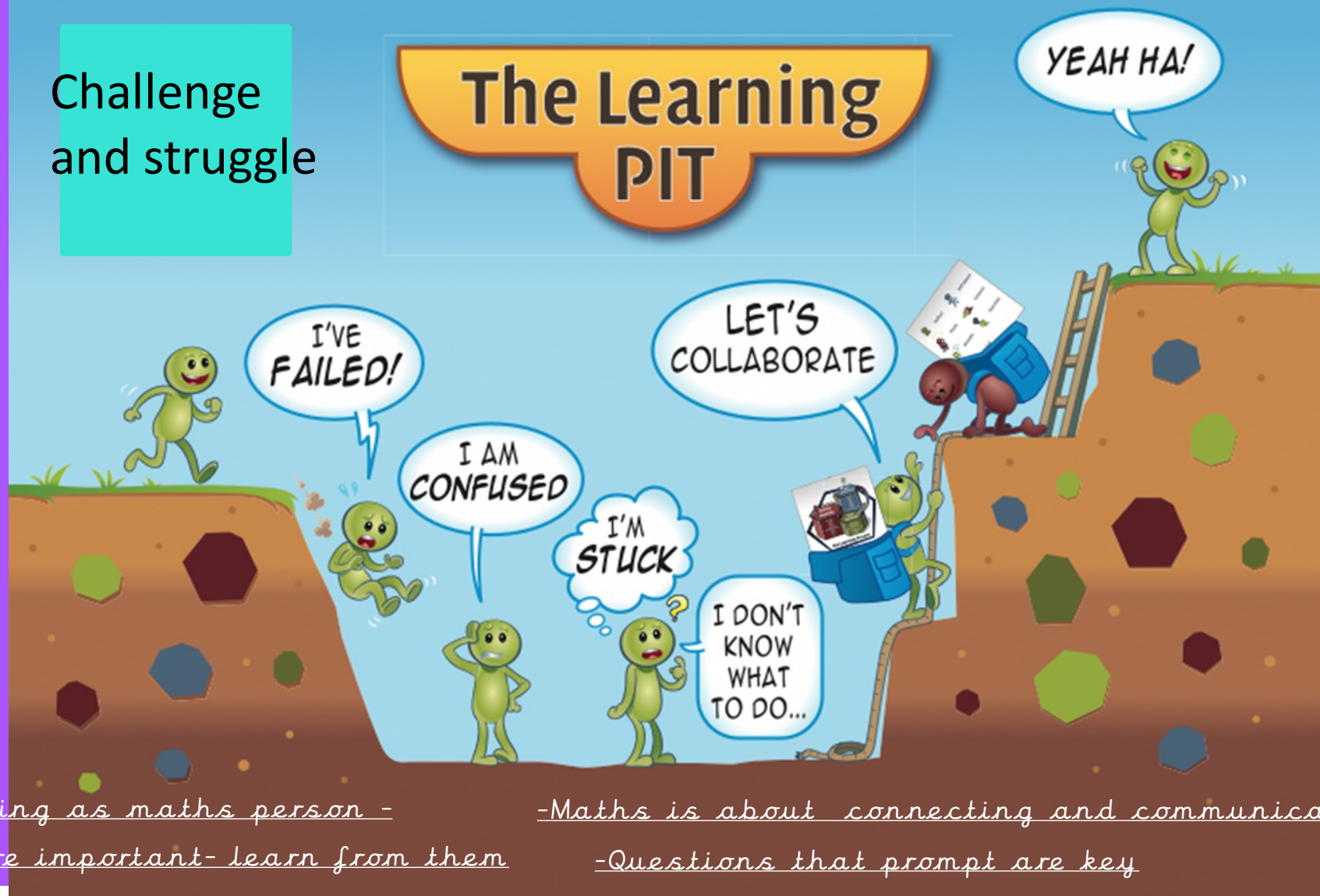


Attitudes in maths

Achievement
and pride

Challenge
and struggle



-No such thing as maths person -

-Mistakes are important- learn from them

-Maths is about connecting and communicating

-Questions that prompt are key

What do we encourage in maths?

Concrete resources



Pictorial representations and jottings

1200	
400	800

$$800 + ? = 1200$$

$$1200 - ? = 400$$

Number bonds

Children need to be able to rapidly recall number bonds to 10 and 20.

Go fish cards

But there are also other addition and subtraction "bonds" that it helps to be able to rapidly recall:

Bonds of multiples of 10 that sum to 100:
(10+90, 20+80, etc)

Bonds to multiples of 5 to sum to 100:
5+95, 15+85, 45+65

Bonds of multiples of 100 that sum to 1000:
(100+900, 200+800 etc)

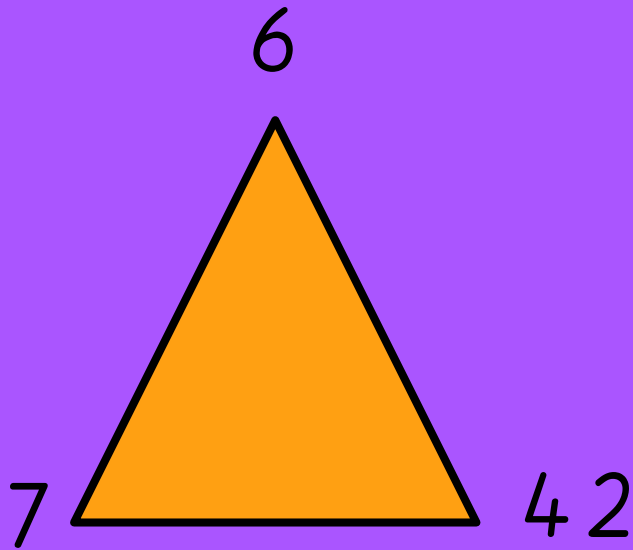
Bonds of multiples of 50 that sum to 1000:
(50+ 950, 150+850, 450+650 etc)

Have I seen anything that looks like that before? Does that help me?

Doubling

Learning Times Tables

How could these three numbers be connected?



NC expectations. Why are they important?

draw it!

If I know $3 \times 5 = 15$ What else do I know?

Fluency and treats! (number talk)

What strategy would you use?

$$18 + 39$$

$$15 + 6$$

$$567 - 199$$

Eg: $70 + 80$

$1999 + 324$

$8 + 6$

$2997 + 3273$

$6 - 4.67$

Problem solving

Successful problem solvers do not rush to set up a number sentence. Instead, they spend more time initially figuring out what relationships connect the things in the problem. They set up a mental model of the problem situation and it is this mental model that enables them to set up the appropriate calculations. (eg bar model or pictures)

Problem solving

A captain owns 26 sheep and 10 goats. How old is the captain?

What do you think the answer was?

Jottings and pictorial representations are key

Sarah had 12 muffins. After baking some more muffins, she had 21 muffins. How many did she bake?

$$12 + ? = 21$$

Sarah had some muffins. After she gave away 9 muffins she had 12 muffins left. How many did she have at first?

$$?-9=12$$

Sarah had some muffins. After she baked 9 more, she had 21 muffins. How many did she have at first?

$$? + 9 = 21$$

Sarah had 21 muffins. After she gave some away, she had 12 muffins left. How many muffins did she give away?

$$21 - ? = 12$$

Jacob cuts 6 metres of string into 3 pieces.

The length of the first piece is 2.59 metres.

The length of the second piece is 1.34 metres.

Work out the length of the 3rd piece.

Problem solving and reasoning:

Year 6

Miley has this number:

824,650

She takes forty thousand away.

Her answer is 820,650

Is this correct?

Explain how you know.

A house costs £250,000.

A motorised home costs £100,000.

A bungalow is priced half way between the two.

Work out the price of the bungalow.

0 3 3 5 5 6 7

Use the digit cards and statements to work out my number.

- o The ten thousands and hundreds have the same digit.
- o The hundred thousand digit is double the tens digit.
- o It is a six-digit number.
- o It is less than six hundred and fifty five thousand.

Is this the only option?

Year 5

Harriet has made five numbers, using the digits 1, 2, 3 and 4

She has changed each number into a letter.

Her numbers are:

- 1) aabdc
- 2) acdbc
- 3) dcaba
- 4) cdadc
- 5) bdaab

Here are three clues to work out her numbers:

- ⌞ Number 1 is the greatest number.
- ⌞ The digits in number 4 total 12
- ⌞ Number 3 is the smallest number.

Simon says he can order the following numbers by only looking at the first three digits.

Is he correct?

Explain your answer.

12,887

12,587

12,745

12,967

12,562

Year 4

Two different two-digit numbers both round to 40 when rounded to the nearest 10

The sum of the 2 numbers is 79

What could the two numbers be?

Is there more than one possibility?

Jasmine says:

"847 rounded to the nearest 10 is 840"

Do you agree with Jasmine?

Explain why.

Use the clues to find the missing digits.

????

The thousands and tens digit multiply together to make 36

The hundreds and tens digit have a digit total of 9

The ones digit is double the thousands.

The whole number has a digit total of 21

Y1 Reasoning examples

Stars are worth 1. Triangles are worth 10. Triangles are worth 2. How many ways can you represent 20? Will there be more ways for 40? How do you know?



Using the same information, as above, can you work out what the circle is worth?

 $= 23$

Jamie had some teddy bears. He said if I had another equal set of teddy bears I would have 20. Is he right? Explain why.

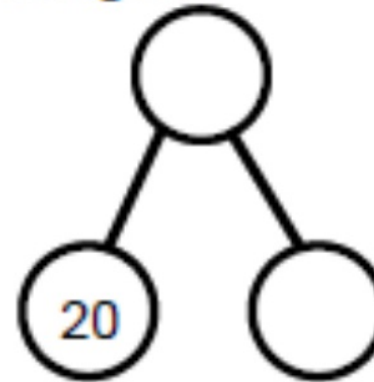


Y1 Reasoning examples

Below is a list of activities Jonathan did. Can you explain to him which he should spend a day, week and year on and why?

A holiday to Spain
A trip to the zoo
Learning in Year 1

Look at the part-whole model. Make all the part-whole models you can from these facts you have been given.



Y2 Reasoning examples

Put these clocks in order



- Here are some digit cards.



Tamsin and Lila each use two of the cards to make a 2 digit number.

Tamsin says,

I have made the largest number
you can make.

Lila says,

I have made the smallest
number you can make.

What is the difference between their numbers?

Y3 Reasoning examples

- Explain the differences in the values of 4 in the following numbers:

546

894

473

- 543 is made of 5 hundreds, 4 tens and 3 ones.
It is also made of 54 tens and 3 ones.
It is also made of 543 ones.
Can you show 113 in these ways?
Can you express 627 in the same way?

- Tom says 'I can use my 4 times table to help me work out my 8 times table'.

Is he correct? Convince me.

- What pair of numbers could be written in the boxes?

$$\square \times \square = 24$$

- True or false?
Put these statements into two piles.
Explain why.

$$3 \times 4 = 0 + 12$$

$$5 \times 8 > 6 \times 8$$

$$28 \div 4 = 2 \times 4$$

Questions to develop a deeper understanding:

How did you see that idea?

Why does that answer make sense?

Why does that method work?

How is that method connected to others?

How can that idea be represented in different ways?

Can you prove it?

Can you prove it visually?

Can you justify your thinking?

Can you predict what would happen if...

Did you make any interesting mistakes?

Tell me about how you got your answer?

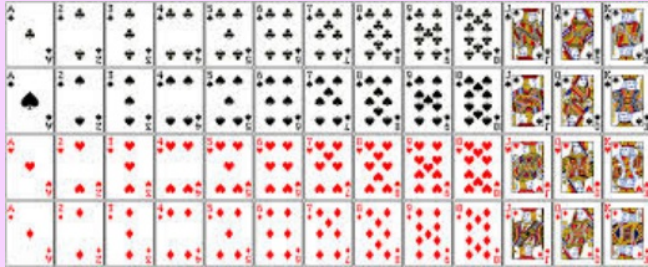
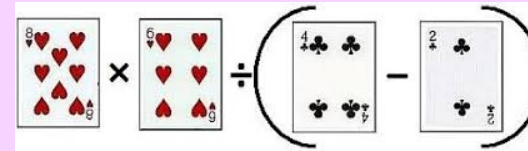
Tell me what you do know?

Strategy booklet

Where can you find it?

It's on the school website.

Games to play at home



○	2	3			1	7		
		8	4	6			1	
9				5			4	8
5		4	3				2	○
	9		8	7		1		
1			○		4	9		5
	7				6	8		2
8	1	7		2				
6			3	○		7	1	

○ → 4 6 7 & 8



Tom spent £50 which was one quarter of his money.
How much money did he start with?