Микросветове за насърчаване на математическото мислене на децата в началния курс

Евгения Сендова

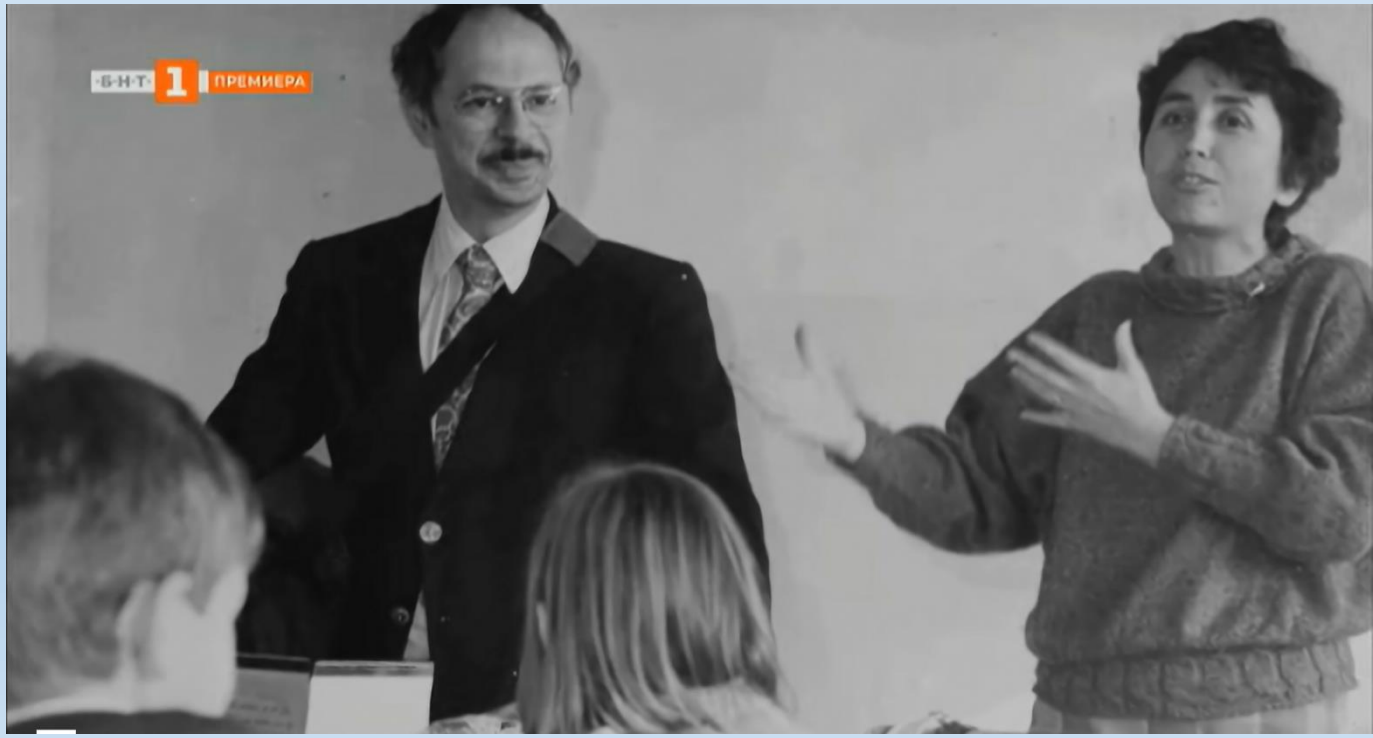
Национален семинар по образование
Изследователският подход в математическото образование
Зала *Акад. Стефан Додунеков*, ИМИ-БАН
27 ноември 2022 г.

ELEMENTARY MATH AT EDC

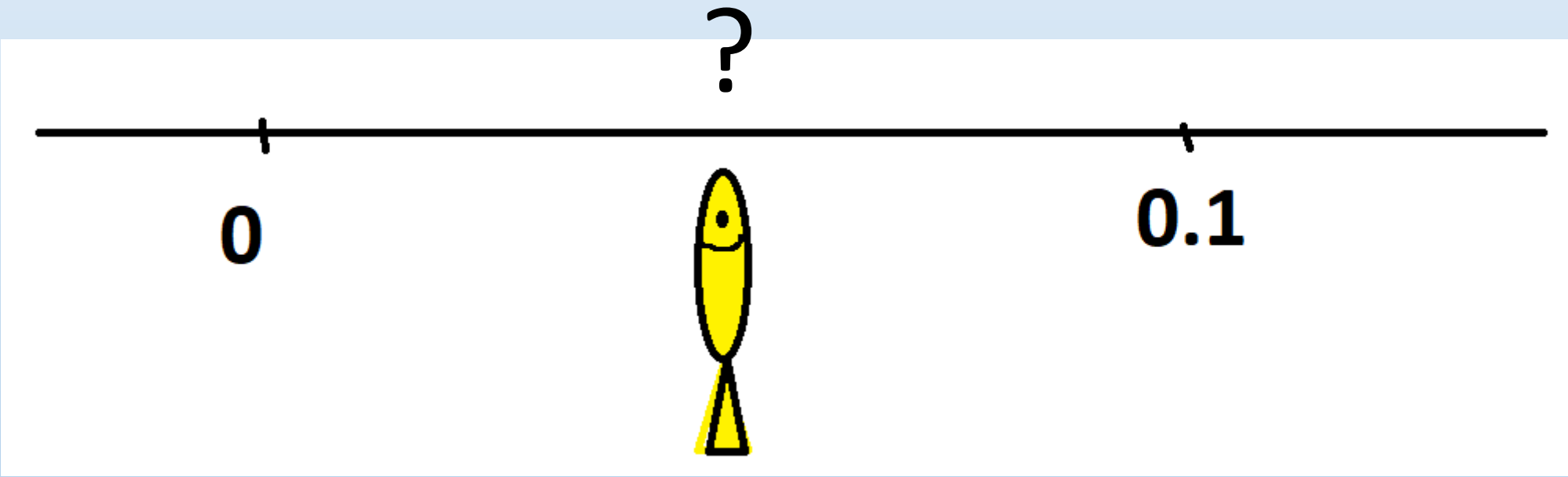
IMI

Малко предистория – годината е 1989

Пол Голденбърг на посещение в 119. СОУ

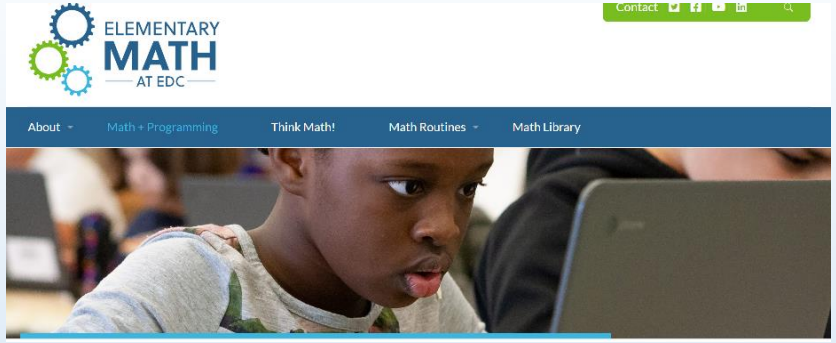


Как да уловим рибката?



На една панелна дискусия – Constructionism 2018

Our Snap!-based microworlds focus on mathematics, and are designed for children grades 2 through 5 (tested even in grade 1). New work we are doing now to infuse that curriculum with programming (inspired by work by Jenny Sendova and others in Bulgaria and by the ScratchMaths work done by Richard Noss and Celia Hoyles of the UK and Ivan Kalaš of Slovakia)

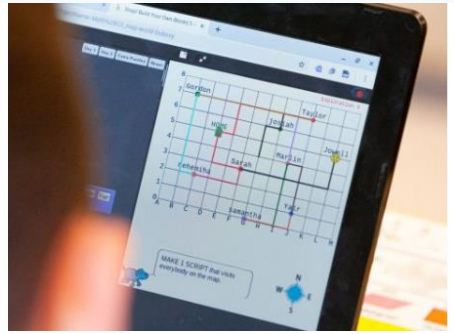


Микросветовете на *Educational Development Center*

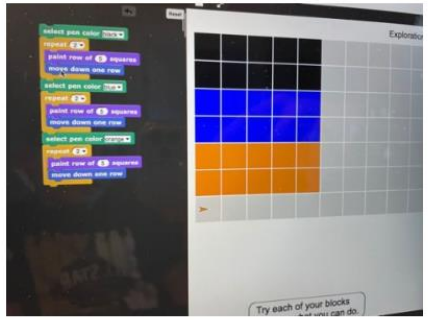
[Math + Programming – Elementary Math (edc.org)]

Number Line

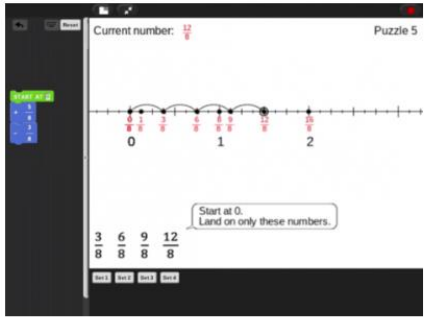
1s, 10s, 100s



Town Map

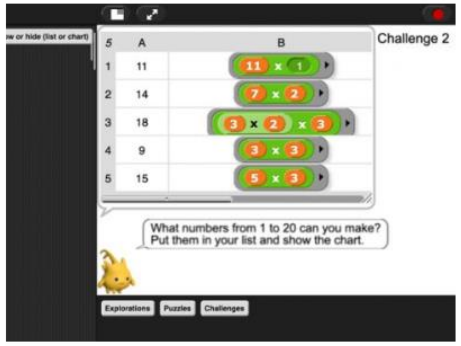


Arrays



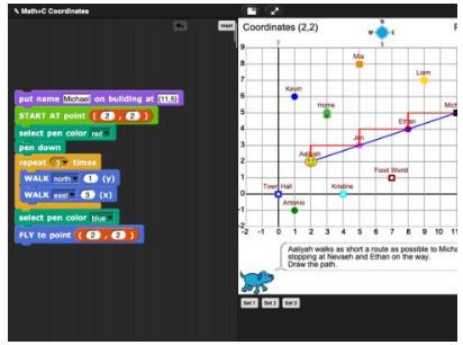
Fractions on a Number Line

Decimal Number Line



Multiplication

Angles and Shapes

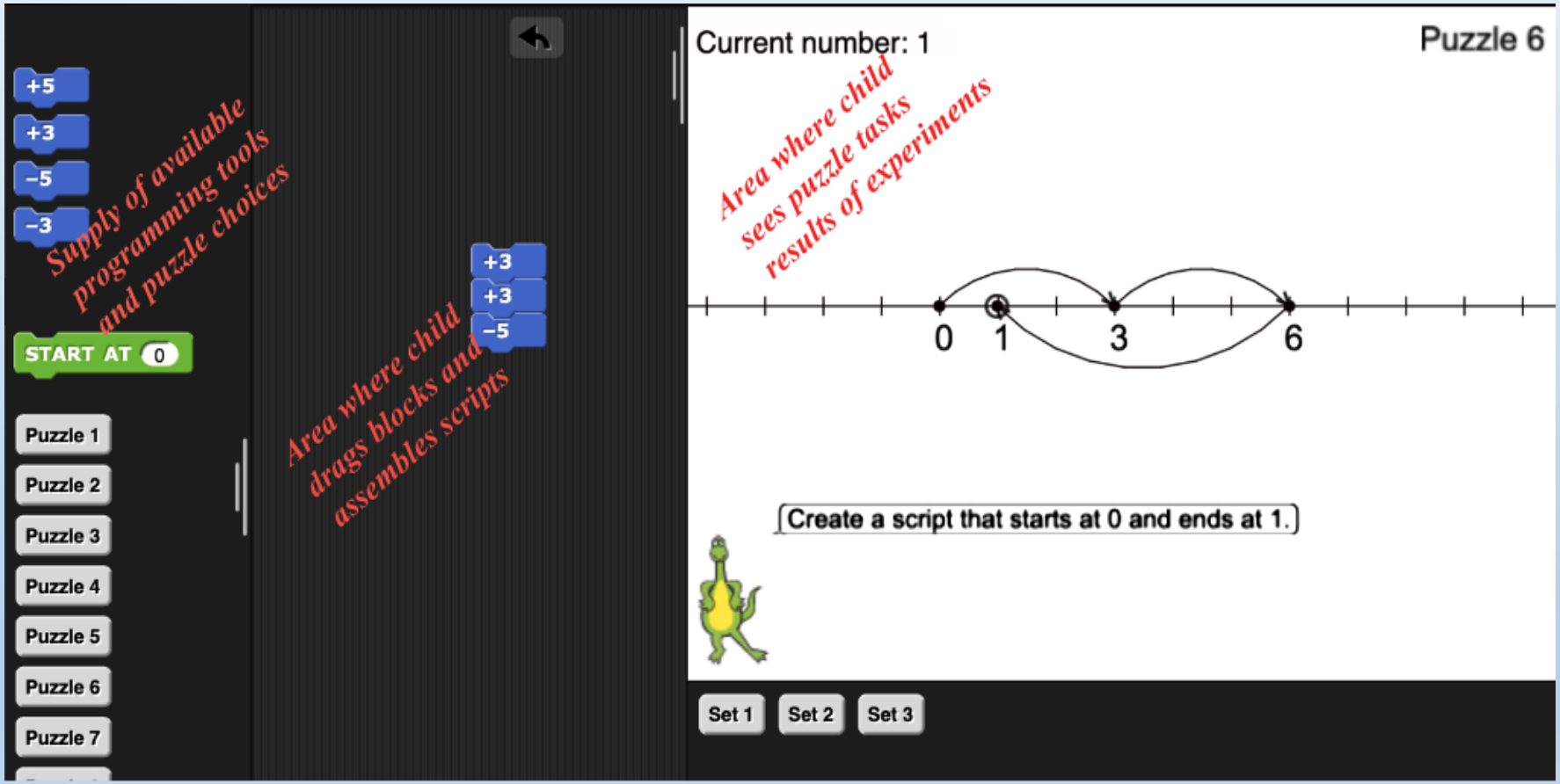


Coordinates

Разходки по числовата права

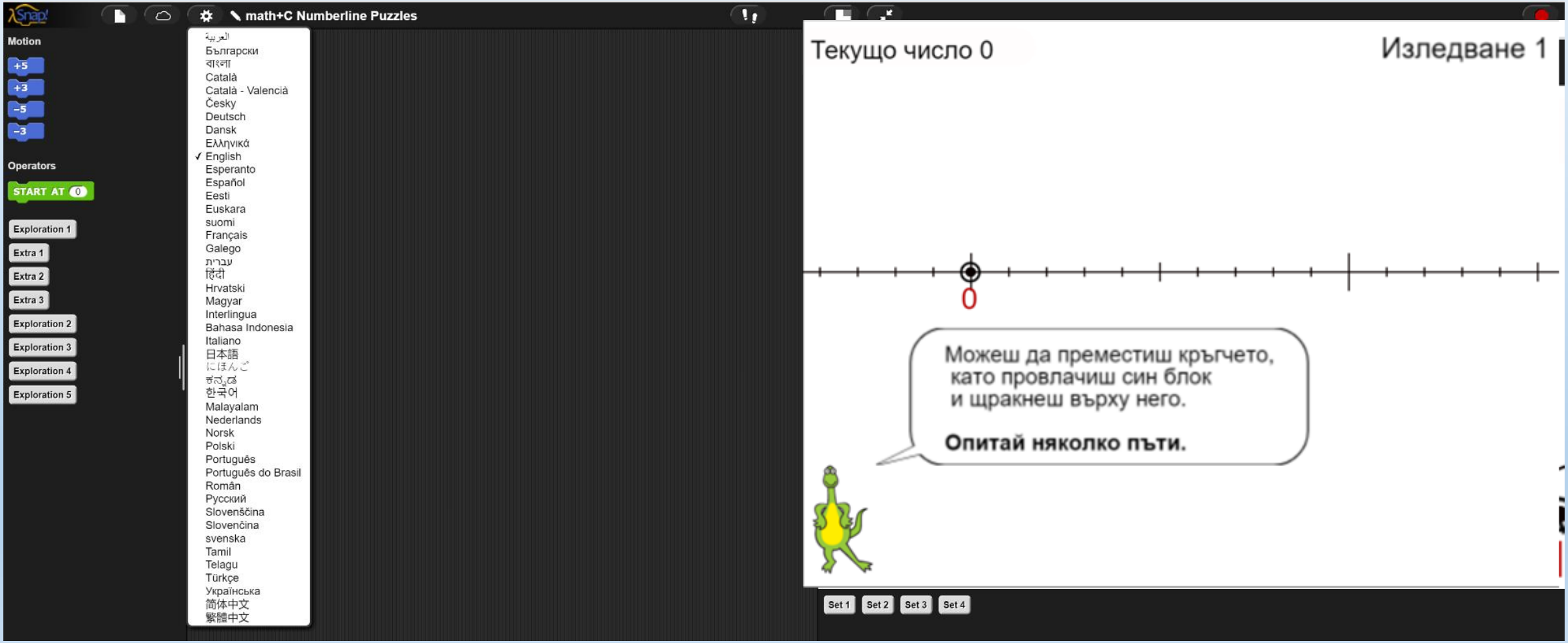
(адаптиран и на български)

https://go.edc.org/MW-number-line

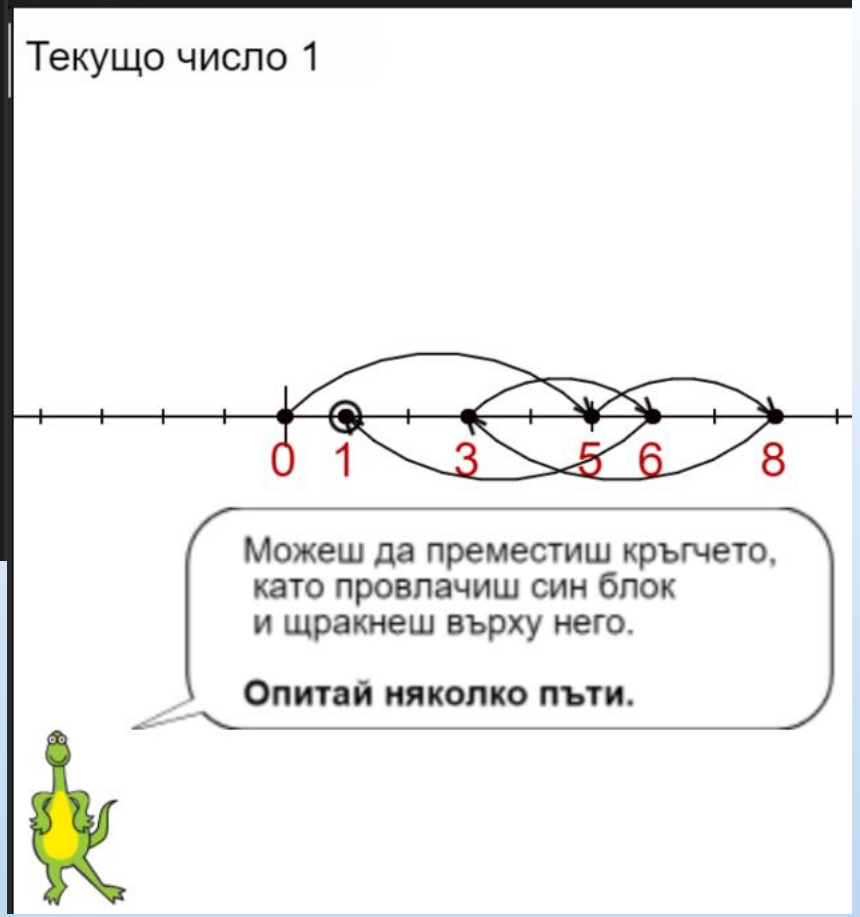


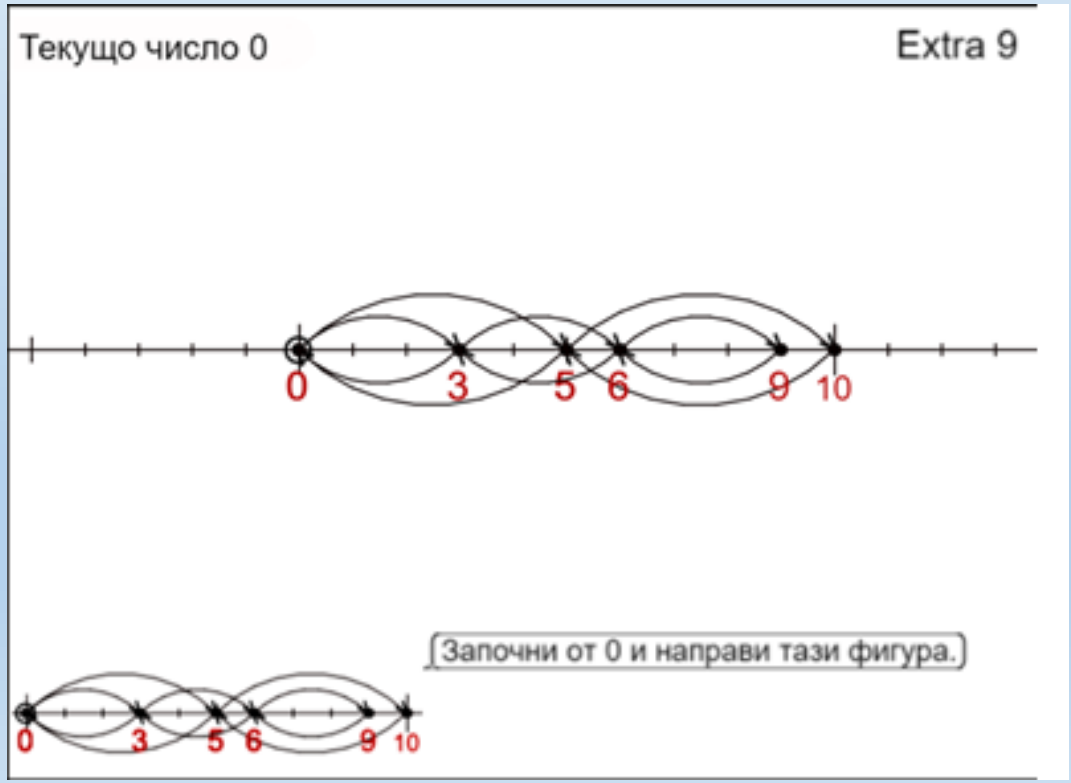
https://microworld.edc.org/version/v2/snap.html#present:Username=math%2Bc&ProjectName=math%2BC%20Numberline%20Puzzles

Избираме език и отново щракваме

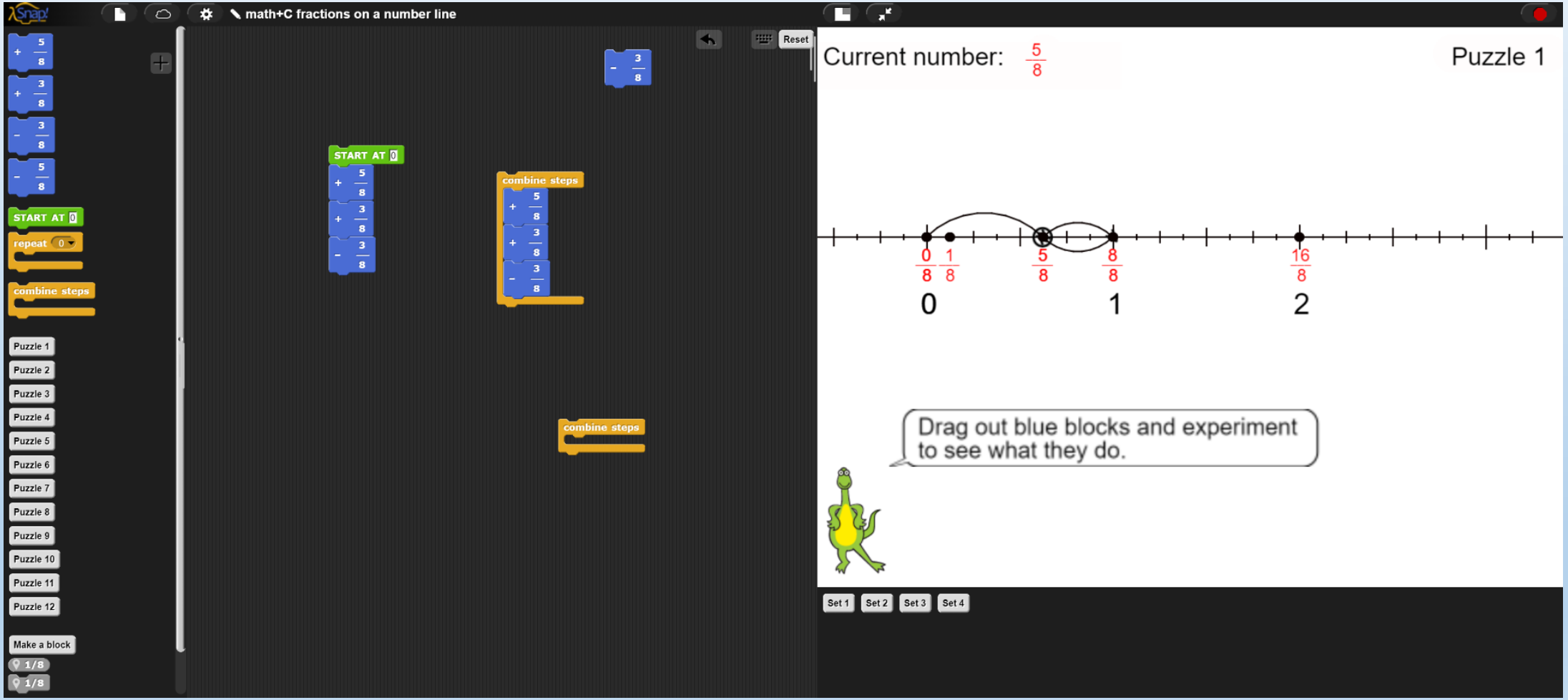


Няколко изследвания

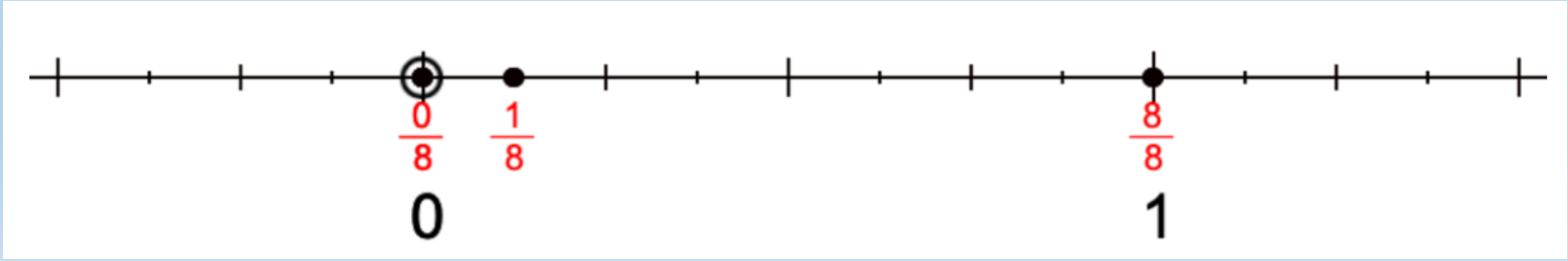




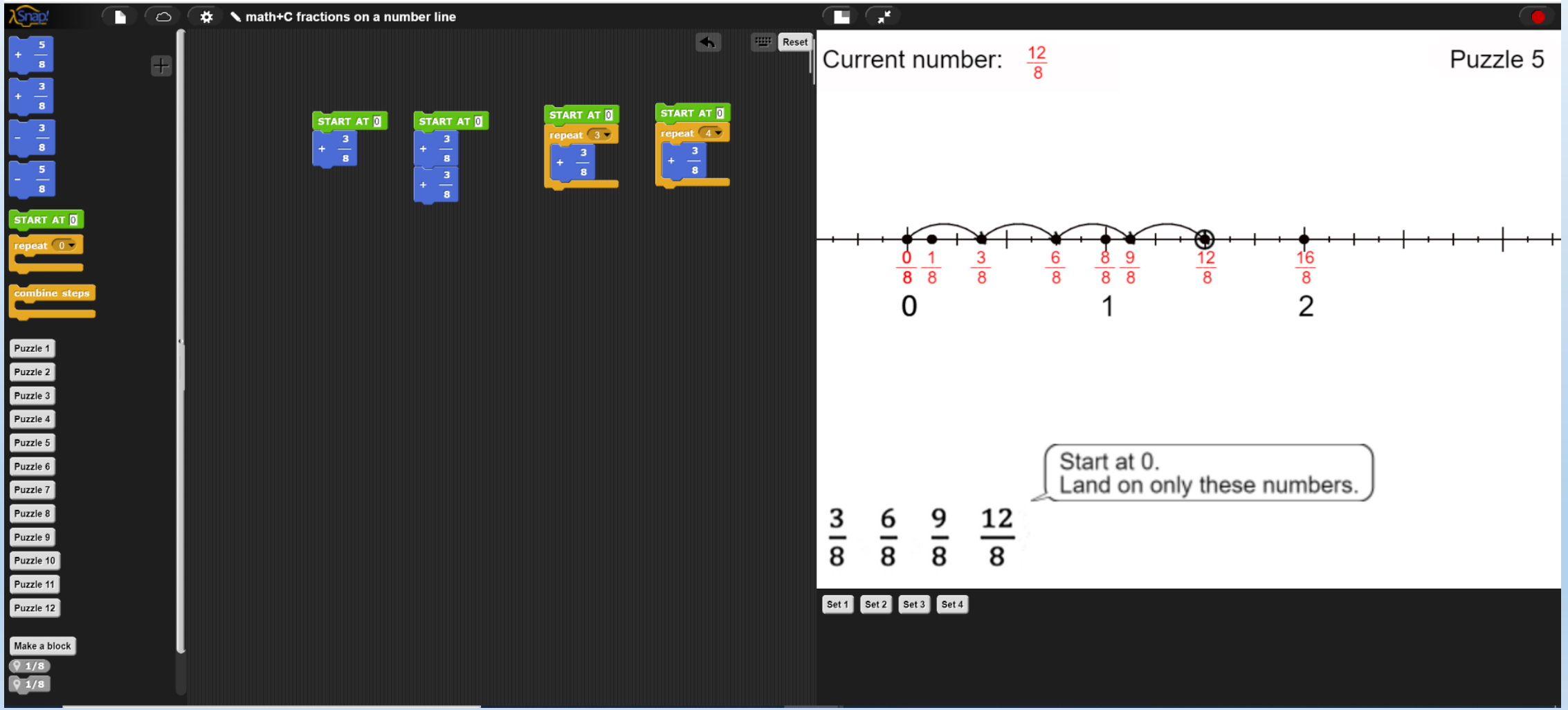
Разходки с дроби



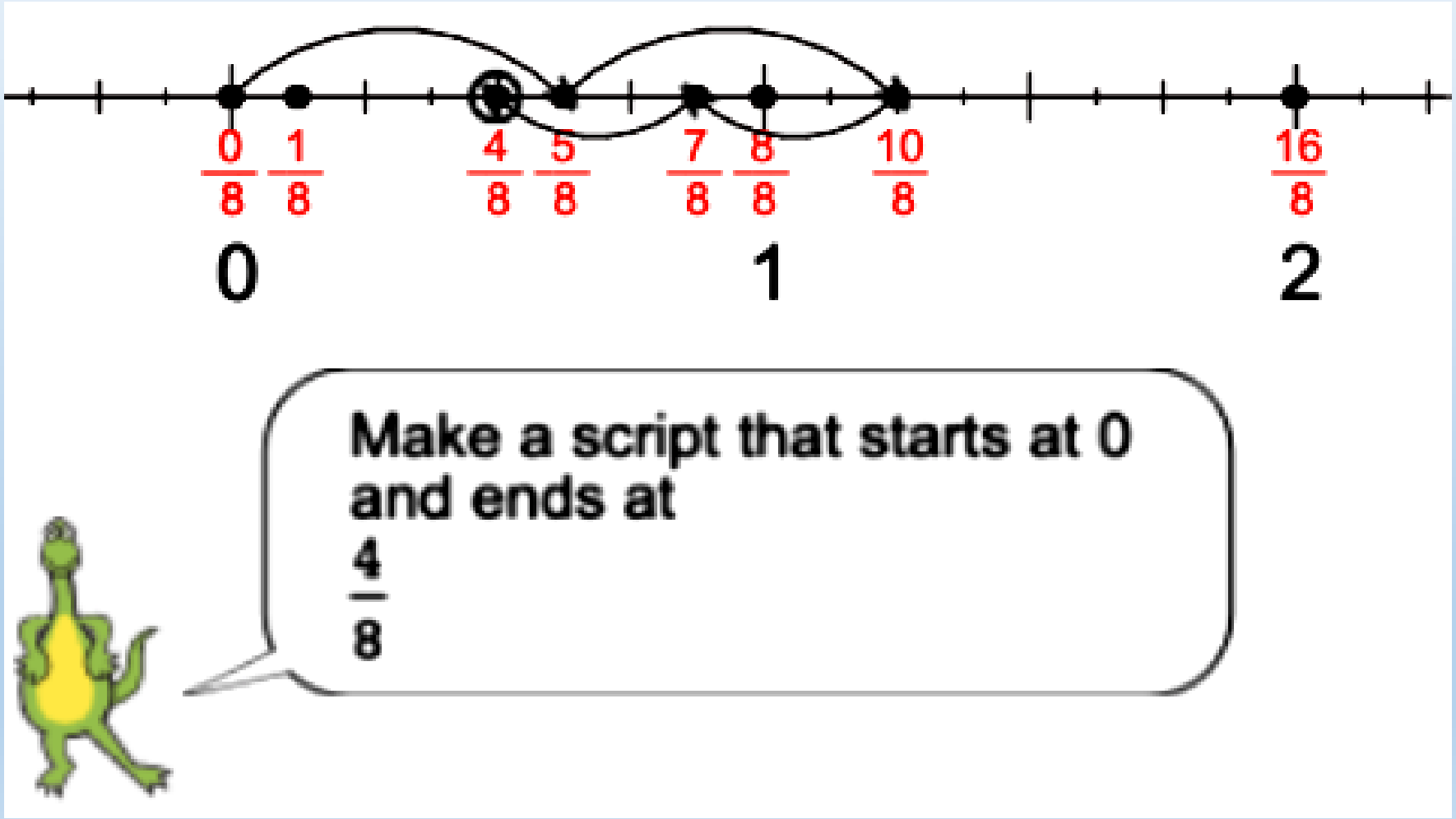
Разходки с ограничения – 4 основни блокчета



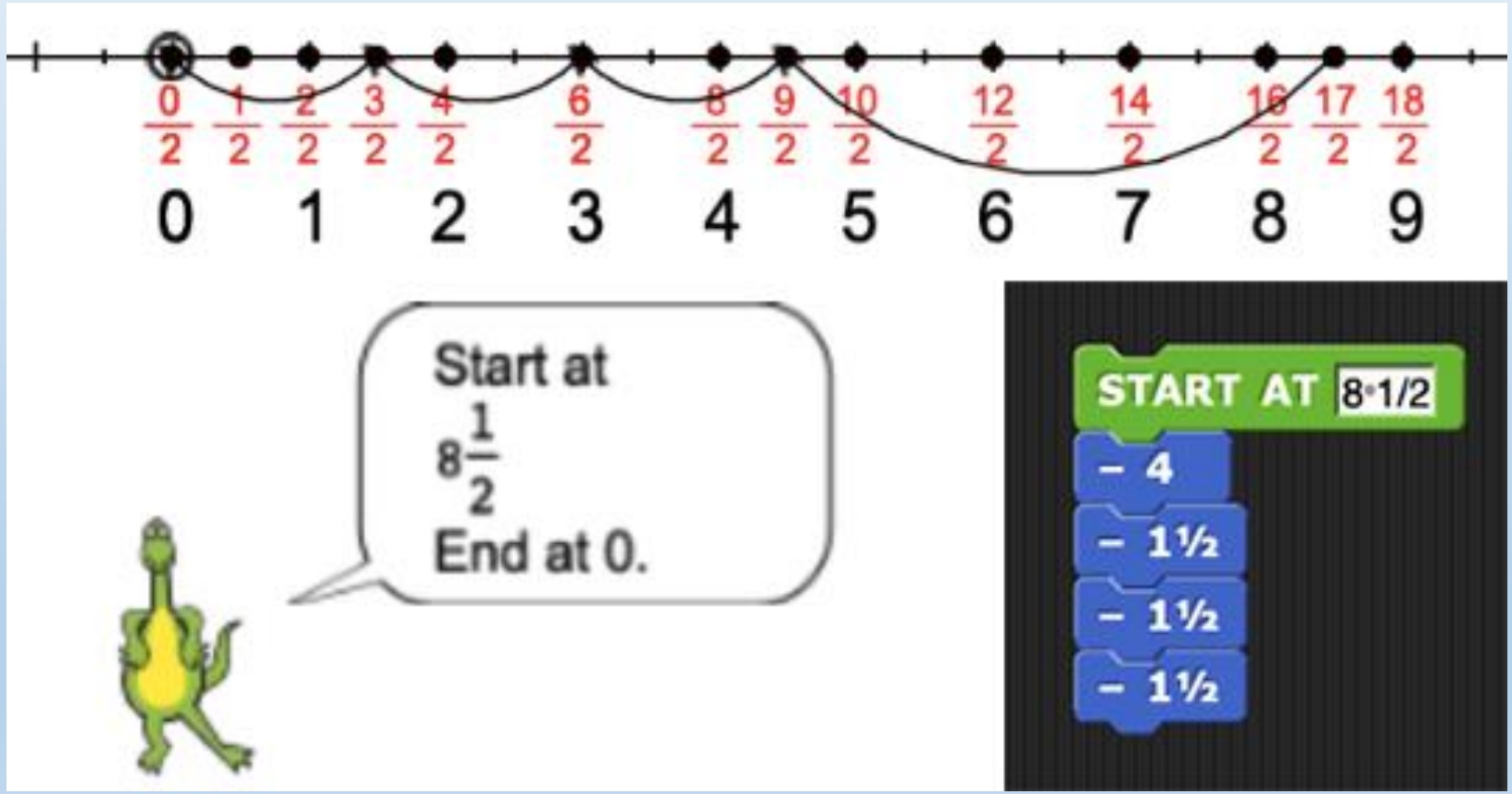
Да посетим конкретни дроби



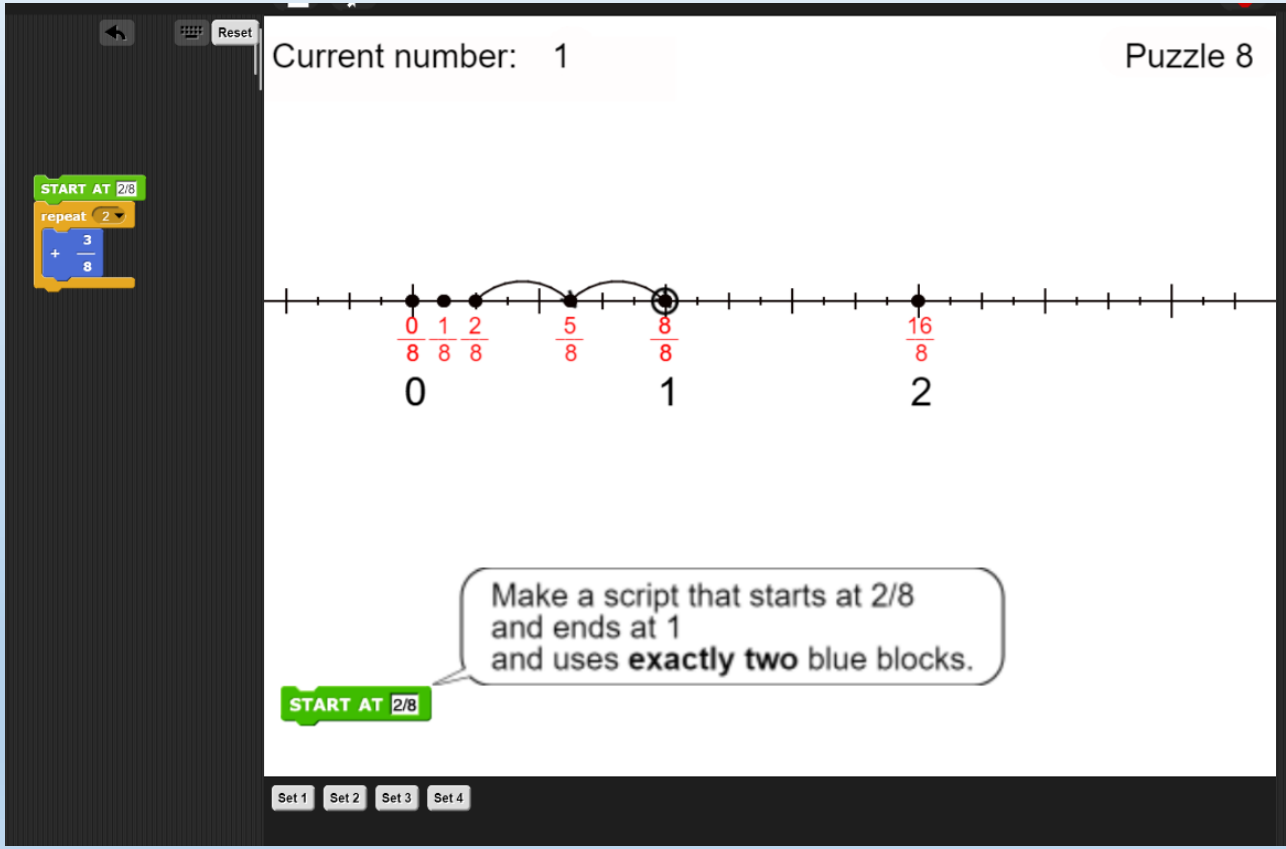
От 0 до 4/8

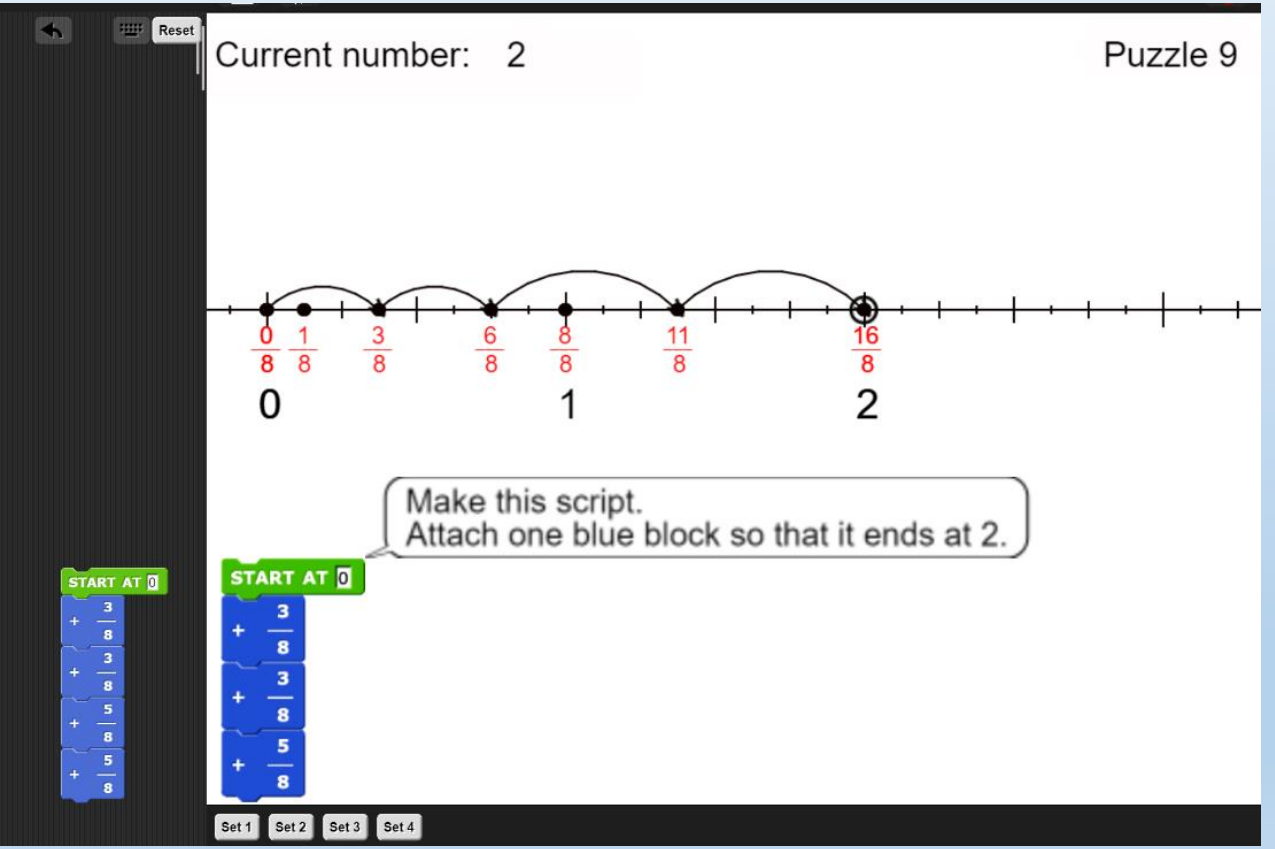

0/8
1/8
4/8
5/8
7/8
8/8
10/8
16/8
0
1
2
Make a script that starts at 0 and ends at
4/8

В стил на Фелини

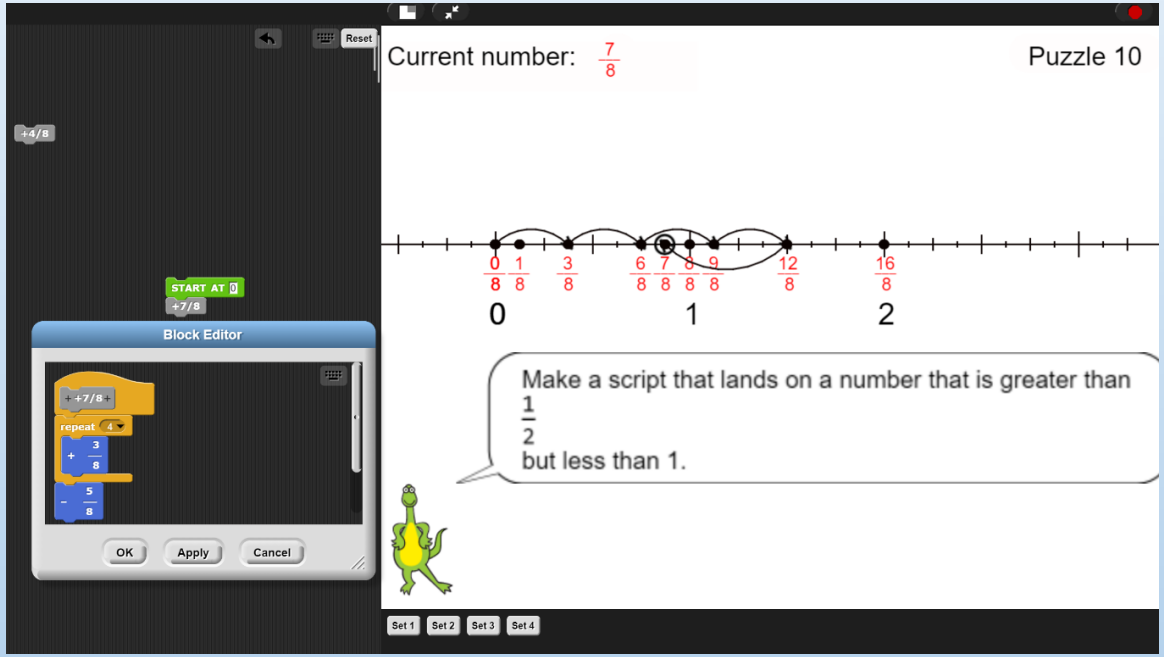


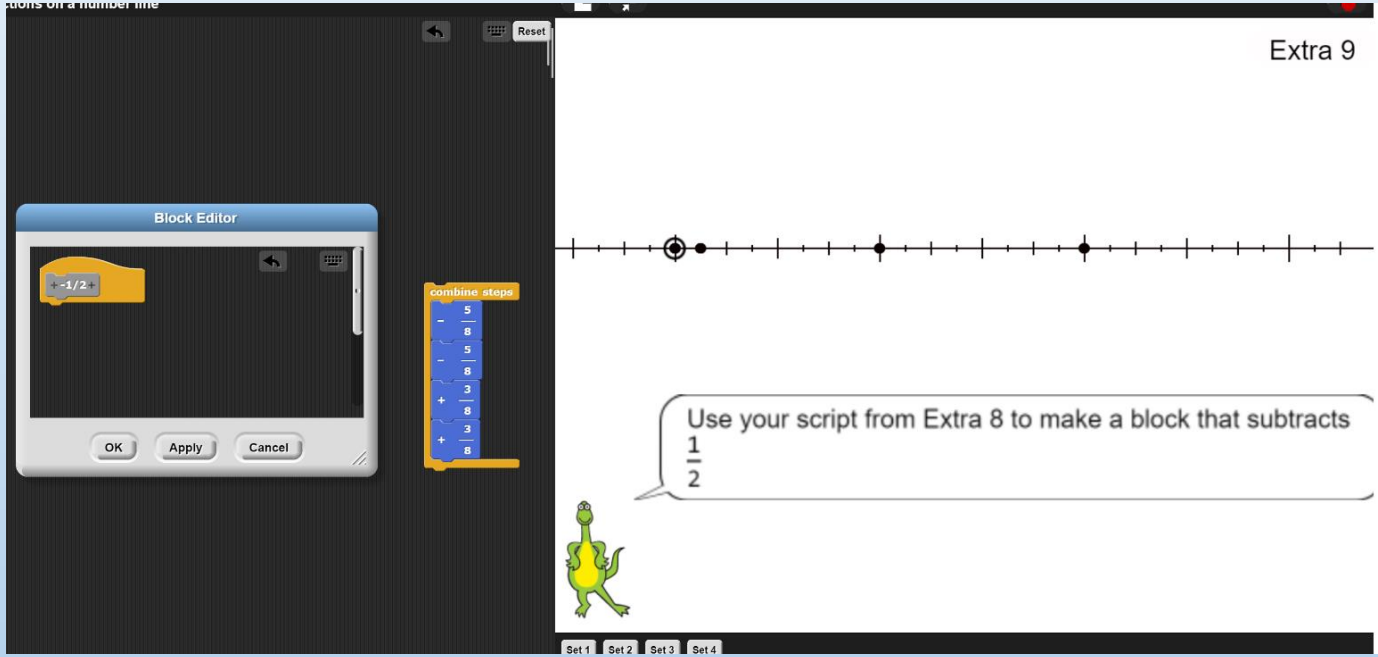
Ограничения в скрипта



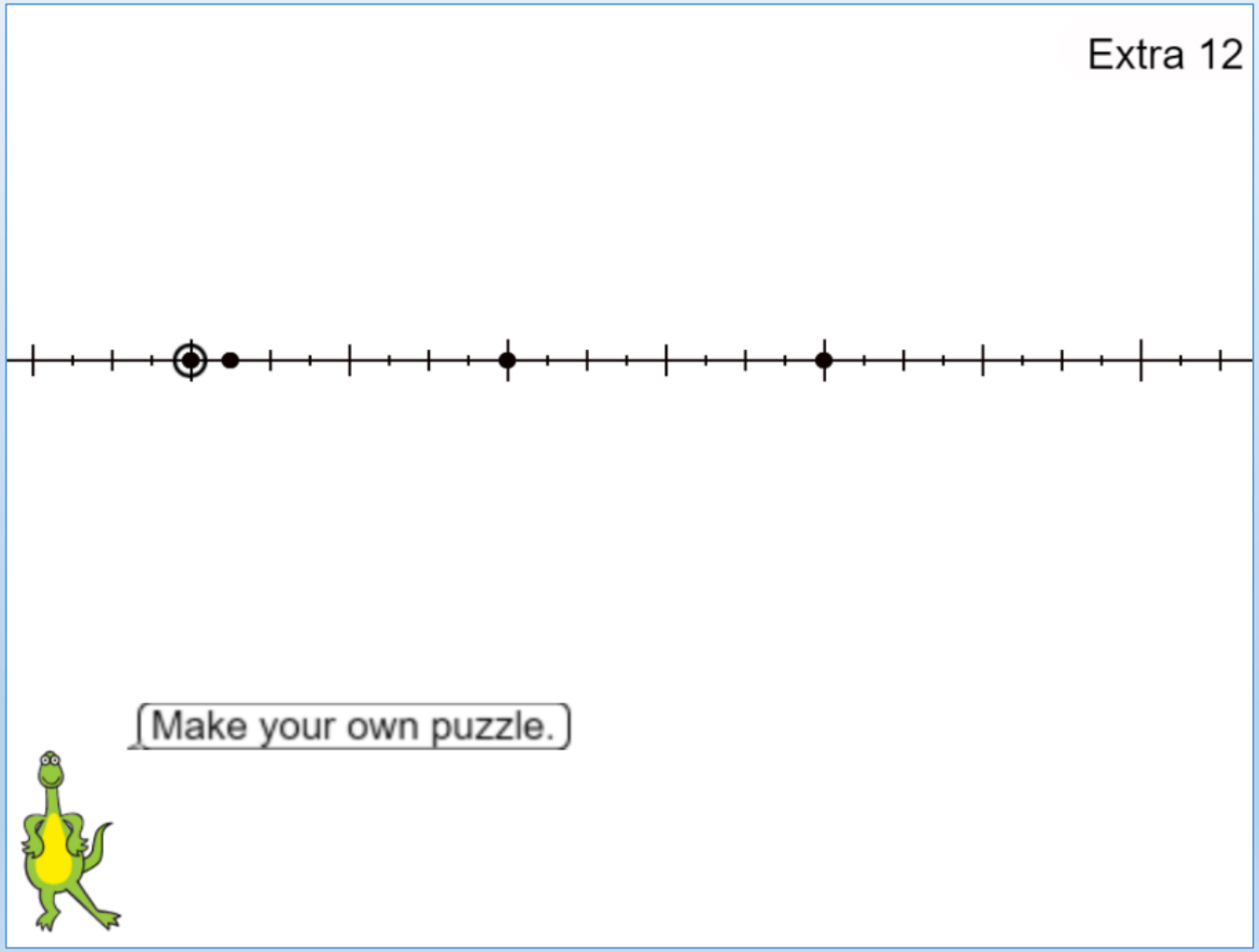


Резултат в интервал и създаване на нов блок

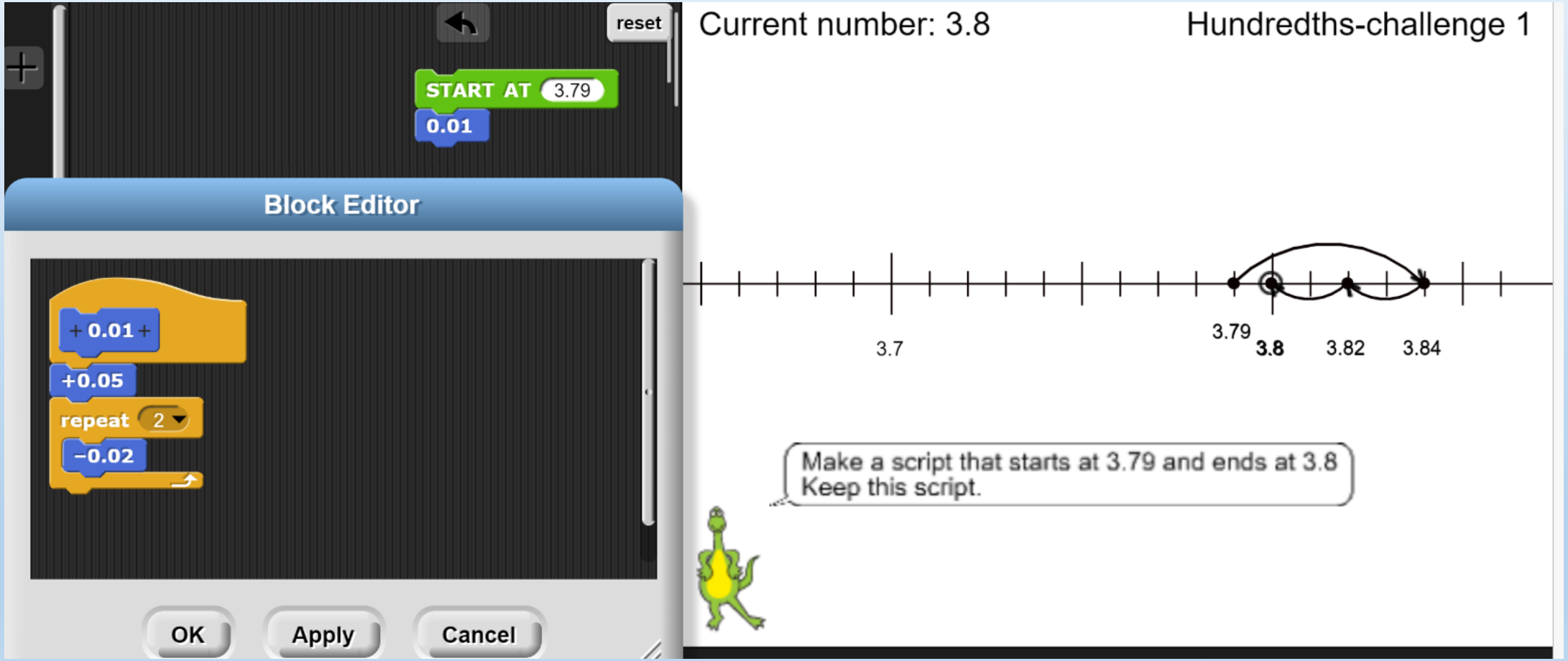




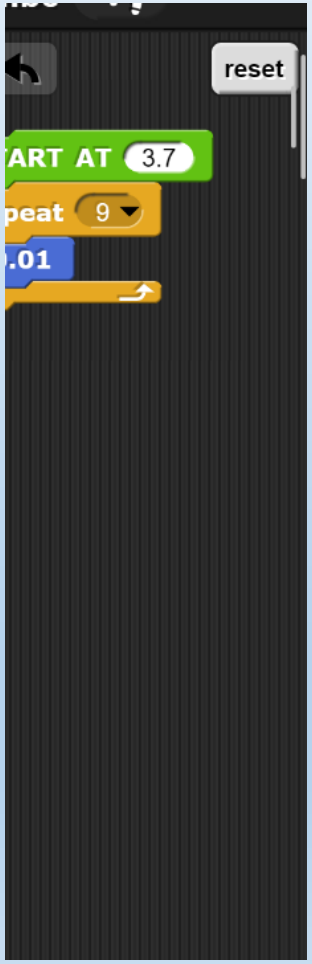
Децата стават автори на *загадки*!

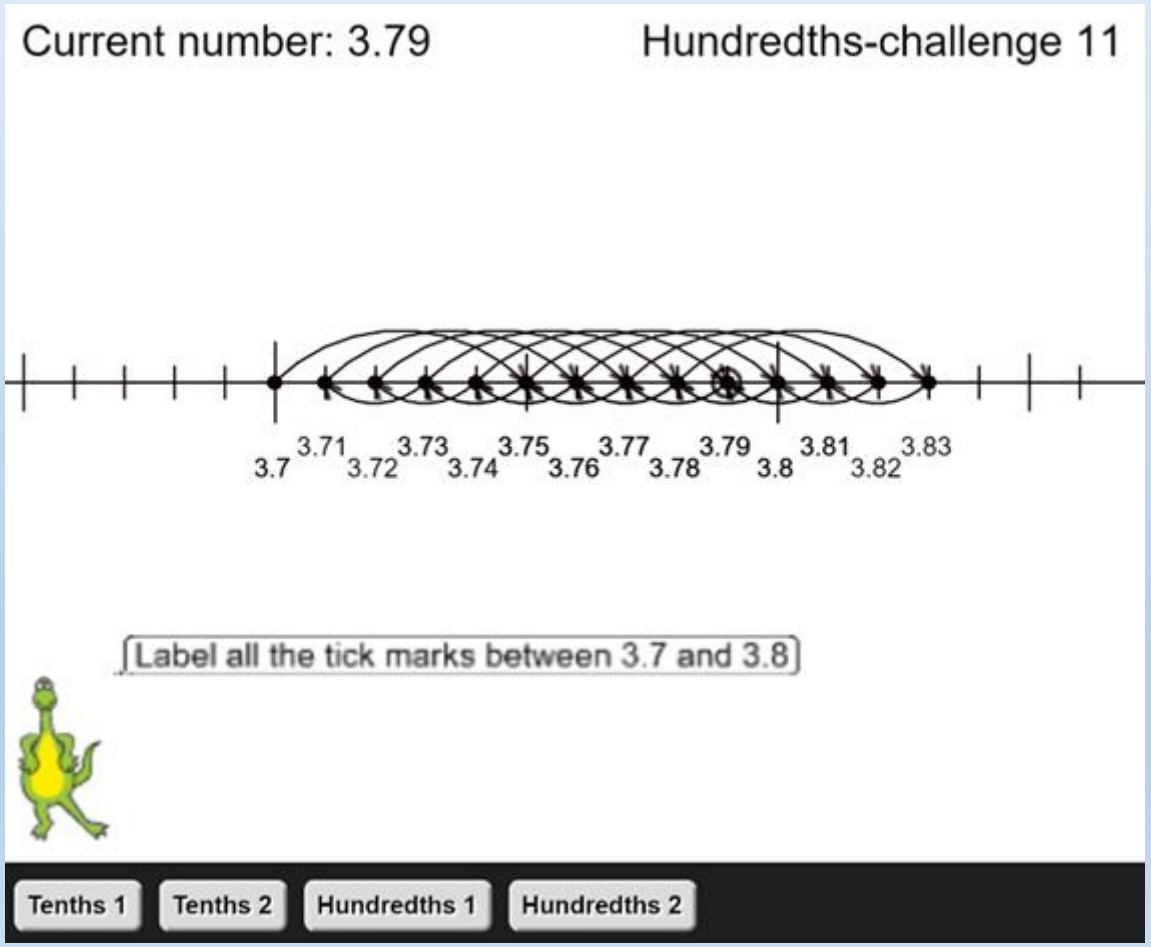


Направи си стотинка!

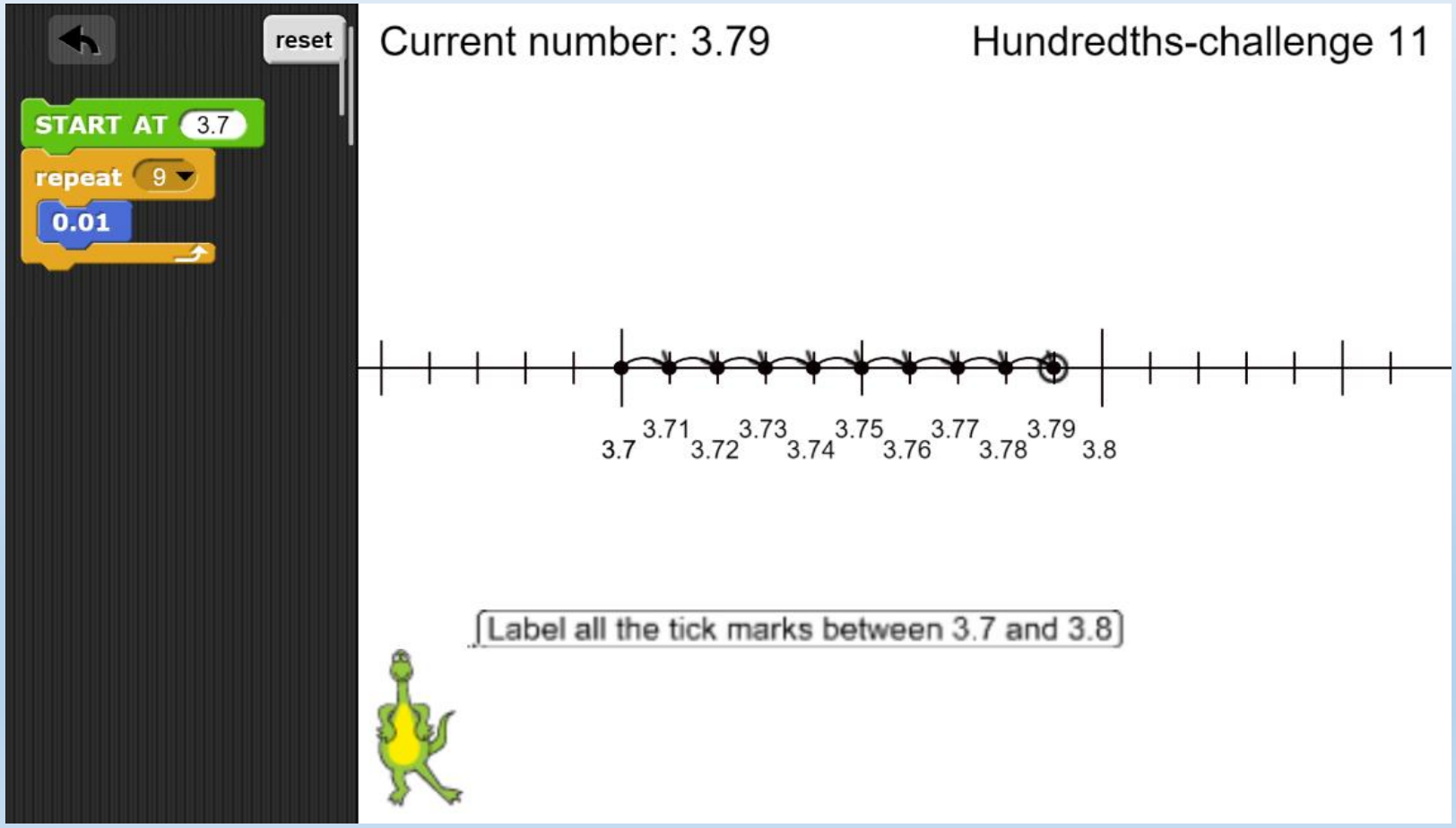


Да отбележим всички стотни в [3.7, 3.8]



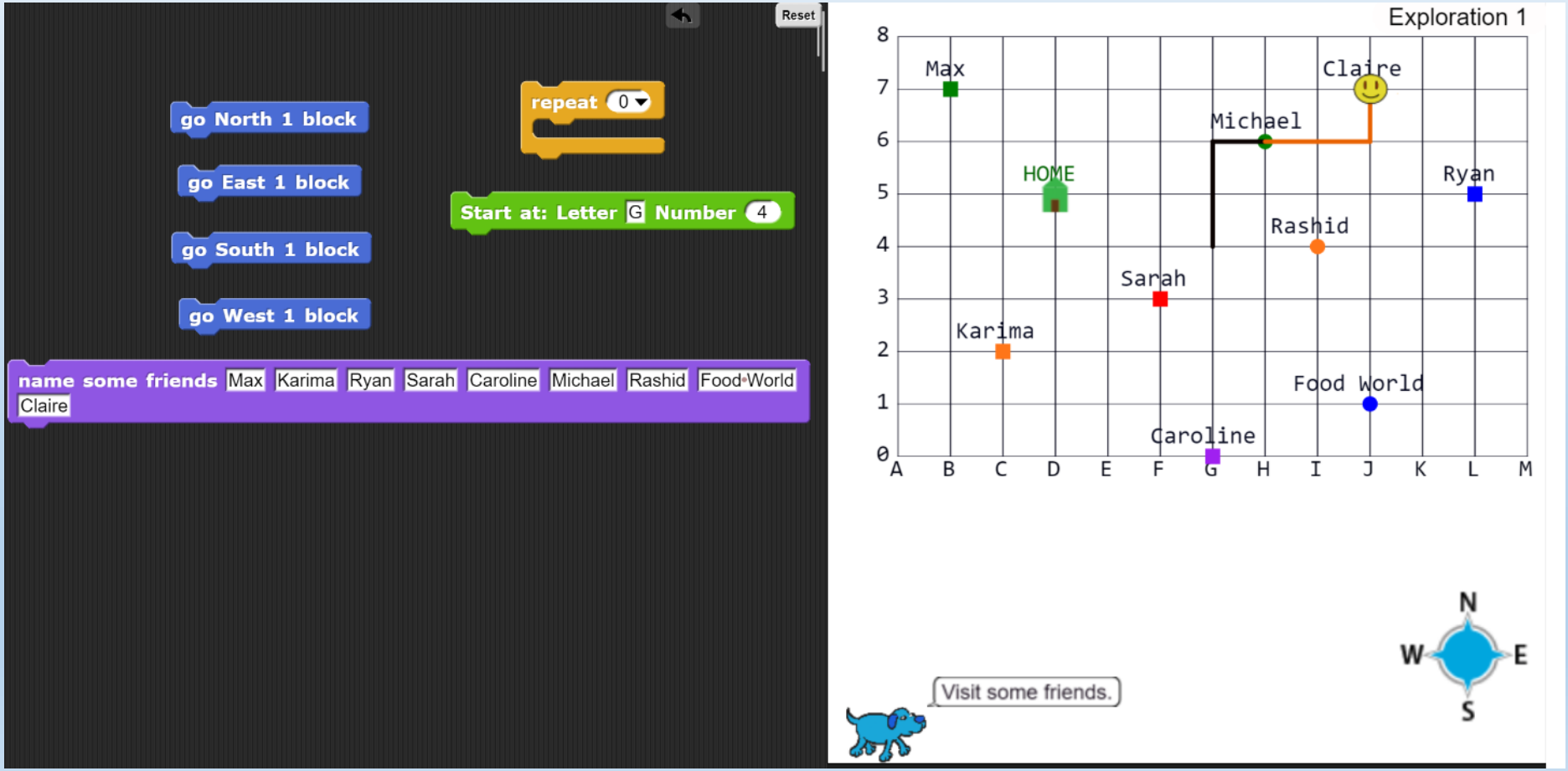


За грешката имало лек!

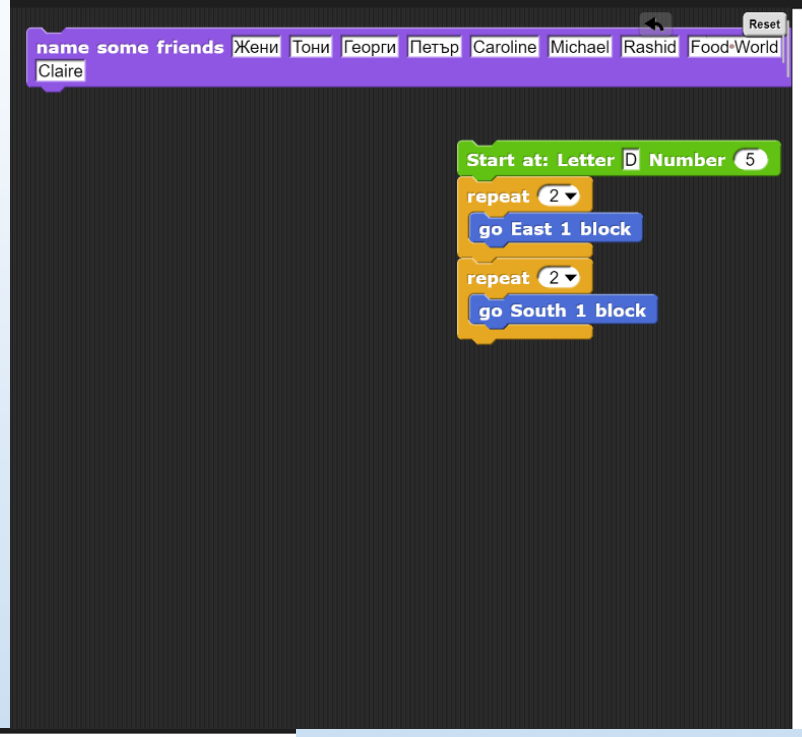


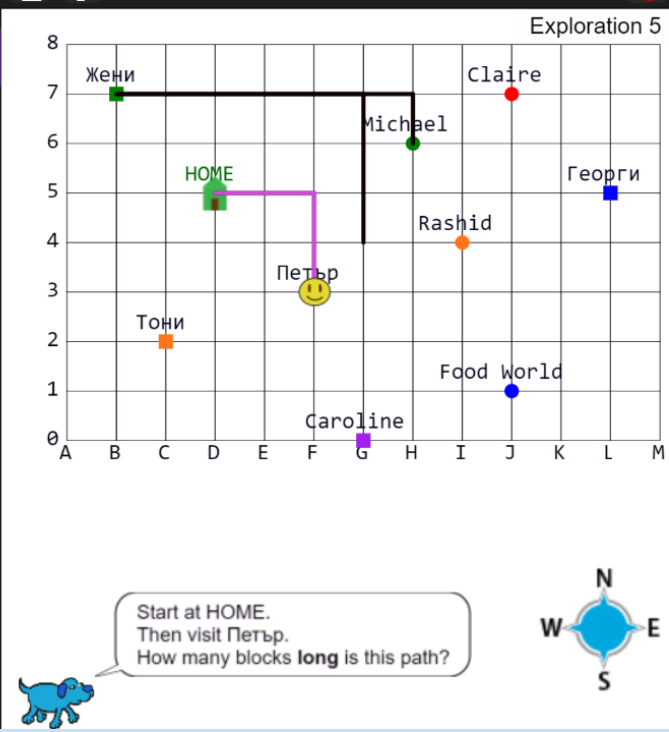
Разходка по Манхатън

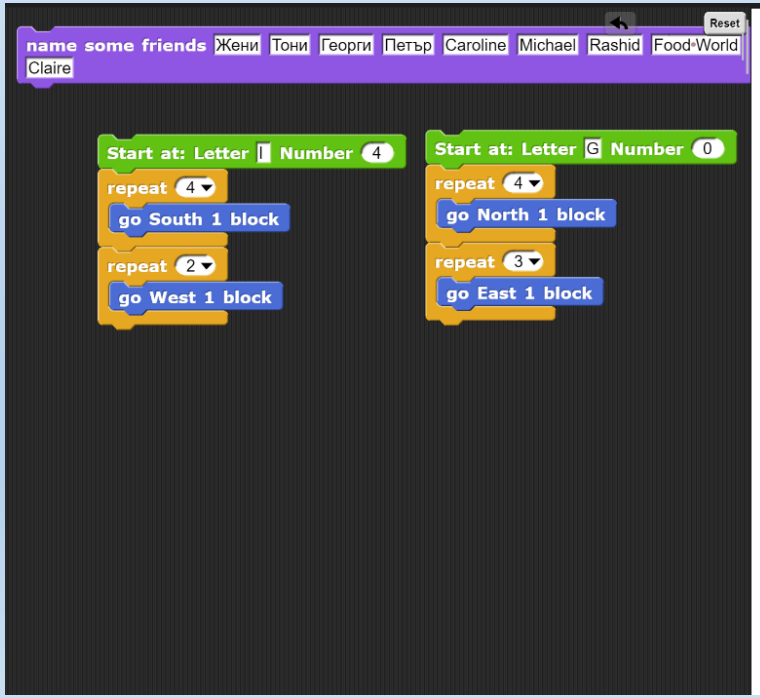
https://go.edc.org/MW-map

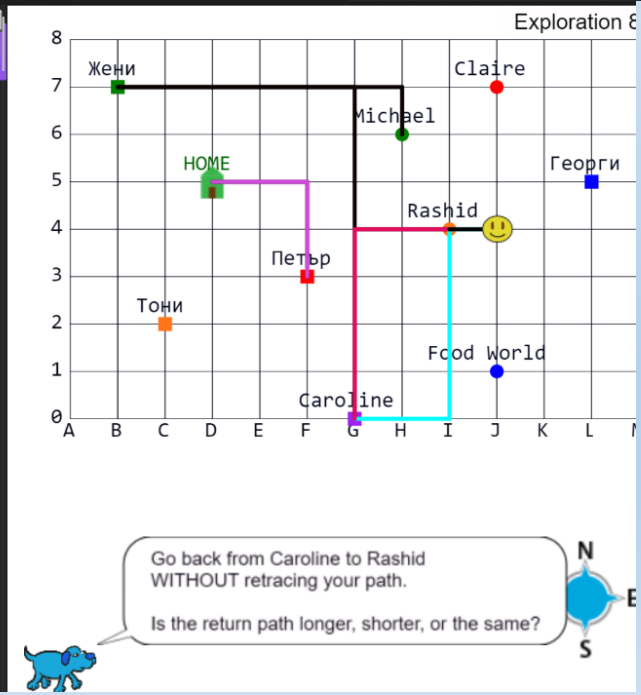


В стил на търговския пътник

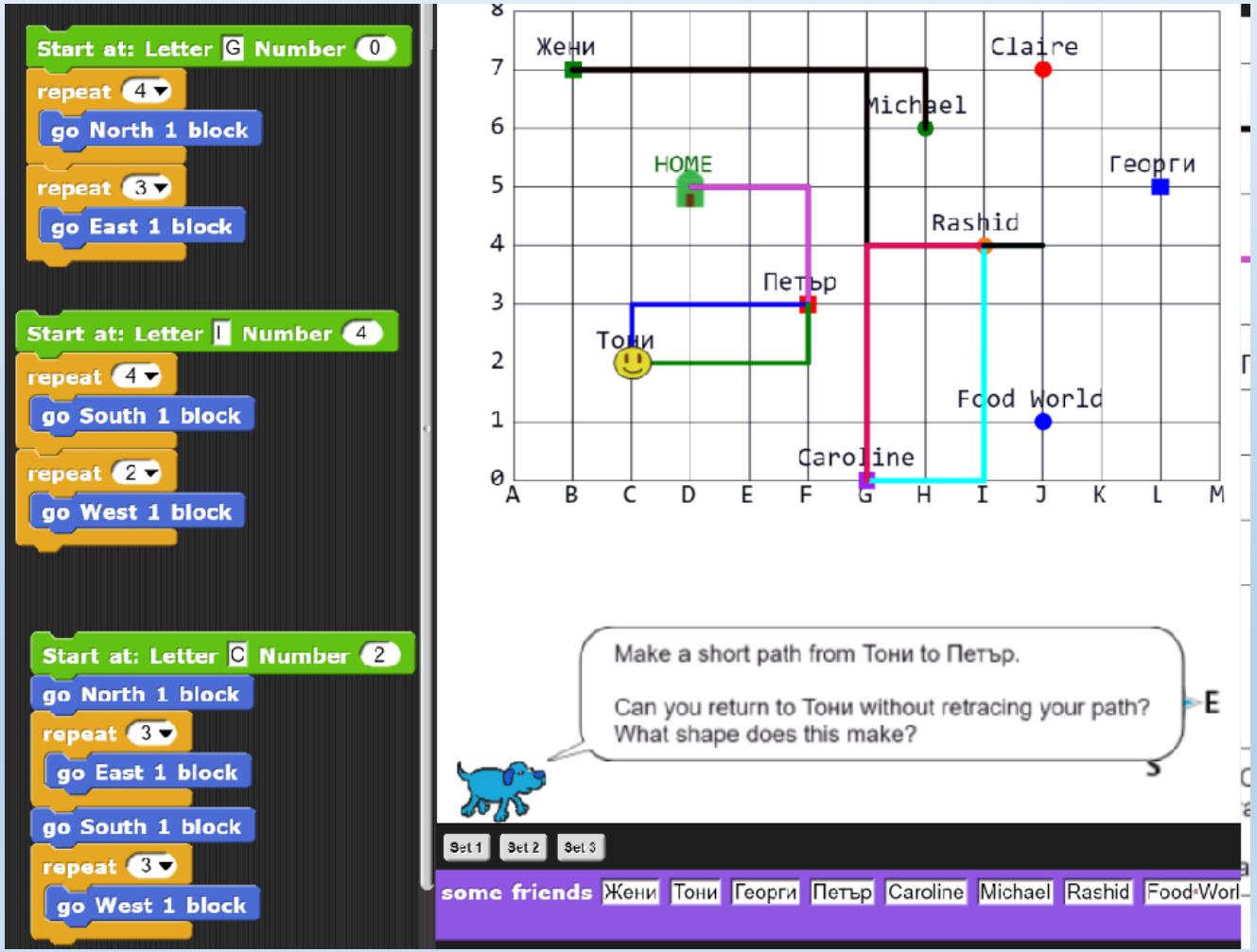


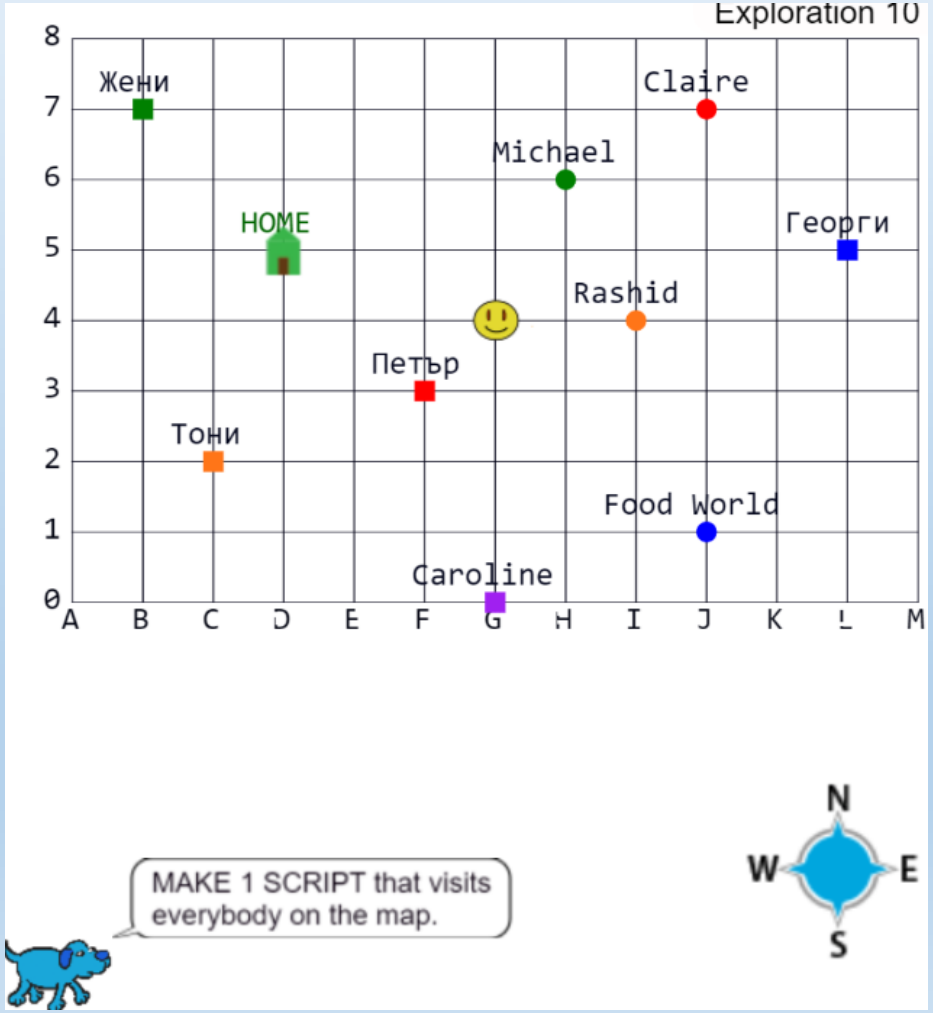




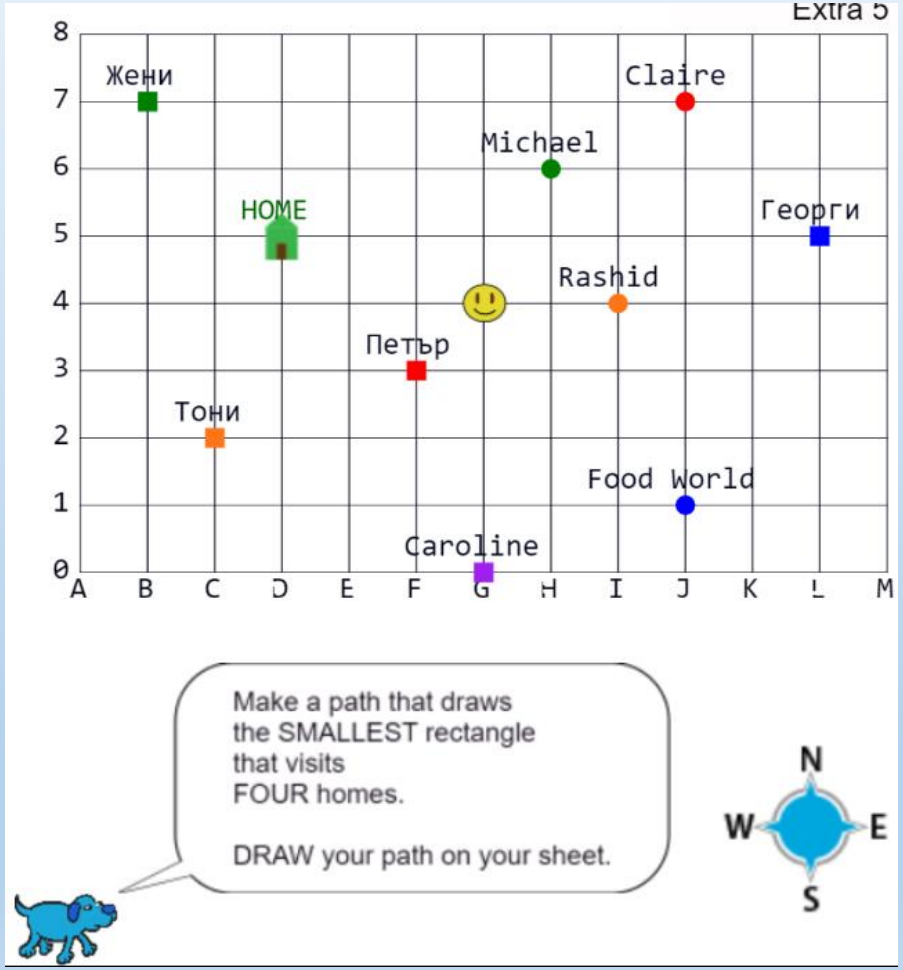


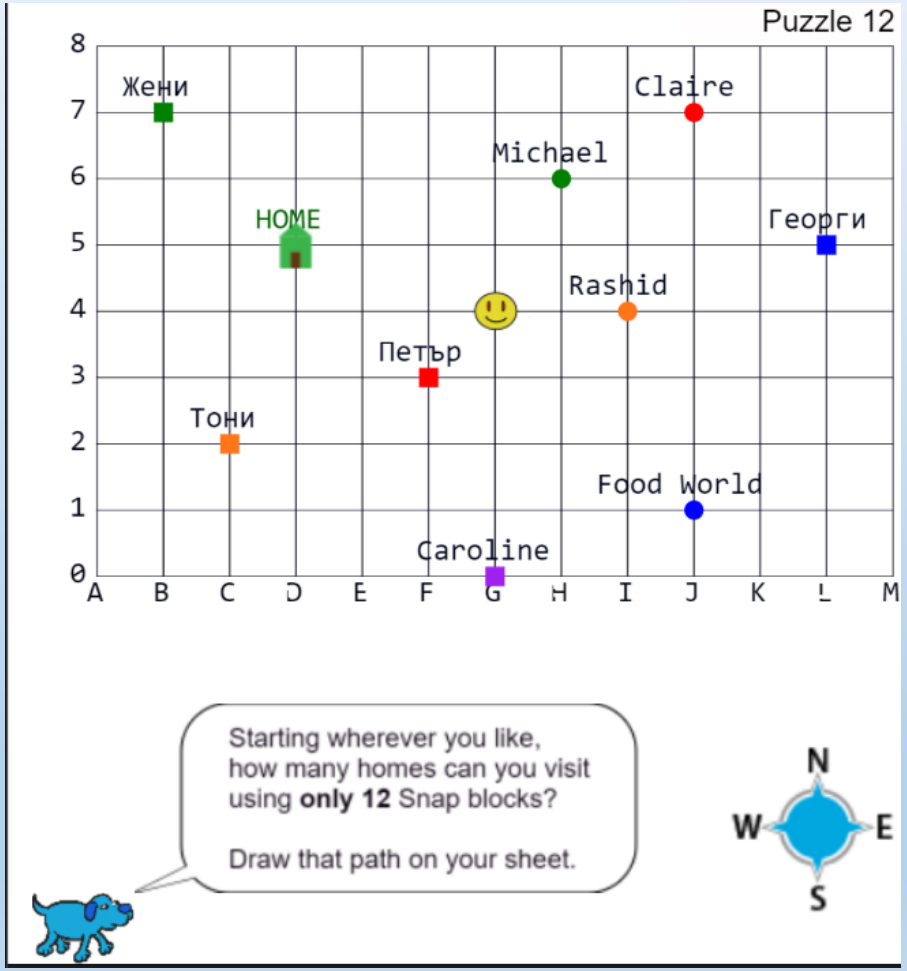
Маршрути и геометрични фигури



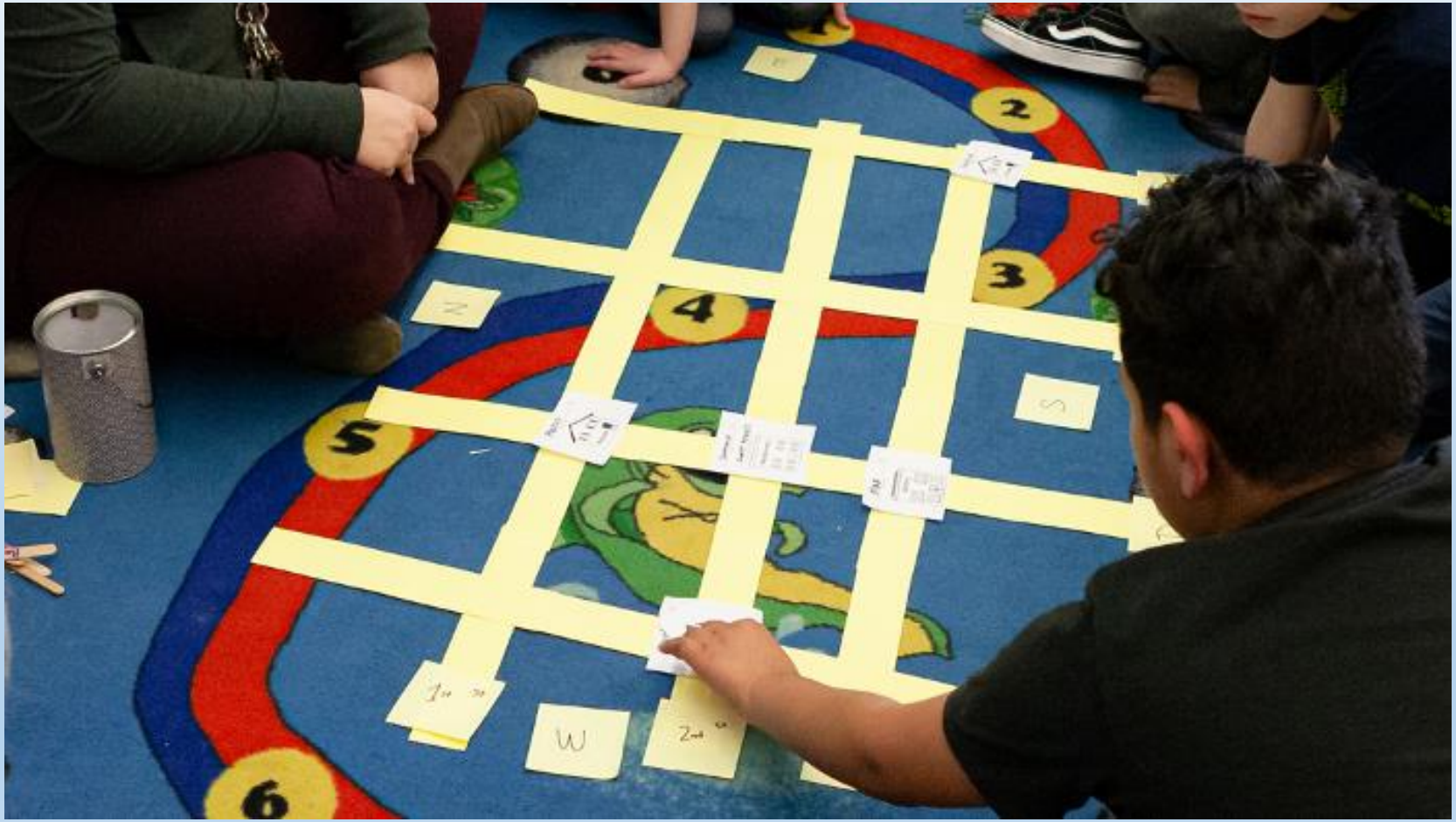


Маршрути с ограничения



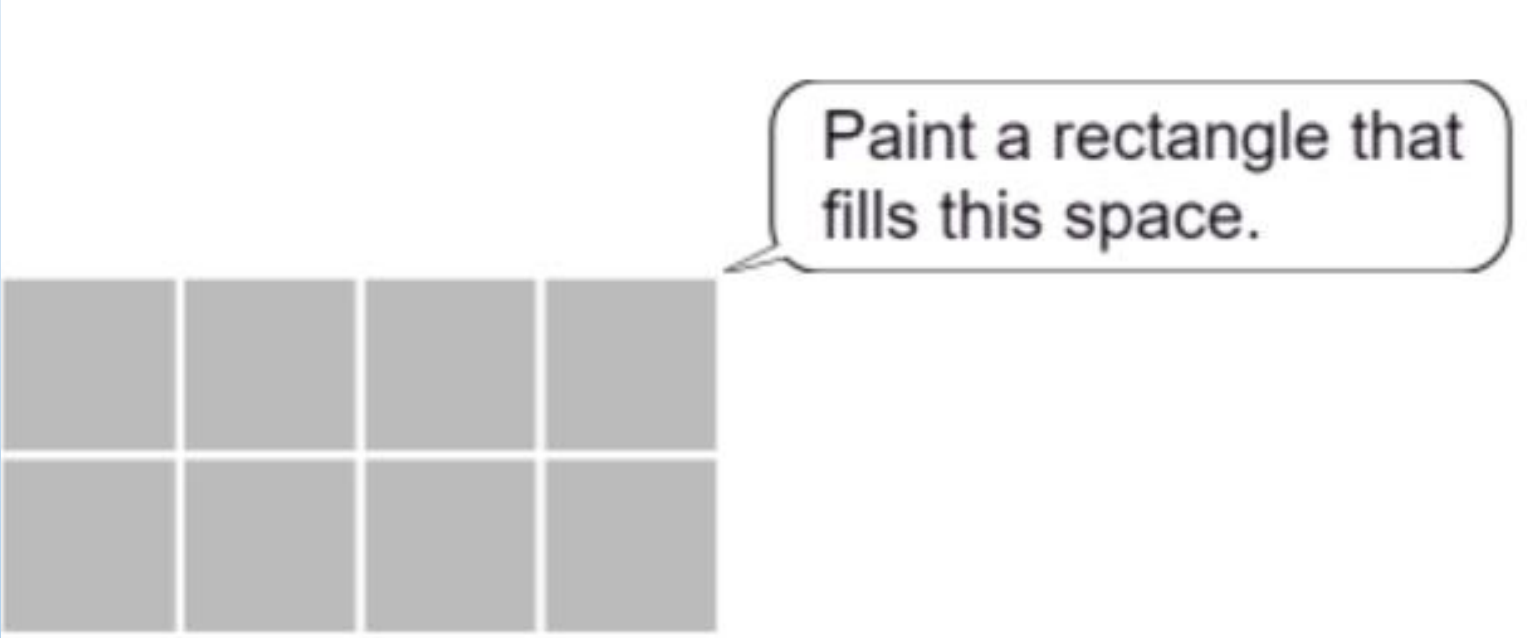


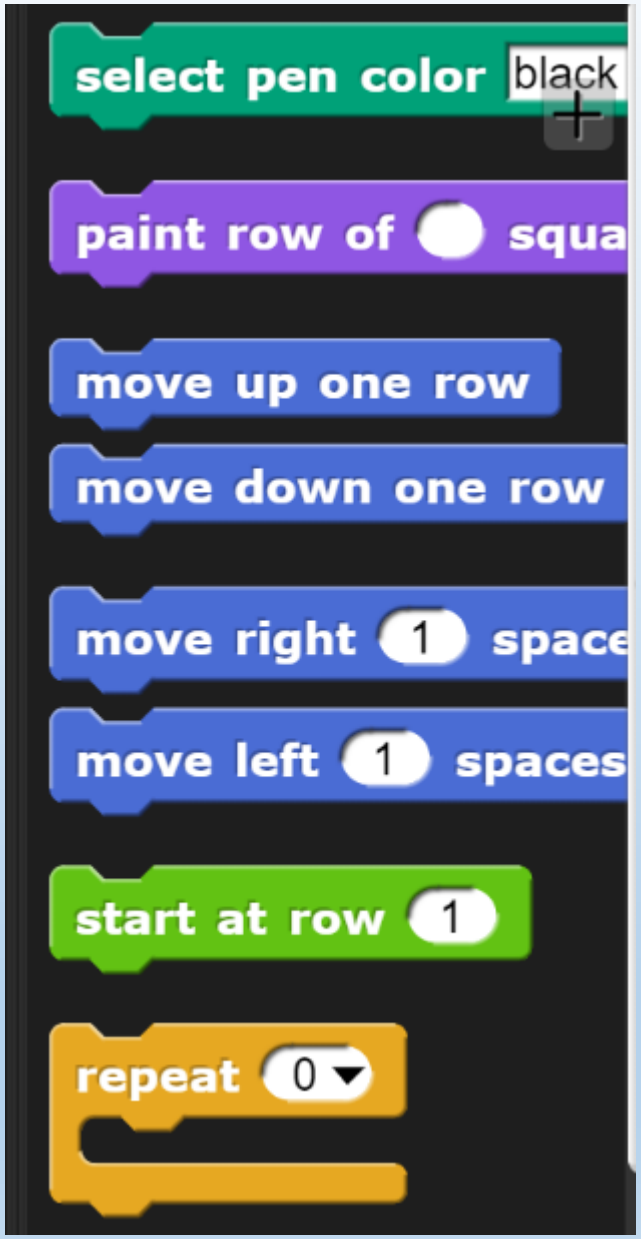
И на земята...



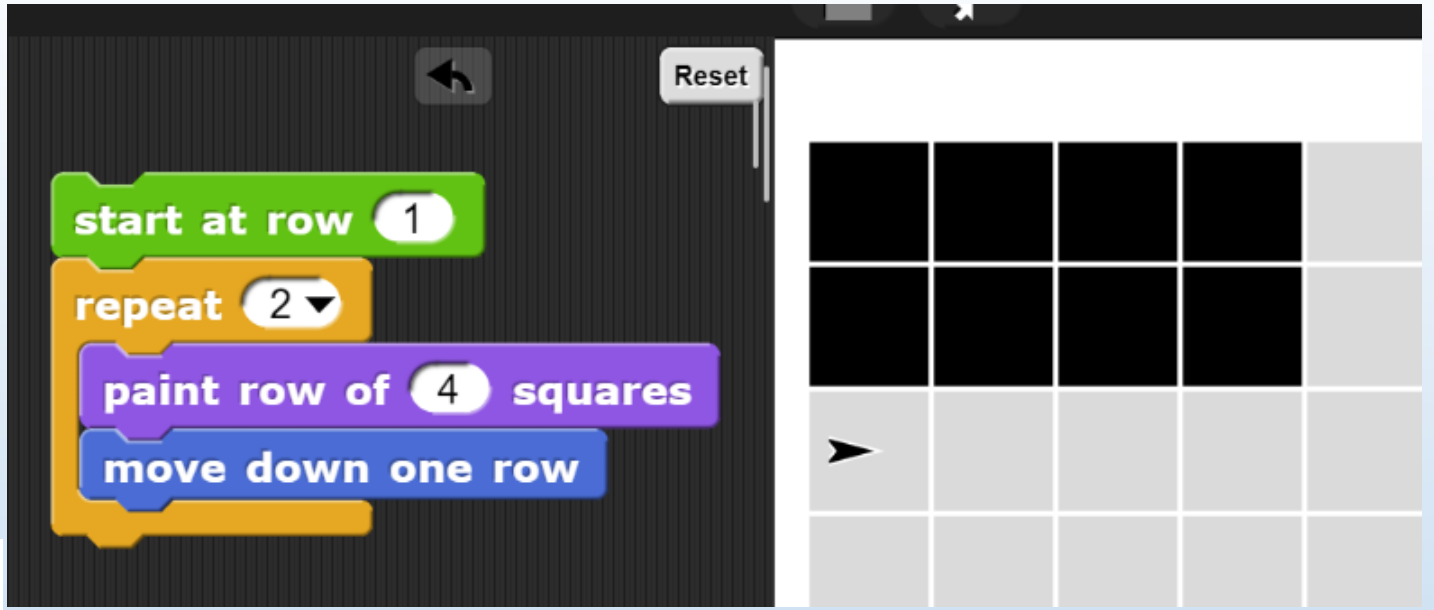
Фигури от квадратчета

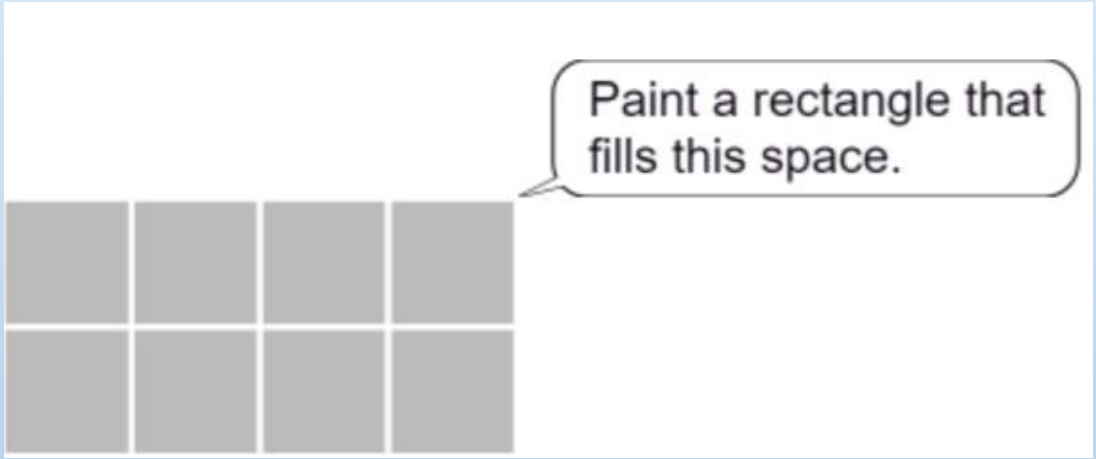
https://go.edc.org/MW-arrays

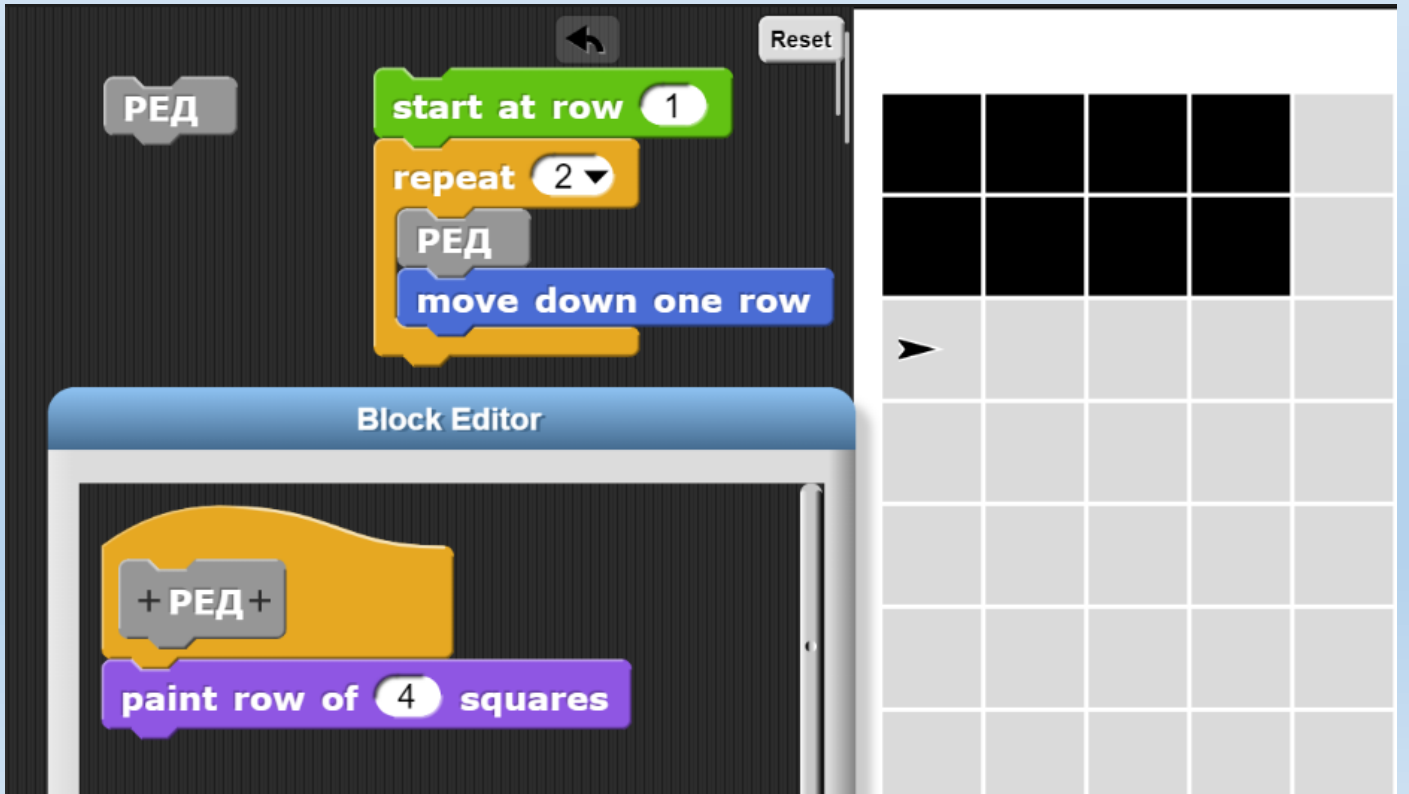


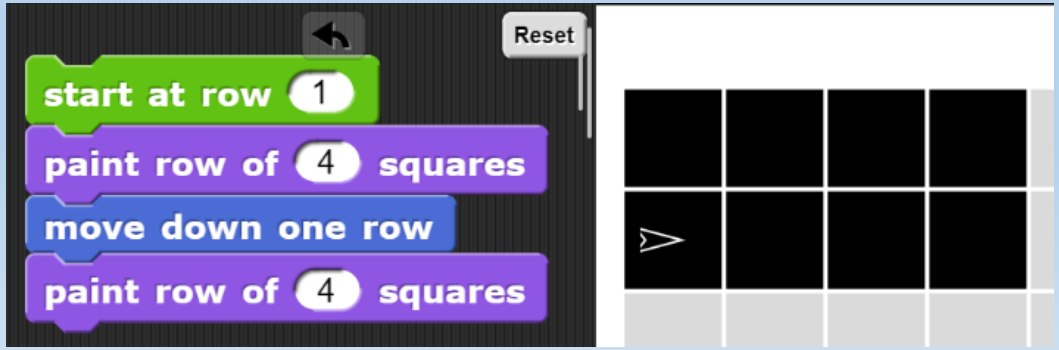


Решения с нарастващи знания

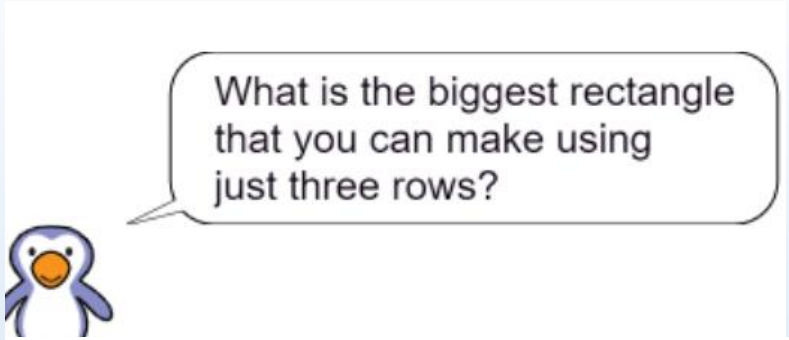


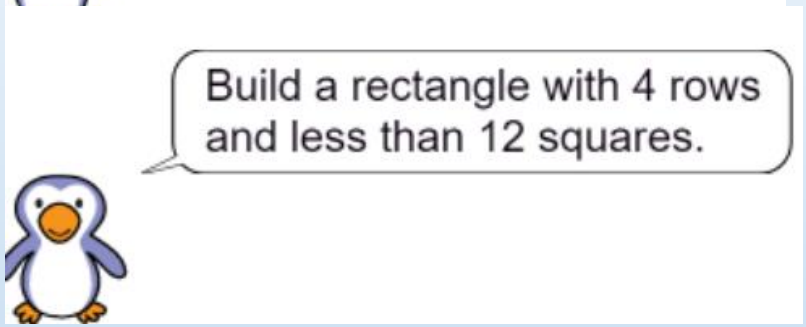


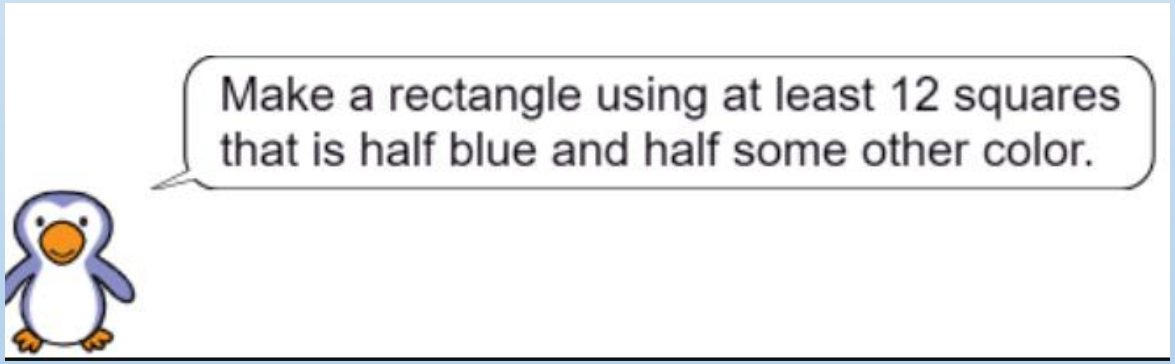


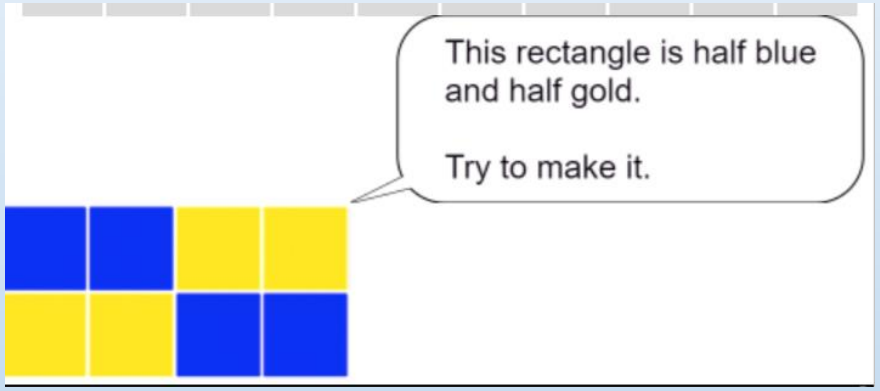


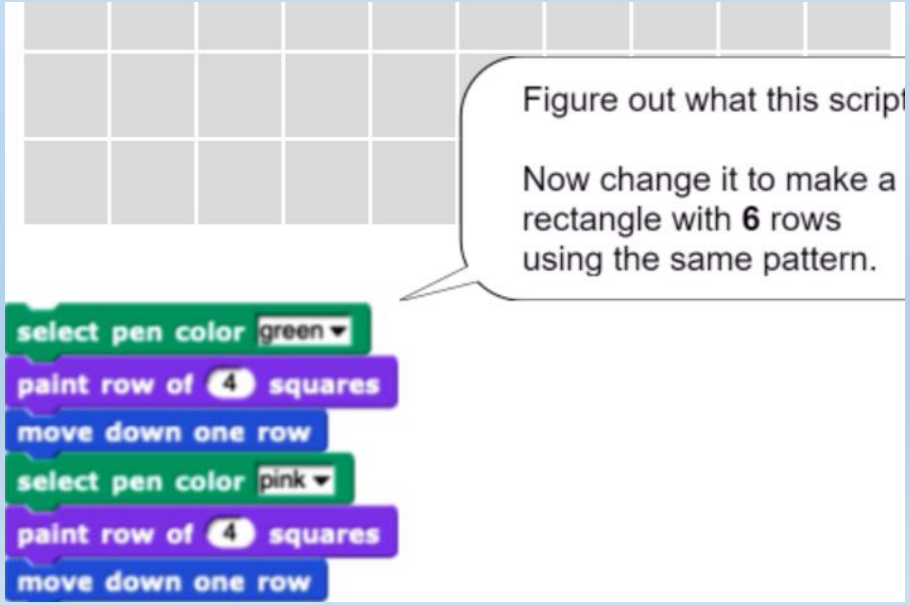
Типове загадки





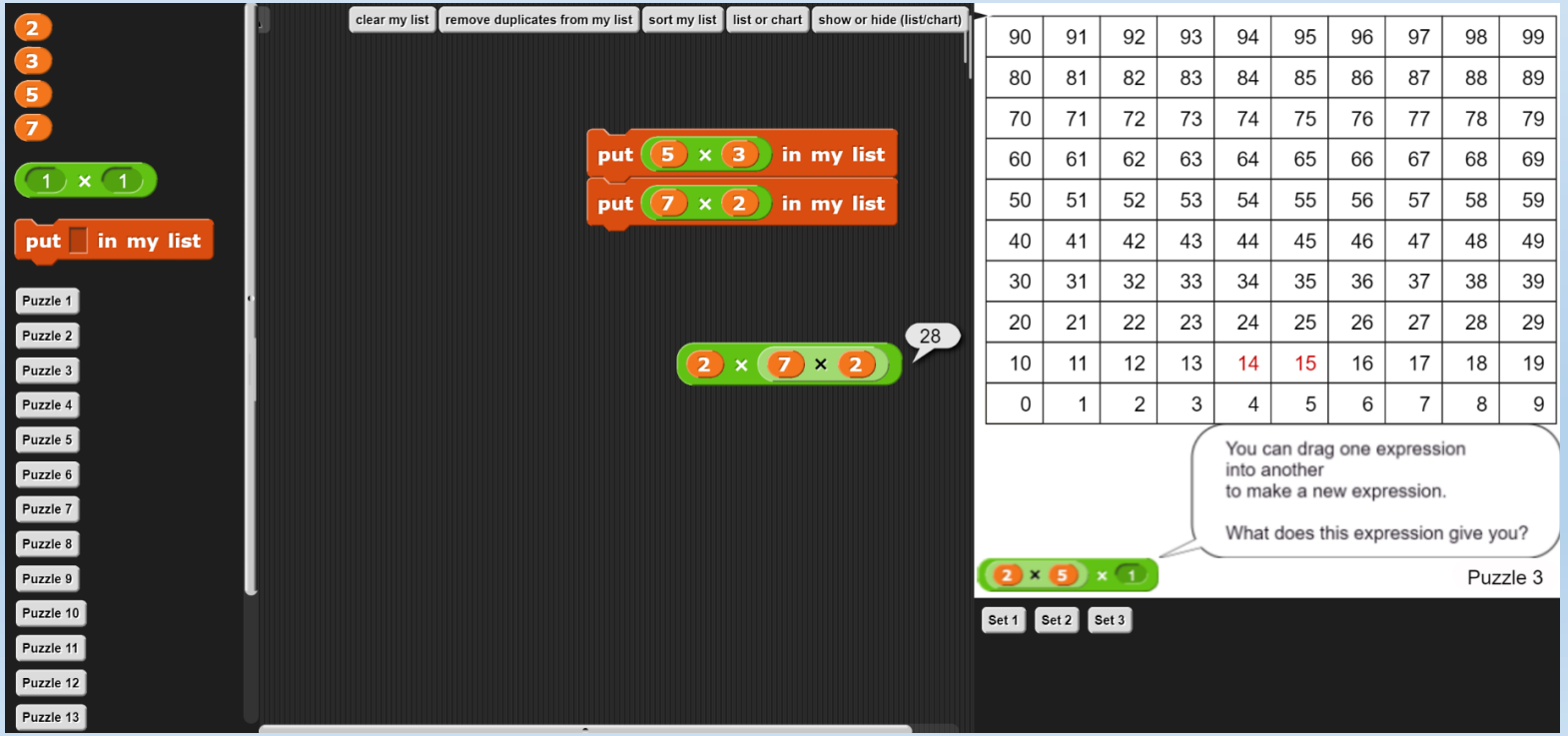


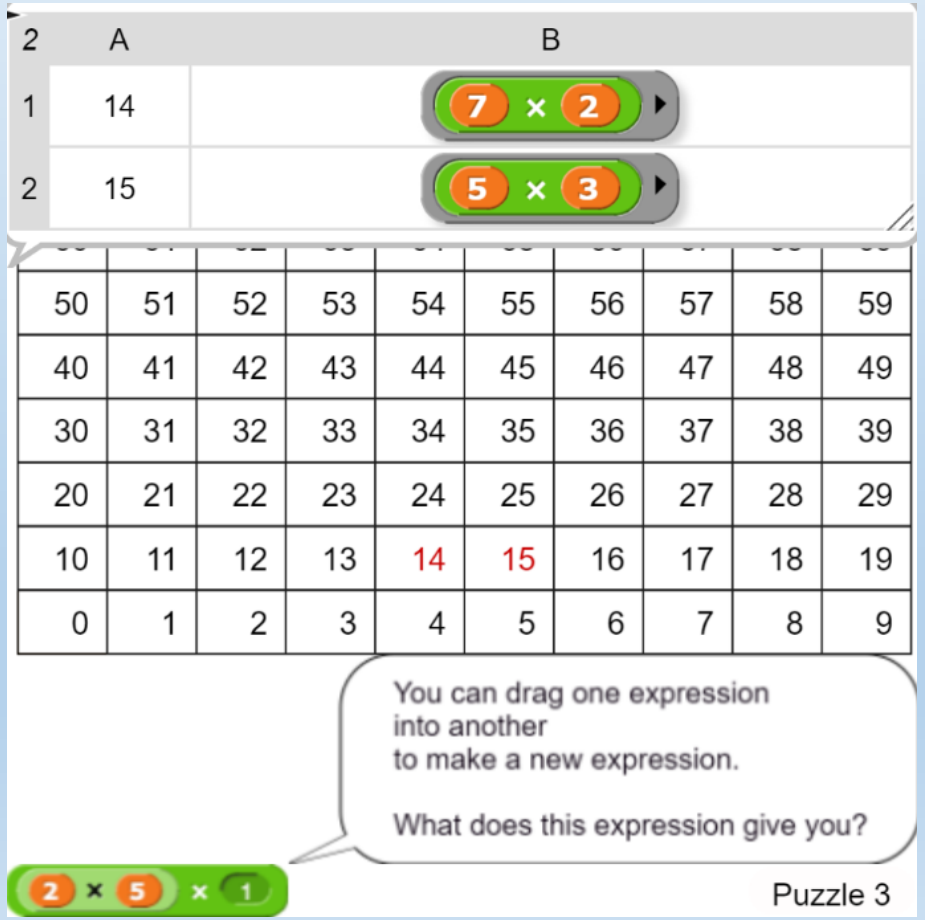


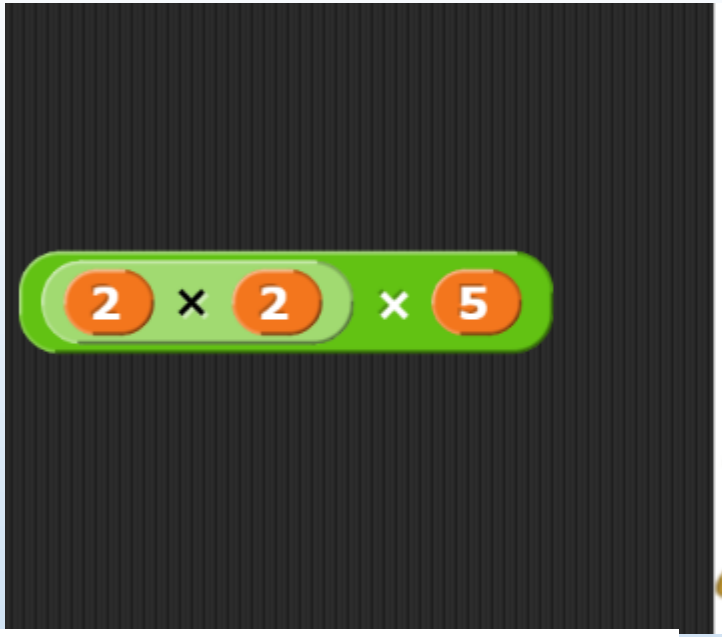


Да откриеш закони и свойства при умножението

https://go.edc.org/MW-small-factor-multiplication-2

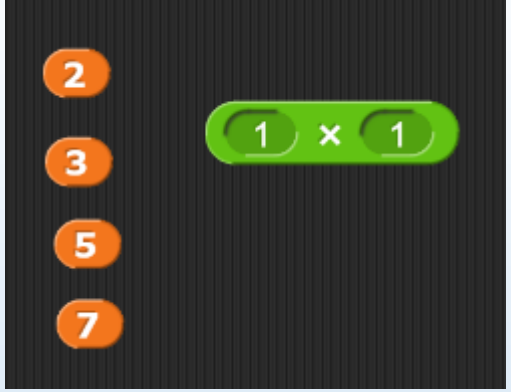






10	11	12	13	14	15	16	17
0	1	2	3	4	5	6	7

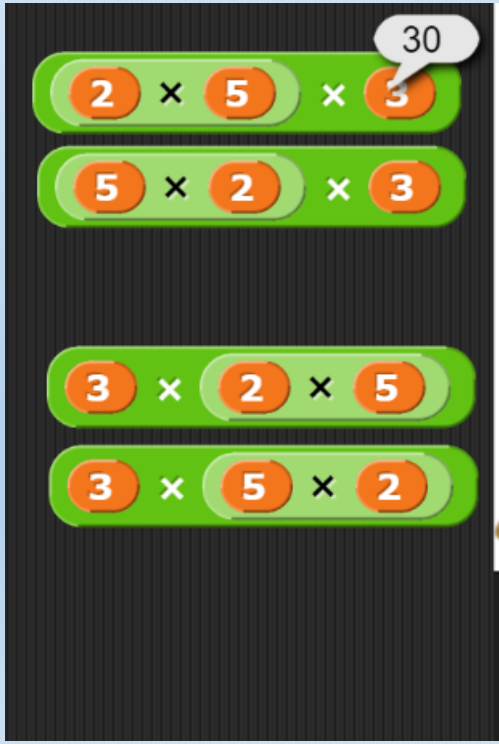
You just made 10 × 2.
You know that 4 × 5 also makes 20.
But you don't have a 4.
Make an expression that shows 4 × 5.



Make an expression that gives you the product 18.

Make a different expression that gives you the product 18.

Make the number 8.



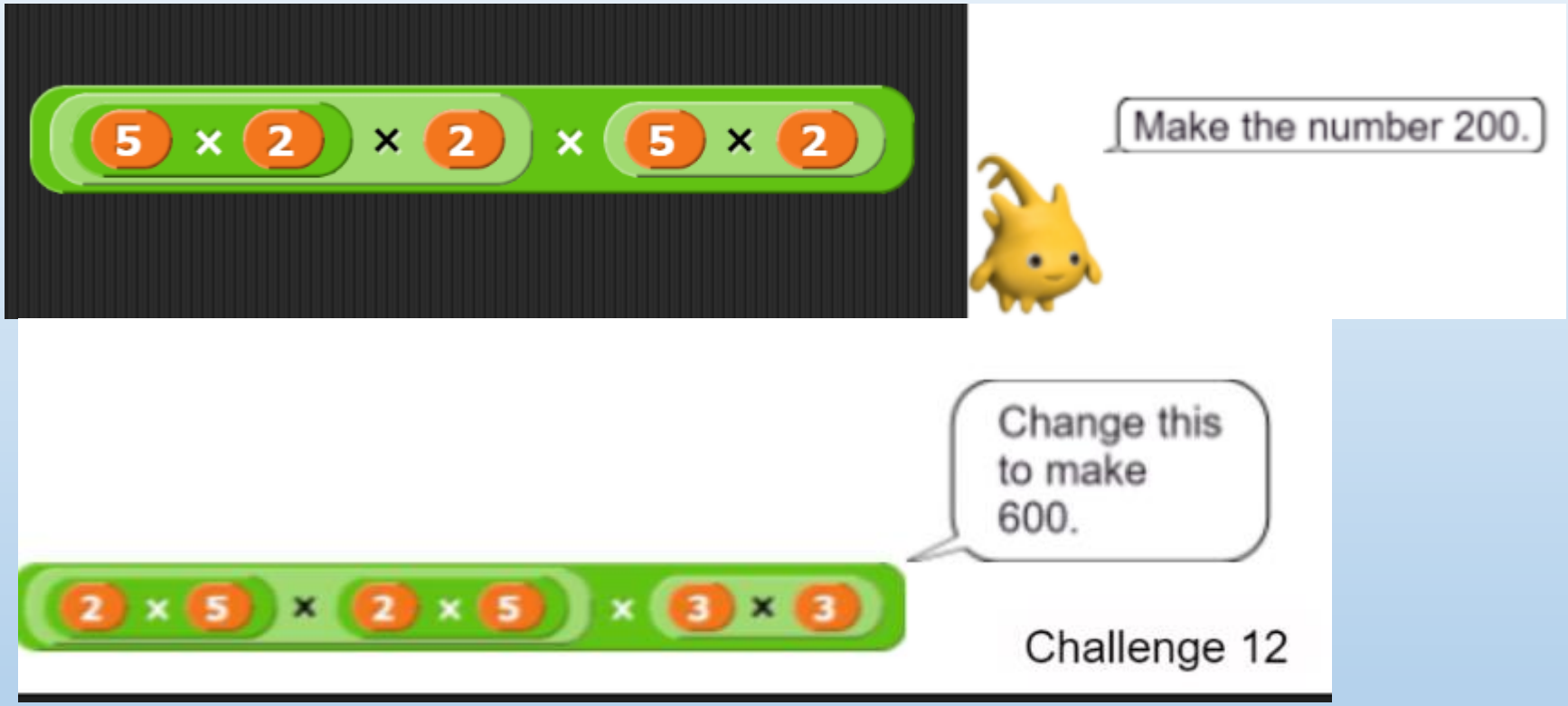
20	21	22	23	24	25	26	27	28	29
10	11	12	13	14	15	16	17	18	19
0	1	2	3	4	5	6	7	8	9

Make an expression that multiplies 10 times 3.

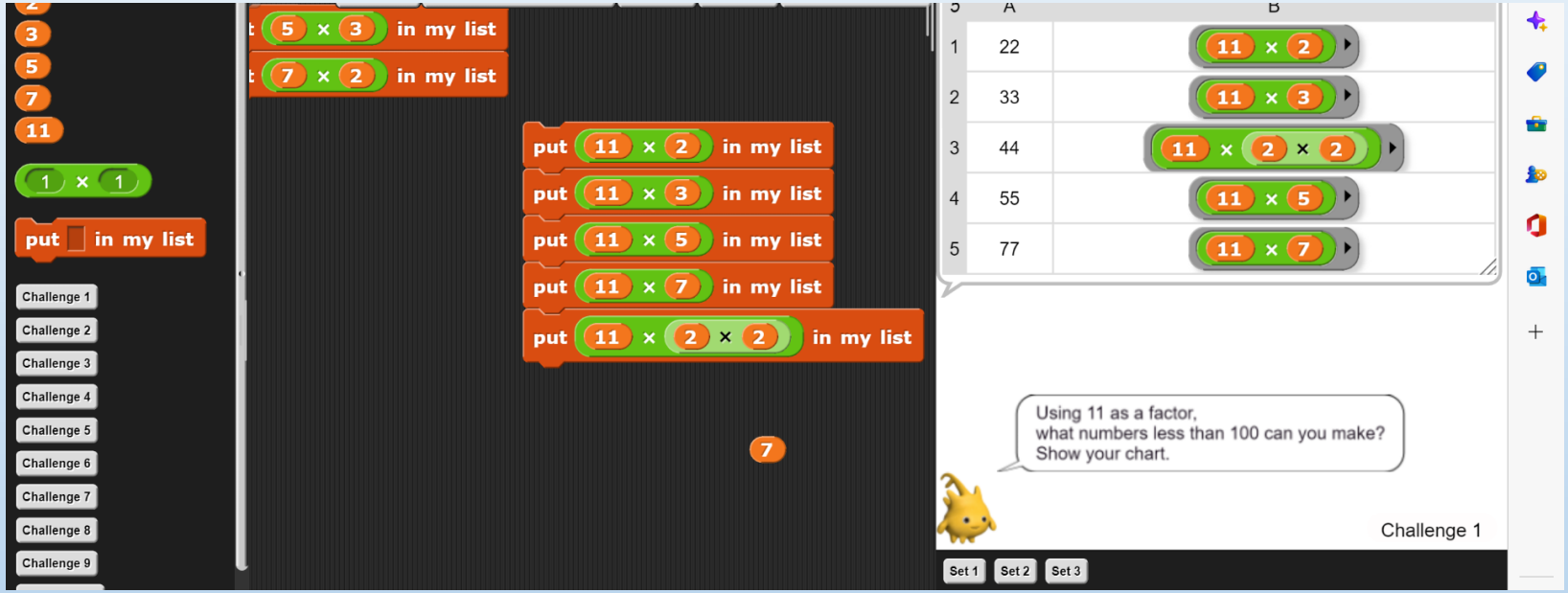
Puzzle 8

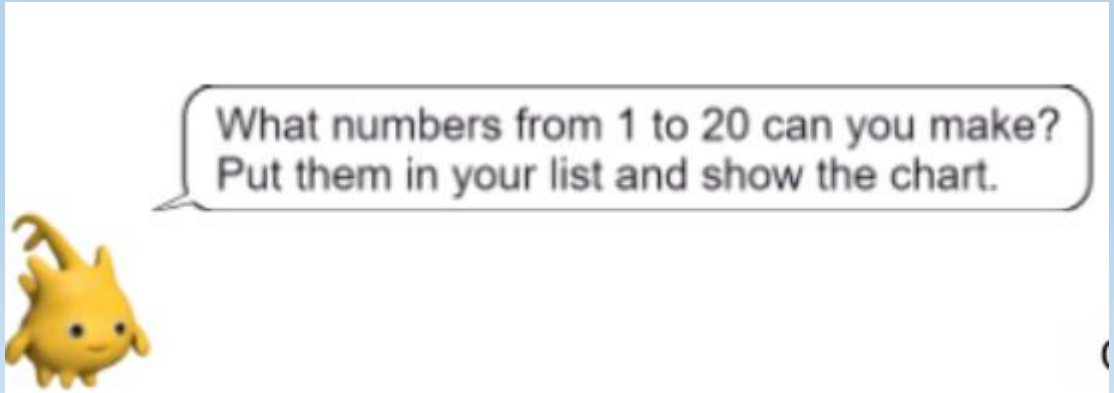
Set 1 Set 2 Set 3

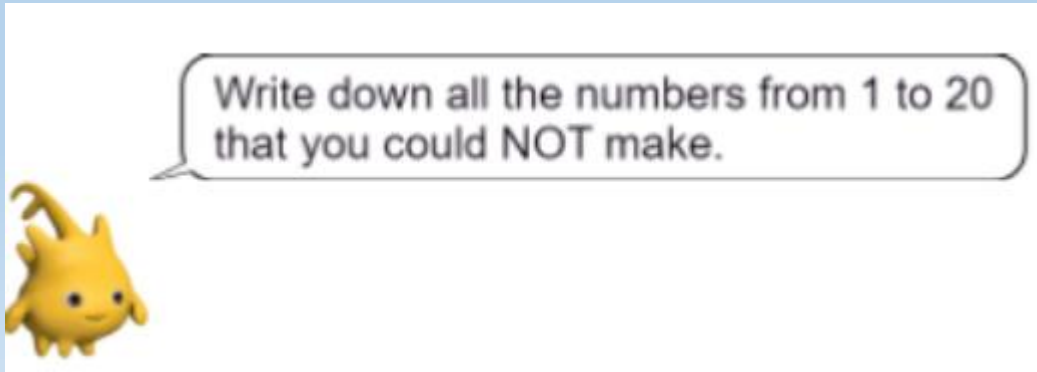
Решаване чрез редактиране



Кои числа от 1 до 20 може да направите?
А кои не? Постройте числа до 100 с множител 11.

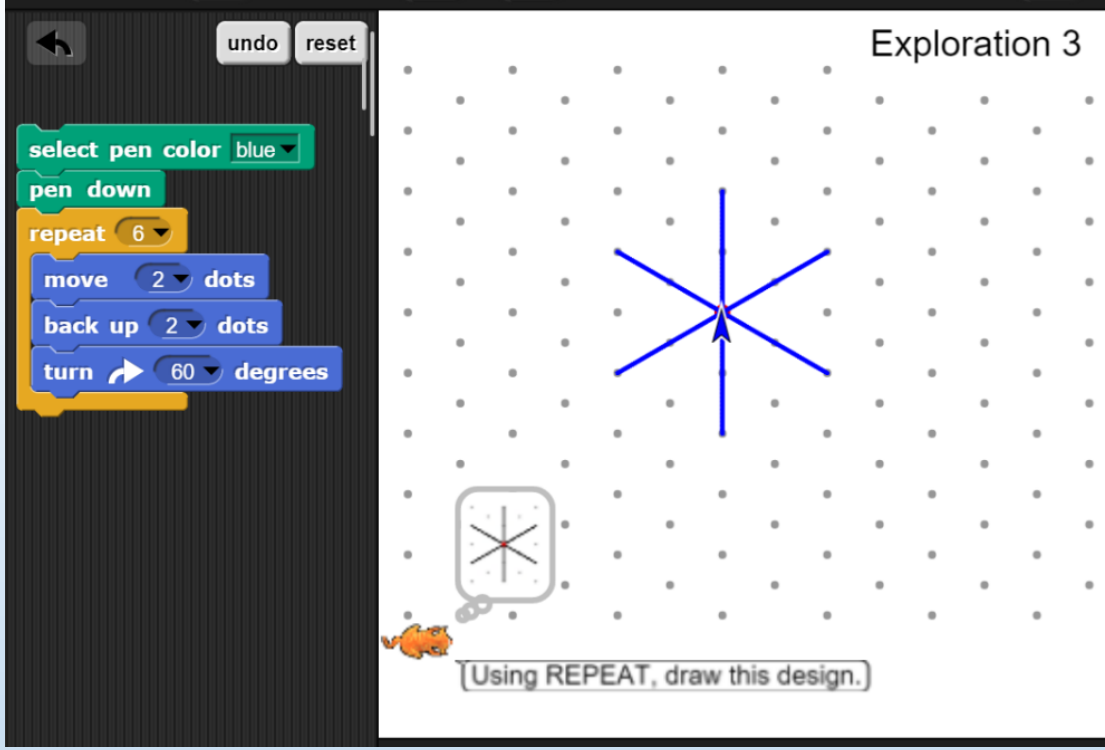


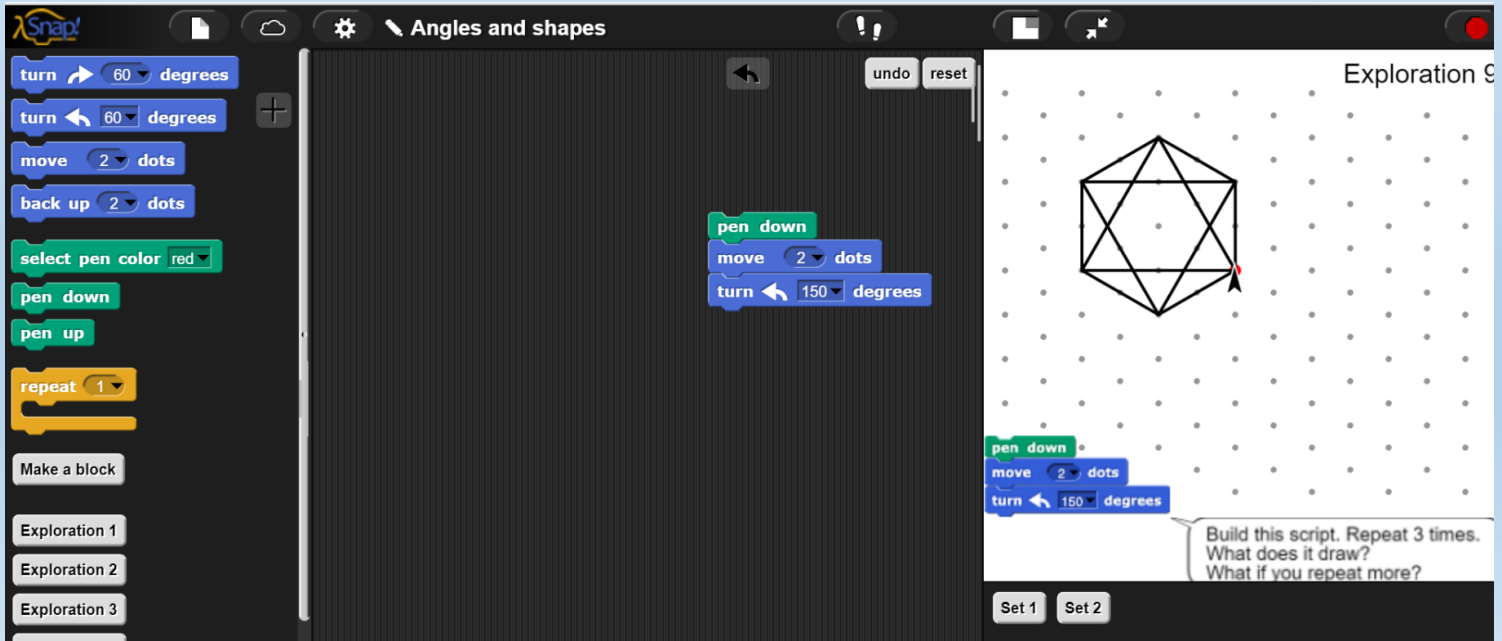




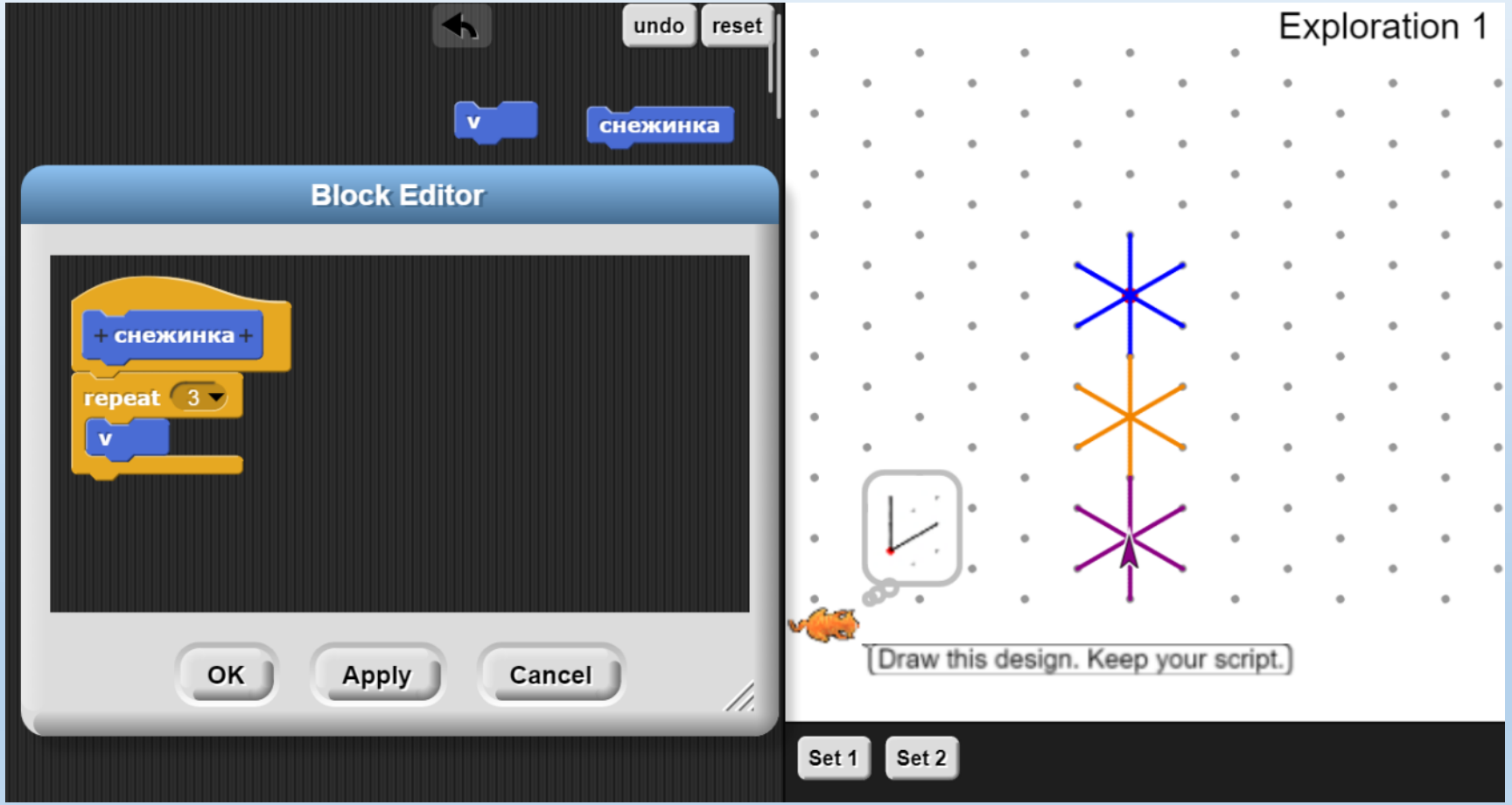
Ъгли и форми

https://go.edc.org/MW-Angles



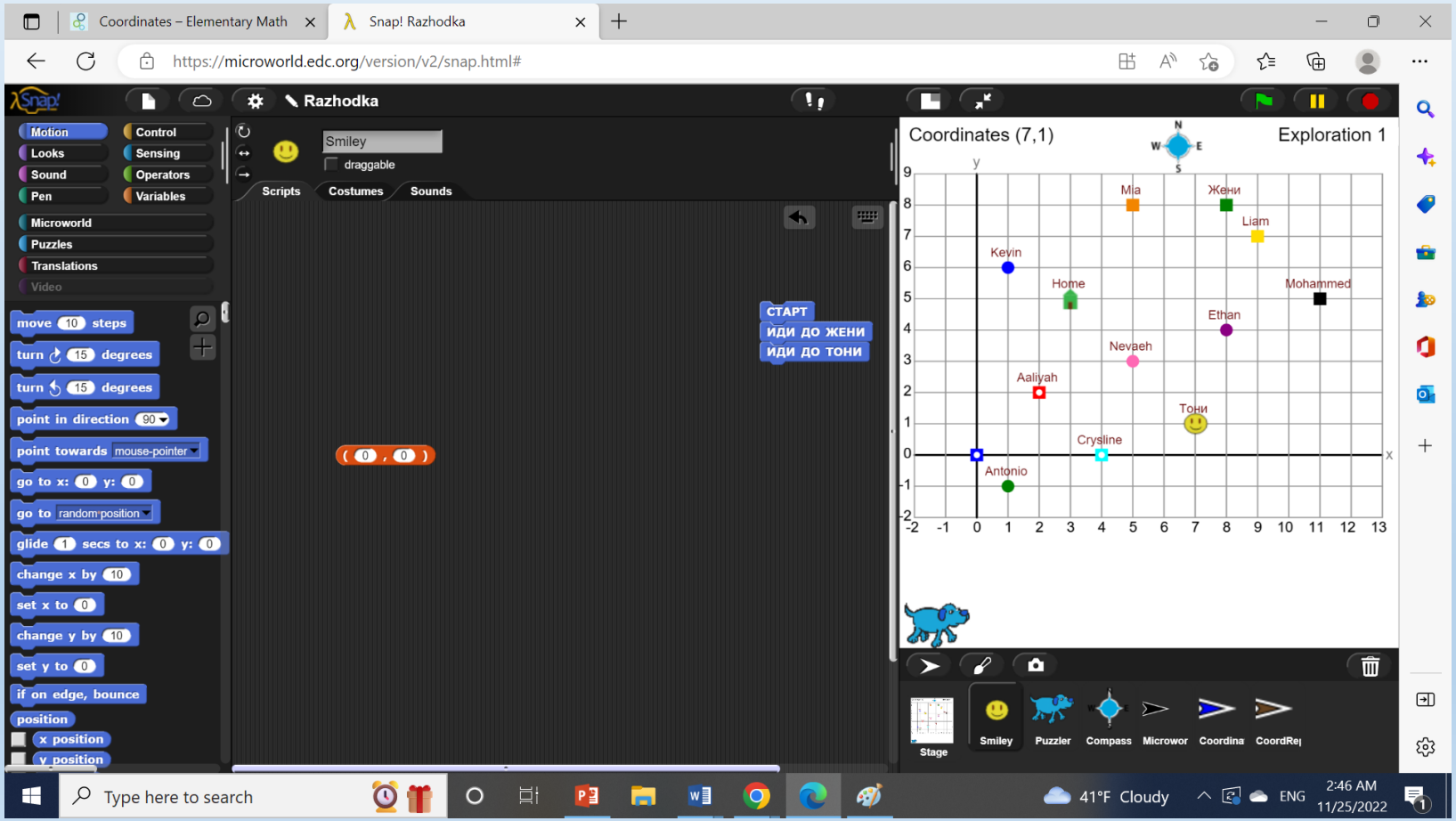


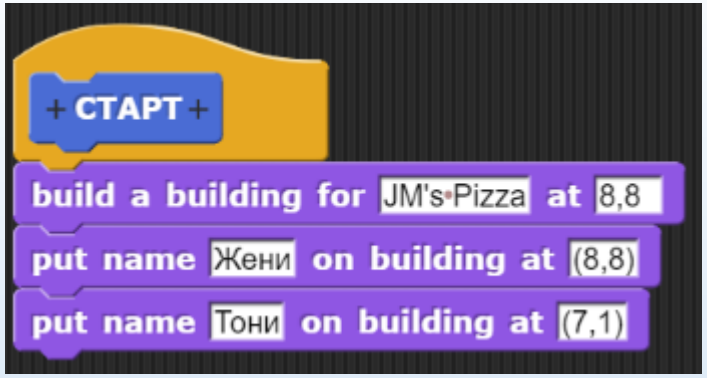
От V до снежинка…

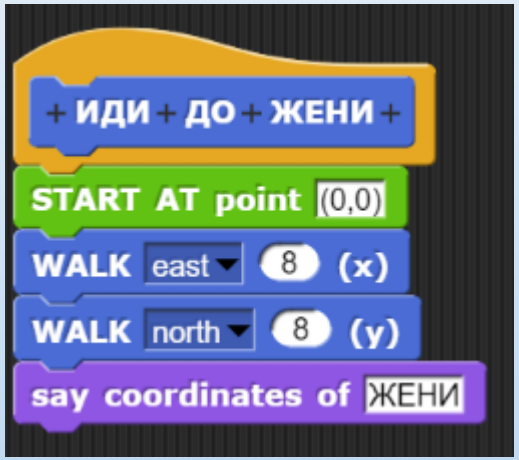


Разходка в координатната система

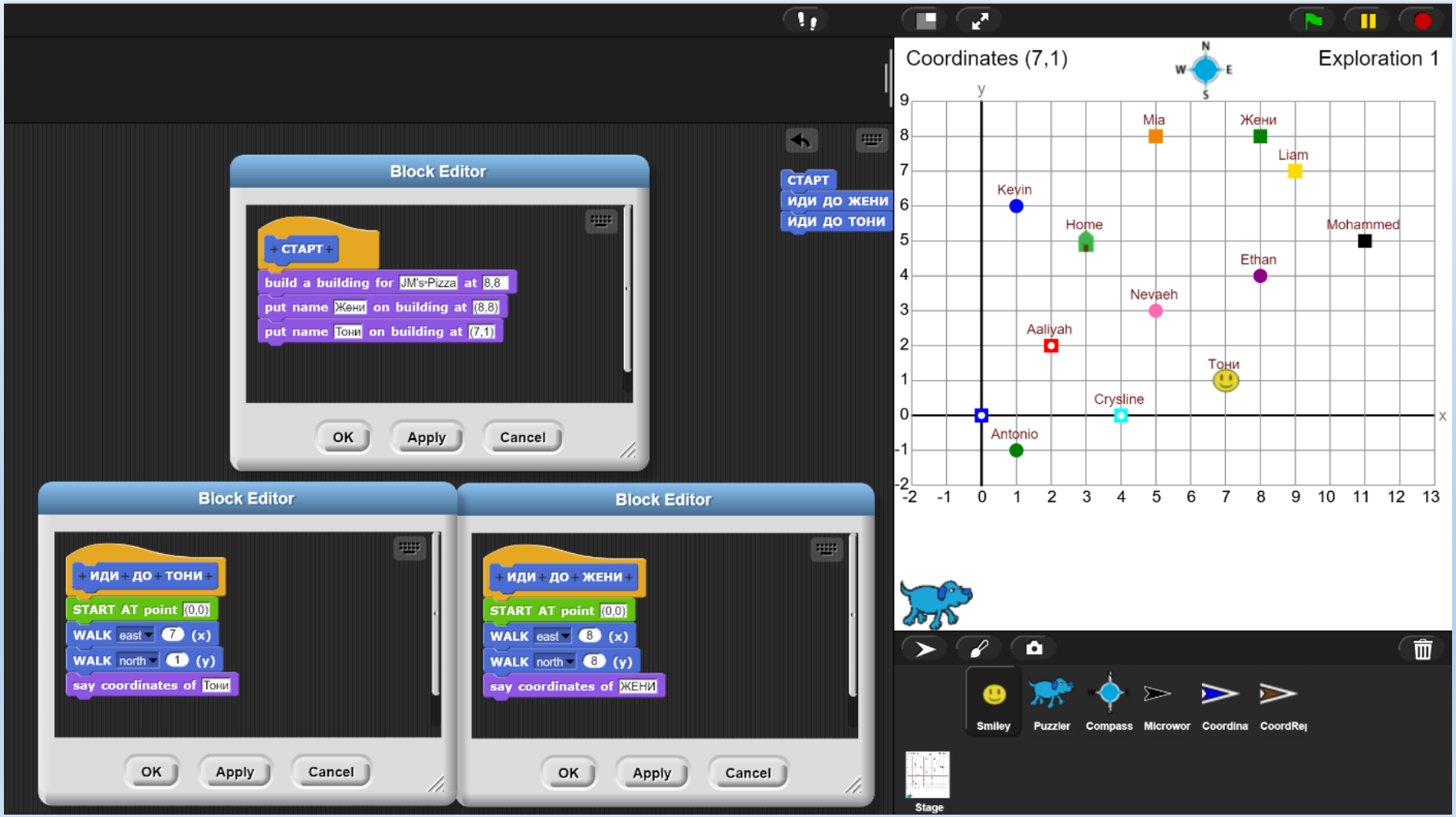
https://go.edc.org/MW-Coordinates



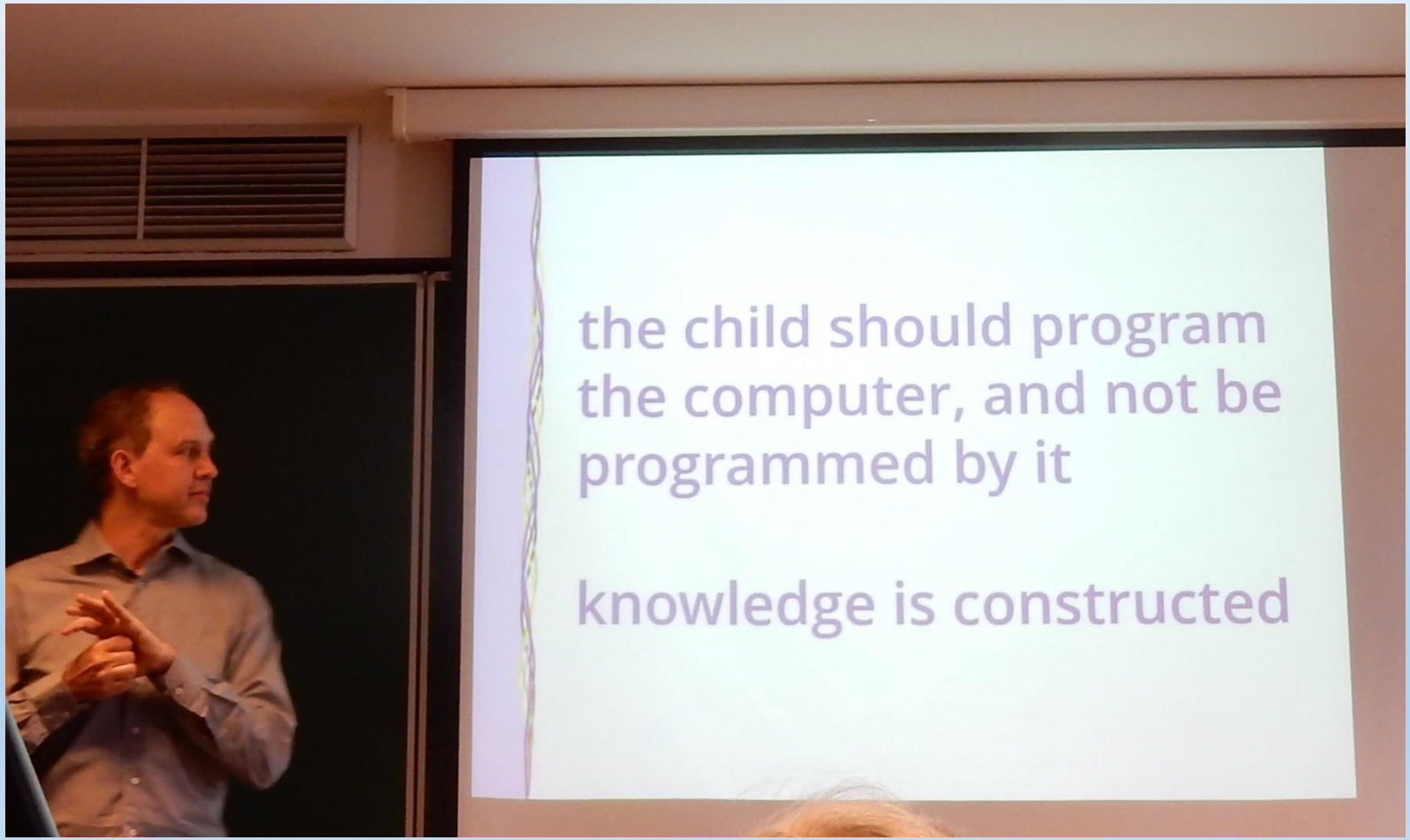




Ако все още имате проблеми, заредете програмата *razhodka*!

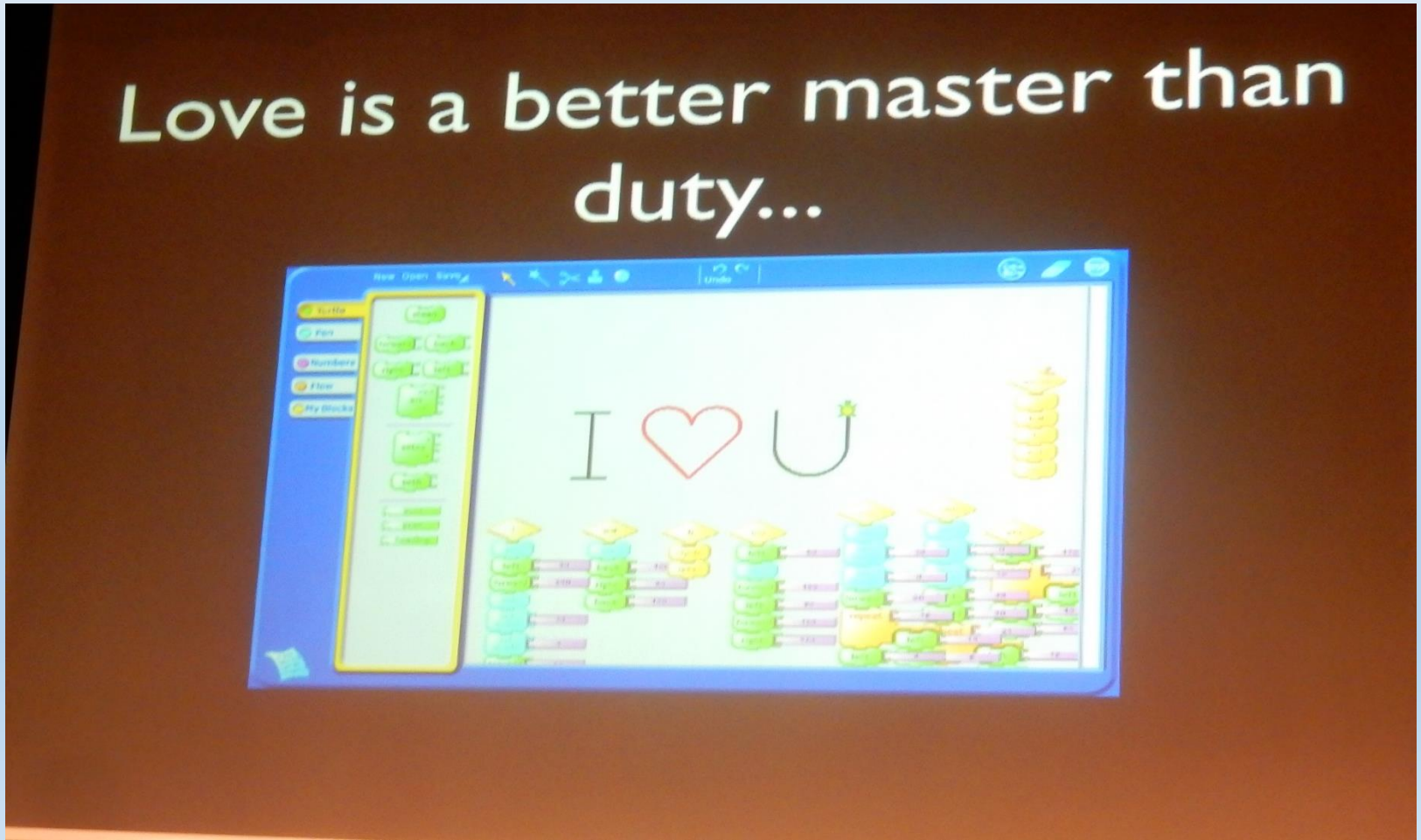


Някои послания от Constructionism 2018



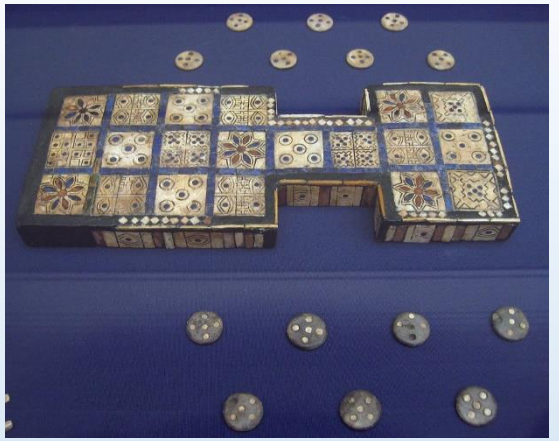
Любовта е по-добър учител от дълга!

Айнщайн



Не само децата обичат да играят

Цветята на Ур - една 5000 годишна месопотамска игра с



Фигури
„Само с тяло“