



# BRAIN EXERCISES ASSOCIATION

Special Issue of Child and Brain

BULLETIN  
APRIL 2024  
NO:2

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### Assoc. Dr. Özlem PERSİL ÖZKAN

While a balanced diet and certain nutrients (especially omega-3 fatty acids and proteins) are critical for children's healthy brain development, unhealthy eating habits (such as fast food and sugary drinks) can negatively affect cognitive functions.

### Dr. Selcen GÜLTEKİN

Learning can be defined as the process of permanent and imprinting changes in our behavior through our individual experiences; This process encourages us to adapt to the world we live in and allows us to develop the behavioral adaptations necessary for our survival.



## 23rd APRIL CHILDREN'S DAY

April 23 National Sovereignty and Children's Day is a turning point in Türkiye's modern history. This date, when the fate of the country passed into the hands of the Turkish people with the opening of the Turkish Grand National Assembly (TBMM) in 1920, is considered a symbol of national sovereignty. Great Leader Mustafa Kemal Atatürk; He gifted this historical day to children, who are the future of Türkiye and the world, in order to emphasize the indivisible integrity of sovereignty and the principle of "Sovereignty Unconditionally Belongs to the Nation".





## BRAIN EXERCISES ASSOCIATION

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## HELLO AGAIN

As the Brain Exercises Association, we are excited to present you our second newsletter. In our first issue, we discussed the basics and importance of brain exercises. Now we focus on the mental development of our children with our theme "Child and Brain".

In this issue, we will discuss the effects of our children's nutrition on brain health. On this subject, Assoc. Dr. We will share with you the comprehensive interview we conducted with Özlem Persil Özkan. Dr. also provides valuable information about the learning processes and mental development of children. We also include Lecturer Selcen Kültekin's article titled "Learning".

Additionally, we have brain exercises for your children that you can easily practice at home. These exercises have been carefully prepared to increase their attention and concentration and support their learning abilities.

We wish you pleasant reading as we take steps together for a healthy and conscious future!

Brain Exercises Association Board of Directors

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## A World in the Light of Children

This year, as every year, we celebrate enthusiasm and hope on April 23 with the National Sovereignty and Children's Day, which Gazi Mustafa Kemal Atatürk, the founder of the Republic of Türkiye's presented to all the children of the world.

On April 23, 1920, with the opening of the Turkish Grand National Assembly, the foundations of our national sovereignty were laid. Atatürk gave gifts to children on this important day. He emphasized their role and importance in the future of the country.

Children, as the most valuable assets of a society, are individuals who shape not only our present but also our future.

Supporting the physical, mental, and emotional development of children ensures a healthier, more aware, and productive future. Therefore, the assistance we offer our children is not just for today, but also represents a step towards building a strong foundation for tomorrow.



In this context, developing children's cognitive skills is also extremely important. Supporting abilities such as problem solving, critical thinking and creative expression; It contributes to their academic success and helps them cope with the challenges they will face in the future. Thus, our children not only retain information in their memories; At the same time, they can produce new and original solutions by using this information effectively. The spirit of April 23 National Sovereignty and Children's Day symbolizes a vision of the future gifted to children with this understanding. This comprehensive support provided to our children lays the foundation stones that will enable them to grow up as leaders not only of today but also of the future. This is an indication of Atatürk's belief in children and his determination to entrust our national sovereignty to future generations.



## Nurturing the Garden of the Mind: Nutrition and Brain Development in Children

To better understand the role of nutrition in ensuring that our children grow up as physically, spiritually and mentally healthy individuals, Assoc. Dr. We met with Özlem Persil Özkan. In this valuable conversation, he shared information about how our children should be fed to increase their mental potential.



**Brain Exercises Association:** Mrs. Özkan, first of all, thank you very much for taking the time for this interview in your busy schedule.

**Assoc. Dr. Özlem Persil Özkan:** You're welcome. I also congratulate you on the establishment of your association.

**Brain Exercises Association:** Thank you. So, let's start with our first question. What is the role of nutrition in children's brain development? Which nutrients are especially important?

**Assoc. Dr. Özlem Persil Özkan:** Adequate and balanced nutrition supports brain functions and contributes to the development of mental abilities. In addition, a healthy and regular nutrition program; It positively affects children's cognitive functions such as focus, learning, memory and problem-solving skills. In other words, healthy nutrition is essential for a healthy functioning brain.

The food groups I will specifically mention are important for children's brain development:







Proteins are the main source of amino acids, which are the building blocks of brain cells. Protein-rich foods such as fish, chicken, eggs, dairy products and red meat are important for brain development.

Omega-3 fatty acids are also of great importance for brain health and contribute to the development of brain functions, are one of the building blocks of nerve cell membranes and are important for nerve conduction, and also contribute to the development of brain functions.

It can increase memory and learning abilities. Foods such as salmon, tuna, walnuts and chia seeds are especially rich in omega-3.

Besides these, Folic acid is another nutrient that is important for brain development; It is especially critical for children during pregnancy and infancy. Green leafy vegetables; It is found in foods such as beans and lentils.

In addition, B vitamins play an important role in regulating brain functions. Especially B6, B12 and folic acid are important for nervous system health. These vitamins; It is found in foods such as eggs, dairy products, meat, fish, and dark leafy vegetables.

Of course water. Water is vital for brain health. Since a large part of our body and therefore our brain is water, adequate water consumption; It ensures proper functioning of brain functions and increases concentration.

**Brain Exercises Association:** Sir, one of the biggest problems of today is attention deficit and hyperactivity... Is there a relationship between nutrition and attention deficit and hyperactivity disorder (ADHD)? In such a case, what should be considered in nutrition?

**Assoc. Dr. Özlem Persil Özkan:** Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder and an appropriate treatment plan must be created by a specialist physician to manage ADHD symptoms. Some research suggests that certain dietary habits may increase or decrease ADHD symptoms, but more research is needed to establish a definitive link. In general, it is suggested that a balanced diet can improve ADHD symptoms. A diet rich in protein, complex carbohydrates, healthy fats and fiber can improve concentration and attention by keeping blood sugar balanced.



**Brain Exercises Association:** Mrs. Persil, our children love the food sold outside and want to consume it.

What are the negative effects of foods such as sugar and sugary drinks on children's brain health?

**Assoc. Dr. Özlem Persil Özkan:** Fast food and sugary drinks may contain simple carbohydrates, unhealthy fats, salt and additives. High amounts of simple sugars found in fast food and sugary drinks can cause a rapid rise in blood sugar levels, followed by a sudden drop. This situation may cause attention and concentration problems.

Additionally, fast food and sugary drinks are often high in calories and can lead to obesity when consumed in large amounts or at frequent intervals. For these reasons, the consumption of such foods and sugary drinks should be limited and more whole grain products, proteins, healthy fats, fruits and vegetables should be included in the diet.

**Brain Exercises Association:** What is the impact of certain nutrients, such as omega-3 fatty acids, on children's cognitive abilities?

**Assoc. Dr. Özlem Persil Özkan:** The effect of omega-3 fatty acids on children's cognitive abilities is very important. Therefore, omega-3 is essential for healthy brain development of children.

**For the healthy brain development of children, it is important to regularly consume foods rich in omega-3 (such as fish, flax seeds, walnuts).**

It is important to consume nutrient-rich foods (such as fish, flaxseed, walnuts) regularly. Omega-3 fatty acids, especially DHA (docosahexaenoic acid), are one of the building blocks of brain cells. It is very important for children's developing brains. Adequate DHA intake maintains the structure of nerve cells and supports the flexibility and functionality of cellular membranes necessary for nerve conduction. DHA has been observed to have positive effects on memory and learning abilities. The results of some studies have shown that omega-3 fatty acid supplements have positive effects on memory and cognitive functions in school-age children, and adequate intake of omega-3 fatty acids can improve attention and concentration.



**Brain Exercises Association:** What can you say about the effect of obesity in children on brain functions?

**Assoc. Dr. Özlem Persil Özkan:** First, obesity can lead to decreased cognitive functions (for example, attention, memory, problem-solving skills) in children. This situation can affect school success and make learning processes difficult. Secondly, obesity can lead to attention and concentration problems, hormonal changes and inflammation associated with high body mass index (BMI), attention deficit disorder.

It may increase its frequency. Third, obesity may increase the risk of mood disorders and behavior problems in children. Negative body image and low self-esteem, especially those associated with obesity, can cause emotional difficulties. For these reasons, obesity can have negative effects on children's brain functions, and these effects can have serious consequences. To prevent or reduce this condition, precautions such as healthy eating habits, regular exercise, healthy weight management and appropriate health treatment should be taken. It is also important for children to adopt a healthy lifestyle and be educated on these issues from an early age to reduce the risk of obesity.

**Brain Exercises Association:** What are your suggestions for parents to encourage healthy eating habits in children?

**Assoc. Dr. Özlem Persil Özkan:** It is important for parents to support their children about healthy nutrition so that children can build a strong foundation for maintaining healthy lifestyles. I can give the following suggestions to parents to encourage healthy eating habits in children: Parents should first be an example to help children acquire healthy eating habits. They can set a good model for children by choosing healthy foods at home and consuming them regularly. Cooking at home is a good way to teach children healthy eating habits. It is important to avoid processed foods as much as possible and prepare meals at home with fresh ingredients to encourage them to consume fruits and vegetables. Colorful fruits and vegetables; It is rich in vitamins, minerals and antioxidants and is indispensable for a healthy diet. Healthy snacks can be kept at home and children can be taught to choose healthy options this way.





For example; Nutritious snacks such as fruit, yoghurt, nuts and oilseeds can be included in meals. Adequate intake of all food groups can be encouraged through a balanced diet.

A diet rich in protein, carbohydrates, healthy fats, vitamins and minerals can be created and care can be taken to spend meal times together as a family. Teaching children to read nutrition labels when grocery shopping and to control the amount of sugar, salt and saturated fat in foods will be very beneficial for them to make healthy food choices.

**Brain Exercises Association:** Thank you very much Mrs. Persil, you gave very useful information. If you want, let's end our interview with the question of what precautions can be taken in schools or in society to improve children's eating habits.

**Assoc. Dr. Özlem Persil Özkan:** It is important that schools and society support children's healthy growth and development processes, and this support can make it easier for children to adopt healthy lifestyles. First of all, it is important to educate children and families about healthy nutrition. Seminars and workshops can be organized to raise awareness about nutrition. It is important to offer and encourage healthy food options in school cafeterias and meal programs. More vegetables and fruits can be included in menus, and whole grain products and healthy protein sources can be offered. It is important to encourage regular physical activity as well as healthy eating habits. These measures can help children develop and maintain healthy eating habits.

## ASSOCIATE PROF. DR. ÖZLEM PERSİL ÖZKAN

Assoc. Dr. Özlem Persil Özkan graduated from Balıkesir Sırrı Yırcalı Anatolian High School in 1994 and then graduated from Hacettepe University Department of Nutrition and Dietetics. She completed her master's degree at Istanbul University and his doctoral studies at Başkent University.

Sh currently works as a faculty member at Bandırma Onyedi University.





## Dr. Selcen Gültekin on "Learning"

*Da Vinci says:*

*Learning is the one thing that the mind never lets go of and never regrets.*

### SO WHAT IS LEARNING?

Although it seems like a simple question, while you are looking for an answer to this question, let me ask you new questions. Let's think a little more:

1. Is the dilation of pupils when excited a form of learning?
2. Are the first steps we take a form of learning?
3. Is it a form of learning if a child cries when he sees the doctor coming with an injection?

So, let's do this like this: Before defining learning, let's look at what is not learning. For example, changes that occur due to development are not learning. So, are our innate characteristics (such as reflexes) learning? No, I think we found the answer to our first question above, but we learn to walk, and this is the answer to our second question. A child's fear of seeing a needle is also a learned reaction. Thus, we find the answer to the third question. Then, if we ask again what is learning:

- ❖ Learning is learning something.
- ❖ Learning is learning how to do something.
- ❖ Learning is an individual process that allows us to adapt to the world we live in.

In this process, we can change our actions until we find behaviors that will ensure our survival and lead to rewards, or we can eliminate behaviors that have failed us in the past. Human is a being who has the ability to learn and is a learner. This is the difference that separates humans from other beings. We define learning in the academy as follows;

"They are permanent changes in our behavior that occur as a result of or through the experiences we have had." In this context, we can say this; In order for learning to occur, we must first have an experience. Then, as a result of this experience, a trace must remain on us, and this trace must be permanent. Then we can say that learning is an individual process because everyone goes through this experience themselves.

Learning occurs in many ways. Sometimes the learner's learning is intentional, such as acquiring information given in class and sometimes the learning is not intentional, such as a child's reaction to a needle. For example, while reading these lines, you are currently learning something about learning.

We can diversify this example;



Sometimes we unconsciously learn where the information we are looking for in the book, or we learn the names of the shops on the street while walking home. Same as when you are reading something right now, Could you be associating what you read with unimportant stimuli around you? What do you mean, I hear you ask? For example, the music we hear or the temperature of the room, the lines we read, the room temperature or the music we hear are all stimuli. Our sensory organs are generally open to external stimuli, but most of the time we are consciously aware of only some of them.

If you ask what this means, we react (selectively) to some of the thousands of stimuli coming to our sensory organs, and this is what we call selectivity in perception. Maybe the problem is not how we learn, in fact we are faced with learning all the time. What is important is how to help individuals learn knowledge, skills and concepts that will be useful in their lives.



Perhaps what is important is how the necessary stimuli should be arranged so that learners can focus their attention and mental efforts in learning the desired skills!

**Learning is affected by both the learner and the environment in which the learner lives. We call these factors that affect learning.**

What do you think are the factors related to learning? For example, do you think "age" affects learning?

Research says: Yes, the age factor plays an important role in learning for all living things. According to research, the best age to learn is generally young adulthood. So, do you think intelligence is effective? Of course, there is a direct proportion between intelligence level and learning. So what does this mean? As the level of intelligence increases, the effect and speed of learning increases.

The degree to which an individual receives or notices external stimuli is called general arousal. We can also call this a state of mental alertness.

General arousal is also important because the individual must be aroused for any learning to occur. If the individual can receive very little stimulation from outside, he is generally closed to stimulation and his level of arousal is low. However, if he can receive too much stimulation, he is generally open to stimuli and his arousal level is high.





The lowest state of general arousal is deep sleep, and the highest state of arousal is alertness and alertness. Overstimulation is not a preferred state for learning. Because the state of overstimulation creates anxiety and excitement, it is difficult to learn. We will not be able to focus.

Success is at its highest level in the case of moderate general arousal (medium intensity affect).

Alright; Is a relaxing tendency, such as studying in bed, an obstacle to learning? Yes, it does, because in such a case, the level of arousal will decrease. For learning to occur, the individual must be stimulated.

That's why we don't recommend studying in bed. Bed reminds us of sleep, and in sleep we become closed to learning because our general state of arousal decreases.

Previous experience or familiarity with the subject also affects new learning. Adults do not start any learning from scratch; as a new learning takes place, they are affected by old learning, and each new learning is built on the previous learning. We call this transfer of learning (transfer).

Adults do not start any learning from scratch; they are affected by old learning while new learning takes place.

The ability to distinguish the learning material from other stimuli around it, that is, things that can be easily distinguished from the surrounding material are learned more easily than others. Some sentences in the text to be learned are different from others, such as "Underlining, colored, bold, CAPITAL, in a different font, etc." Writing it down increases perceptual distinguishability. In order to distinguish some subjects from others, teachers distinguish that learning material from others by saying that the subject is important and can appear in the exam. "Perceptual Discrimination" is also one of the factors affecting learning.

So, how do we prepare for exams? How much time do we devote? (Intermittent and Collective Learning) The time devoted to learning occurs in two ways: "intermittent study" and "collective study".

Collective study (learning) is intensive work done in a specific and limited time. The information studied in this type of study is forgotten in a short time. The individual is more motivated in group work (since it is right before the exam). Therefore, more success can be achieved in exams compared to intermittent study. As an example, we can give the work we did until the morning during the exam week.



Interval study (learning) is the repetition of topics in a certain order over time. Since spaced study is done repeatedly, it enables both the learning and retrieval of information.

Repetition affects the process of turning the learned subject into behavior. For example; You came to the lesson prepared for the first repetition, you listened to the lesson and participated in the second repetition, you said what we talked about this week on the weekend, the third repetition, you prepared for the exam the fourth repetition.

Research has shown that spaced learning gives better results than mass learning in the long run. Because the information learned in collective work is forgotten in a short time. Spaced learning is more effective for long-term and permanent learning.

Good listening is essential for permanent learning to occur.

Learning the entire subject as a whole is called whole learning, learning the learned subject by dividing it into parts, and learning each part one by one is called learning by dividing it into parts. The general rule in the structural arrangement of subjects is to learn them first as a whole, then as a part, and then again as a whole. If the subject to be learned is easy, short and concrete, all learning is more advantageous. However, if the subject to be learned is difficult, long and abstract, it is more advantageous to learn by dividing it into parts.

Active participation of the learner in learning also makes learning easier. Good listening is essential for permanent learning to occur. In addition, in order to learn better, it will be effective to take notes of important parts while listening, then read these notes and explain them to someone.

Repetition and practice strengthen our memory and thus we achieve permanent learning. Did you know? Research on learning shows us that our nervous system can undergo physical changes with learning. Whatever you say, learning increases the synaptic connections, which we know as the connection between two nerve cells. We can best strengthen these connections by sending repetitive stimulation.



For example; By repeating the same topic while studying, we strengthen its place in the child's memory, thus the synaptic connection it creates, and strengthen its place in our memory.

We can say that the statement that a job is best learned by doing it is a correct statement. Because repetitive stimulation is important for consolidating the place in memory, or more precisely, for learning. In fact, we can say that it is the basis of memory.

In fact, we said that by learning, we can cause visible physical changes in your brain tissue.

According to an article published in Science magazine in 1995, the brain region responsible for the left hand fingers in people who play the cello professionally is larger than in normal people. Neurobiologist Dick Swaab says in his book "We Are Our Brains": "When I see how fast young people text, I know for sure that the part of their brain responsible for the thumb is bigger than mine."

To understand the magic of learning, let's listen to two very valuable words said by the famous painter Michelangelo at the age of 87: "Ancora imparo" and "I'm Still Learning". These words show us how important learning is.

#### **Source:**

Slavin, Robert. (2006). Educational Psychology–Theory and Practice. Nobel Publishing.  
Işık, Emine. (Editor).(2019). Education psychology. Pegem Akademi Publishing Balkuv,  
Emine. (2020). How Your Brain Shapes Your Life. Müptela Publications.

### **Dr. SELCEN GÜLTEKİN**

She graduated from Hacettepe University, Faculty of Education, Department of Educational Sciences, Department of Curriculum and Instruction in 1999. In 2002, She started working as a research assistant at Balıkesir University Necatibey Faculty of Education, Department of Educational Sciences, Department of Curriculum and Instruction. She completed his master's degree at Balıkesir University Social Sciences Institute, Department of Educational Sciences in 2006, and her doctorate in 2016. In 2017, she was appointed as a member at Balıkesir University, Necatibey Faculty of Education, Department of Educational Sciences. She still works at the same university.

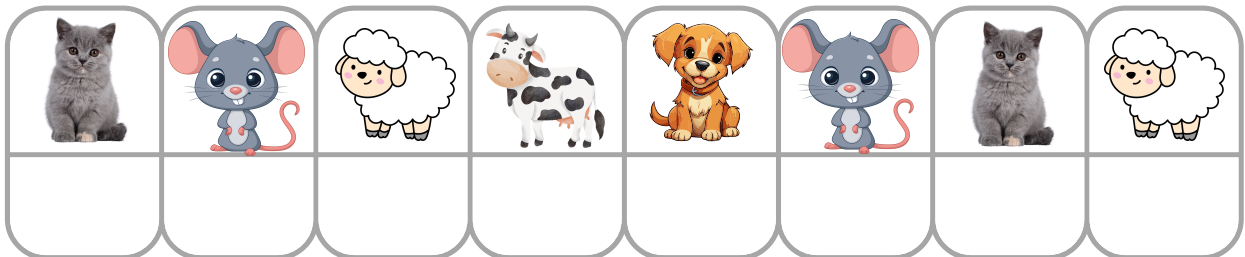
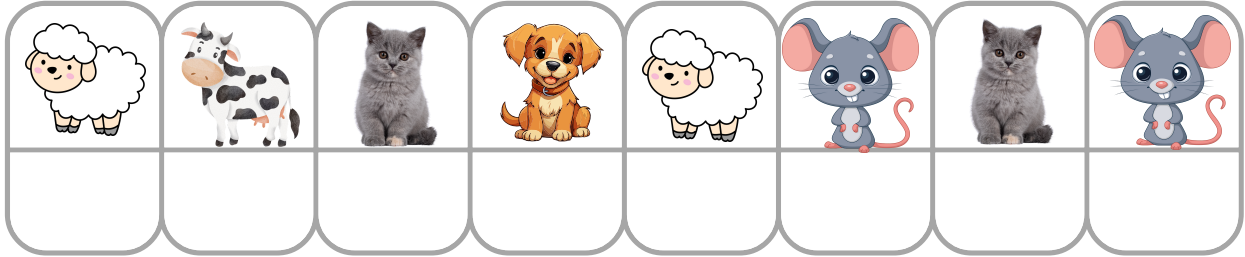
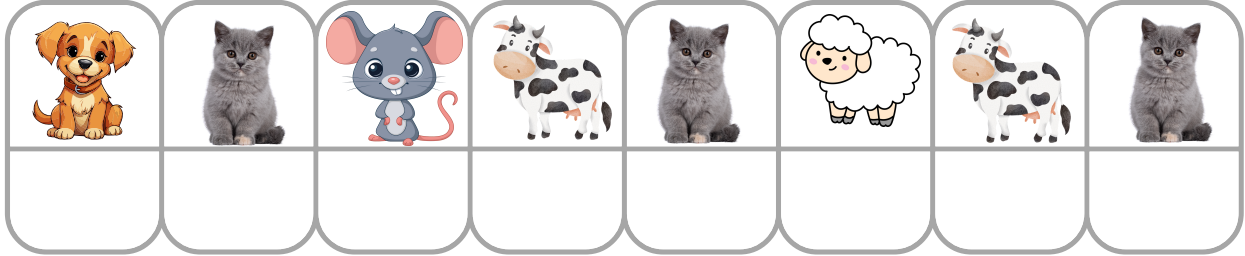
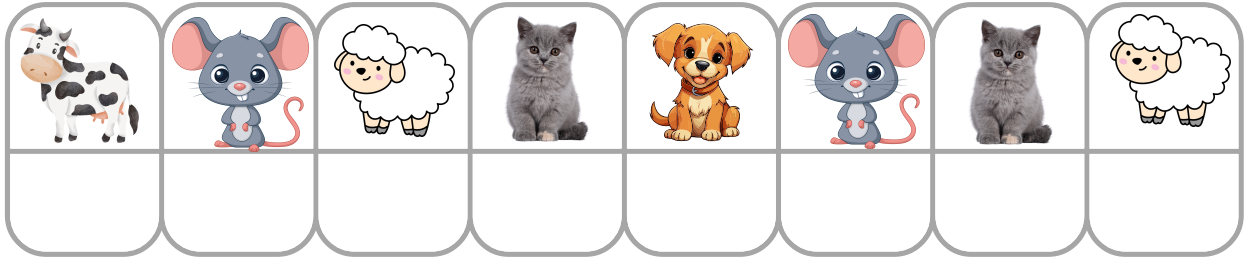
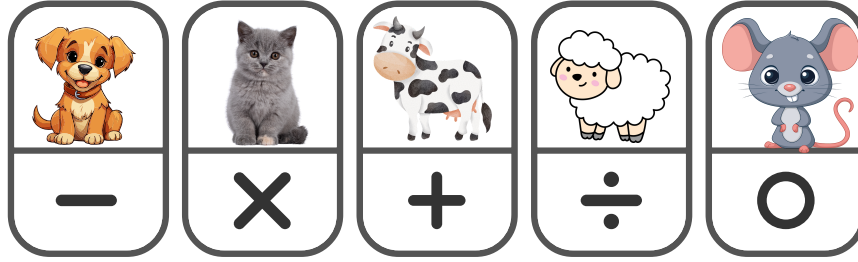




## BRAIN EXERCISES FOR CHILDREN

### Instruction:

Fill in the boxes below, looking at the signs corresponding to the animals below.





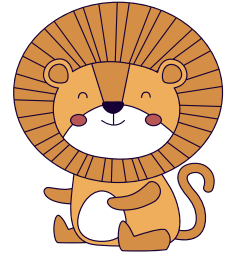
## BRAIN EXERCISES FOR CHILDREN



K\_al\_



P\_n\_a



L\_on

### Instruction:

Complete the missing letters in the words.

\_o\_l\_

Pa\_\_a

\_io\_

K\_a\_a

P\_nd\_

Li\_\_

Bread

Garden

Car

Bug

Soap

Butterfly

Soap

Triangle

Car

Curiosity

Butterfly

Garden

Walnut

Bread

Curiosity

Triangle

Bug

### Instruction:

Find the unique word in the table below.



## BRAIN EXERCISES FOR CHILDREN

### Instruction

How many numbers are greater than 50 in the table below? Write it in the space provided below.

14	98	42	26	36
17	89	64	52	70
			68	78
12	42	45	52	73
				63
37		29	48	70
	16	51		
		50	23	30
44				
	21			
73		55	76	37
	68		53	59
26	14	41		
			11	98

.....