V E N N Y®

PART ONE OF THE METHOD OF SCREENING AND REHABILITATING VISUAL PERCEPTION DIFFICULTIES

VENNY® 1

SCREENING/SURVEYING VISUAL PERCEPTION DIFFICULTIES OF SCHOOL NEWCOMERS

TO DETECT AND PREVENT POTENTIAL FUTURE LEARNING DIFFICULTIES

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VENNY® 1

SCREENING OF VISUAL PERCEPTION DIFFICULTIES

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1. INTRODUCTION

The aim of the VENNY 1 screening and surveying section has been to develop a method for finding children with visual perception problems as early as possible, preferably right at the beginning of school. About fifteen years a special psychologist in child neuropsychology in the **Helsinki University Hospital (HUS)** has acted as a consulting expert and valuable support. The graphic designer at VENNY 1 has been class teacher Eva Roos-Rautakorpi. A special teacher and the principal of Hyvinkää Paavola School, Aino Puolimatka-Arkko, has also been as strong support.

The Ministry of Education has supported the development of the VENNY method in **the Basic Education Quality Development Project named KELPO** project in 2008–2010, when guidelines and scores were made for the VENNY 1 surveying section to help teachers to find children, who have visual perception difficulties.

Foundation for Finnish Inventions has also supported VENNY method as a new Finnish innovation since August 2012.

Foundation of Henry Ford started to support VENNY method in 2015 for further development of the VENNY method.

The VENNY 1 screening method has been developed to assist in the initial education phase. It includes a three-part construction set as an individual task as well as group task forms (serial and point tasks).

In addition possibly to help in initial education phase but especially for the phase after that there has also been created a questionnaire for teachers to find children who have visual perceptual problems.

It enables the teacher to identify possible characteristics of children's perceptual difficulties in everyday school life by observing a child with a learning problem. With the help of these VENNY 1 sections, children with visual perception difficulties are found early in the initial school stage. Therefore it is possible to immediately begin to rehabilitate and help the child.

Perceptual difficulties have not been studied nearly as much as the so-called linguistic problems. Consequential phenomena of visual difficulties often appear also as linguistic learning problems, as well as various learning difficulties, social and emotional problems. The VENNY method is a systematically progressive rehabilitation program based on a clear theoretical basis that rehabilitates perceptual difficulties. It involves both concrete and similar theoretical exercises in parallel. The Rehabilitation Exercise Book (VENNY 2) contains guidance on rehabilitation and serves not only as an exercise

but also as a rehabilitator's handbook. The major consequential problems of visual perceptual difficulties in both learning and social interaction are now well known. It is also known that problems can be largely remedied through rehabilitation (Heli Numminen 11/2008).

VENNY is the so-called pilot experiment and one of its starting points is the theories of Luria - Tsvetkova. VENNY is based on more than fifteen years of experimentation, monitoring, observation and multi-professional network cooperation.

On the basis of preliminary experiments and re-examinations, VENNY has obtained good results in terms of improvements in visual perception skills and an overall increase in the child's level of performance (eg. M. Liisa -table, p. 18).

VENNY is ideal for general, enhanced and specific support:

VENNY 1 = A screening method for visual perception problems, which is used to find those children in difficulty.

VENNY 2 = An exercise book for the rehabilitation of visual perceptual difficulties to correct the difficulties of children with perceptual problems and to prevent possible deepening learning problems. It is also a teacher's / instructor's handbook. It can be used to follow the stage of each child in rehabilitation at any given time. This way, the rehabilitation structure of the VENNY method becomes more clear to the teacher / instructor.

VENNY 1 & 3 = cubic rehabilitation material and survey to school newcomers

VENNY-rehabilitation structure:

I LINE LEVEL / ONE DIMENSIONAL =>

II SURFACE LEVEL / TWO DIMENSIONAL =>

III DEPTH LEVEL / THREE DIMENSIONAL

VENNY -rehabilitation structure forms the basis for correcting visual perception difficulties. VENNY 1 and VENNY 2 and VENNY 3 follow the same structure (line level/ one dimensional => surfage level/ two dimensional => depth level/ three dimensional).

VENNY 1 helps to find children, who have general support, with visual perception problems.

VENNY 2 and VENNY 3 are especially intended for enhanced and specific support, but they will certainly be useful in the context of general support in strengthening children's visual perception skills and thus improving cognitive performance level.

2. BACKGROUND TO VISUAL PERCEPTION DIFFICULTIES

Visual perception, in its simple form, is how we understand what we see. Visual perception here refers to a child's ability to gain by perceiving accurate information about himself and the world around him, its various situations, and related experiences. Obtaining accurate information also requires the normal functioning of the senses.

The causes of developmental and learning problems may be found in neurobiological, cognitive, social and environmental background factors (Valtonen, 2009). In early childhood, visuospatial difficulties can be seen e.g. as psychomotor coordination problems, tactile and perceptual motor problems (Ahonniska & Aro 1999). Also part of the naming difficulties; especially abstract concepts and classifying upper concepts, can be based on perceptual problems (Hänninen, 1999). Self-esteem problems and the child's introversion may also occur as a result of visual perceptual difficulties, as well as deficiencies in narrative expression in the child's speech. These make it difficult for the child to socialize and communicate linguistically with other children. They also have an impact on the formation of comrade relationships.

The child's linguistic development is delayed if the child has a deficiency in the functioning of one of the sensory circuits or if the so-called material activity has remained deficient. In this case, the central sensory basis for the acquisition of words and concepts is not sufficiently developed. (Hänninen 1999). Uncorrected visual perception problems affect a child's overall cognitive capacity, future development, and thus entire future life.

3. CONSEQUENCES OF UNCORRECTED PERCEPTUAL DIFFICULTIES

Visual perception is developing even after early childhood and has a clear link to the child's overall intellectual development. At the age of seven or eight (during the first and second grades in Finland), visual perception problems usually occur only in the visual area, but when uncorrected they appear from about the nineth year of age (from the third grade onwards), as so called Matthew effect, the everexpanding and deepening problems, e.g. deficiencies in language comprehension and vocabulary,

mathematical problems and difficulties in concentrating and paying attention, socialemotional problems, as well as deficient problem-solving skills. At the age of about seven years, children have a strong stage of development of visual perception.

It is thus a slowly spreading delay that causes a decline in many cognitive skills which require thinking and reasoning. Even if, in the tests, the raw scores of a child's performance increase with age, performance in relation to age decreases. (Ahonniska-Assa 8/2004)

Problems with the visual perception area also often manifest as difficulty in understanding times, days (the day after tomorrow, the day before yesterday), spending money, distances, maps, relationships between words, and grammatical structures. Likewise, the problems may manifest themselves especially in the difficulty of understanding mathematics, since mathematics has its own system of relations within everyday language. Thus, when it is difficult to understand the interrelationships of words and more complex sentence structures, there also often exists difficulties in studying different subjects.

Visual perceptual difficulties, if uncorrected, usually affect a child's development in almost every area of his or her life. Visual perception is related to social perception and social interaction. After all, a significant portion of interpersonal communication is nonverbal expressive sign language and, on the other hand, interpretation of body language. According to researchers, nonlinguistic learning difficulties are associated with permanent socioemotional problems after about the age of ten. These problems can easily lead to anxiety and various difficulties in interpersonal relationships and thus also to a wide range of problems at school and later in working life.

Also attention disorders, especially ADD-type, can also be related to a perceptual disorder (not perceiving the overall situation, not getting started in tasks ..., dreaming in their own worlds). From the ages of 9 to 11 onwards, or even earlier at the age of 6 to 8, the so called prefrontal and frontal brain areas of the third function unit mature. This enables impulse control, concentration, planning, voluntary regulation and control of functions. (Hiltunen 1992) This is a time when it is possible for the school to positively influence the child's own activity control skills. By strengthening the child's visual perception skills, the child's skills of directing their own activities are usually strengthened at the same time.

It is necessary to intervene in learning problems, because learning disabilities can be the starting point for broader difficulties. A significant proportion of students in upper grades have troubles with understanding reading, and increasingly also mathematics (Numminen 11/2008). According to research on the developmental risks of young people, school failure is the factor most strongly associated with poor social coping and mental health problems among young people. School failure is linked to dropping out of school, antisocial development, substance and drug abuse, the threat of unemployment and the increased need for income support. Of the psychological consequences, low self-esteem and depression have been observed most clearly. Exclusion can start already at the beginning of schoolpath, because of incompetence.

If the reason for the problems is not understood, learning difficulties threaten the child's future by influencing e.g. to the formation of his self-esteem. (Huolila et al. 2002)

As perceptual learning problems are likely to increase, despite an increasingly visual world, it is important to recognize the potential and importance of early childhood or school-based guidance and rehabilitative education for the future life of the whole child.

4. REHABILITATIVE TEACHING

Visual perception difficulties can be a major obstacle and a cause of problems for a child's later life, whether in the school world, social interaction, and later in working life. The consequences of uncorrected perceptual problems can also be a cause of exclusion from society. However, as these difficulties are in most cases remediable, significant efforts should be made to address this problem.

Rehabilitative teaching and guidance at school, or even at home when following instructions, can be important and even crucial for a child's future life. One lessonlong, weekly, regular practice gradually produces results. Some children need rehabilitative education for a year, others for several years. In any case, the results are usually clearly observable over time.

Children's cognitive functions are not seen as the realization of innate qualities or abilities, but as processes formed by the interaction of many factors, with long-term development behind them. Children's cognitive difficulties must be understood as the result of impaired development in which some or all of the components or conditions of normal development have been deficient. (Hiltunen 1992)

The preschool and elementary school stages are a particularly opportune time to contribute to the correction of visual perception problems. This can often prevent many follow-up problems from occurring later in a child's life. Rehabilitative education focuses on primary education (iniative phase) and is therefore preventive of wider problems, but also corrects already existing problems.

5. THE RESULTS OF REHABILITATIVE TEACHING

The following positive aspects were observed as a result of rehabilitative teaching:

- there was usually a clear improvement in mathematical skills
- language comprehension skills improved (understanding and producing language)

- cognitive skills in different areas of learning improved, not just non-linguistic, but also the results of the linguistic side
- skills related to the control of one's own activities were strengthened (Complex visual processing also requires the operation of areas in the frontal lobe of the brain, where design of organization, impulse control and self-evaluation also take place.)
- progress was made on concentration and alertness skills
- progress was made on social skills
- overall school performance improved
- the overall well-being of the student improved

In the future, schools will be required to have new skills and take a new approach to guide and help children with learning difficulties, with specific, enhanced and general support. Support from home can also greatly help.

Uncorrected visual perception problems can greatly affect a child's future life by complicating it in many ways. Today we know how to help and correct these problems. The main goal of the VENNY project is to make this help available for every child suffering visual perception problems.

6. VENNY 1 AND SCREENING OF PERCEPTION DIFFICULTIES

Three different task sections can be used to help identify visual perception difficulties in school entrants. Two of them are aimed at students (1. A, 1. B and 1. C as well as 2. A and 2. B). These are intended to identify students with perceptual problems right at the beginning of the primary education.

The third section, a two-page questionnaire for teachers, can be used if necessary, e.g. when a teacher is concerned about a pupil's learning problems (eg. a pupil who has moved from another school at a later stage). Based on the results of the survey, the child can be referred to more detailed examinations, if necessary, for example by a school psychologist.

The first section is a series of three cube structures (1. A, 1. B, 1. C)

The child builds block structures according to three model cards with the teacher / instructor. The teacher / instructor can make observations about the child's speech and, for example, linguistic awareness.

- 2) The second section consists of two parts (2. A, 2. B):
- A) serial section (6 tasks)
- B) progressively more difficult set of point tasks (18 tasks, one two and three dimensional structure)

Both sets of assignments in the second section can be done as group assignments, however, preferably for half a class at a time so that the teacher can better observe the children's performance. If the class is not very large (about 15 students), the screening can also be done for the whole class at the same time. One lesson is well enough to do the whole second section.

The tasks in section A, i.e. the series, are usually familiar to children. The only difference may be that the series is started right from the beginning of the line by joining the dotted lines. This gives the child better access to the rhythm of that series. To make the set long enough, it is done with the paper in a horizontal position. Initially, the series are easy and simple and only repeat a certain pattern. In this way, the child experiences success and gets excited about the next ones. Gradually, the tasks become more difficult, but schoolchildren in iniatial phase usually can do them fluently.

The point problems in section B consist of two parallel patterns of nine points, of which a pattern is drawn to the left. The student is to draw on the right side of the paper in a vertical position exactly the same pattern as on the left side.

The first problem is a simple dot-drawn, one-dimensional line pattern (1), the next problem is overlapping line patterns (2), then overlapping, two-dimensional patterns (two triangles) (3), overlapping rotating triangles (4), pairs of triangles that are mirror images of each other (5-6), overlapping triangles rotating about their axis (7-9), rectangular prisms drawn concretely in three dimensions (10-13), and polyhedrons drawn concretely in three dimensions and asymmetric (14-18). This task 2. B predicts in advance really well the possible future problems.)

The third section is a two-page questionnaire for teachers of older students

The form can be used to survey, on the basis of the teacher's / supervisor's observations, whether the student's learning problems may be based on visual perception difficulties. The third section is mainly about student performance in normal classroom and in other school-related situations. If a child has visual perceptual difficulties, the questionnaire also reveals a variety of problems in classroom situations. If concerns arise, the student may be sent for more detailed investigations.

7. INSTRUCTIONS AND EVALUATION

The assessment of tasks is in itself indicative and intended as a guide to assist the teacher / instructor. It is based on multi-year, long-term follow-up and hundreds of student surveys and the results obtained from them.

The evaluation is a so-called pedagogically valid evaluation, the aim of which is to be able to draw direct conclusions from the results of the evaluation concerning needs of special education and the child. This approach is described by the concept of pedagogically valid assessment. In this case, the evaluation is not an absolute value, but the most important thing is that the evaluation results in direct proposals for teaching. Also, pedagogically valid assessment does not always have to be based on standardized and normative tests, although their use is undeniably beneficial. (Dufva & Poskiparta, 2009, NMI Bulletin1) The aim is to identify problems and help the child as early as possible.

There may be large developmental differences between children between the ages of 6 and 8, which is definitely worth considering, both here and later when monitoring a child's learning and development. In any case, it would be important to find children with perceptual difficulties at the beginning of the school path, because even in the third grade, milder difficulties may gradually begin to show up as difficulties in understanding mathematics and language, for example.

1) Instructions in the first section (cubes)

The teacher / instructor places one of the three pictures on the table in front of the child. Next to it, there are plenty of colorful wooden cubes in the box, about the same size as in the model image. The teacher instructs the child to look at the picture and build a similar, parallel, and the same color structure from the wood cubes as in the picture.

Evaluation

The teacher / instructor monitors the child's construction method and assesses whether the construction is logically sensible in terms of the whole and the goal (parallel processing) and records his / her observations. At the same time, instructor scores the results. If the child completes the task smoothly or with a little pondering, he gets **1 point**. If a child performs poorly, has to think and try, and finally get the task done correctly, he gets **1/2 point**. If the child's attempt right from the start is completely flawed, and the child can't complete the task, and if he or she feels anxious about the situation at the same time, the performance is marked as a **0-point**.

It is important that the teacher / mentor leads the child in an encouraging and empathic way from a difficult/hard task (for the child) to the next task, for example: "This task is quite difficult for many older ones as well. Let's move on and try the next one." An encouraging, empathic and accepting attitude towards the child is important, so that the child could try his or her best without pressure or anxiety. Usually, children are enthusiastic about building with colorful wood cubes.

Too large or small gaps in the third task in the building series will drop otherwise correct performance to half a point. The same is true if one of the structures is made from a completely wrong perspective in relation to the image. Correct perfomance, but a completely illogical construction method, also drops points in half.

The maximum score is three points from the first section (cubes). In my experience, two points in this task alone make it necessary to monitor a child's school performance more closely. Atention should also be paid in his or her performange in the second section. Performing less than two points is already worrying. In that case, special attention should be paid to the performance of these children in the group task 2 B.

2) Instructions in the second section

The teacher / instructor has made a simple model that differs from the actual student tasks (appendix 2), from both the serial assignment and the point assignment to the classroom board. Students only have a sharp pen and eraser on their desk (no ruler).

A) Serial section

Before giving the papers, the teacher / instructor calmly shows the pattern task on the board how to start each line from the very beginning in the series task and carefully combine the dotted lines of the figures into a solid line. When the dotted lines end, the patterns are continued to the end of the line according to the pattern already made. Preschool children are usually familiar with serial tasks and may not require more indepth guidance. However, for example, verbalizing a series of patterns on the board helps the student to better understand the idea of the series.

B) Dottasks

The teacher / instructor then shows on the board a simple reproduction of the tick pattern drawn in the nine-point dot pattern on the blank pattern dot on the right. At the same time, the teacher emphasizes a calm and careful way of working. The tools needed are eraser and a sharp pen (no ruler) to draw the lines directly from point to point according to the model and to stop at the exact point. He also instructs students to examine the pattern of the image carefully and to follow at which point the line starting from a particular point is drawn, and then to make exactly the same pattern, i.e. a pair, according to the pattern. The teacher / instructor emphasizes careful work without rush.

Students are then given the papers and asked to write their own name, age, and class. Teacher shows in front of the class where this information is inserted. Students are also encouraged to put hand up if something is unclear, in which case the teacher may come to guide the child. The teacher / instructor walks calmly in class as the children work and observes the children taking notes. If one of the children finds a task really difficult, the teacher can urge her to skip it and move on to the next task. If the following tasks are also too difficult, the child can move on to draw his or her own drawings on the back page. The situation must not become too distressing for the child, but he or she should then be released from tasks. However, this is quite exceptional. Children usually do tasks smoothly and enthusiastically. However, it is sometimes necessary to allow the child to do the tasks again on another day. Students are allowed to work calmly at their own pace.

When the children are ready, they put hand up and the teacher checks that the form contains the child's name and that each page has also been filled. The student can then draw, write, or count on a blank back page.

Making observations and recording students' abnormal performance is also important in this situation (e.g., problems understanding comprehensively given instructions, getting stuck, restlessness and anguish, need for help, erasing, etc.). Likewise, easy, smooth and effortless performance can also be recorded. It is also important, where possible, to observe children who have struggled in the first section (wood cubes), and especially take notes on their performance in the second section.

Assessment in the 2. A series (maximum score is 1)

Score	Correctly completed tasks
1	5–6
1/2	3–4
0	0–2

Assessment in the 2.B-dot section (maximum score is 3)

Score	Total of tasks performed correctly
3	17 - 18
2 1/2	15 - 16
2	13 - 14
1 1/2	11 - 12
1	9 - 10
1/2	7 - 8
0	0 - 6

The task is half correct if only one or two lines between the points are incorrectly drawn (or missing). If there are more than two incorrect or missing lines, the task is marked as incorrect.

However, in tasks with overlapping and rotating patterns (3 - 9), the student gets half of the problem correctly if one of the patterns is drawn correctly. This task 2. B usually predicts very well possible future learning problems and is therefore very important.

8. TOTAL SCORING INDICATORS AND POSSIBLE MEASURES ON THIS BASIS

From the sections of the first (construction tasks) and the second task (series and scores), the student can get **a maximum of 7 points in total**:

6 - 7 points performance good

5 points general support and monitoring needed

4 points enhanced support needed

For children with less than five points, it is important to strengthen visual perception skills in order to prevent possible learning problems that may occur as a consequence. If the total score is much lower, it is good to map out the child's need for special support.

The most problematic evaluating of development are mild delays, which occur in relatively many children. Another child may have a self-healing problem or an individual developmental course. In another child, the appearance of a slight delay may in turn anticipate deepening difficulties. For example, in Strid's (1999) study, up to 70% of five-year-olds who were assessed as mildly problematic still had some kind of problem in the sixth grade. (Valtonen 2009)

For this reason, it is also particularly important to monitor more closely the school performance of children with a score of five or less. On the other hand, children's development is individual and even large differences may occur in children's development in the primary education phase. However, comprehensive support for an underperforming child is really relevant, especially in the early stages of schooling.

According to Ritva Hänninen (1999), the difficulties of getting stuck and, for example, of flexible forward and backward movement are manifested not only in movements, speech and writing, but also in thinking. (Note: problems of control of one's own

activities at school.) Therefore, conscious action should be facilitated by more automatic rhythmic action. This is supported by various serial exercises. Serialization task 2. A seeks to find clues to possible related problems in the "space" of thinking in moving forward and backward.

Identifying early developmental features of learning problems is important, as research has provided ample evidence that early holistic support alleviates problems. (Valtonen, 2009)

Follow-up is also significant in the sense that, if left unaddressed, learning difficulties due to perceptual problems, such as reading comprehension, math difficulties, etc., become clearer only from the third grade onwards, when problems tend to begin to expand and deepen (the so-called Matthew effect). (Ahonniska-Assa, 2004)

In the light of current knowledge, it is essential that even minor problems are not ignored, as the tendency of problems to accumulate is well known. Learning problems are a threat to a child's overall well-being and healthy development, not just to the achievement of adequate academic skills. The mere perception of problems in itself has a positive effect on school performance and emotional problems. (Valtonen 2009) For this reason, all possible support is really important right at the beginning of school and, if possible, even before that.

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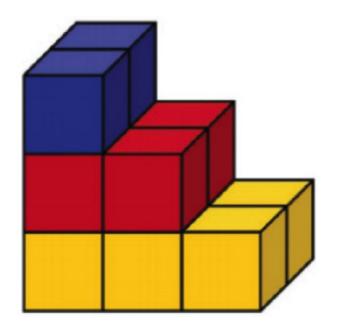
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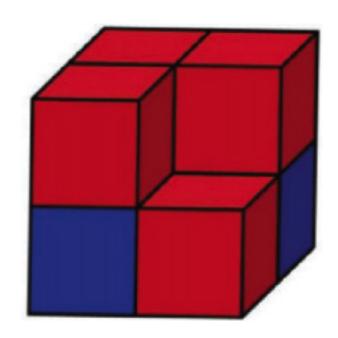
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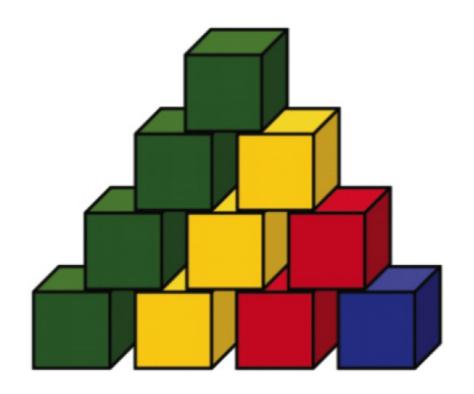
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1 K		1999-2000	Ikätasoinen suoritus	Suoritustaso alle ikätason	Oppilaan suoritustaso Kielellinen ja visuaalinen päättelytaito	Matematiikan, lukemisen ja kirjoituksen ongelmat →	Koulupsykologin tutkimukset → Tulokset:	"Abilinan namebanacitaatti kokonsiemdae	Alylineri perusakapasiteetti kokoriaisuuudes- saan heikkotasoinen:	suurimmat vaikeudet kielellista paattelykykya mittaavassa luokittelutehtävässä ja aritmeet-	tisen päättelykyvyn tehtävässä."	Näönvarainen näättelv alle ikätason."		 "Perushahmottaminen hankalaa." 	"Silmā-kāsi-yhteistyö hidasta."	"Tarkkaavaisuus herpaantuu helposti."	•	 "Toiminnanohjauksen tueksi tarvitaan aina ciloisee een." 	aikuisen apua.	EMU-opetukseen suositus (laajat oppimisvaikeu-	det). Taustalla kotiongelmat, vanhempien avioero. Vioisonatus iatkuu (äiti kielsi EMI I-n)	first the second fall with the		



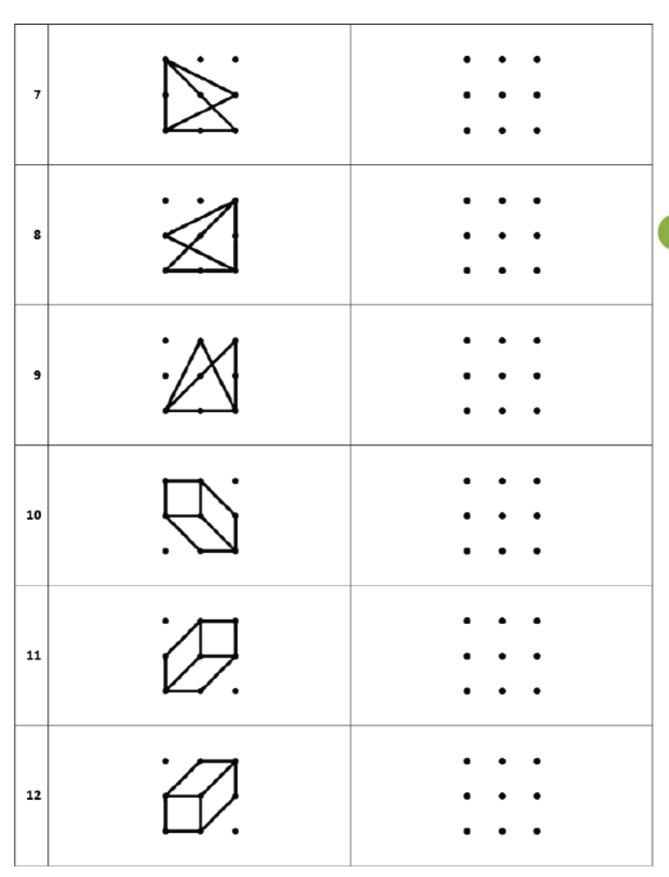




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