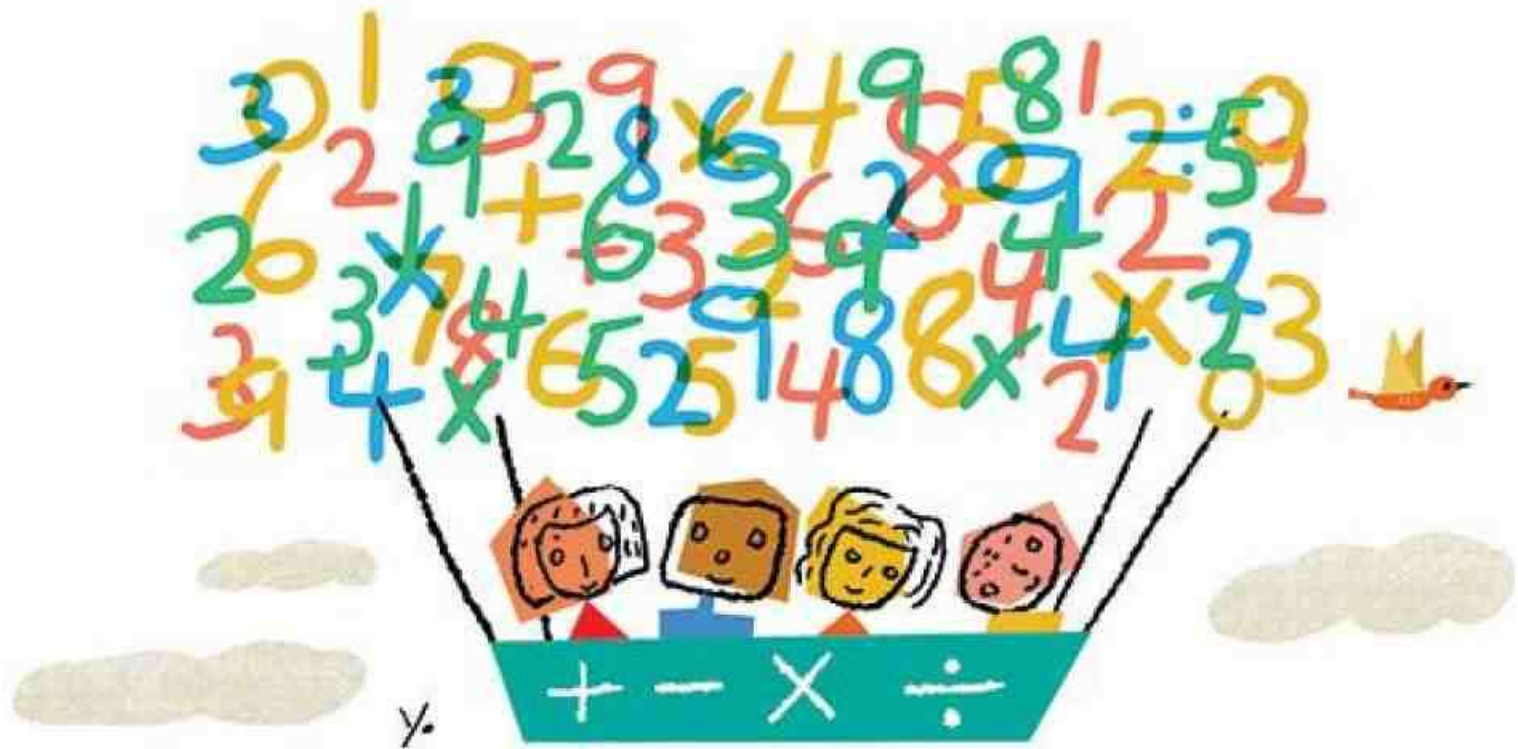


How new knowledge of the ways our brains learn mathematics is impacting our teaching and learning, and how parents and guardians have incredible opportunities to make a huge difference in their **children's mathematical lives.**



# Brain Science is showing us...



There is no such thing as a math person – anyone can learn mathematics to high levels.

Mistakes, struggle, and challenge are critical for brain growth.

Speed is unimportant in mathematics.

Mathematics is a visual and beautiful subject, and our brains want to think visually about mathematics.

Watch the video **Our Brains Think about Math Visually**

<https://www.youcubed.org/resources/brains-think-math-visually-video/>

What do you ...

**NOTICE?**

What do you ...

**WONDER?**





**‘What mathematics will you find for your child to notice and wonder about every day?’**

Twelve steps to increase your  
**Child's Maths** Achievement and  
make Maths Fun!

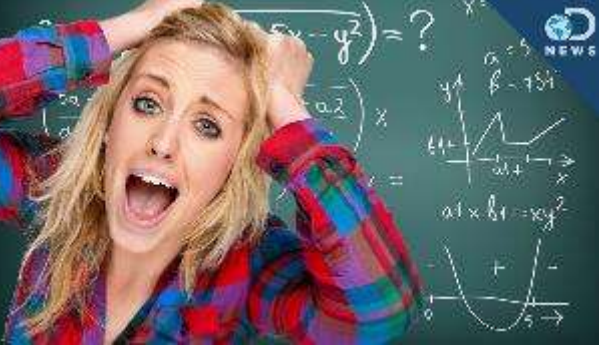
You have the opportunity to make a huge difference  
in **children's mathematical lives.**

Try not to praise children by **telling them they are “smart.”**

“It’s wonderful that you have learned how to add numbers”







Never share stories of maths failure or dislike.

You have maths homework...  
"Hooray, can I do it with you?"



**I Love MATH**

Always praise mistakes and say that you are really pleased that your child is making them.



Encourage children to work on problems that are challenging for them, so that they can make mistakes.

**You want to be struggling and finding work hard!**

**When you make a mistake and struggle, your brain grows!**



Everyone can learn maths to high levels!

Believe in yourself, it changes what you can do!

Maths is about creativity and making sense!

Mistakes and challenge are the best times for your brain!



 youcubed Maths Class Norms

Maths is about learning not performing!

Questions & discussions deepen your mathematical understanding!

Visualize and make connections to strengthen your brain!

Depth is more important than speed!

When you help your child, do not lead them through work step by step, as this takes away important learning opportunities for them.

Homework question:

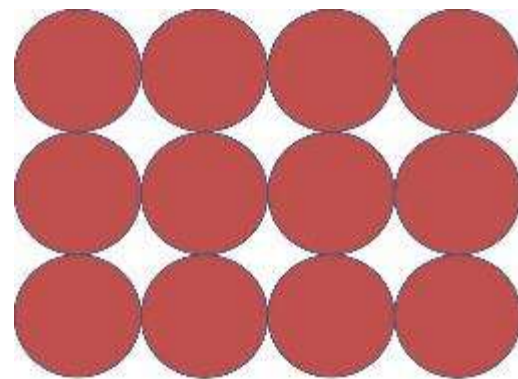
Carlos started with 12 sweets, he gave some to Janice, then he had 8 sweets, how many did he give to Janice?

Child: **I don't know how to do this.**

Parent: Well, Carlos started with 12 and now he has 8 so what is 12 take away 8?

Child: 4

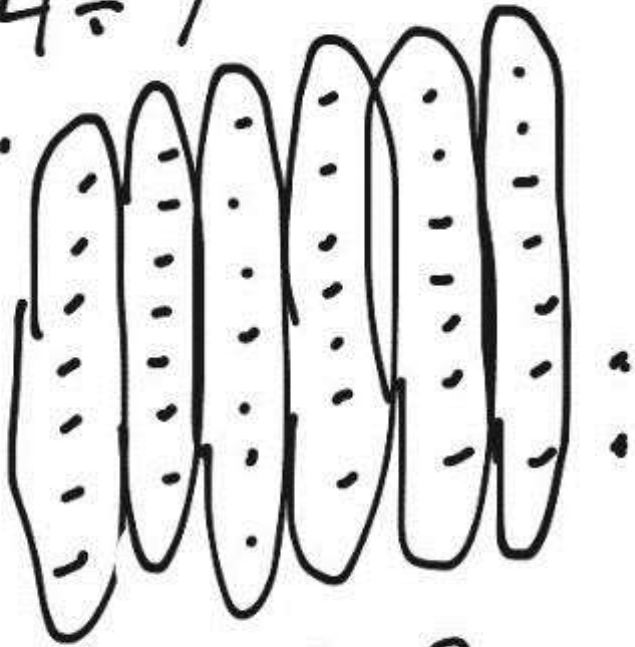
Parent: **That's right!**



Encourage drawing and use hands on items whenever you

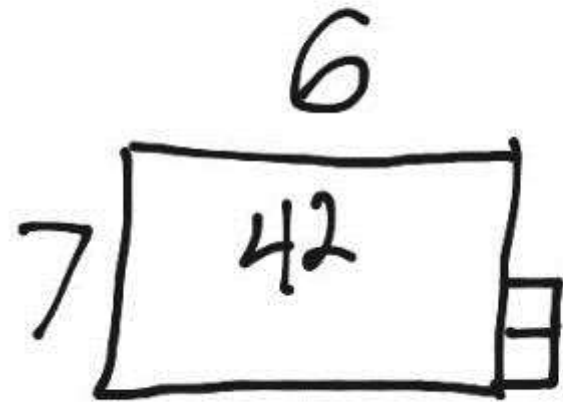
$$44 \div 7$$

a.



$$Q=6 \quad R=2$$

b.



# Encourage your child to make sense of maths at all times.

Here are some questions you can ask children to keep them thinking conceptually:

What is the question asking you?

- How could you draw this question?
- How did you get that answer?



- Can you share your method with me?
- Can you try a different way of solving this?
- What does addition/ divide etc mean?

- In what other situation could we use this?
- Would this method work with different numbers?
- What is important about this work?





Encourage your child to think flexibly about numbers.


A large rectangular area containing several elements. At the top left is a 2x5 grid of yellow squares. The top row has five red, semi-circular shapes. The bottom row has one red shape in the first square, and the rest are empty. To the right of the grid is a target diagram with three concentric circles and the number "11" in the center. Below the grid and target are two columns of handwritten math problems. The left column is for "Leslie" and the right column is for "Stephanie".


Leslie  
 $5 + 6 = 11$   
 $5 + 5 + 1$   
 $10 + 1 = 11$   
(doubles +)


Stephanie  
 $8 + 3 = 11$   
 $8 + 2 + 1$   
 $10 + 1 = 10$   
(making a 10)

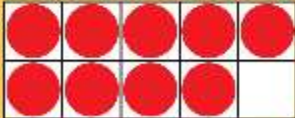
$$\begin{array}{r} 3 \\ \cancel{4} 1 \\ - 17 \\ \hline 24 \end{array}$$


The Gate of the Number **9** *example*

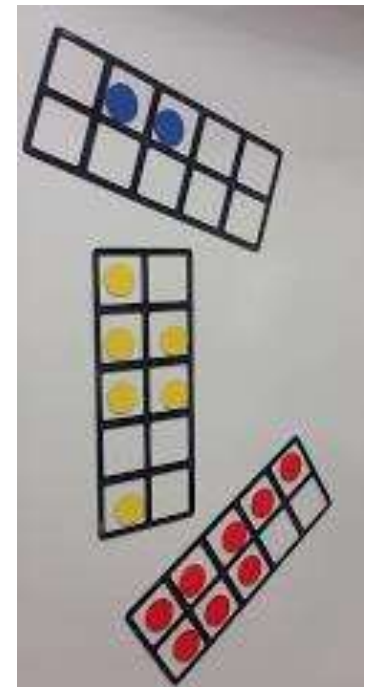
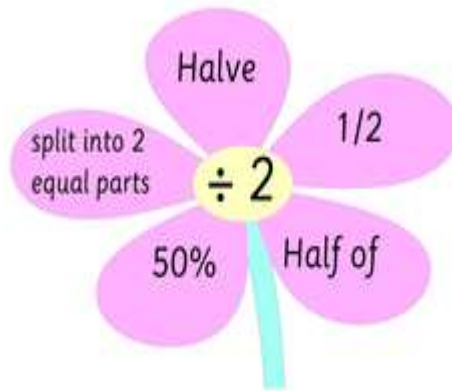
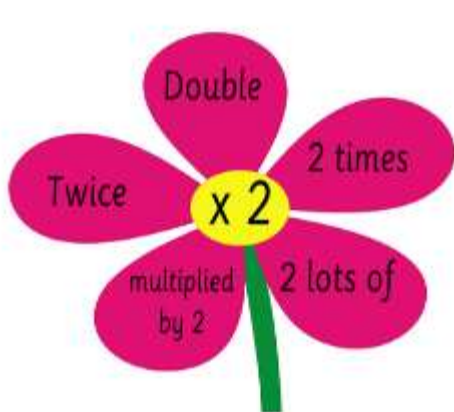
Write **9** Tally 

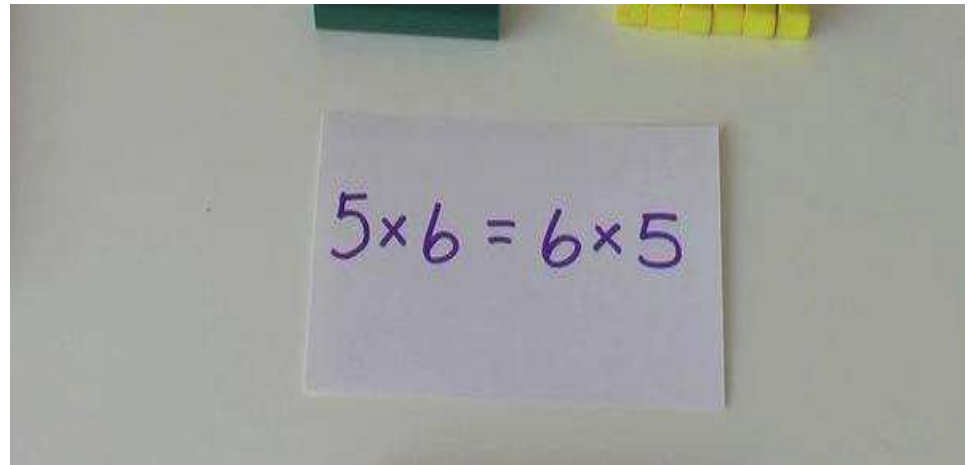
Count 

Color 

Build 

Make 





$$p + \square = b$$



$$2p + \square = O$$



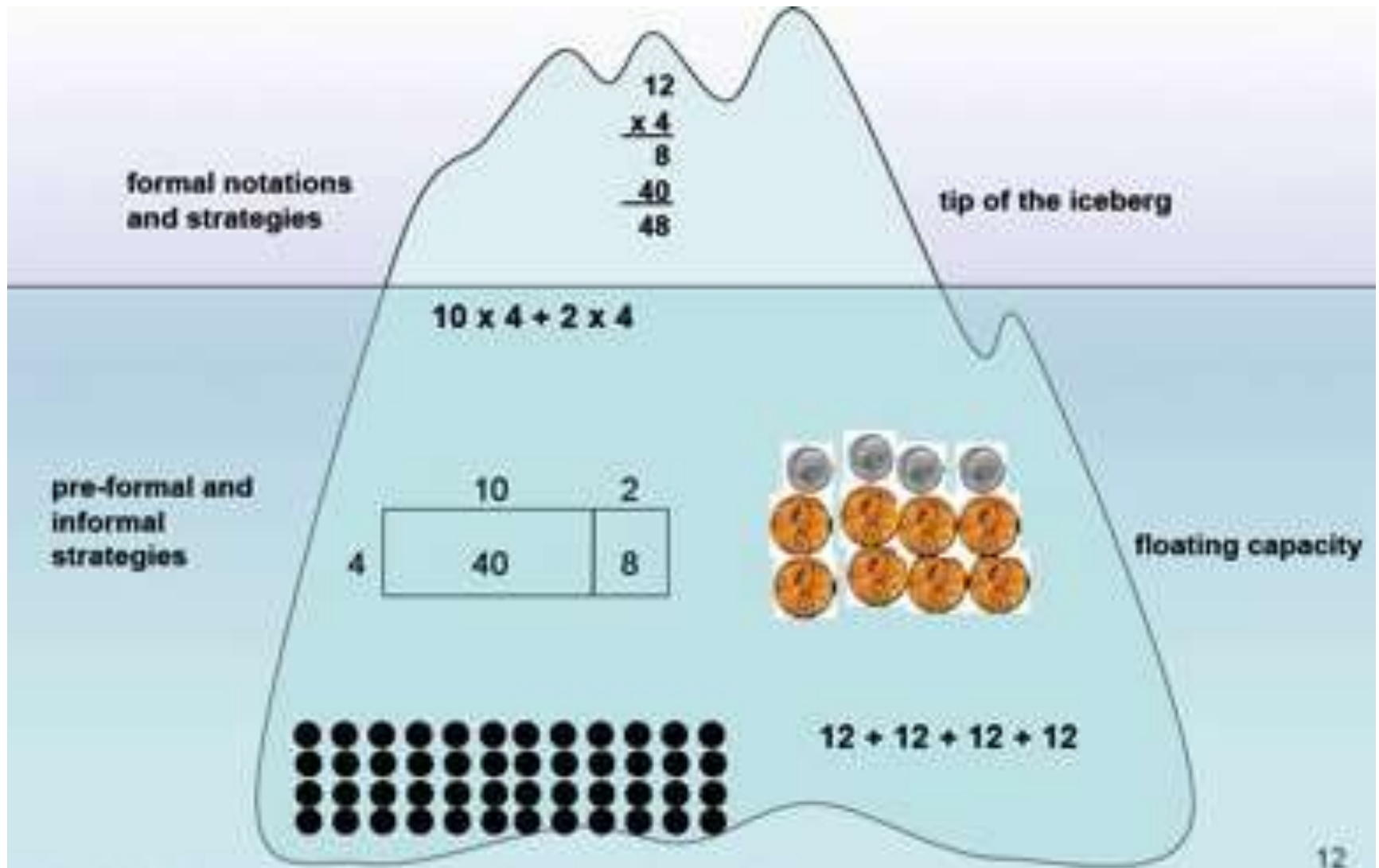
$$3y - \square = B$$



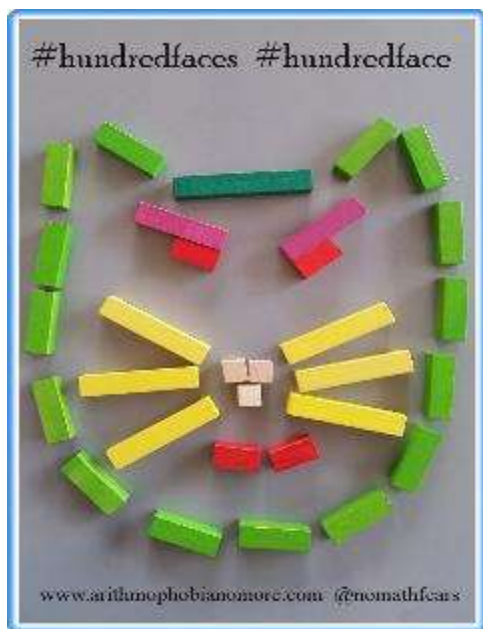
$$\frac{1}{2}O + \square = t$$



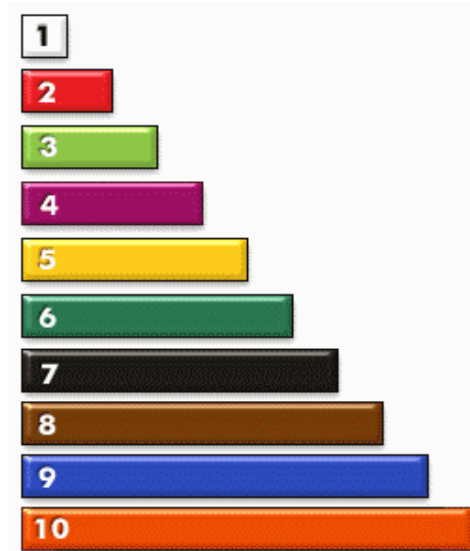
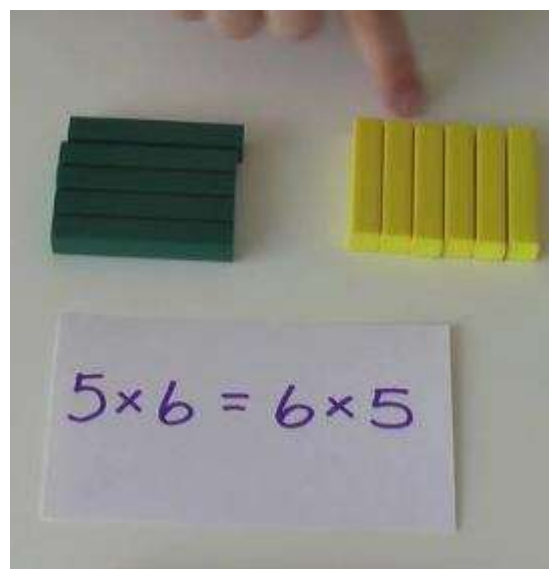
# Developing Conceptual Understanding



Be careful of overly pressuring your child with time tests or by encouraging them to work faster.



versus



When children answer questions and get them wrong, try and find the logic in their answers – as they have usually used some logical thinking.



Give your child maths puzzles and play games.



Biggest take away that will provide your child with a platform to success.

1: Encourage your child to try hard – tell them they are developing into good mathematician and that their brains are growing when they struggle.

2: Pretend you love maths (**even if you didn't** like maths at school yourself!)



Sian Jones, Provo Primary School



