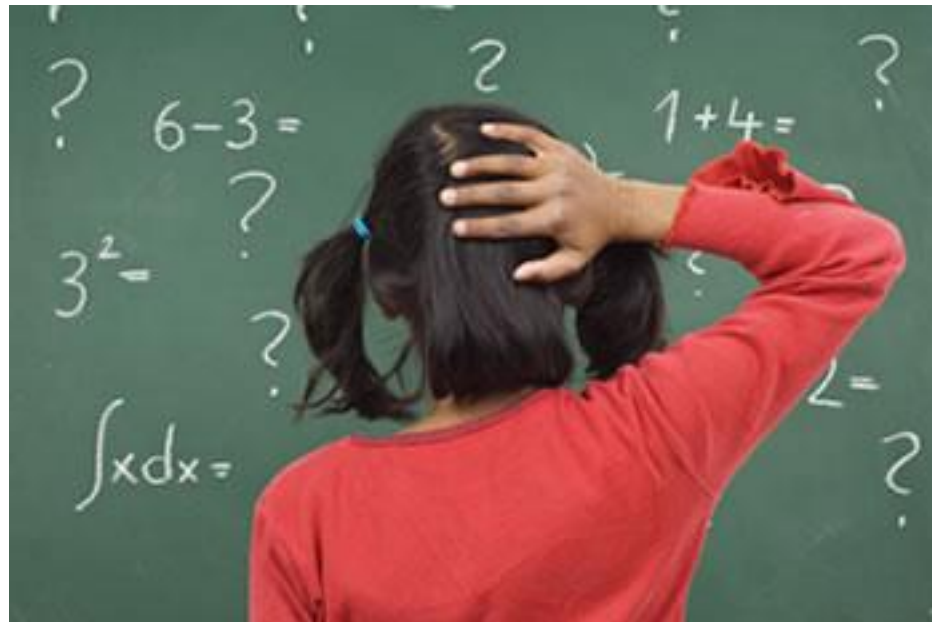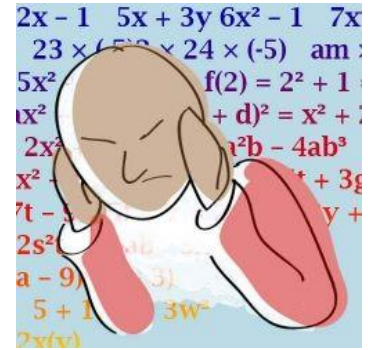# DYSCALCULIA

Ivana Marova, Ph.D.
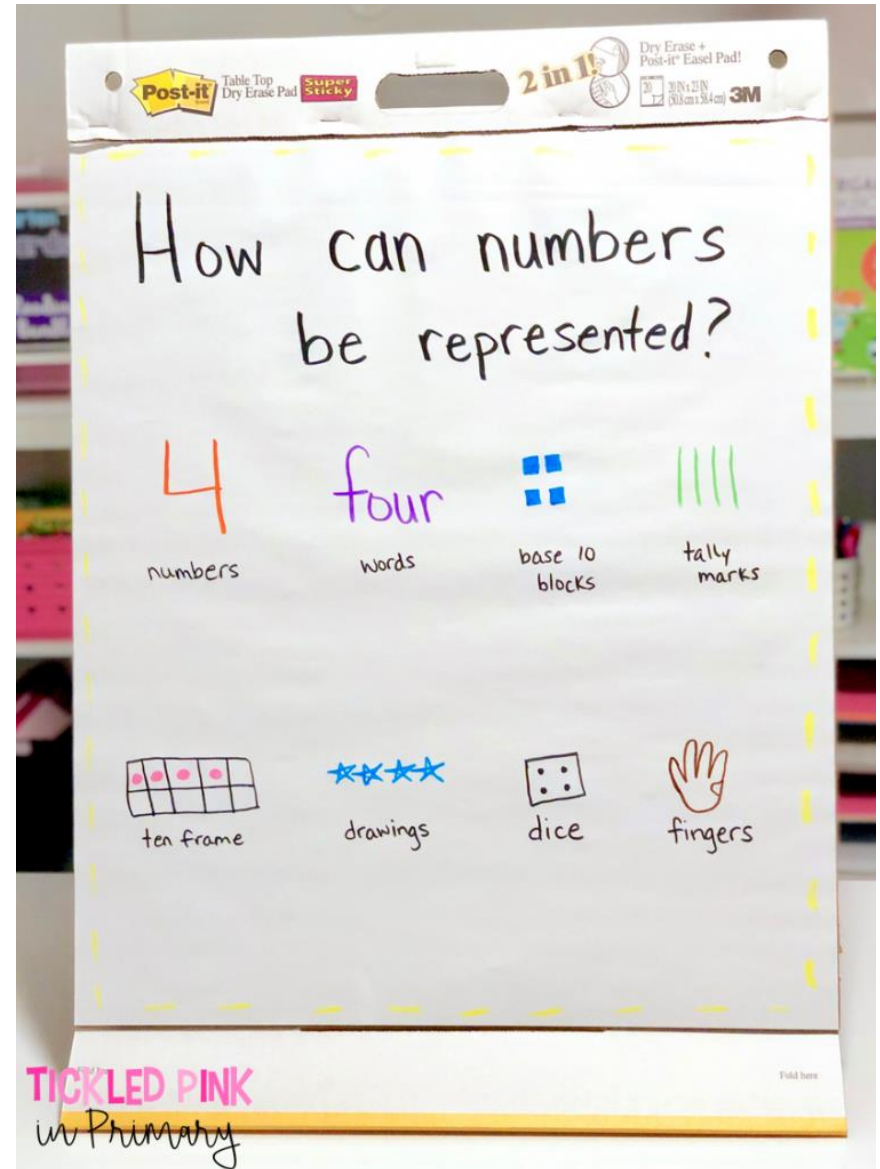
DYSCALCULIA

DYSCALCULIA - DEFINITION

Developmental Dyscalculia (DD) is a specific learning disorder that is characterised by impairments in learning basic arithmetic facts, processing numerical magnitude and performing accurate and fluent calculations. These difficulties must be quantifiably below what is expected for an individual's chronological age, and must not be caused by poor educational or daily activities or by intellectual impairments.

British Dyslex!a
Association

NUMBER SENSE

- Child's fluidity and flexibility with numbers

- It helps children understand what numbers mean, improving their performance of mental mathematics, and giving them the tools to look at maths in the outside world and make comparisons

DYSCALCULIA - SYMPTOMS

1. **Delay in counting.** Five to seven year-old dyscalculic children show less understanding of basic counting principles than their peers (e.g. that it doesn't matter which order objects are counted in).

2. **Delay in using counting strategies** for addition. Dyscalculic children tend to keep using inefficient strategies for calculating addition facts much longer than their peers.

3. **Difficulties in memorizing arithmetic facts.** Dyscalculic children have great difficulty in memorizing simple addition, subtraction and multiplication facts (eg. 5 + 4 = 9), and this difficulty persists up to at least the age of thirteen.

D. C. Geary, C. O. Hamson, and M. K. Hoard, "Numerical and arithmetical cognition: A longitudinal study of process and concept deficits in children with learning disability," Journal of Experimental Child Psychology, vol. 77, pp. 236-263, 2000.

DYSCALCULIA - SYMPTOMS

The following are likely to be symptoms of dyscalculia:

1. Difficulty imagining a mental number line

2. Particular difficulty with subtraction

3. Difficulty using finger counting (slow, inaccurate, unable to immediately recognise finger configurations)

4. Difficulty decomposing numbers (e.g. recognizing that 10 is made up of 4 and 6)

5. Difficulty understanding place value

6. Trouble learning and understanding reasoning methods and multi-step calculation procedures

7. Anxiety about or negative attitude towards maths (caused by the dyscalculia!)

MATH DIFFICULTIES (BLAŽKOVÁ, 2009)

Pre-numerical skills

Propaedeutic exercises to create the term number

Numbers as category

General mathematical operations

Verbal tasks

Geometry

Unit conversions

Estimation of results

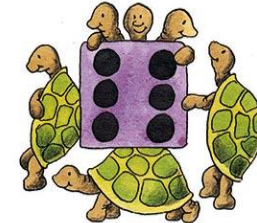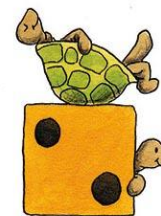Mathematics in everyday life – financial literacy, spatial orientation
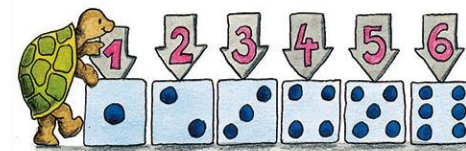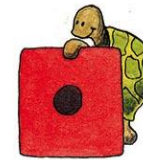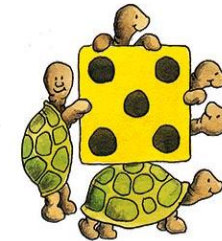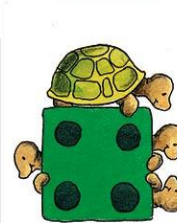
1
2
3
4
5
6

NUMBER AS A CATEGORY - PRINCIPLES

- Handling of objects with verbalization – the child takes a hand and counts

- Counting with visual aids without eye support

- Counting from memory

○ Orientation on the numerical axis (show number on axis, show number before/after,...)

○ Comparing numbers – larger, smaller, same

○ Sort cards by Size – 42, 24, 204, 4002, 422

○ Write numbers using table numbers

○ Reading numerals ascending and descending, dithering numbers

○ Graphical representation of numbers in a grid of 10 × 10 squares (thousands, hundreds, tens, units)

POČÍTÁNÍ NA ČÍSELNÉ OSE

1 jedna	6 šest
2 dvě	7 sedm
3 tři	8 osm
4 čtyři	9 devět
5 pět	10 deset

⊕ sčítání

$2 + 3 = 5$

0 1 2 3 4 5 6 7 8 9 10

procvičuj:

0 5 10

⊖ odčítání

$8 - 5 = 3$

0 1 2 3 4 5 6 7 8 9 10

STIEFEL

COMPARE

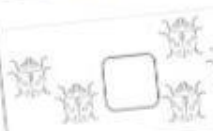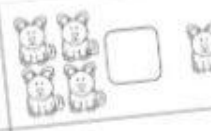## 1 -10

VĚTŠÍ
©Porozumím autismu 2017
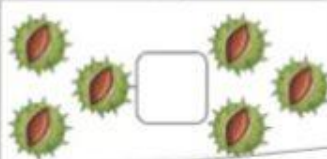
AUTOR: MGR. EVA HUFOVÁ
©POROZUMÍM AUTISMU 2017

ROVNÁ SE
©Porozumím autismu 2017

MENŠÍ
©Porozumím autismu 2017

Write numbers into the chart

	DT	T	S	D	J
9 651		9	6	5	1
3 284		3	2	8	4
7 497		7	4	9	7
6 848		6	8	4	8
2 369		2	3	6	9
10 000	1	0	0	0	0

GENERAL MATH OPERATIONS

+	−	×	÷
addition	subtraction	multiplication	division
add	subtract	multiply	share
plus	minus	product	group
more	take away	times	divide
and	decrease	lots of	divide into
total	take from	multiplied by	divided by
increase	reduce	times table	divisible by
sum	fewer	groups of	share equally
together			

Abacus

90 pcs

3•9

8 − 3 = 5 + 4 = 9

GOULA

$$46 - 28 = 22$$
$$10 + 5 = 14$$
$$23 + 8 = 13$$

$$7 - 3 = 3$$
$$13 - 12 = 11$$
$$49 + 1 = 59$$
$$60 - 1 = 50$$
$$50 + 3 = 80$$

Přičítej k 9 a vybarvuj to, co přidáváš:

$$9 +$$

1	2	3	4	5	6	7	8	9	10
∧	∧	∧	∧	∧	∧	∧	∧	∧	∧
1+0	1+1	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9

●●●●● ●●●●○	9+1	9 + 1 = 10
●●●●● ●●●●○ ○	9+1+1	9 + 2 = 11
●●●●● ●●●●○ ○○	9+1+2	9 + 3 = 12
●●●●● ●●●●○ ○○○	9+1+3	9 + 4 = 13
●●●●● ●●●●○ ○○○○	9+1+4	9 + 5 = 14
●●●●● ●●●●○ ○○○○○	9+1+5	9 + 6 =
●●●●● ●●●●○ ○○○○○ ○	9+1+6	9 + 7 =
●●●●● ●●●●○ ○○○○○ ○○	9+1+7	9 + 8 =
●●●●● ●●●●○ ○○○○○ ○○○	9+1+8	9 + 9 =
●●●●● ●●●●○ ○○○○○ ○○○○○	9+1+9	9 +10 =

Piš výsledky:

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 37 38 39 40 41 42 43 44 45 46 47 48 49 50

SČÍTANEC	SČÍTANEC	SOUČET
32	+ 4	= 36

$$32 + 4 = 30 + 2 + 4 = 36 \quad nebo \quad 32 + 4 = 36$$
30 + 2 , 2 + 4 = 6

SČÍTANEC	SČÍTANEC	SOUČET
20	+ 13	= 33

$$20 + 13 = 20 + 10 + 3 = 30 + 3 = 33 \quad nebo \quad 20 + 13 = 33$$
10 + 3 , 2 + 1 , 0 + 3

SČÍTANEC	SČÍTANEC	SOUČET
25	+ 8	= 33

$$25 + 8 = 20 + 5 + 8 = 20 + 13 = 33$$
20 + 5 , 13

SČÍTANEC	SČÍTANEC	SOUČET
21	+ 22	= 43

$$21 + 22 = 20 + 20 + 1 + 2 = 43 \quad nebo \quad 21 + 22 = 43$$
20 + 1 , 20 + 2 , 40 , 3 , 2 + 2 , 1 + 2

SČÍTANEC	SČÍTANEC	SOUČET
17	+ 25	= 42

$$17 + 25 = 10 + 20 + 7 + 5 = 30 + 12 = 42 \quad nebo \quad 17 + 20 + 5 = 37 + 5 = 42$$
10 + 7 , 20 + 5 , 30 , 12 , 37

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 37 38 39 40 41 42 43 44 45 46 47 48 49 50

MENŠENEC	MENŠITEL	ROZDÍL
48	- 4	= 44

$$48 - 4 = 40 + 8 - 4 = 44 \quad nebo \quad 48 - 4 = 44$$
40 + 8 , 8 - 4 = 4

MENŠENEC	MENŠITEL	ROZDÍL
39	- 20	= 19

$$39 - 20 = 30 + 9 - 20 = 10 + 9 = 19 \quad nebo \quad 39 - 20 = 19$$
30 + 9 , 30 - 20 = 10 , 3 - 2 , 9 - 0

MENŠENEC	MENŠITEL	ROZDÍL
47	- 9	= 38

$$47 - 9 = 30 + 17 - 9 = 30 + 8 = 38$$
30 + 17

MENŠENEC	MENŠITEL	ROZDÍL
36	- 11	= 25

$$36 - 11 = 36 - 10 - 1 = 25 \quad nebo \quad 36 - 11 = 25$$
10 + 1 , 3 - 1 , 6 - 1

MENŠENEC	MENŠITEL	ROZDÍL
44	- 18	= 26

$$44 - 18 = 44 - 10 - 8 = 34 - 8 = 26$$
10 + 8 , 34

① obsah karty

② stupeň náročnosti
předni strana: ● lehčí
zadní strana: ● náročnější

③ symbol jednotlivých druhů úkolů

④ barva čísel ve sloupci odpovídá barvě kapsy

Kapsy

zelená
výpočet součtu
nebo rozdílu

červená
výpočet druhého
sčítance nebo
menšitele

modrá
výpočet prvního
sčítance nebo
menšence

zasuňte kartu a začněte

Přední strana s úkoly

Kvĕtiny v zahradĕ

tulipán
hledík
snĕženka
narcis
gladiol
astra
kopretina
rúže
šafrán
petrklíč

(card on easel):

rúže
kopretina
narcis
gladiol
hledík
šafrán
tulipán
petrklíč
snĕženka
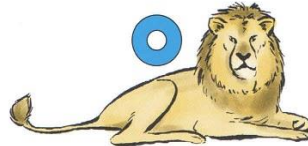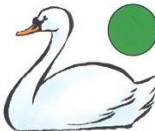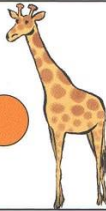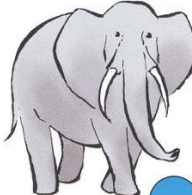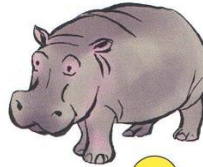
Zvířata	koč-ka			1
Vyslovuj a zatleskej slabiky.				

LOGICO PICCOLO © Mutabene

Sluchové vnímání • Slabikolov

VOLNO,
MŮŽEME
JET!

$7 + 8 + 9 =$ ●

$18 + 2 - 7 =$ ●

$95 - 60 + 23 =$ ●

$68 - 7 - 30 =$ ●

$34 - 5 + 9 =$ ●

1,5 l

30,52 l

3,465 kg

9,98 s

38,6 °C

69,3 kg

2,8 km

0,5 l

1,5 m

3,70 Kč

NATURAL

KAREL CHORÝ

OPERATIONS — COLORFUL PRISMS