordinates. Graphs of linear and quadratic functions will also be covered.

Level 31

1. The following figures are drawn to prove the Pythagorean Theorem. Prove that $a^2 + b^2 = c^2$.

a

b

Geometry

Students will learn the concepts of basic geometrical figures and use congruence and similarity to prove their properties. Other topics include the properties of triangles and the Pythagorean Theorem as well as the properties of circles.

Field of Study for E.nopi MATH

What is E.nopi's Critical Thinking Math?

Levels 1-23

Level 20

1 The picture below follows an increasing pattern and the figure numbers indicate the order. Answer the questions.

2 Fill in each

Number of dots (•) in =

Number of dots (•) in = $1 + 2 =$

Number of dots (•) in = $1 + 2 + 3 =$

Number of dots (•) in = $1 + 2 + 3 + 4 =$

3 Using the pattern above, fill in each and complete the table.

Figure number	1	2	3	4	5	6	...
Number of dots (•)	1	3	6	10	15	21	...
	+2	+3	+4	+5	+6	+7	...

4 How many dots (•) would there be in the 8th figure? _____ dots

The number of dots increases in the order of 1, 2, 3, ... Try finding the sums of the consecutive numbers. Look $1 + 2 + 3 = 6$, $1 + 2 + 3 + 4 = 10$ and $1 + 2 + 3 + 4 + 5 = 15$.

Patterns and Relationships (Algebra)

Students will use numbers, figures, and arithmetic operations to learn about sequences and develop an understanding of basic equations.

Level 30

1 Harry, Jason, Jimmy, Hanson, and Kevin are in a race. Read the following statements and answer the questions.

- Harry is ahead of Jason, but behind Jimmy.
- Hanson is ahead of Harry, but behind Jimmy.
- Kevin is ahead of Hanson, but behind Jimmy.

2 From the first statement, list Harry, Jason, and Jimmy in order. _____

3 From the second statement, list Hanson, Harry, and Jimmy in order. _____

4 From the third statement, list Jimmy, Hanson, and Kevin in order. _____

5 From 2 and 3, list Harry, Jason, Jimmy, and Hanson in order. _____

6 From 2 and 4, list Harry, Jason, Jimmy, Hanson, and Kevin in order. _____

Reasoning (Reasoning and Proof)

Students will use classification and analogy to develop analytical skills for solving problems logically.

Level 20

1 The front, side, and top views of a set of blocks are given. Circle the correct set of blocks.

Front View Side View Top View

1 2 3

Geometry

Students will develop an intuitive sense of spatial relationships by using manipulatives.

Level 21

1 There are the following signs on Willy's farm. But, the rain washed out some parts of the signs. Find out the number of chickens and the number of sheep. Answer the questions.

2 How many chickens and sheep are there in total? _____ chickens and sheep

3 Find the number of chickens and sheep. Fill in each

The total number of chickens and sheep is . The sum of the legs of chickens and sheep is . If there are 80 chickens, the number of legs is and it is less than 200. If there are one less chicken and one more sheep, then the total number of legs increases by . So, if chickens are taken away from 80 chickens and sheep are added, the total number of legs becomes 200.

4 How many chickens and sheep are there on Willy's farm? _____ chickens _____ sheep

Problem Solving

Students will learn 8 effective problem solving strategies:

Problem solving by Pattern Recognition, Data Analysis, Alternative Methods, Drawing Diagrams, Deduction, Trial and Error, Reverse Calculation, Problem solving Using Tree Diagrams.

Level 10

1 Circle the figure below that has the same area as the figure.

1 2

3 4

Measurement

Students will compare the volumes of different solids and become familiar with measurement of length, area, and volume.

Levels 24-32

Date: _____ Name: _____

Level 24

1 Find the sum of each set of 3 numbers in a horizontal, vertical, and diagonal sequence in the following square.

6	1	8
7	5	3
2	9	4

Squares and Magic Squares

The square is called a magic square when the numbers within the square have certain relevant properties.

The sum of the numbers in a horizontal, vertical, and diagonal sequence are all equal.

It is called a 3 × 3, 4 × 4, or 5 × 5 magic square according to the number of rows and columns.

The horizontal line is called a row, and the vertical line is called a column.

A magic square is which the number of rows and columns is n is called an $n \times n$ magic square or magic square of size n .

Note: An $n \times n$ magic square is read as an "n by n" magic square.

3 × 3 magic square — Also known as Lo Shu magic square

Problem Solving I (Numbers and Arithmetic)

Students will improve their problem solving ability and be motivated by doing challenging mathematical puzzles and quizzes.

Date: _____ Name: _____

Level 28

1 This is a game where a ball dropped at the top bounces through a network of pins and falls into a slot at the bottom, and whoever correctly guesses the slot wins. As shown on the right, the ball can be dropped at any point, A, P, Q, R, or S, and each slot, A, B, C, D, and E, has a different prize. Find the expectation for each point.

2 If a ball is dropped at point O, write the number of possible outcomes for each space the ball can pass through. (Use Pascal's triangle.)

3 What is the expectation for the prize if you drop the ball at point O?

If you are not familiar with the concept of expectation, read the material on the next page and come back to this problem.

An arrangement of numbers with the pattern shown on the right is called Pascal's triangle.

1
1 1
1 2 1
1 3 3 1
1 4 6 4 1

Problem Solving III (Probability and Statistics)

Students will learn statistics to improve their problem solving ability. This will also help them to understand the value and usage of mathematics.

Date: _____ Name: _____

Level 25

Dad sighs while reading the paper and says, "Gas prices are going up again." His son, Darren, thought about how he could help his father with this situation and decided to look for ways to save money when buying gas for the car. He thought about the different conditions and the different costs involved. Let's look at Darren's calculations.

1 Darren's family is going to an amusement park and they need to buy gas at one of two nearby gas stations, which of the two gas stations would be better to use?

2 The table below shows the price of gas per liter at gas stations G and H.

Gas Station	G	H
Price per Liter (\$)	1.18	1.15

3 The table below shows the prices depending on the amount of gas purchased. Complete the table.

Amount of Gas Purchased (L)	Price per Liter (\$)	
	Station G	Station H
1	1.18	1.15
2	2.36	2.30
3	3.54	3.45
4	4.72	4.60
5	5.90	5.75
6	7.08	6.90
7	8.26	8.05
8	9.44	9.20
9	10.62	10.35
10	11.80	11.50

Problem Solving II (Algebra)

Students will develop necessary problem solving skills and realize how math can be useful and applicable through solving problems based on real life situations.

Date: _____ Name: _____

Level 32

1 Look at the 7 solid figures made by placing cubes of 1cm adjacent to one another in the box below and fill in the blanks.

2 Solid figure with the smallest surface area and the fewest number of vertices: _____

3 Surface area: _____ cm²

4 Number of vertices: _____

The surface area is the area of the faces on the surface. When you count the vertices, pay attention to where the edges of the cubes meet.

Spatial Sense

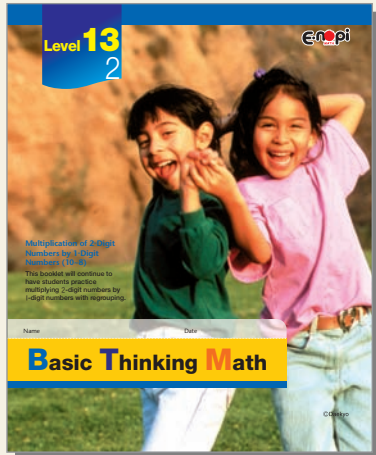
Students will improve intuitive insight and spatial recognition with teaching tools such as Thinking Bricks, Thinking Pentos, and Thinking Cubes.

Contents of E.nopi MATH

Basic Thinking Math is designed as follows.

Basic Thinking Math is composed of:

Booklet Concept Review Main Section Try This 1, 2 Thinker's Corner Performance Assessment/Comprehensive Assessment.



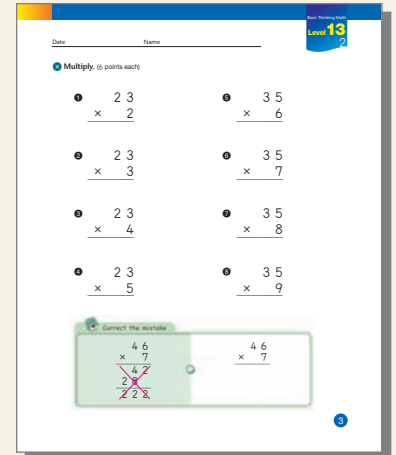
Booklet Concept

The cover page provides an overview of booklet contents.



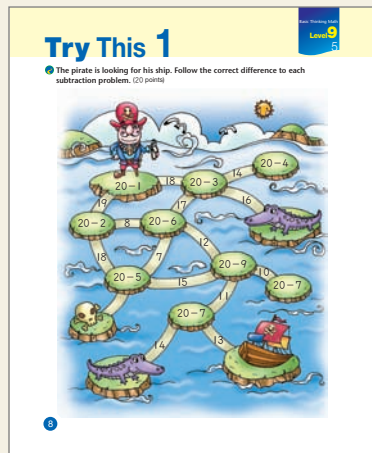
Review

Each booklet begins with a review of previously learned material.



Main Section

Students learn mathematical skills and techniques through drills in the Main Section.



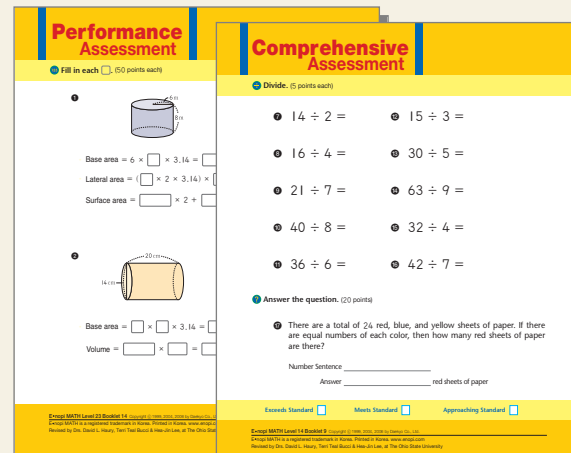
Try This 1

This page fosters student interest through the use of mazes, line drawings, word scrambles, and codes.



Thinker's Corner

Activities on this page challenge students through the use of number cards, number shapes, quizzes, games, mazes, coloring activities, folding papers, and stories.



Performance Assessment






This page reinforces the major concepts developed in the booklet.

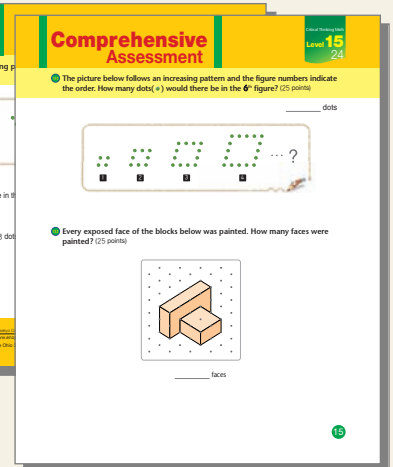
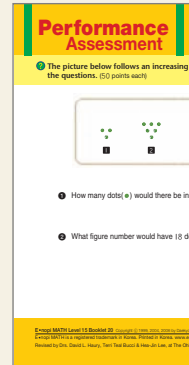
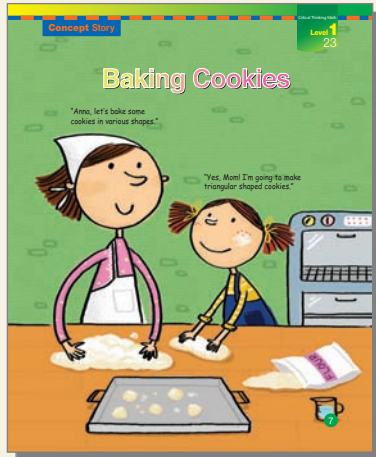
Comprehensive Assessment

The main concepts of each level are reviewed through two Comprehensive Assessments at each level.

Critical Thinking Math is designed as follows.

Critical Thinking Math is composed of:

Booklet Concept  Review  Main Section  Concept Story / Concept Comic  Teaching Tools 
Performance Assessment / Comprehensive Assessment.



Concept Story/Concept Comic

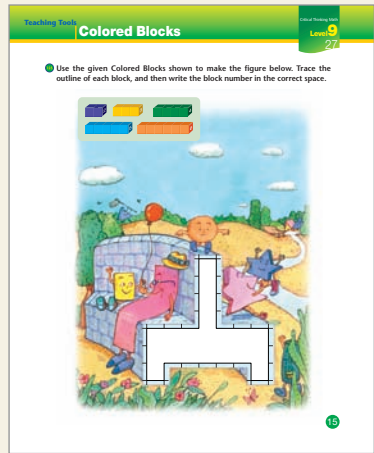
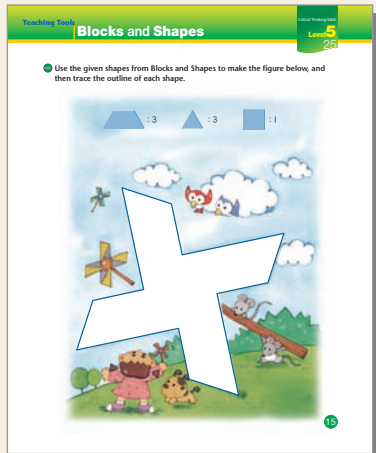
Stories and comics are used to cultivate student interest in mathematics. Each comic has an underlying theme or concept that is being taught in a humorous way. (Levels 1-4: Concept Story, Levels 5-23: Concept Comic)

Performance Assessment

This page reinforces the major concepts developed in the booklet.

Comprehensive Assessment

The main concepts of each level are reviewed through two Comprehensive Assessments at each level.



Teaching Tools

Manipulatives are used to develop and enhance student ability with spatial relationships. They also provide tangible experience with problem solving skills and concepts. (Levels 1-6: Blocks and Shapes, Levels 6-14, 16-20: Colored Blocks, Levels 15-23: Wooden Blocks)

E.nopi MATH Teaching Tools

Students experience practical applications in mathematics by solving applied mathematical problems using E.nopi MATH Teaching Tools.

Levels 1-23: Numerical Figures, Blocks and Shapes, Clear Paper, Colored Blocks, Mirror, and Wooden Blocks

Levels 24-32: Thinking Bricks, Thinking Pentos, and Thinking Cubes

Numerical Figures



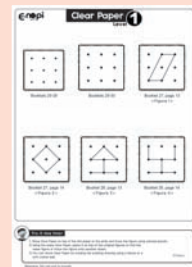
Numerical Figures assist in developing the concepts of number and quantity.

Blocks and Shapes



Blocks and Shapes assist in developing depth perception by matching and finding the location of various shapes.

Clear Paper



Clear Paper is used to trace and copy various shapes. This helps students to develop their mental skills in relation to depth perception and location.

Colored Blocks



Colored Blocks assist in the understanding of numbers as well as length. As students manipulate Colored Blocks, they develop their perception of depth and location.

Mirror



Mirror activities require students to draw shapes symmetrically. This forms the basis for line symmetry that will be introduced in future studies.

Wooden Blocks



The manipulation of Wooden Blocks enables students to learn depth perception, location, and spatial relationships. This is crucial in the development of critical and analytical thinking skills.

Thinking Bricks



Thinking Bricks consist of three cuboids that can be used to stack up the bricks. (5 pieces, 2 sets)

Thinking Pentos



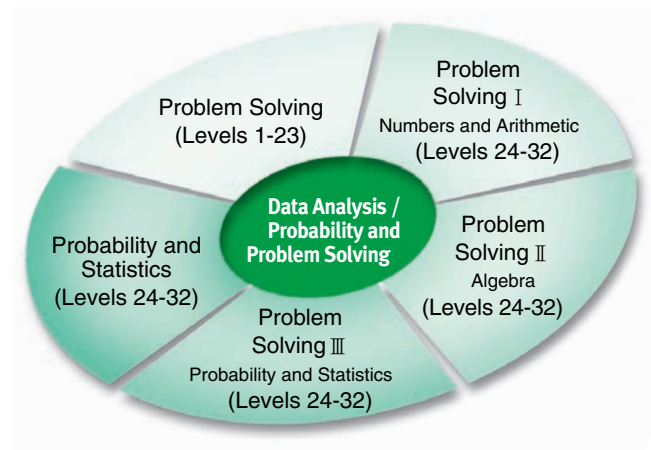
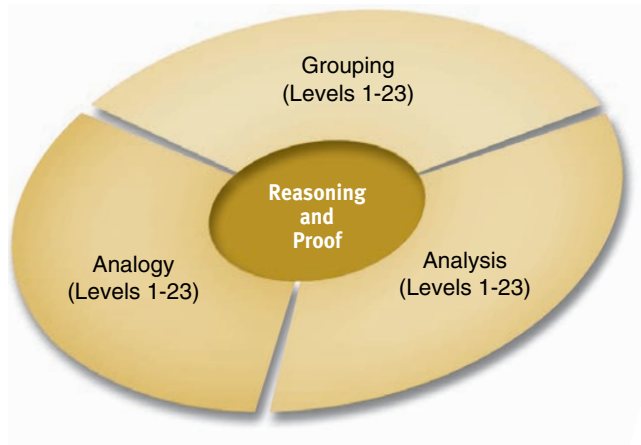
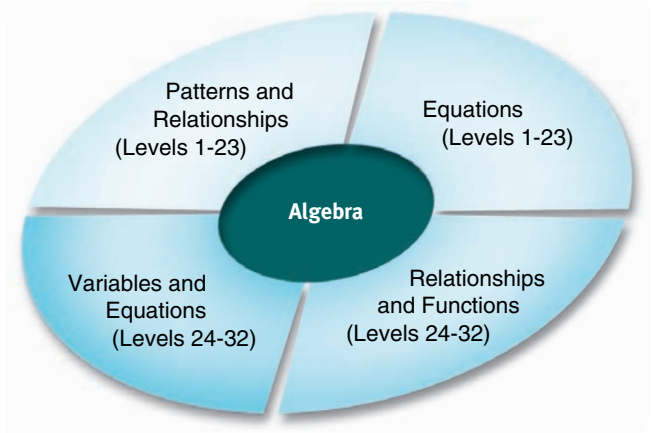
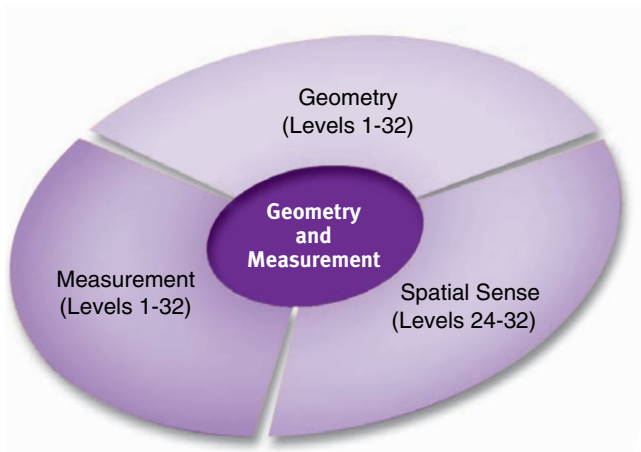
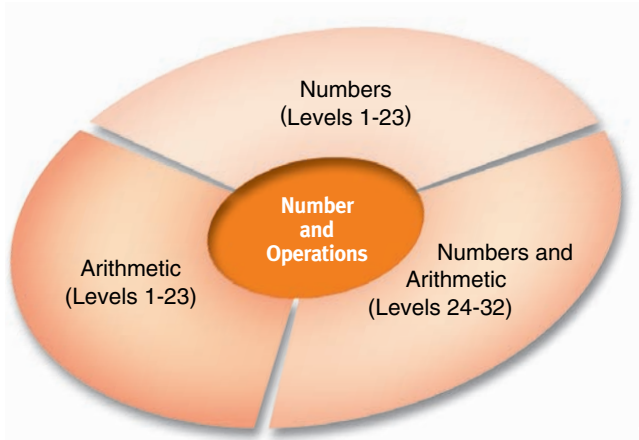
Thinking Pentos are used to build a model built by putting the sides of unit squares together. (12 pieces)

Thinking Cubes

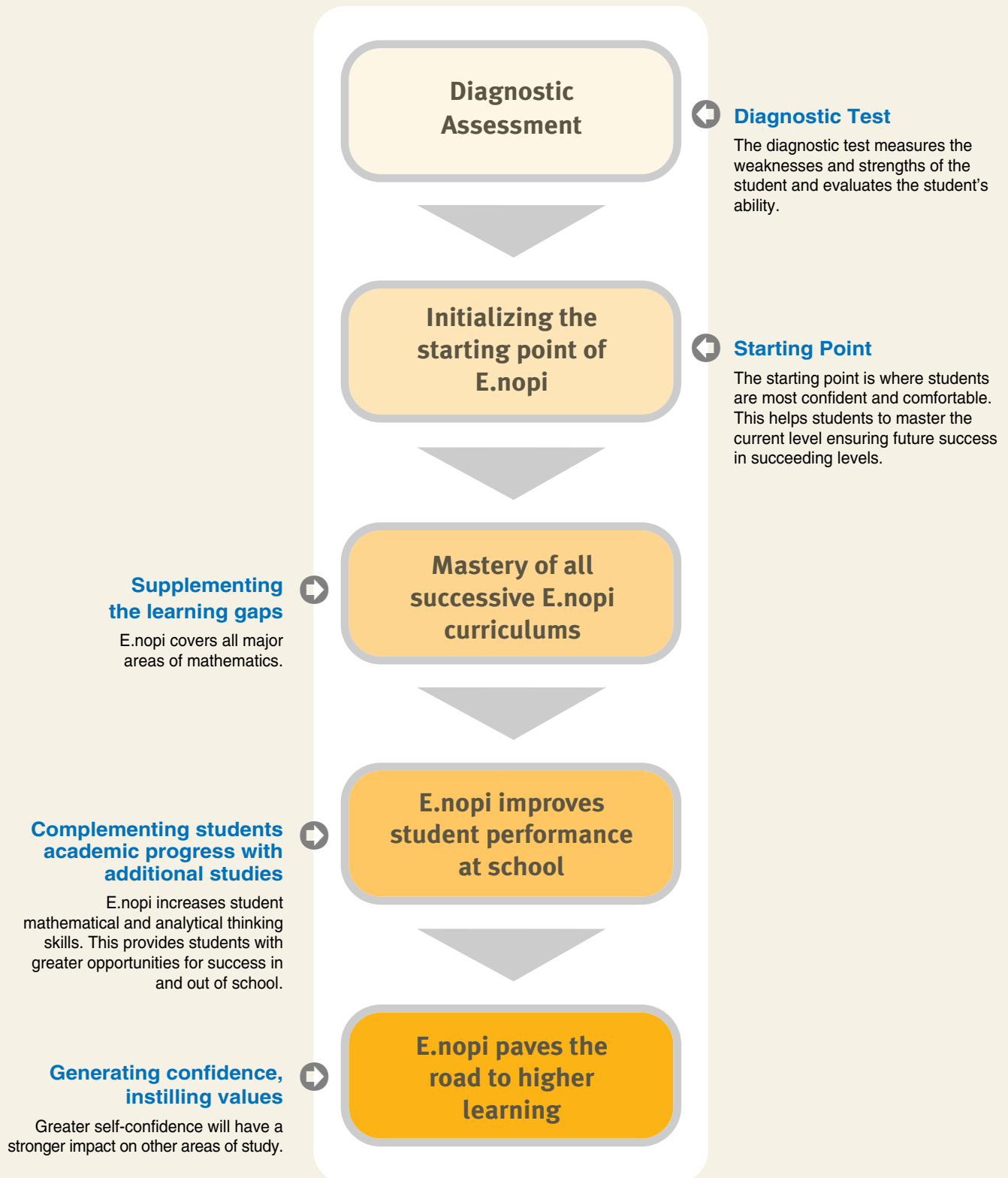


Thinking Cubes are used to build a model that comprises the figures with concave surface built by putting together the faces of 3 or 4 cubes. (7 pieces)

E.nopi MATH is aligned with school math curriculums



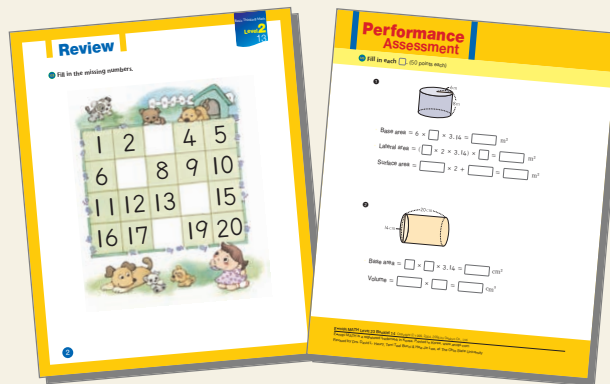
E.nopi MATH Study Program



E.nopi MATH Study Flow

Student

Reviews the previous booklet and solves additional problems in the review section.

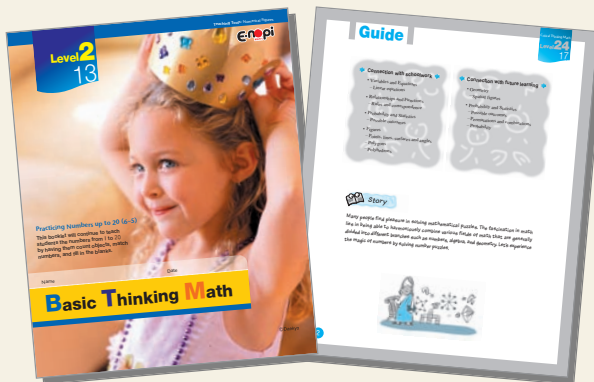


Instructor

Evaluates and assesses student performance for the previous booklet.

Student & Instructor

Instructor checks for mistakes, evaluates the weaknesses for the previous booklet, and previews the material for the new booklet.



Student & Instructor

Instructor introduces new materials for the upcoming week and instructs the student about the new concept(s) that will be discussed.

Student

Study with Main Section, Try This, Thinker's Corner, Concept Story / Concept Comic, Teaching Tools, and other learning material.





What are the benefits of E.nopi MATH?

1 Systematic study materials for all levels.

E.nopi MATH uses a systematic curriculum. The curriculum is divided into various levels according to student abilities. This allows students to fully understand and master the required mathematical concepts in a progressive manner. Questions in the curriculum are cumulative. Students will not be able to progress if they do not understand or master the preceding concepts.

2 Study materials that develop the ability to solve problems independently.

Some mathematical concepts are difficult to introduce. Some mathematical concepts are cumulative and require extensive related knowledge of other mathematical concepts. The E.nopi curriculum is progressive. Subtle increases in difficulty in each level makes it easy for all students to learn. This allows students to become comfortable with all necessary concepts before proceeding to the next level. Students will be able to solve questions that are presented as variations of similar concepts. Students will be able to independently arrive at answers using their critical and analytical thinking skills.

3 An interactive teaching methodology that incorporates proactive feedback.

E.nopi is a proactive learning process. Students receive continual, ongoing feedback from our instructors to enhance the student learning process. Feedback from the instructors will include review, performance assessment, and overview sheets. Instructors also work with parents to maximize feedback. The parents receive and give feedback to both the instructors and their children. Communication is an integral part of education. A positive environment makes learning optimal for all students. In this case, students are able to learn from both their parents and instructors.

4 E.nopi helps students to develop their critical and analytical thinking skills.

E.nopi MATH incorporates learning materials into its curriculum that will help students to develop problem solving abilities. The active use of such materials creates a learning environment where students will develop critical and analytical thinking skills. This is accomplished through developing depth perception, and location and spatial relationship skills by utilizing our learning materials such as Numerical Figures, Blocks and Shapes, Clear Paper, Colored Blocks, Mirror, and Wooden Blocks. Difficulty and question variations are introduced systematically throughout all levels.

5 E.nopi allows students to utilize their skills in all areas of study.

Performing well in E.nopi not only helps students in mathematics, but is also helpful for applying their knowledge to other areas of academic studies. Skills that students will develop in E.nopi are broad. In most cases, students will be ahead of their class and their peers. Ideally, students will advance faster in all areas of academic studies and thus become more confident in mathematics and in other areas of study.



Three streams of learning

1 E.nopi Home Learning System

An E.nopi instructor visits the student's home once a week for home instruction.

2 E.nopi In-Class Learning System

Students attend the closest E.nopi Learning Center twice a week for in-class instruction.

3 Correspondence System

Study materials are sent out to the student's home via mail once a month.

※ Service availability can vary depending on the region.

Membership Fees

Initial Enrollment

\$ _____

Monthly Membership

In class instructor

\$ _____

Visiting instructor

\$ _____

Correspondence Course

\$ _____

※ Please contact your local office for registration.