Welcome to the Math Explorer Club!

October 2025 – March 2026

1h of fun for 12 weeks:

- **10 weeks of exploring**
- **2 weeks practice tests**

Math Kangaroo Competition:
March 19th, 2026

Lesson 1: Introduction to Problem Solving

Math Kangaroo Class Level 3-4

Lesson 1: Introduction to problem solving with Math Kangaroo

What is Math Kangaroo?

Individual math competition for students 1-12 grade.

- 24 questions for levels 1-4
- 30 questions for level 5-12
- 75 minutes
- Easy problems (3 points), medium problems (4 points), hard problems (5 points)

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What is problem solving?

Problems are different from exercises.

- In an exercise, we are practicing technique or a skill. You know how to approach it and you just need to go through the steps to solve it.
- In a problem, we don't know at first how to approach it and it demands much thought and resourcefulness. Problems often involve trying different strategies, making mistakes, and starting over, until a solution is found.

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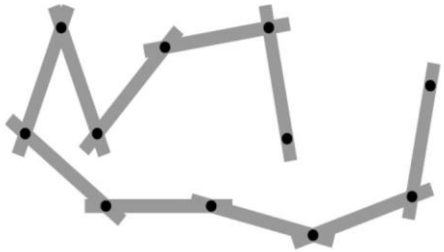
Lesson 1: Introduction to problem solving with Math Kangaroo

What is problem solving?

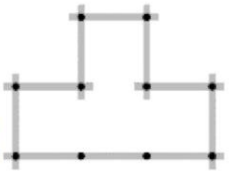
Example of an exercise:

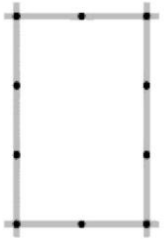
MK 2019 # 7

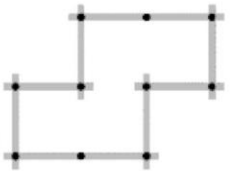
1. Pia is making shapes using the connected sticks shown in the picture.

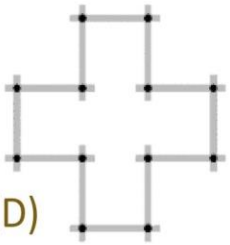


Which of the following shapes uses more sticks than Pia has?

(A) 

(B) 

(C) 

(D) 

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Exercise or problem?

MK 2015 # 11

2. Luis had 7 apples and 2 bananas. He gave 2 apples to Yuri, who in return gave some bananas to Luis. Now Luis has as many apples as bananas. How many bananas did Yuri give to Luis?

As you become more experienced, more problems will turn into exercises.
This course will help you do just that!

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What are the different types of Math Kangaroo problems?

Let's get started by looking at the different types of problems in Math Kangaroo competitions. Here is a hint: they are all so fun!

Let's look at six main types of problems:

1. number problems
2. geometry and measurement
3. visual thinking
4. spatial thinking
5. clocks problems
6. logic problems

Types of Math Kangaroo problems

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Lesson 1: Introduction to problem solving with Math Kangaroo

Examples of **number problems**:

MK 2019 # 13

3. Sarah has 16 blue marbles. She can trade marbles in two ways: 3 blue marbles for 1 red marble, and 2 red marbles for 5 green marbles. What is the maximum number of green marbles she can get?

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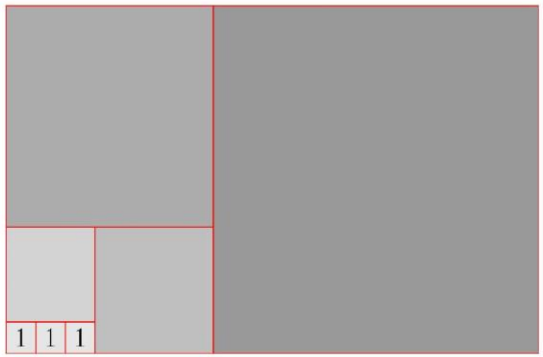
MK 2018 # 22

4. The large rectangle is made up of a number of squares of various sizes. The 3 small squares each have an area of 1. What is the area of the large rectangle?



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Types of Math Kangaroo problems

VISUAL THINKING

Visual thinking helps us visualize problems, and visual thinking problems help train and connect different parts of the brain. Math Kangaroo is famous for having fun visual thinking problems. Here are three examples.

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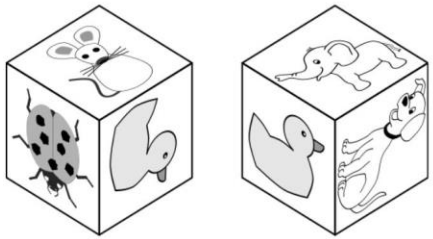
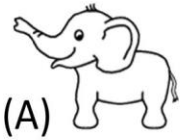
MK 2020 # 7

5. Jorge glues the 6 stickers  to the faces of a cube. The picture shows the cube in two positions. Which sticker is on the face opposite the duck?



(A) 

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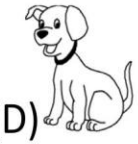
(D) 

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Types of Math Kangaroo problems

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SPATIAL THINKING

Spatial thinking is closely related to visual thinking and but emphasizes spatial relations, object location in space, and the change between 3D and 2D plane of an object (called surface development). Here are some examples.

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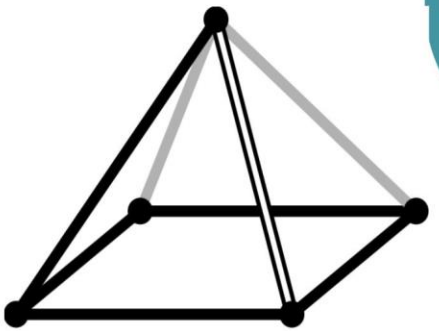
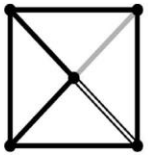
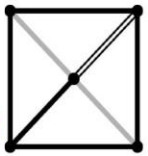
Examples of spatial thinking problems:

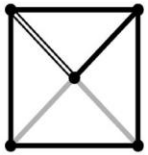
MK 2020 # 10

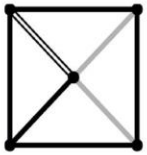
6. Loes looks at the pyramid from above. What does Loes see?

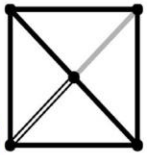


(A) 

(B) 

(C) 

(D) 

(E) 

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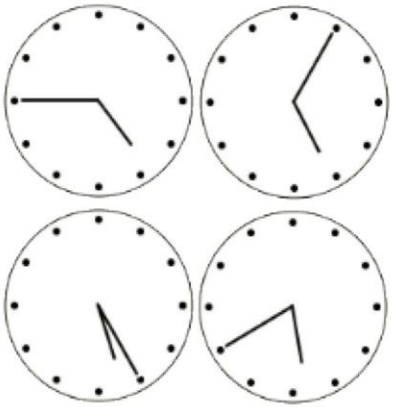
Types of Math Kangaroo problems

CLOCK AND CALENDAR PROBLEMS

Certain problems work on our time perception skills and can be useful for our daily life situations. Math Kangaroo has interesting clock and calendar problems. They sometimes have spatial thinking elements, which make them extra fun to do.

MK 2004 # 11

7. I noticed four clocks on the wall (see the picture). Only one of them shows the correct time. One of them is 20 minutes ahead, another 20 minutes late, and yet another is broken. What time is it now?



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Example of a logic problem:

Logic problems train our logic reasoning ability. Here is an example.

MK2004 #7

8. The buildings on Color Street are numbered from 1 to 5. Each building is colored with one of the following colors: blue, red, yellow, pink, and green. We know that:

- The red building is next only to the blue building.
- The blue building is between the red building and the green building.

What color is the building with number 3?

Exit ticket and Genius Hour time

To recap, in this class, you have seen examples of the six main type of Math Kangaroo problems: number problems, geometry and measurement, visual thinking, spatial thinking, clocks, and logic problems.

Please share with the class which type of Math Kangaroo problems excites you the most, and why?

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Exit ticket and Genius Hour time

Genius Hour time:

A great way to become a better problem solver is to create your own problem. This course has a Genius Hour project. You will create your own Math Kangaroo type of problem and present it during our last class. It may sound hard but remember that good problems get inspiration from hobbies and interests in real life. Let's take a look at a problem created by a 4th grader who is crazy about science.

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Exit ticket and Genius Hour time

Superconductors make magnets levitate (see image on the top right).

For Christmas, Neil wants to serve candies on a levitating magnet (how cool is that!).

The height at which a magnet levitates is based on this formula:

9 – (weight of the candy in grams ÷ 2).

Neil chooses from a box of traditional holiday candies: the red ones weigh 2 grams each, the yellow ones 1 gram each, and the green ones 3 grams each. Neil wants to have at least 1 red, 1 yellow, and 1 green on the magnet.

What is the greatest number of candies Neil can put on the magnet before it collapses on the superconductor?

A) 13 B) 14 C) 15 D) 18

Genius Hour project:

At the end of this course, you will have opportunity to present a problem created by you and share your clever solution(s) with the entire class and their guests. Here is a graphic organizer which can help you get started. Don't worry, you will have plenty of chances to work on it during the next classes.

STEPS	HOW
Step 1. Pick a topic and type of problem	Get inspiration from your life- your hobbies and interests. Do you play a sport? Scoring may make a good number problem. Do you like fold origami? Crease patterns may make a good spatial thinking problem. Do you like debating? Making the case for an argument may make a good logic reasoning problem.
Step 2: Pick a strategy or a set of strategies that can help solve your problem	Creating a problem that entails using multiple strategies is the best! It means that it is challenging but still can be tackled with the strategies you learn in this course. You will see many examples in the following classes that utilize multiple strategies.
Step 3: Craft your problem and try out on your family members	Use interesting pictures and good writing techniques to make the problem clear, concise, and most of all gripping for your fellow problem solvers. The superconductor and magnet problem you saw is one example. We will also see some examples that MK students created last year.
Step 4: Showtime! Present your problem and help your classmates tackle it in the last class of this course	You will have 3 minutes to present your problem and help the class solve it. Creativity in presentation is most encouraged.