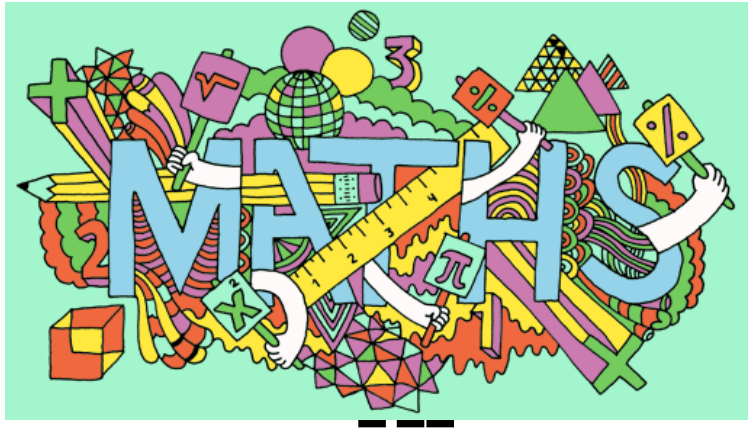
Marvellous Maths



Parent Workshop

Numbots

November 2021

NUMBOTS

MATHS CIRCLE

Agenda

★ Maths at Thorndown

★ Welcome to Numbots!

★ How does it work?

★ What can teachers do?

★ How can parents can support?

★ Let’s have a go!

Teaching for Mastery at Thorndown

- A love of maths and can-do attitude
- Deep conceptual understanding
- Number sense and fluency

NumBots – What is it?

★ NumBots is a highly engaging platform for supporting children when learning to add and subtract.

★ NumBots is all about every child achieving the “triple win” of understanding, recall and fluency in mental addition and subtraction, so that they move from counting to calculating.

How the game works

BEFORE THE GAME

Children are welcomed to the game with an opening video, where they are introduced to the central character, "Rusty". In the video, Rusty asks for help in his quest to find new parts to upgrade him to a diamond robot, so he can "shine inside and out, like a Diamond". Next, the child will be able to choose a bot name they will play under, as well as their own robot character.

How The Game Works

There are two play modes in NumBots that serve different purposes.

1. Story Mode for understanding

2. Challenge Mode for recall

How the game works

PLAYING THE GAME: STORY MODE

The game starts in 'Story Mode'. There are 18 stages - from Rust to Diamond - and each stage is made up of a number of levels. Players start at Rust level 1 and, to unlock the next level, they need to earn at least 2 out of 3 stars.

To earn the 2 or 3 stars required to pass the level, children must demonstrate a level of fluency when answering the questions. This means they must be accurate and timely with their answers; if children get 0 or 1 stars they need to answer more quickly. The game ensures that learners don't move on to the next level until they show they are prepared for it.

It's essential that children don't feel pressured to answer quickly.

Story Mode starts with very basic maths (subitising numbers) and progresses steadily and rigorously to addition and subtraction of double-digit numbers.

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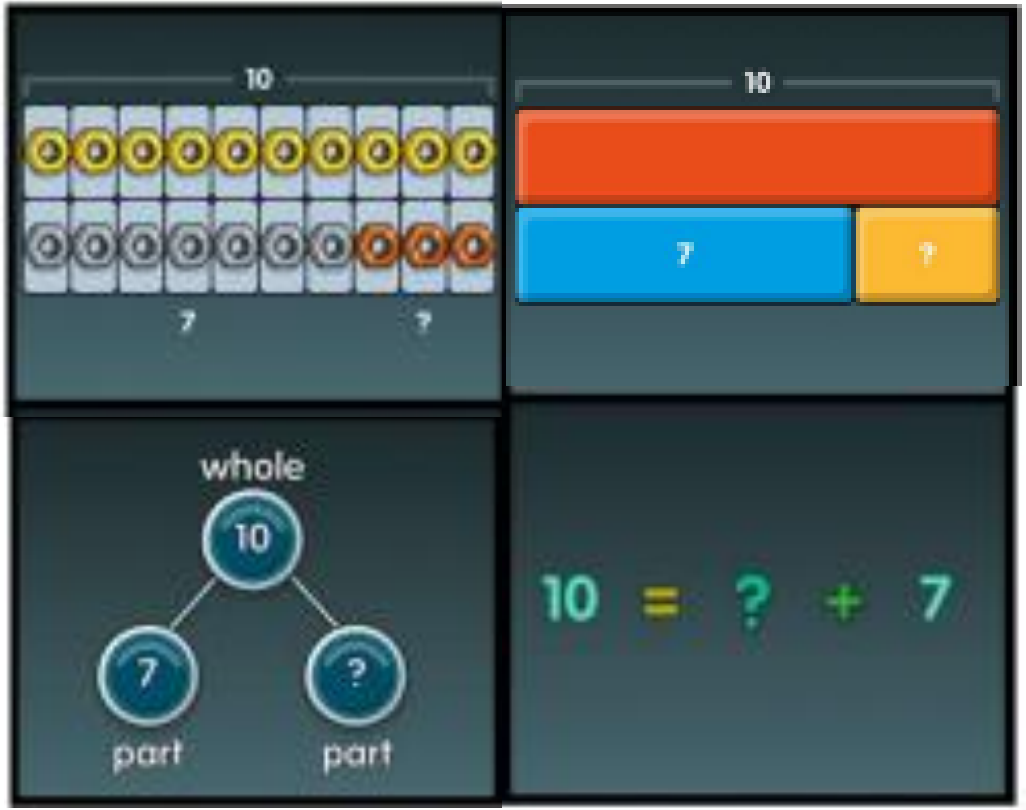
Key Representations



A part add a part is equal to the whole.

The whole is equal to a part add a part.

Key Representations

How the game works

2. Challenge Mode for Recall

In Challenge Mode, the emphasis is on rapid responses to essential facts and simple sums, against the clock.

PLAYING THE GAME: CHALLENGE MODE

When players complete Stage 3 (Tin): Level 35 in Story Mode, they will unlock Challenge Mode. Here they can race the clock to test themselves on how many questions they can answer correctly in one minute. There are 20 different challenges to choose from; each challenge testing a different skill, for example number bonds to 10, adding single digits or subtracting double digits.

We use this mode with caution, as we don't want to create maths anxiety.

Each Challenge focuses on a key skill, as follows:

No,	Key Skill	Example
1	Adding and subtracting 1 or 2 within 10	1 + 3, 8 – 2
2	Number bonds to 5	3 + ? = 5
3	Doubles within 10 (i.e. up to 5+5)	4 + 4
4	Adding and subtracting 1 and 2 within 20	17 + 2, 11 – 1
5	Number bonds to 10	3 + ? = 10
6	Adding and subtracting 10 within 20	3 + 10, 16 – 10
7	Doubles within 20 (i.e. up to 10+10)	8 + 8
8	Adding two 1-digit numbers	5 + 7
9	Number Bonds to 20	8 + ? = 20
10	Subtracting 1-digit numbers within 20	14 – 6
11	Adding and subtracting 1, 2 and 10 within 100	1 + 74, 51 – 2, 38 + 10
12	Adding and subtracting 2-digit numbers to/from multiples of 10	20 + 64, 83 – 20
13	Addition by bridging a multiple of 10	25 + 6, 47 + 5
14	Subtraction by bridging a multiple of 10	25 – 6, 42 – 5
15	Number bonds to 100	52 + ? = 100
16	Using compensation to add and subtract within 100	35 + 19, 35 – 19
17	Adding by partitioning two 2-digit numbers	64 + 25, 10 + 64
18	Subtracting by partitioning two 2-digit numbers	64 – 23, 47 – 31
19	Adding any two 2-digit numbers	63 + 56, 63 + 58
20	Subtracting any two 2-digit numbers	76 – 43, 76 – 47

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Glossary of terms	Explanation	When might my child come across this term?
Subitising	This is to tell at a glance, without counting, the number of items in a set. Counting without counting.	Foundation (EYFS framework)
Number bonds	Pairs of numbers that make up a given number. 6+4=10. 6 and 4 are number bonds of 10.	Foundation (EYFS framework)
Place value	Place value is the value of each digit in a number. For example, the 6 in 360 represents 6 tens, or 60	Year 1
Partitioning	Partitioning is a useful way of breaking numbers up so they are easier to work with.Partitioning links closely to place value: a child will be taught to recognise that the number 54 represents 5 tens and 4 ones, which shows how the number can be partitioned into 50 and 4.	Year 2
Commutative	This is a property of the number operations addition and multiplication. In addition 1 + 2 = 2 + 1, i.e. it works both ways, it is commutative. In subtraction or division it does not work both ways, e.g. 6–7 ≠ 7–6.	Year 2
Bridging to the nearest 10	A mental method of adding two numbers whose total is greater than 10. Pupils are taught to count on to 10 and then add the remainder of the number to 10. For example: 7 + 9 – bridging from 7 to 10 requires 3, which leaves 6 (from the original 9), 10 + 6 = 16.	Year 3
Compensating/ Adjusting	Compensation is a way of adding or taking away numbers that you find easier. **23 - 9 = ?** Try taking away **10** instead. **23- 10 = 13.** You have taken away **1** too many (**10** is **1** more than **9**) So add the **1** back on.	Year 3

How the game works

THE CUSTOM SHACK

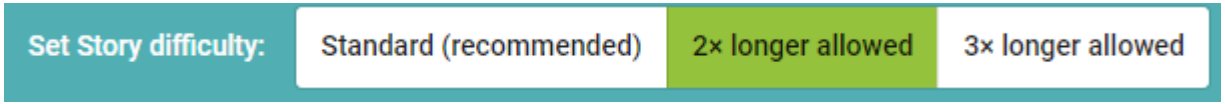
For every maths question answered correctly, the child will receive coins to spend in the Custom Shack. Here, they are able to purchase new parts to upgrade and personalise their own robot character. As well as earning coins, children are kept motivated throughout their NumBots journey by collecting badges and winning trophies to reward their achievements.

How can parents support?

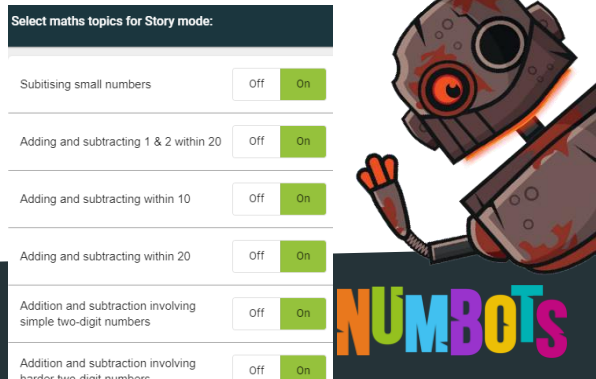
- We recommend that children play for 5 - 10 minutes a day, 4 or 5 days a week. Little and often is best!
- Some children may need help at times; there is an info slide before each level begins to help!
- Making mistakes is a good thing! We love growth mindset at Thorndown! Praise effort and perseverance.
- Becoming stuck on a level? Go back to earlier ones and try and complete them with 3 stars.
- If children are still finding it difficult to complete levels with 2 stars, speak to your teacher! They can change the story settings or help with strategies.

What can the teacher do?

They can set the story difficulty – giving more time per question.



They can set topics on and off. This may help if your child is a little overwhelmed!



Let’s Play!

★Let’s have a look at how NumBots looks. If you have a device, feel free to join in. If not, watch my screen.

NUMBOTS

Helping you and Rusty to shine like a diamond!