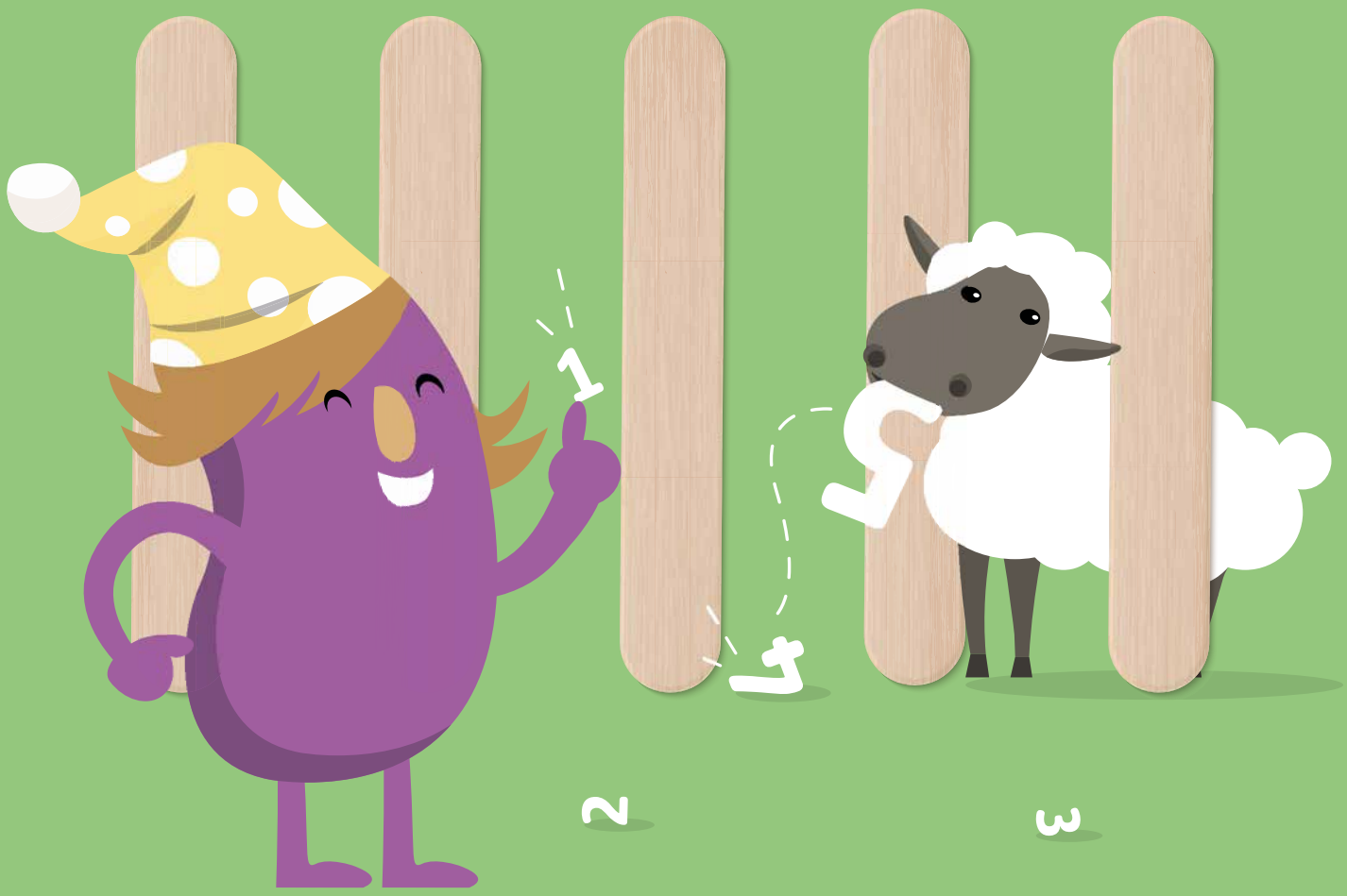
EMAT

• mathematics for life •



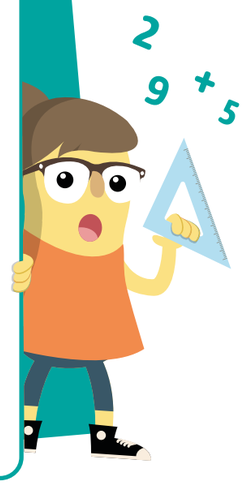
Teacher's Guide - Level 3 sample

¿What is EMAT?

EMAT is a **mathematics teaching program based on innovative methodologies** that allow for meaningful learning. Thanks to games, manipulation and context-specific activities, **your students will enjoy mathematics.**

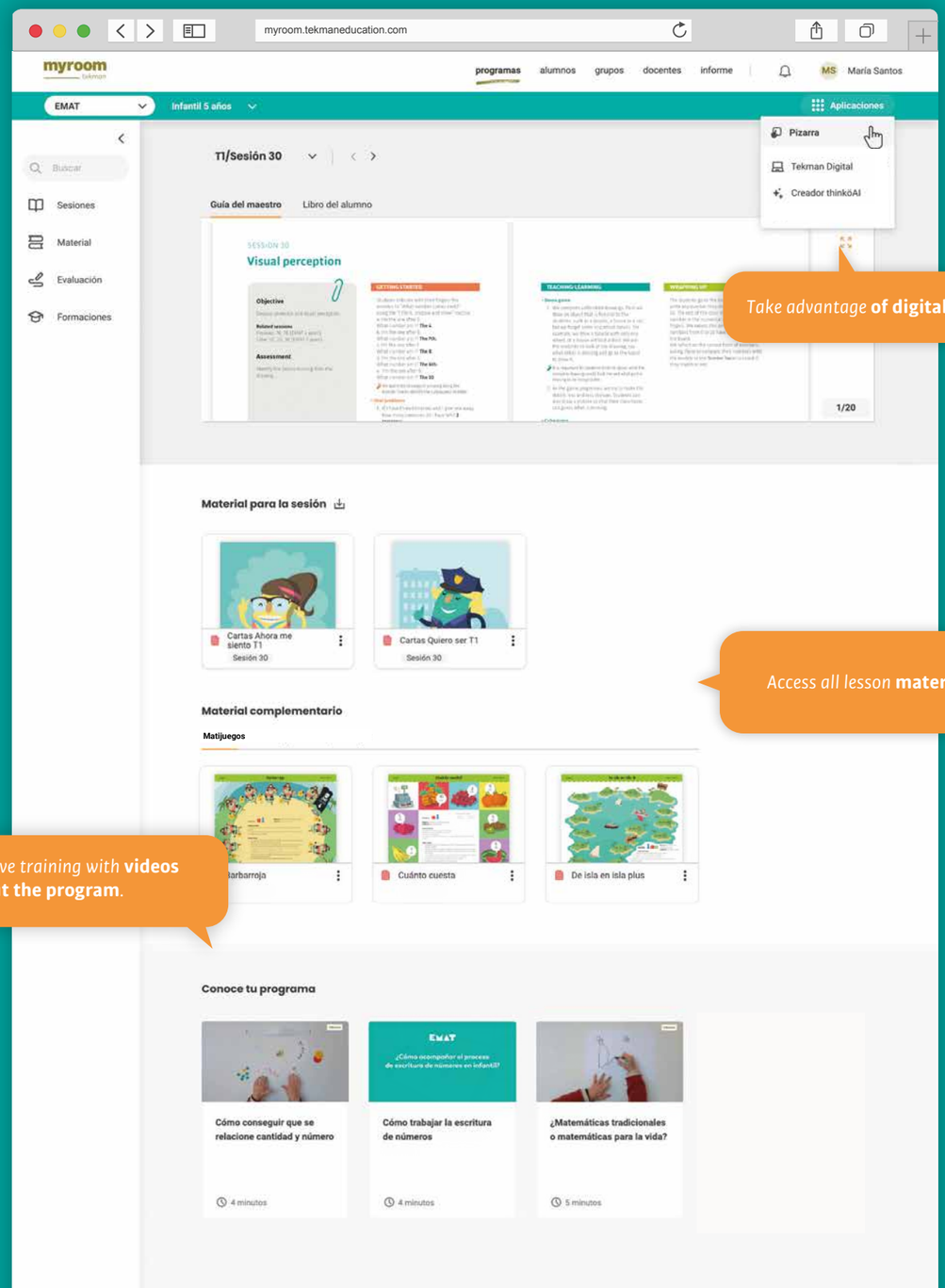
Moreover, **cyclic sequencing of the content** and the wide range of learning experiences will make it possible to achieve in-depth, long-lasting learning from an early age **while respecting all paces of learning.**

Here you will find a **selection of pages from the Teacher's Guide**, the document containing all the activities in detail, as well as the key educational aspects to plan your daily classes.



Your classroom manager day by day

myroom, your online teaching platform, provides you will everything you need to implement the program in your classroom. All the information is **organized**, **with all the necessary resources for the day**, so that you can carry out the activities in just one click!



Plan your calendar

EMAT proposes **120 lessons** over the course of 3 quarters. These lessons include the initial and final assessments, where we recommend dedicating 2 lessons to each one, and 3 learning situations, where you can dedicate between 2 and 4 lessons, depending on the time you have. Lastly, the shaded lessons are the lessons that contain an activity in the Student's Book.

1st QUARTER

Initial assessment

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	LS 1			

2nd QUARTER

37	38	39	40	41	42	43	44	45	46
47	48	49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64	65	66
67	68	69	70	71	72	73	74	LS 2	

3rd QUARTER

75	76	77	78	79	80	81	82	83	84
85	86	87	88	89	90	91	92	93	94
95	96	97	98	99	100	101	102	103	104
105	106	107	108	109	110	LS 3	Final assessment		

Lessons with the Student's Book

Understand horizontal cyclicity

In order for students to be able to use mathematics in their daily life, proposals must be designed to allow them to **build knowledge and practice math skills** in realistic contexts. The best way to **sequence this learning is by doing so cyclically**, in other words, by interspersing information throughout the weeks and quarters to link them together. We indicate the following key aspects that are worked on in EMAT, as well as the lessons they appear in, so that you have an overall view.

Kim: Numbering

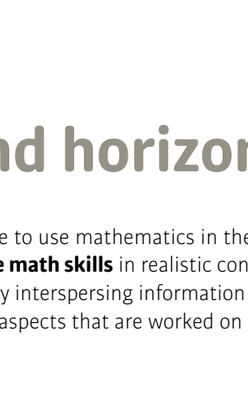
1 3 5 7 9 12 16 18 21
23 25 27 29 33 35 37 40 43
47 50 53 55 58 60 63 66 68
71 73 77 80 82 85 88 91 94
96 99 101 103 106 109

Max: Measurement

17 26 31 34
36 51 57 62
74 78 84 90
100 107

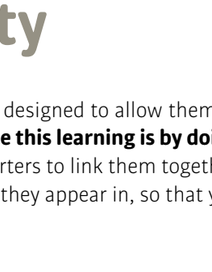
Leo: Geometry

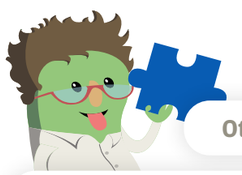
11 14 22 32
41 46 64 70
79 93 102 108



Doc: Visual perception

4 10 20 30
39 45 56 69
76 83 89 97





Otto: Logical reasoning

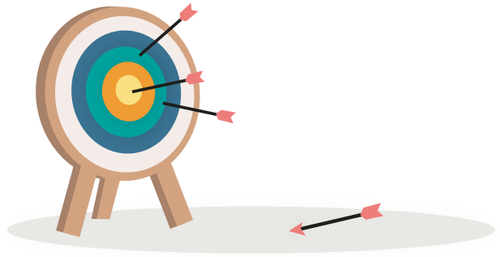
2 8 13 19 28 38
44 48 52 54 61 67
75 81 87 92 98 104

Nora: Spatial orientation

6 15 24 42
49 59 65 72
86 95 105 110

Review the objectives

- Develop critical thinking skills by applying the notions of “one more” and “one less” in everyday situations.
- Match the numbers to their corresponding quantities in an accurate and applied manner (from 0 to 7).
- Efficiently coordinate the graphical representation of the numbers (from 0 to 10) by integrating visual and manual skills.
- Use mental arithmetic strategies, including the use of materials such as Cuisenaire Rods and fingers, in counting exercises.
- Build number series in a creative and play-based way, exploring patterns by 1s, 2s and 5s.
- Compose and decompose numbers autonomously using Cuisenaire Rods.
- Solve number problems mentally and graphically, incorporating addition and subtraction operations.
- Recognize patterns in number series based on shape, size and color.
- Make groupings and quantitative matching with elements, demonstrating an understanding of number relationships.
- Discover common attributes in groups of elements, encouraging sorting and logical reasoning.
- Identify the belonging of an element to a grouping and establish relationships based on signs.
- Search for elements within a set, developing observation and visual discrimination skills.
- Build series with elements based on variable signs, promoting cognitive flexibility.
- Integrate knowledge of ordinal and cardinal numbers in a contextual and applied manner.
- Apply notions of orientation, organization and directionality in relation to oneself and objects.
- Connect dots to form geometric shapes and explore visual and spatial connections.
- Follow mazes, developing orientation and problem-solving skills.
- Build geometric shapes on the geoboard, integrating manipulation with mathematical concepts.
- Recognize and describe geometric shapes (circle, square, triangle and oval) in different contexts.
- Use grouping criteria to sort logic blocks according to attributes such as shape, color, measurement and thickness.
- Identify Geometric Shape Bits, encouraging pattern recognition.
- Compare and order objects based on contrasting notions of long, wide, high, full, empty, thin, thick, heavy and light.
- Use the notions “more than”, “less than” and “same as” in contexts of masses and lengths.
- Use mathematical vocabulary in detailed descriptions of shapes, positions and measurements.
- Experiment with probability in practical situations and mathematical games.
- Offer creative solutions and predictions in mathematical problems and transformation of elements.
- Actively participate and show an interest in mathematical games, encouraging play-based learning.
- Collaborate effectively in the distribution and collection of mathematical materials during activities.
- Show an interest in the answers and solutions provided by classmates, promoting collaboration.
- Keep students’ attention, manage impulses and participate enthusiastically in all mathematical activities.



Plan your assessment

Assessment with EMAT is an **overall**, **continuous** and **formative** assessment that is designed to help you gather information that you can then use to describe the development of your students and the achievement of the assessment criteria at that stage. We recommend the following moments of time, strategies and assessment tools.

1

INITIAL ASSESSMENT

- **When?** Before starting the EMAT lessons.
- **How?** Carry out specific activities on mathematical skills for no more than 4 lessons and write down the difficulties and potential that you identify in your students.
- **Tools:** initial assessment activities available in this guide.

2

SYSTEMATIC OBSERVATION

- **When?** In the lessons.
- **How?** Regularly write down the achievement of the lesson’s objective, choosing students based on previous observations.
- **Tools:** assessment indicators of the lesson.

EVIDENCE OF THE PROCESS

- **When?** In the lessons.
- **How?** Regularly document the development of math skills, focusing on the process.
- **Tools:** pages from the Student’s Book and photographs of the learning experiences.

At the end of each quarter, we recommend that you gather all the observations and evidence and analyze them together with the *Competence Rubric*, available in myroom, for the level of achievement of the assessment criteria.

3

FINAL ASSESSMENT

- **When?** At the end of the EMAT lessons.
- **How?** Carry out specific activities on mathematical skills for no more than 4 sessions and assess the level of achievement.
- **Tools:** final assessment activities available in this guide.

SELF-ASSESSMENT

The lessons also contain self-assessment and co-assessment proposals for students that relate to learning processes and cooperative work. They will help students improve their self-regulation and autonomy.

Discover learning situations

Learning situations are tasks and activities that are based on a challenge or a problem and allow students to practice knowledge and skills in an integrated and context-specific manner. It enables students to develop their competences and transfer their learning to real life.

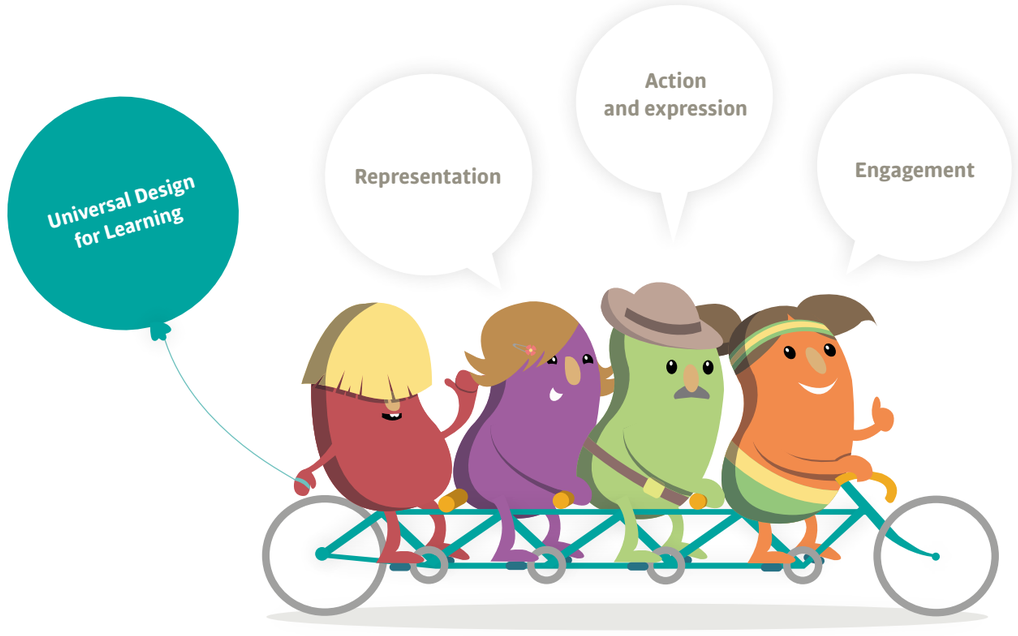
The EMAT lessons provide you with context-specific activities that will allow for developing this competence. Furthermore, we designed 9 learning situations to carry out over the course of several lessons: 3 of these situations are developed in the Teacher's Guide, one at the end of each quarter, and the rest are complementary and explained in the Classroom Programming.

What do the situations contain?

The learning situations are characterized by entailing a complex challenge for students that is adapted to their developmental age, presenting an authentic context and using active methodologies. For example:

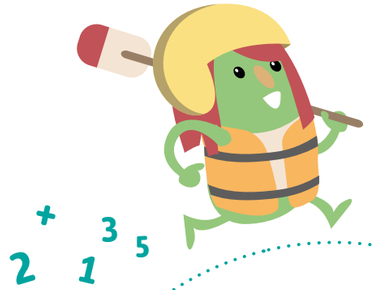
- **Challenges:** they can be formulated as a question to be answered, a product to be made or an action to be carried out.
- **Contexts**: framed within the daily work of the classroom, the school, the family and the immediate surroundings.
- **Methodologies:** methods such as manipulation, cooperative learning, the culture of thinking, reflection, and self-regulation of one's own learning or emotional education are integrated.

Moreover, the learning situations are designed to respond to diversity in the classroom and break down the barriers of learning and participation. To achieve this, we use the **Universal Design for Learning**, a teaching framework in which students find multiple ways:



How are the situations developed?

The learning situations consist of one or more activities and should allow for a resolution process that includes complex reasoning and resolution skills. That is why it is necessary to start with an initial challenge and sequence the tasks, based on the moment of resolving the same, with processes such as the following:



1. Activate knowledge and analyze the context.
2. Understand and practice knowledge, explore and practice.
3. Integrate knowledge and skills, apply and reflect.

Specifically in EMAT, the learning situations allow students to use different forms of mathematical reasoning, representation and communication in meaningful and functional contexts.

Create a mural with the learning situation in your classroom!

Learning situations should promote the comprehensive development of competences in all areas. Creating a learning mural in your classroom is a good strategy to facilitate this aspect and it will also be an excellent opportunity to gather evidence of learning... and motivate your students!

LESSON 4

Visual perception

Objective

Develop attention and visual perception.

Assessment

Identify the missing details in the drawing.

Related lessons
Previous: 76, 78 (EMAT Level 2)
Subsequent: 10, 20, 30 (EMAT Level 3)

Materials

Student materials
- *Number Tracing*

Classroom Box
- EMAT Cubes
- Number line

WARM-UP

Students use their fingers to indicate the answers to "What number comes next?" using the routine "Think - Prepare - Show":

a. I am the one that comes after number 3. What number am I? **The number 4.**
b. I am the one that comes after number 6. What number am I? **The number 7.**
c. I am the one that comes after number 7. What number am I? **The number 8.**
d. I am the one that comes after number 5. What number am I? **The number 6.**
e. I am the one that comes after number 9. What number am I? **The number 10.**

We apply the strategy of moving along the number line to identify the next number.

- **Story problems**

1. If I have three tomatoes and I give one away, how many tomatoes do I have left? **2 tomatoes.**
2. Patricia has four muffins and eats three. How many does she have left? **1 muffin.**
3. Fernando has two cars and Marta has two cars. Who has more? **They have the same number of cars.**

Classroom management

Before playing **CubeGame** or **MathGame**, we suggest playing a demo game by projecting the game from **myroom** so that students understand the rules and flow of the game in a practical and visual way. It also allows us to clear up any doubts, thus ensuring more active participation and a more enriching game experience.

TEACHING-LEARNING

- **DemoGame**

1. We complete unfinished drawings. First, we draw an object that is familiar to students, such as a bicycle, a house or a cat, but we leave out an important detail. For example, we draw a bicycle with a single wheel, or a house without a door. We ask students to look at the drawing, say the detail that is missing and go up to the blackboard to draw it.

It is important for students to think about what the complete drawing would look and what part is missing for it to be recognizable.

2. As the game progresses, we try to make the details less and less obvious. Students can also draw a picture so that classmates can guess what is missing.

- **CubeGame**

1. We play with *Cubes* and *number line* using the cubes. Students are placed into groups of two or more or they can all participate together.
2. We draw a number line on the floor or on the blackboard, leaving some numbers blank.
3. Students must use the cubes to identify and represent the numbers that are missing on the number line.

We play with *Cubes* and *number line* to identify missing numbers up to 10. The objective is to reinforce recognition and sequencing of numbers up to 10. We suggest playing a demo game so that the group understands how the game works.

WRAP-UP

Students go up to the blackboard one by one and write down any number they choose between 0 and 10. The rest of the class uses their fingers to show the next number in the number sequence. We repeat this process until all the numbers from 0 to 10 have been written on the blackboard. We reflect on the correct shape of the numbers, asking students to compare their numbers to the *Number Tracing* models to check whether they coincide or not.

Page of the Student's Book

In a large group, students complete the first row of the page of the **Student's Book** by identifying and drawing the kites that are missing and the rest of them, individually.

LESSON 6

Spatial orientation

Objective

Identify the geometric shapes studied.

Assessment

Recognize the geometric shapes in the set of geometric shape cards.

Related lessons
Previous: 33 (EMAT Level 2)
Subsequent: 22 (EMAT Level 3)

Materials

Student materials
- *Tracing Shapes*

myroom
- Learning cards: *numbers*
- *Geometric shape* cards

Others
- Geoboard and bands
- Magic function robot

PARA EMPEZAR

- **Story that makes you think**

Robot dreams
Rita is a great dreamer. When she closes her eyes really hard, she can see all of her friends from different stories, but lately a magic robot visits her dreams.
It is a giant robot, with bright lights and buttons everywhere. On the top, it has a hole where you can insert items and, at the bottom, it has a very tiny door.
One night, Rita decided to try something special. She inserted her favorite pencil into the robot's hole! And boom! The robot started to shake a lot and then it took out two pencils from the little door below! Cling, cling, cling!
"It's amazing!", says Rita in her dream.
"I am now going to try with these two pencils!"
So, she inserted the two pencils and cling, cling, cling! Three pencils appear!
"What do you think the robot is doing?".
It always takes out one more item than the item inserted (one more pencil, etc.).
"Great! I can have all the pencils I want!", exclaimed Rita. "Now I'm going to insert my favorite stuffed animal."
And when Rita inserts the stuffed animal into the robot... cling, cling, cling!
"What do you think happened?" **2 stuffed animals.** Another reasonable answer would be **1 pencil and 1 stuffed animal.**
"2 stuffed animals! Exactly what I thought!", says Rita.
"I would like to know how many pencils I will get if I insert four," she thinks.
"How many pencils will she get?" **5 pencils.**
"He really is a magic robot," Rita thinks in her dream. If I insert four pencils and get five, what will happen if I insert five?"
"What will happen?". **6 pencils will come out.**
"1, 2, 3, 4, 5, 6 pencils, just what I thought!", exclaimed Rita. "This robot is magic; it always takes out one more item than what I put in."
"What would happen if, in addition to pencils and stuffed animals, I put in Blus, Piti and Mini's dog?", wonders Rita, excited.
"What will happen?". **2 dogs will come out (answers may vary greatly).**

Right then, a distant barking wakes Rita up. It's a shame because it would have been great to know what would have happened if she had put Blus in the magic robot!

ENSEÑANDO-APRENDIENDO

- **DemoGame**

1. We present the magic function robot. We choose a volunteer to be the first to try it. We talk to them about the rules of the robot; for example, the magic robot always wants to take out one more object than we put in (n+1).
2. We give tokens to the volunteer. They add one more token to the initial number that was inserted and take out the tokens through the robot's slot, following the rule.
3. We ask the other classmates to discover the robot's rule by predicting how many tokens will come out, using simple examples such as: "If someone inserts four, how many do you think will come out?". We help students understand the rule by asking them questions that help them deduce how the robot works.

- **Actividad manipulativa**

1. We show the *Geometric shape* cards, recalling the name and characteristics of each shape. We focus on the rhombus and the trapezoid. We ask: "What objects do you have at home with these shapes or where can we find these shapes?".

   We explain that trapezoids and rhombuses are polygons, closed shapes made of straight lines. We emphasize that a trapezoid has two parallel sides and that a rhombus has four equal sides that are parallel pairs.

2. We divide the geoboard to build shapes. We talk to students about the name and properties of the shapes that have been built. We ask questions such as: "What shape did you build?". **A triangle.** "How many sides does it have?". **3.** "How many vertices?". **3.**
3. We repeat the process with other shapes.

PARA ACABAR

We ask a volunteer to summarize the story to make you think. Then in a large group we ask: "What did you like most about the story?".

Magic Blackboard

Students practice tracing geometric shapes on the **Magic Blackboard** with *Tracing Shapes*.

LESSON 9

Numbering

Objective

Recognize the graphical representation of the numbers studied.

Assessment

Visually identify the graphical representation of the numbers from 0 to 4.

Related lessons
Previous: 3 (EMAT Level 3)
Subsequent: 16, 29 (EMAT Level 3)

Materials

Classroom Box
- Number cards
- EMAT Rods

myroom
- Learning cards: *numbers*

Others
- Jars for counting, tokens
- Different objects (buttons, bottle caps, colored sticks, etc.)

WARM-UP

We take the number cards and randomly select two. Students observe them and say all the numbers that are between the two numbers appearing on the cards.

We can help students by using the number line from 0 to 10 on the digital blackboard. On the number line, we circle the two numbers that appear on the cards so that it is easier for them to identify the numbers that are in the middle.

- **Story problems**

1. Clara the Hen lays two eggs and Juliana the Hen lays one. How many total eggs do the two hens lay? **3 eggs.**
2. If I already jumped three times out of four, how many jumps do I have left? **1 jump.**
3. How many are one elephant and one elephant? **2 elephants.**

Focus on diversity

- **Oxygen**
  Students can complete the manipulative activity with between 0 and 5 tokens.

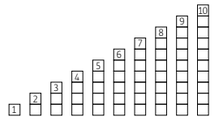
- **Challenge**
  Students can expand the manipulative activity by inserting different types of objects into the jar and estimating how many objects of each category there are. Then, they verify their estimates by counting each type of object separately.

TEACHING-LEARNING

- **DemoGame**

1. We give each student a set of EMAT Rods (1-4) and ask them to form a ladder by ordering the rods from the shortest to the longest. Then, they explore "greater than" and "less than" relationships by comparing the lengths of the rods.

We initially let students share their ideas. If some of them do not respond, we can help them by placing the rods on the table, one next to the other, so that the students can compare lengths.



2. We play "Which one is the EMAT Rod?" in pairs. One student picks up an EMAT Rod and both students observe it to see how many squares it has. Then one of the students turns around while their partner picks up another rod. The first player tries to guess the rod without counting, based on the comparison of lengths.

- **Manipulative activity**

1. We play "Counting with Jars". A student volunteer inserts a number of tokens into the jar and asks their classmates to estimate the number of tokens without revealing the actual number.
2. After students have made their estimates, we check the exact number of tokens inside the jar.
3. We talk about how they made their estimates, what strategies they used and how they arrived at that amount.

If we have more time, students can play in pairs and swap roles so that each student has the chance to insert a number of tokens and estimate the amount in another jar.

WRAP-UP

We listen to the *Cantamos hasta 10* song and we ask students to pay close attention to what they will hear about numbers.
We play the song for the second and last time and ask them questions such as:
"What is the number 0 like?". Round like a chickpea. "What does the nose of the number 4 look like?". Like a sweet potato

LESSON 11

Geometry

Objective

Recognize the characteristics of geometric shapes.

Assessment

Describe some properties of the geometric shapes studied.

Related lessons
Previous: 43, 103 (EMAT Level 2)
Subsequent: 14, 22, 32 (EMAT Level 3)

Materials

Student materials
- *Reproduce shapes*

Magic blackboard

Classroom Box
- *Logic blocks*
- *Build shapes on the geoboard*

myroom
- Learning cards: numbers
- *Leo Looks for Shapes* MathStory

Others
- Rubber bands
- Geoboard and rubber bands

Classroom management

Organize the classroom space in a way that facilitates the use of manipulative materials, both in groups and individually. For example, you can have a math corner, a shelf with labeled boxes, a table with trays or baskets, etc

WARM-UP

Students state the differences between a circle and a square: **One has vertices, or corners; One has sides; One rolls.**
Then they will look for the differences between a square and a triangle.
Students should group objects from the class or logic blocks to form collections with different criteria: differences, similarities and order.

- **Problem of the day**

Magicians do amazing things:
I saw them make a person disappear, take a dove out of a hat, levitate above the ground and make coins disappear from their hands.
How many tricks did I see them do? **4 tricks.**

To solve the problems, we use the strategy of staging the problem by taking on roles.

TEACHING-LEARNING

- **MathStory**

1. We watch the *Leo Looks for Shapes* MathStory and we ask: "What geometric shapes did Leo find?".
2. We organize students into groups and each group chooses a geometric shape: Students represent the shape using their body or rubber bands.
   Students create different geometric shapes using the rubber bands on the geoboard and *Build shapes on the geoboard*.

We can have a math space in the classroom to incorporate projects that are made during activities. This practice makes it easier to connect with the learning studied throughout the preceding days as well as to make student thinking visible.

- **DemoGame**

1. We give each student a logic block.

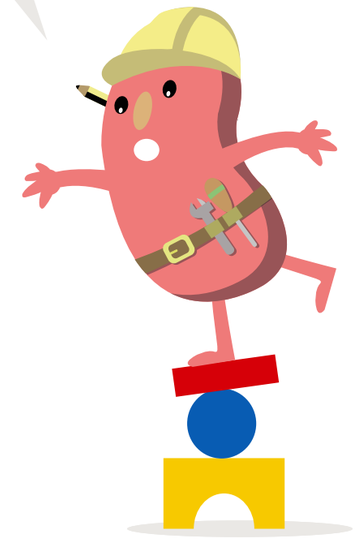
   We first make sure we have two blocks that are identical to each block given to the students.
2. We ask them to walk around freely showing their block to their other classmates, but without showing it directly so that they can only see a glimpse of it.
3. When they find someone with a block they think is the same as theirs, they move closer and compare the blocks to see if they really are the same. If the blocks are identical, they stay together. If the blocks are not the same, they keep looking for another classmate with a similar block.
4. We ask if they can tell us which shapes are the same. They have to show us their shapes and verify whether they are the same or not. We observe them and help if necessary. We repeat the exercise a couple of times.
5. When students show ease in exploring and matching shapes, we challenge them to find trios or quartets of identical blocks.

WRAP-UP

We ask, "How do you know if two shapes are exactly the same size and shape?". Students should say: **By putting one shape on top of the other; if you put one on top of the other, they fit perfectly like a puzzle.** We explain that congruent shapes are geometric shapes that have exactly the same shape (being an enlarged, reduced or rotated version of the other shape, but maintaining its proportionality and congruence), the same size and the same measures.

Magic Blackboard

Students draw different geometric shapes on the **Magic Blackboard** with *Reproduce shapes*.



LESSON 17

Measurement

Objective

Compare objects based on their length.

Assessment

Make a reasonable estimate with the wound string.

Related lessons
Previous: 40, 80, 87 (EMAT Level 2)
Subsequent: 62, 71, 76 (EMAT Level 2)

Materials

myroom
- Learning cards: *numbers*

Others
- String of different lengths
- Objects of different lengths

Classroom management

This is a good time for members of the group to reflect on their own learning process and that of their classmates, offering constructive feedback.
Allow time for students to discuss and share their discoveries, concerns, opinions and emotions. This will allow you to assess each student's level of understanding and participation, as well as address any remaining questions.

WARM-UP

We divide students into small groups and provide them each with a long string and a short string. We ask them to compare the length of the two strings and say which one is longer and which one is shorter. Next, we ask them to wind each string forming a spiral or a coil and we ask, "Which string seems longer?" and "Which one seems shorter?".

- **Story problems**

1. I won one trophy on Monday and two on Wednesday. How many did I win in total? **3 trophies.**
2. I have two buttons and a friend gives me two more. How many buttons do I have now? **4 buttons.**
3. María, Berta, Marcos and Andrea are having lunch. How many girls are having lunch? **3 girls.**

TEACHING-LEARNING

- **DemoGame**

1. We introduce the concepts of "shorter" and "shortest".
2. We start by showing some string and explaining that students are going to discover things that are shorter than the string.
3. We choose two objects, one that is longer than the string and one that is shorter. We show how the short object is "shorter" than the string while visually comparing both objects.
4. We show some objects and ask students to say which objects are shorter than the string.
5. Once all their objects have been identified, we ask them to put them together to compare them with the string and determine which one is the "shortest" of all the objects collected.
6. We talk about why they think a certain object is "the shortest" to reinforce the idea of size and comparison.

- **Cooperative DemoGame**

1. We organize students into cooperative teams of four.
2. We assign the cooperative work roles. Leader: leads the activities and the cooperative assessment. Reporter: collect the group's input. Supervisor: coordinates the materials, the time and the right to speak. Cheerleader: encourages group participation and represents the group as a whole.
3. We give string to each team and ask them to move through the space looking for objects that are shorter than the string provided. After 5 minutes, we ask them to show us the objects they found that are shorter than the string.

We recall the importance of using mathematical vocabulary: shorter, shortest.

4. As a whole, each group must determine which object they consider to be "the shortest" by answering the question: "What object do you think is the shortest?".

WRAP-UP

We ask each student, "How did you know if something was shorter than your string?". We expect answers of the type: **I compared it; I used my string to measure, etc.** Then, in pairs, students sort a group of three objects of different lengths that they should measure with their string.
Each student has to identify a short object, a shorter object and the shortest object.

Page of the Student's Book

Students complete the page of the **Student's Book** individually: we read the instructions aloud and guide them with questions such as: "Which object is the shortest?" or "Which is the longest?".

LESSON 44

Logical reasoning

Objective

Make one-to-one correspondences.

Assessment

Make correspondences correctly with elements in the classroom.

Related lessons
Previous: 8, 90 (EMAT Level 1)
Subsequent: 10 (EMAT Level 1)

Materials

myroom
- Learning cards: *numbers*

Other
- Images of rabbits and carrots

WARM-UP

We prepare the learning cards (+1 series) and start the sequence: "1, 2, 3, 4, 5, 6, 7, 8... stop". We ask students to guess the following number. When a student guesses it, we show the corresponding number card. Next, we ask them for the pattern of the series.

We can use the number line on the myroom digital blackboard to guess the following number.

- **Story problems**

1. Cristina drew a square and a rectangle.
2. Which one has more sides, the square or the rectangle? **Neither, they both have the same number of sides.**
3. Sebastian drew a triangle and a square. Which one has more sides, the triangle or the square? **The square.**
4. Manuel drew a big triangle and a small rectangle. Which one has more sides, the big triangle or the small rectangle? **The small rectangle.** Which one has fewer sides? **The big triangle.**

We recall the importance of using geometric vocabulary to name the elements of geometric shapes.

Focus on diversity

- **Oxygen**
  Students can complete the DemoGame activity with 6 rabbits.

- **Challenge**
  Students can expand the DemoGame activity with 20 rabbits.

TEACHING-LEARNING

- **DemoGame**

1. We play "Feeding Rabbits" to work on one-to-one correspondences.
   The proposed situation consists of going to the greengrocer to get food for some rabbits in the classroom. The idea that each rabbit only gets one carrot will allow students to determine whether there are more rabbits than carrots, or vice versa.
   We show 10 rabbits and ask a volunteer to go to the greengrocer to get carrots for the rabbits. At the greengrocer there are only three baskets with 8, 12 and 15 carrots (we have chosen these quantities so that students can say, in one case, that there are more carrots than rabbits and, in another case, that there are more rabbits than carrots).
   The volunteer chooses a basket, for example, the one with eight carrots. They take it and leave a carrot on top of each rabbit.
   When making pairs, they realize that some rabbits do not have carrots.
   Then we ask, "Do all the rabbits have a carrot?"; "Do we need more carrots?"; "Why?"; "Are there more rabbits or carrots?".
   Next, we ask the first volunteer to return the carrots and another volunteer to go to the greengrocer to get another basket, but this time we should have enough carrots.
   We assume that now the student choose the basket with 12 carrots. The volunteer makes pairs with the two sets and we see how, in this case, all the rabbits have a carrot and there are also leftover carrots. Now there are more carrots than rabbits.
2. To finish, we give the students a challenge: they have to go to the greengrocer to get carrots, but this time there should be no missing or leftover carrots and they can only make one trip.

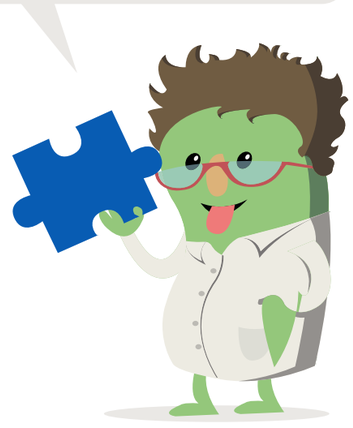
One-to-one correspondence is the ability to pair one object with another object, or pair an object with its corresponding number while we count.

WRAP-UP

We ask: "What strategy did you use to go and get the carrots?"; "Why do the other strategies fail?"; "Is it good to know how to count?"; "How did you know if there were more carrots or more rabbits?".
We positively assess all the strategies used by students. We reinforce the idea that there are multiple options to solve the problem.

Page of the Student's Book

Students complete the page of the **Student's Book** individually by making the one-to-one correspondences. When they finish, in a large group we check to see if everyone found the train with the most carriages.



Building a school garden

The learning situation is designed to work on the number sense (quantity, counting and order of operations) and the measurement sense (measurement), without forgetting the socio-affective sense. This learning situation is related to SDG 12 (responsible consumption and production) aimed at ensuring sustainable consumption and production patterns.

In "Building a school garden", objects are counted and sorted, length measurements are studied and ordinal numbers from the first to the tenth are identified. The proposed final product is the creation of a school garden to address the lack of healthy food in a city neighborhood due to limited useful space for planting.

Materials

myroom
- *Ladder of metacognition*
- *Programming of learning situations*

Learning objectives

- Apply the notions of "orientation" and "direction" in relation to oneself.
- Apply subtraction or addition to solve problems.
- Experiment with the notion of "half".
- Use the "+" and "–" signs.
- Identify the ordinal numbers from the first to the tenth.
- Experiment with notions of orientation and direction.
- Take length measurements.
- Encourage autonomy when making decisions in problem-solving situations.
- Actively participate in teamwork.
- Recognize mistakes as an opportunity in learning mathematics.

1

ACTIVATION
What do we know about gardens?

1. Students find several baskets of fruit and vegetables in the classroom, and we let them experiment with them freely. Then, we talk about the produce: we describe them (their shape, their smell, their color, their size, etc.), whether they are familiar with them, if they know where they come from, etc.
   The idea is for students to briefly get to know the foods and ask questions. Some of the main questions we want to hear are: "What do these foods have in common?"; "Where do they come from?"; "What is a garden?".

   The initial situation aims to catch the attention of students so that when they carry out the activities, they work on the proposed knowledge and develop specific competences almost without realizing it.
2. We present what students are going to learn (learning objectives) with the development of the learning situation.

2

CONTEXT
What is happening in the neighborhood?

1. We explain the problem to make it easier to understand: in a neighborhood of our city, we learn that there are not enough healthy foods for everyone. The lack of space for planting and the difficulties of obtaining fresh food have become a problem.
2. In a large group, we explore the variety of foods (fruit and vegetables) that can be grown. To do this, we prepare a game with cards that have pictures of food that can be grown and others that cannot be grown. We place the cards in a 6x6 grid and students must find the foods that can be grown by ordering "forward, backward, left, right". Once found, we count the frequency of each food. Lastly, we paste the pictures of the foods on a graph and for each food found, we mark an "X" in the corresponding column. When we finish, we talk about the food that was found more or less often, encouraging the use of mathematical vocabulary such as more, less, same as, etc.

3

EXPLORATION
What information do we have about the problem?

1. We proceed to analyze the information that we have so far by brainstorming. Then, in a large group we proceed to answer the questions:
   "What is the problem presented to us?"
   "What do we know?"
   "What do we need to know?"

   We guide the practice so that students complete the sentences with the missing words. Thus, we allow students to work in groups and we foster the participation of all students. We put the answers on the learning situation mural.

4

ORGANIZATION
How could we solve the problem?

1. We start a joint dynamic search for information, such as looking for books about vegetables, consulting seed catalogues, etc. Then, we talk about the information found.
2. We decide on how we can solve the problem (we create the school garden) and we analyze what space of the school can be used for our school garden. Once the space in the school is located, we can ask students to use geometric shapes to design the garden space on the page. We ask them to contribute ideas and we can give some examples: they can use a circle to represent the planting area, squares or rectangles for paths, triangles, for example, for a pond.

Assessment

Challenge:

Creation of a school garden.

Individual challenge, through daily observation and experimentation (through the different activities):

- Recognize mathematics present in everyday life.
- Understand the questions raised.
- Make simple mathematical guesses.
- Use appropriate strategies to solve the problem (counting and sorting objects, adding and subtracting, experimenting with the notions of orientation and direction, and measuring objects).
- Find possible solutions to problems in a guided way.
- Recognize mistakes as an opportunity in learning mathematics.
- Actively participate in teamwork.
- Communicate possible mistakes with assertiveness.

5

STRUCTURING

What foods can we plant in the school garden?

1. At this point, if necessary, we read the problem again and leave five minutes to review the ideas that have come up so far.
2. It is time to plan how the school garden should be organized. We decide which fruit, vegetables and herbs we want to plant in the garden and how many.
3. We make groups of 3-4 students and we distribute the food.

We can guide students to decide how many seeds to plant for each of the foods. We ask them to discuss the different answers and review them in a group.

6

APPLICATION AND VERIFICATION

How do we distribute our school garden?

1. We say that we already know the number of seeds that we want to plant for each fruit and vegetable. As a group, we add all of them up and consider the arrangement of the plants to make the most of the available space. We draw the school garden and the arrangement of the seeds on the blackboard, also taking into account the space that each food will need to grow.

We work with students on the concepts of "more" and "less" in relation to the number of seeds. We guide the reflection with questions such as: "For which vegetables do we need more seeds?"; "Do we have 'more' or 'less' carrots than tomatoes?", etc.

2. We encourage students to complete the garden design created on the page with the number of seeds and the distance between them.

We guide students to decide on the distances between the seeds (in centimeters), depending on the available space.

FINAL PRODUCT

Creation of the school garden

1. In a large group, we think about what we are going to need to create the school garden. We make a list on the blackboard that includes fertilizer, irrigation and necessary materials.

If there is not enough time to develop the final product within the Mathematics area, it may be interesting to develop the learning situation from an interdisciplinary perspective.

7

REFLECTION

Let's all reflect together

1. In a large group, we reflect on what students learned, how they learned it and in what other situations they will be able to use it.

We end the lesson by projecting the **myroom** *Ladder of Metacognition*. We ask students to reflect on the learning process carried out during the learning situation.

EMAT materials

EMAT offers a set of materials to consolidate meaningful learning. Student materials include manipulative material and the notebook. Teachers have a detailed Teacher's Guide and access to myroom, the classroom manager that includes digital resources and training. Complete classroom materials are essential to be able to carry out the manipulative activities.

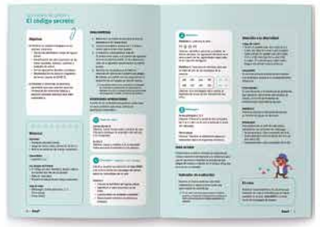
STUDENT MATERIALS

1 uni **Student's Book**

1 uni **Student materials**

1 uni **Magic Blackboard**

TEACHER MATERIALS



1 uni **Teacher's Guide (online)**

1 uni **myroom**

CLASSROOM MATERIALS

Classroom materials box + Individual case for the complete stage

Training and support

We propose several training and support models throughout the course so that in addition to getting the most out of your program, you can make great strides in your teacher training.

Personalized itinerary

Meetings with families
Support in communicating to families how their children learn with the program.

Advice and support
Resolving pedagogical concerns and support with the implementation of the program in the classroom.

Events in different cities

In-person tekman Academy
On-site training with leading speakers in education.

tekman Laboratory
Training sessions to share experiences with other teachers and receive training on the main topics in education.

Always available online

Training in tekman programs
Online courses to master the program and ensure optimal implementation.

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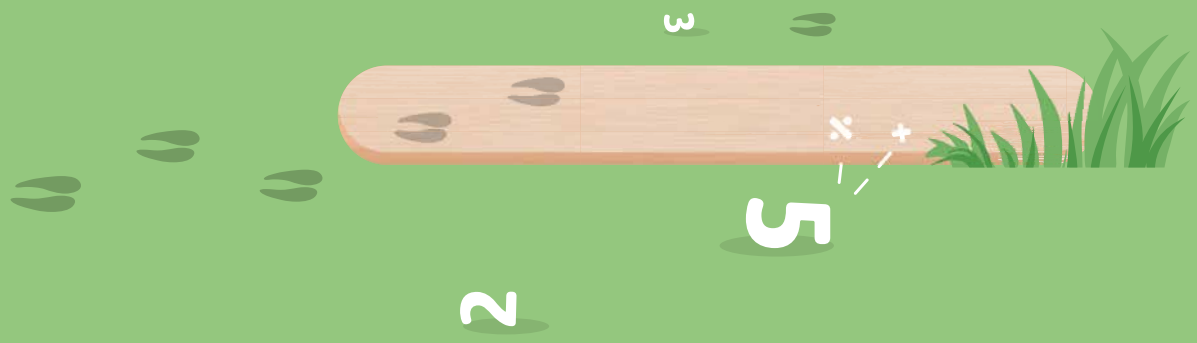
Online talks, conferences and interviews with professionals and experts in education.

EMAT is a mathematics teaching program based on innovative methodologies, which develops mathematical competences from the beginning of the early childhood education stage.

Its sequence is designed to foster a gradual understanding adapted to the developmental and cognitive level of the youngest students, while ensuring continuity with the later stages.

Thanks to the great range of cooperative, reflective and experiential situations, all students connect with mathematics.

With EMAT, mathematics are used and enjoyed.



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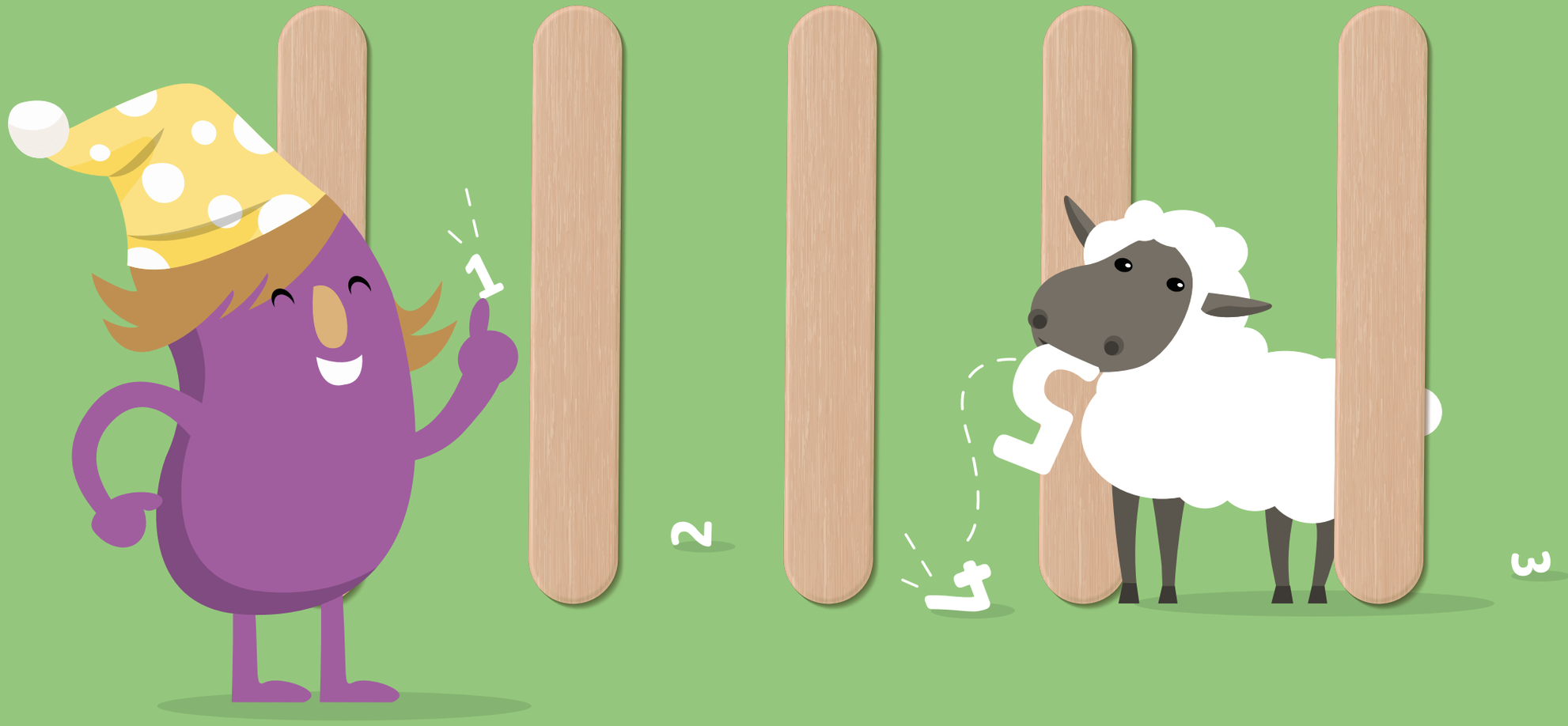
EMAT

• mathematics for life •



Level 3 sample

Name

.....

With **EMAT**, we work on all adapted mathematical concepts
at students' maturational age, based on **six aspects**:

Measurement

Numbering

Geometry

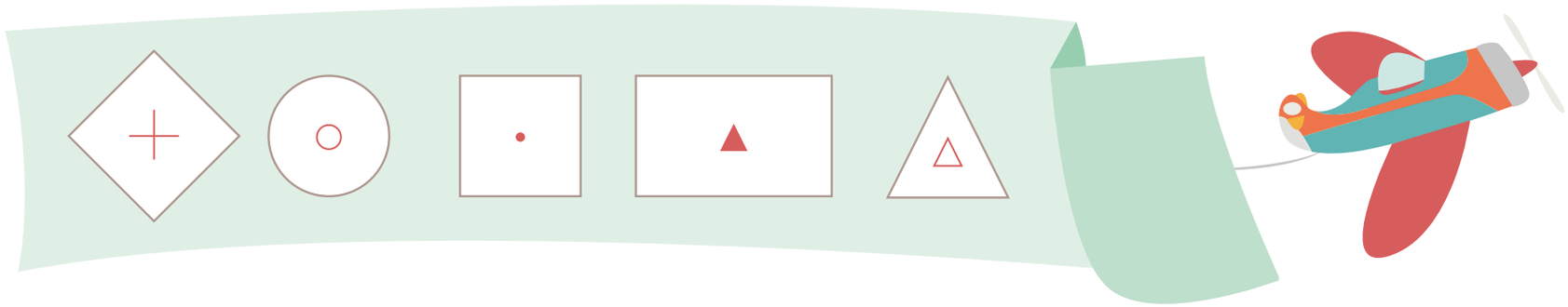
Visual perception

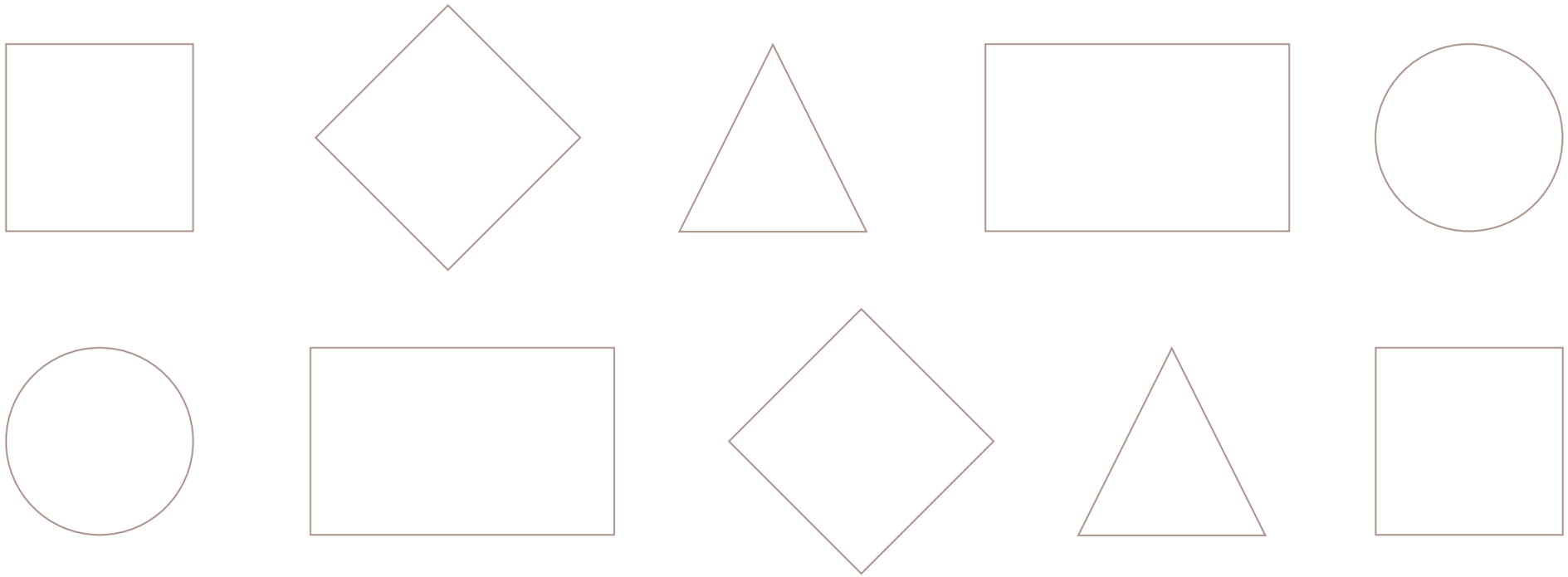
Spatial orientation

Logical reasoning

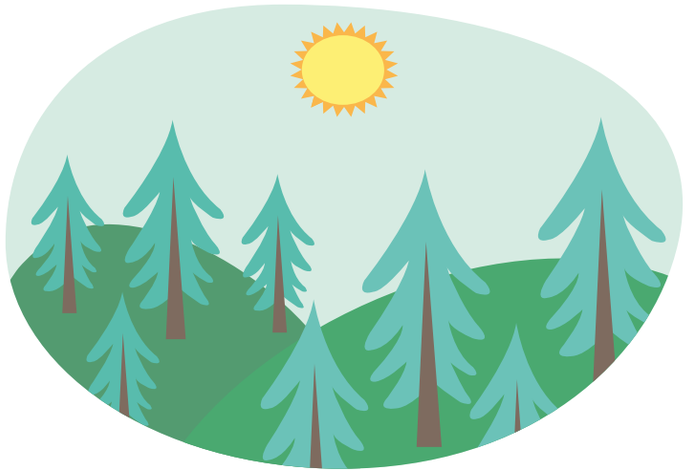
EMAT

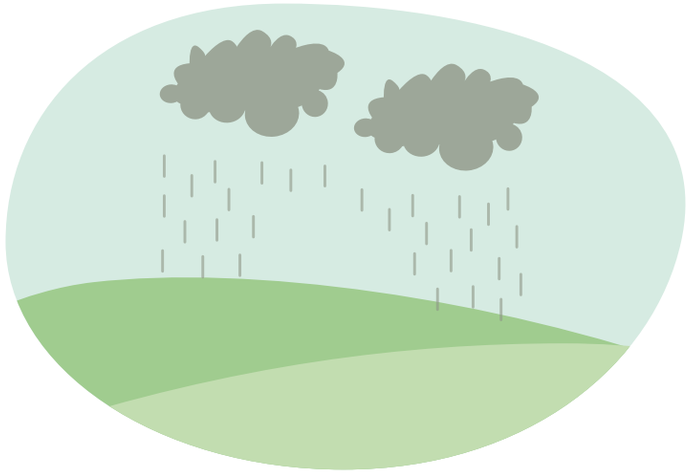
Initial assessment • Complete the figures according to the model.

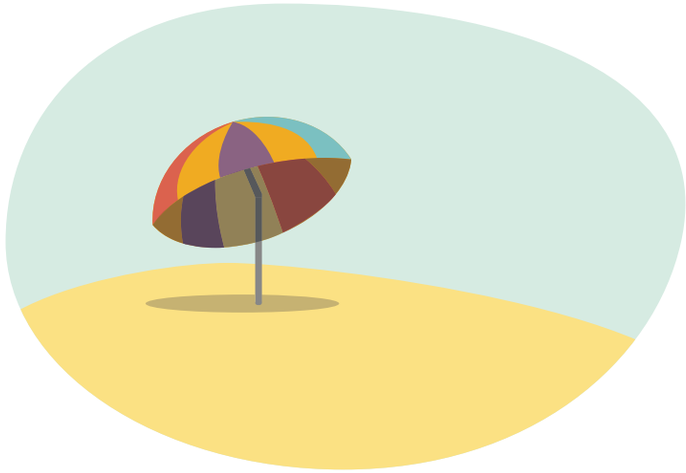




Initial assessment • Draw a cloud under the sun, a bird above the house, a flower under the rain and a towel under the umbrella.

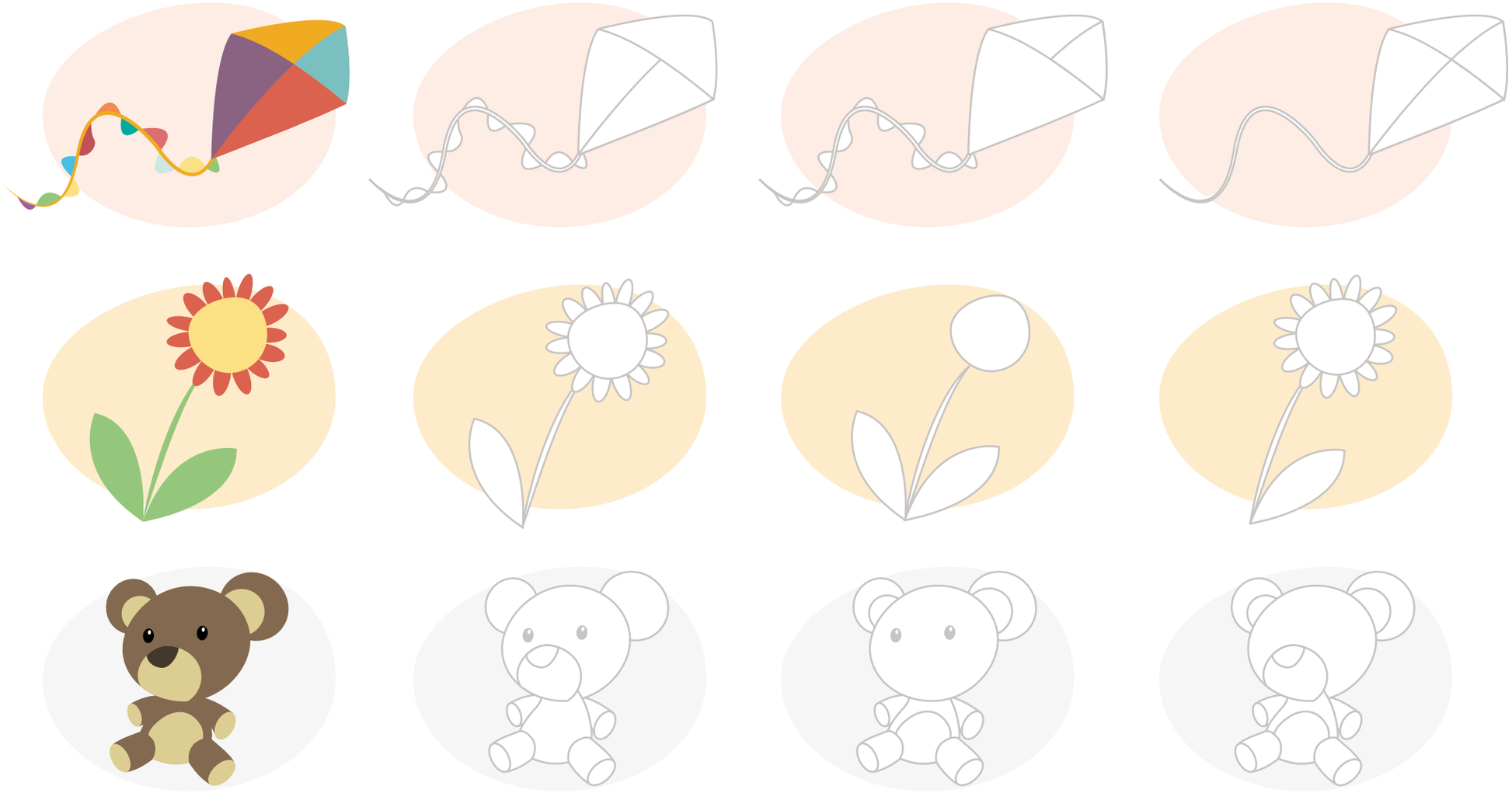




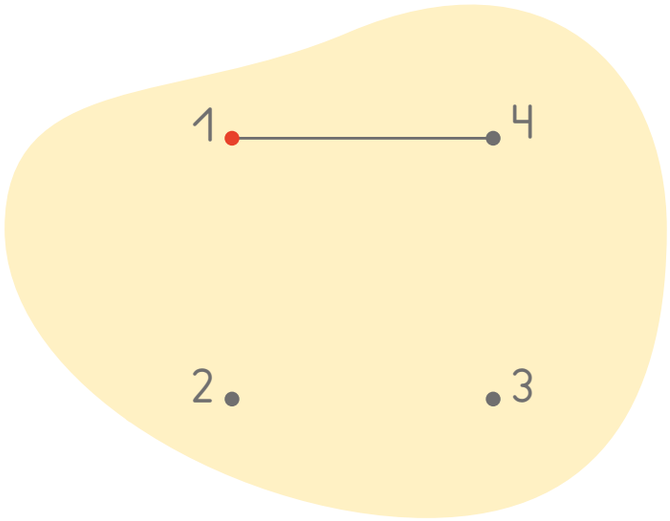


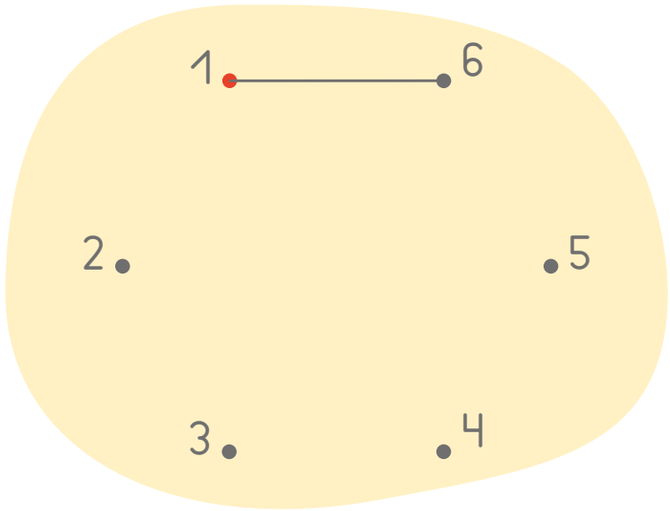
EMAT

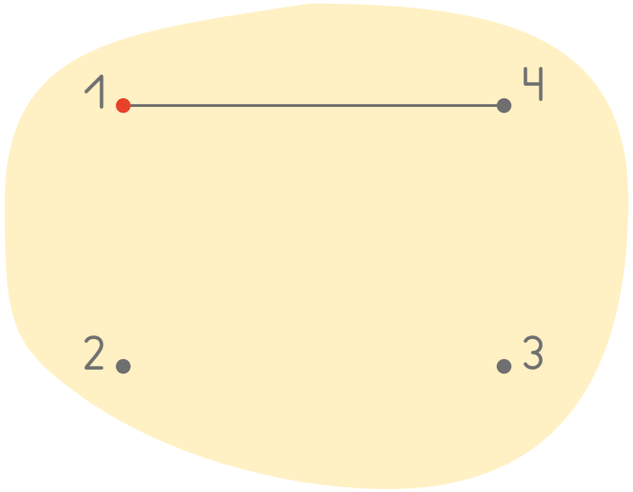
Look at the first figure in each row and draw what is missing from the ones that follow it.

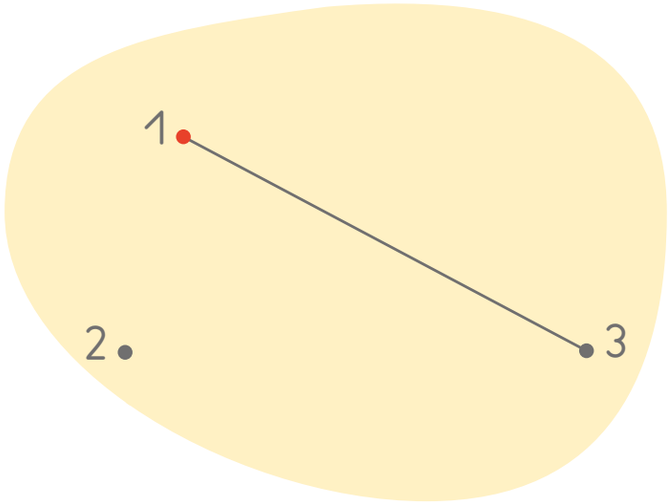


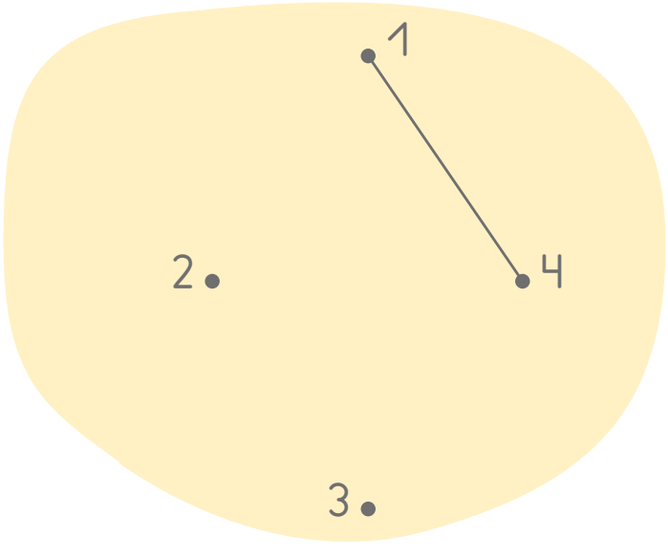
Connect the dots to build plane shapes.

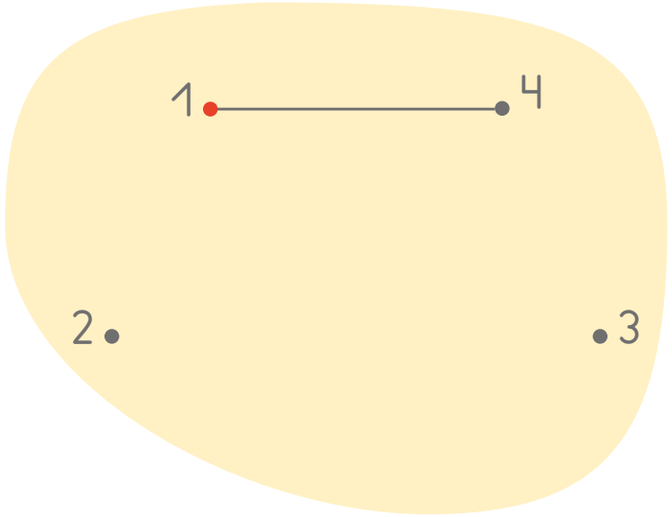












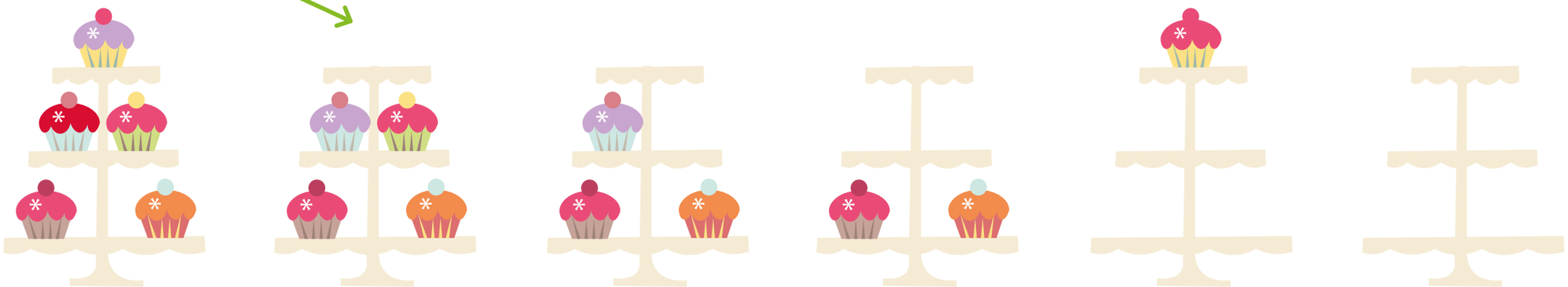
EMAT

Circle the longest plant, cross out the shortest hose,
draw polka dots on the longest shovel and trace stripes on the longest rake.

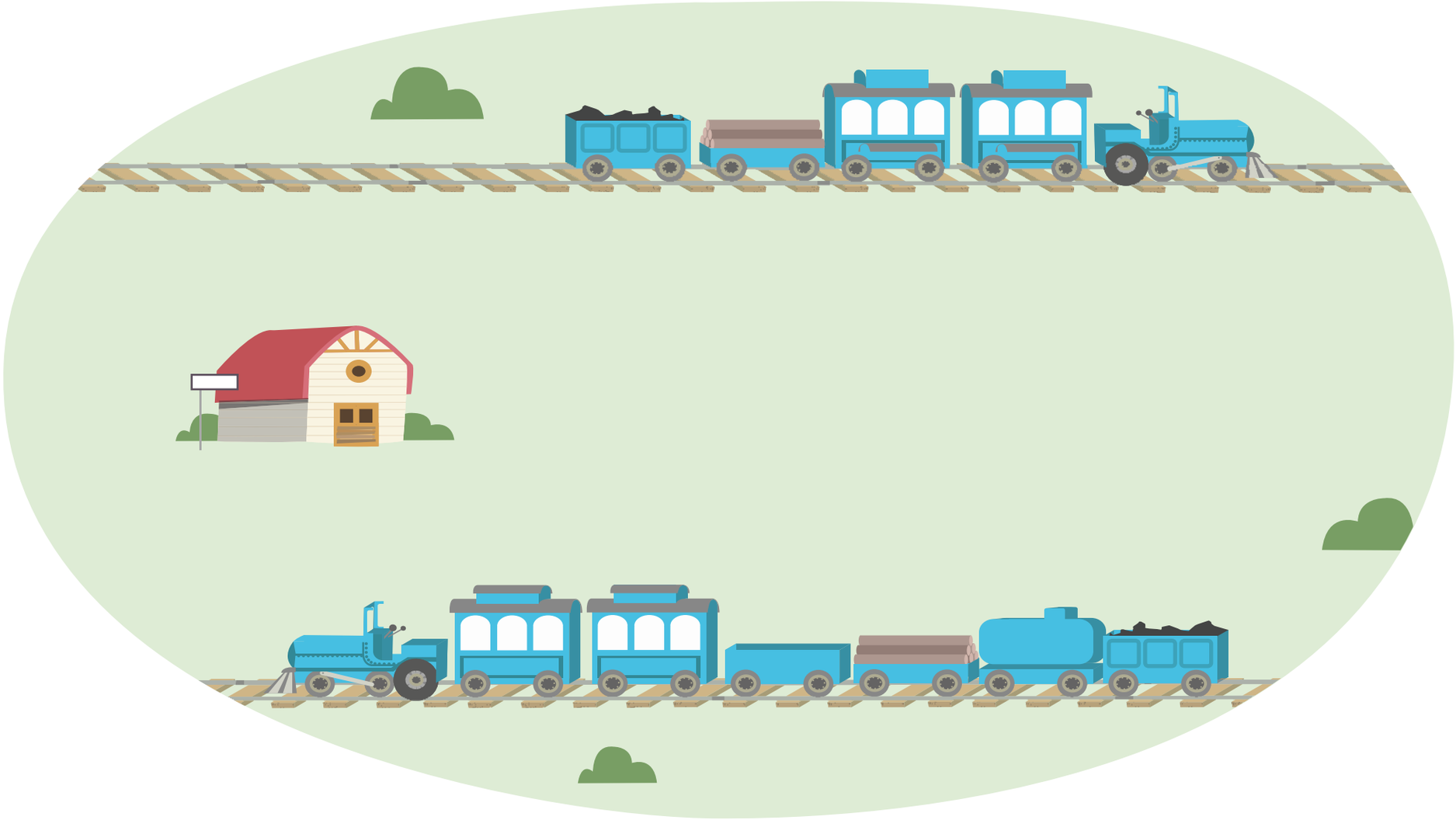
EMAT

Solve the following additions and match the result to the number of muffins.

1+3 5+0 2+3 0+4 1+2 1+0



Making matches: draw a line between the wagons of the train above and below to find out which train has the most wagons.



Circle the foods that come from the earth. Stick the stickers, colour as many squares as there are foods and decide which one has appeared more times.

5
4
3
2
1

Design the school garden space using different geometric figures.

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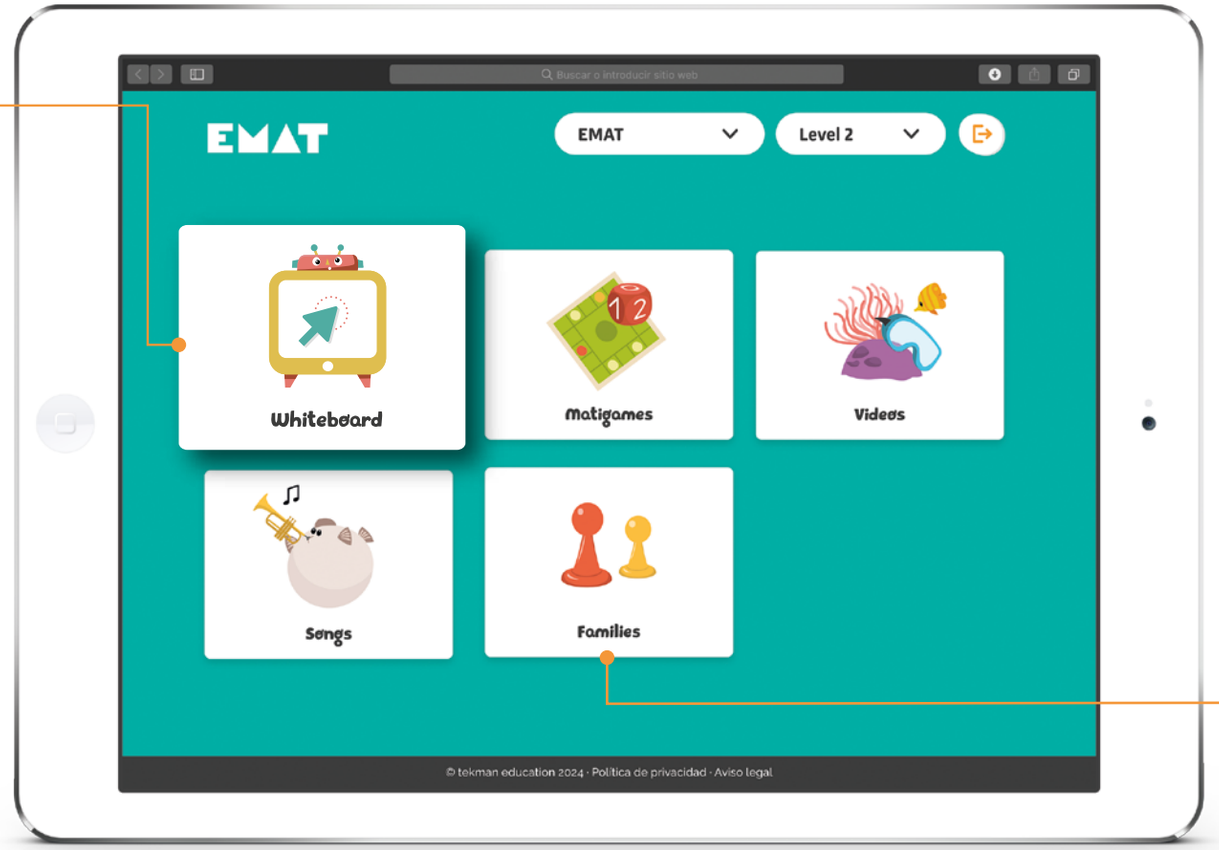
Whiteboard:
hands-on interactive mathematics tool.

Matigames:
board games to practise maths skills.

Videos:
fun short films to learn mathematical concepts.



Songs:
musical compositions related to mathematics.

Families:
useful information to share with your family.

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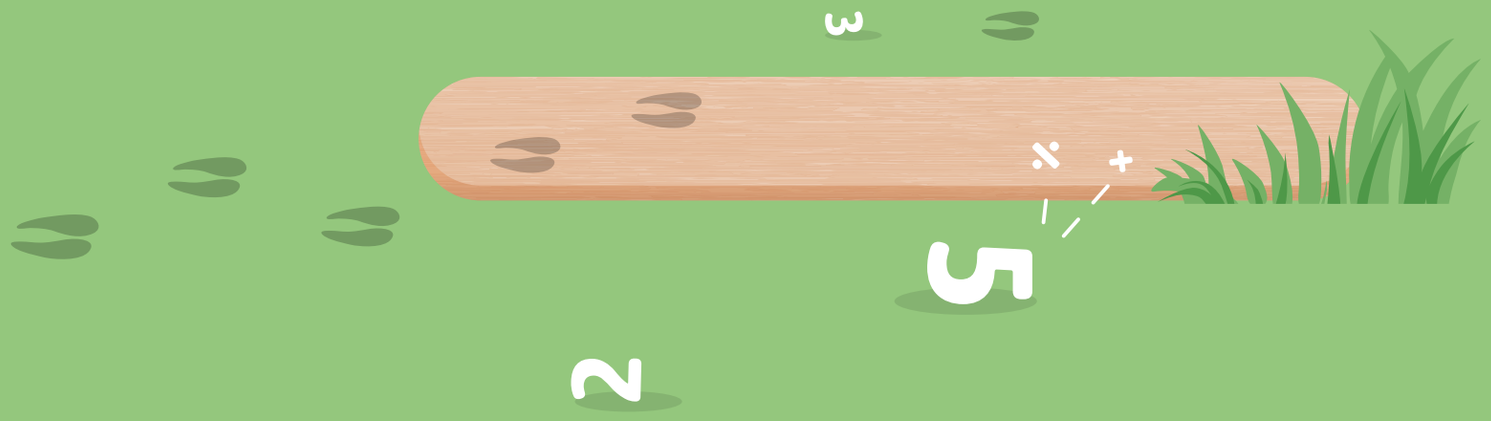

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