

Patrician Presentation Secondary School



**Maths Education Evening for Parents
7.00pm Thursday, September 27th 2018**

Learning Intentions

- An overview of what the research tells us
- How we in our school prepare to teach the First Year Maths Programme
- The New Junior Cycle
- Practical Strategies of how you as a parent can help your child in primary school prepare for Secondary School Mathematics

Meet the Team

- Mr Coffey
- Ms Walsh
- Mr Walsh



Current Evidence

Chief Examiner's Report SEC- 2015 JC

“Students should get into the habit of showing supporting work at all times. This will help them tackle more difficult problems, and will allow them to check back for mistakes in their work.”

“Students should develop strategies for checking their answers. One of these is to have an estimate of the answer in advance. In real-life problems, check if the answer makes sense. “

“Students should always round their answers to the required level of accuracy, and include the appropriate unit where relevant. “

Current Evidence

Chief Examiner's Report SEC- 2015 JC

“Students should practise different ways of solving problems – building up their arsenal of techniques on familiar problems will help them to tackle unfamiliar ones.”

“Students should get used to describing, explaining, justifying, giving examples, etc.”

International Research

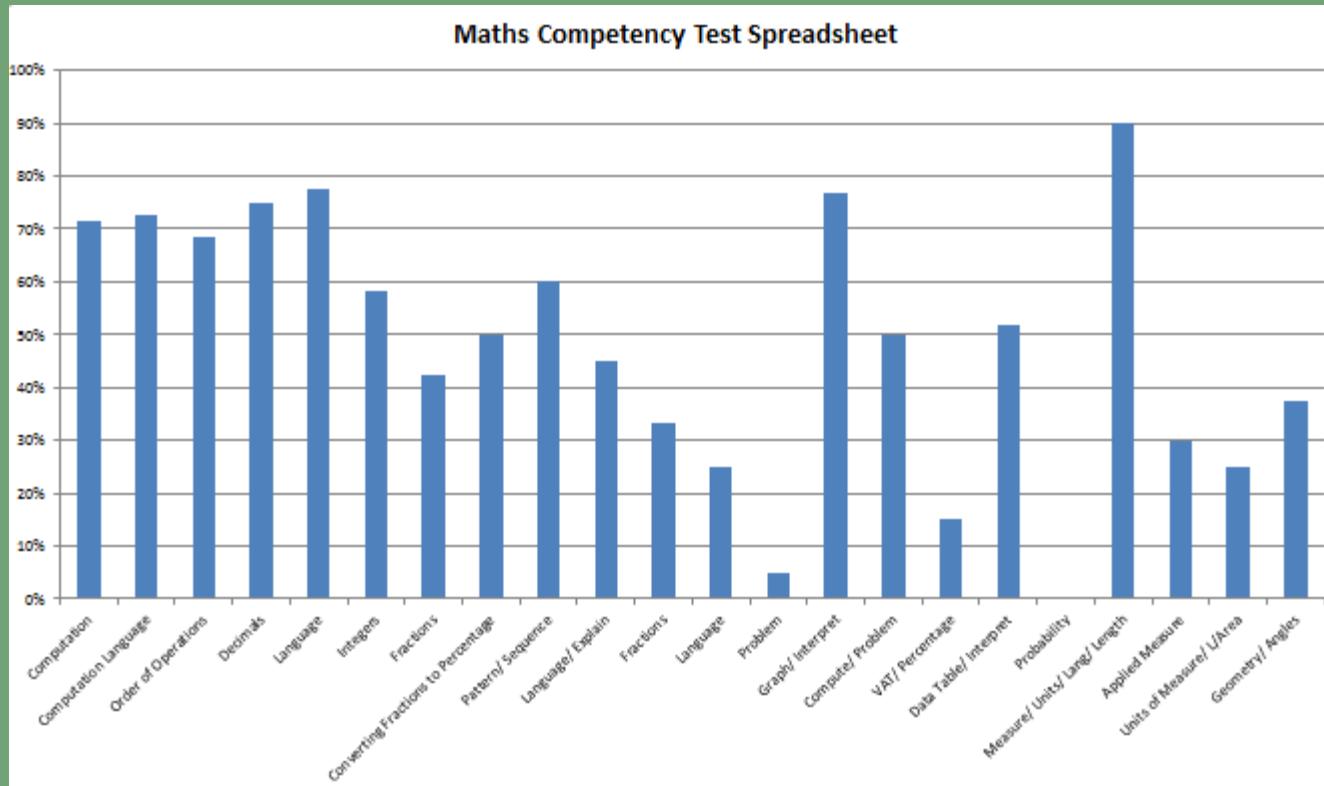
“In Ireland, 15.0% of students perform below Level 2 on PISA mathematics (indicating weak performance), compared with 23.4% on average across OECD countries “ (ERC, 2016, 93).

“On the other hand, 9.8% of students in Ireland perform at Levels 5-6 (indicating strong performance in mathematics), compared with an OECD average of 10.7%” (ERC, 2016, 92)

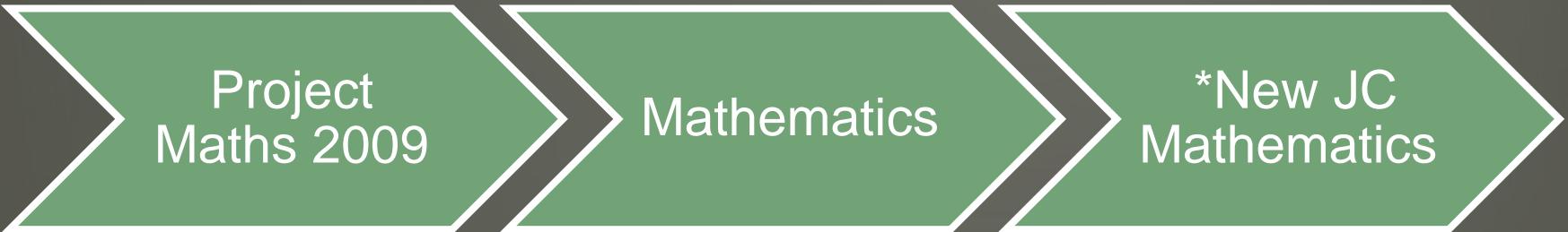
How we prepare in our school?

- Student passports from primary school
 - STEN scores
 - CAT scores
 - Maths Competency Testing

Maths Competency Test



Timeline of Recent Developments



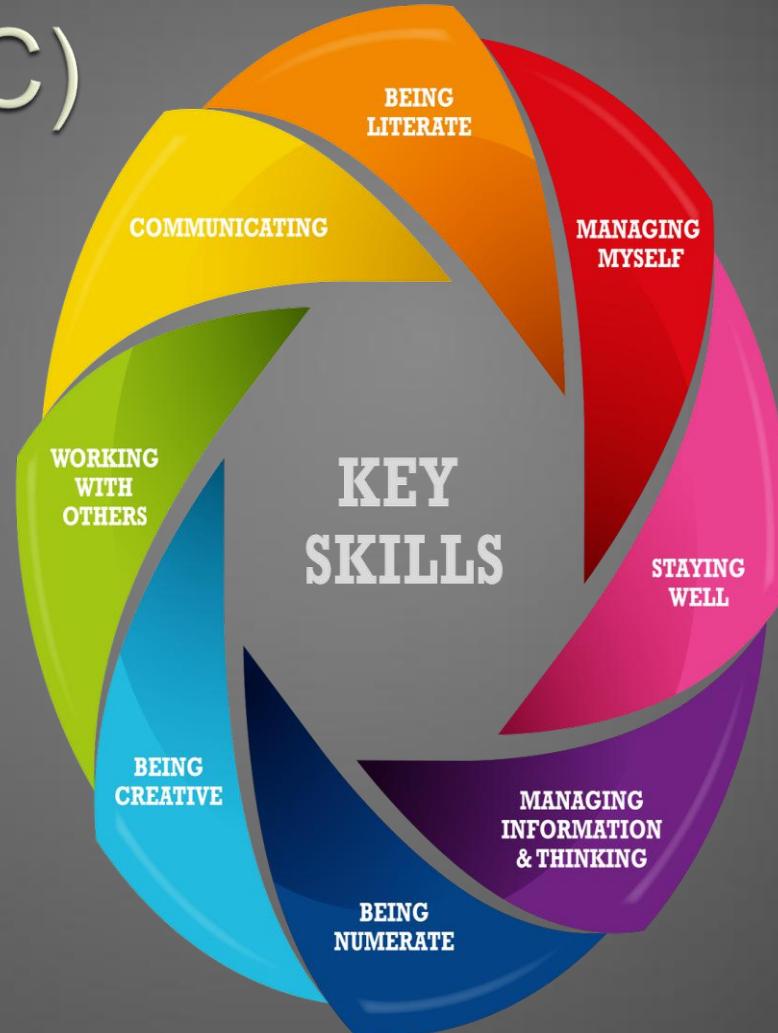
Project
Maths 2009

Mathematics

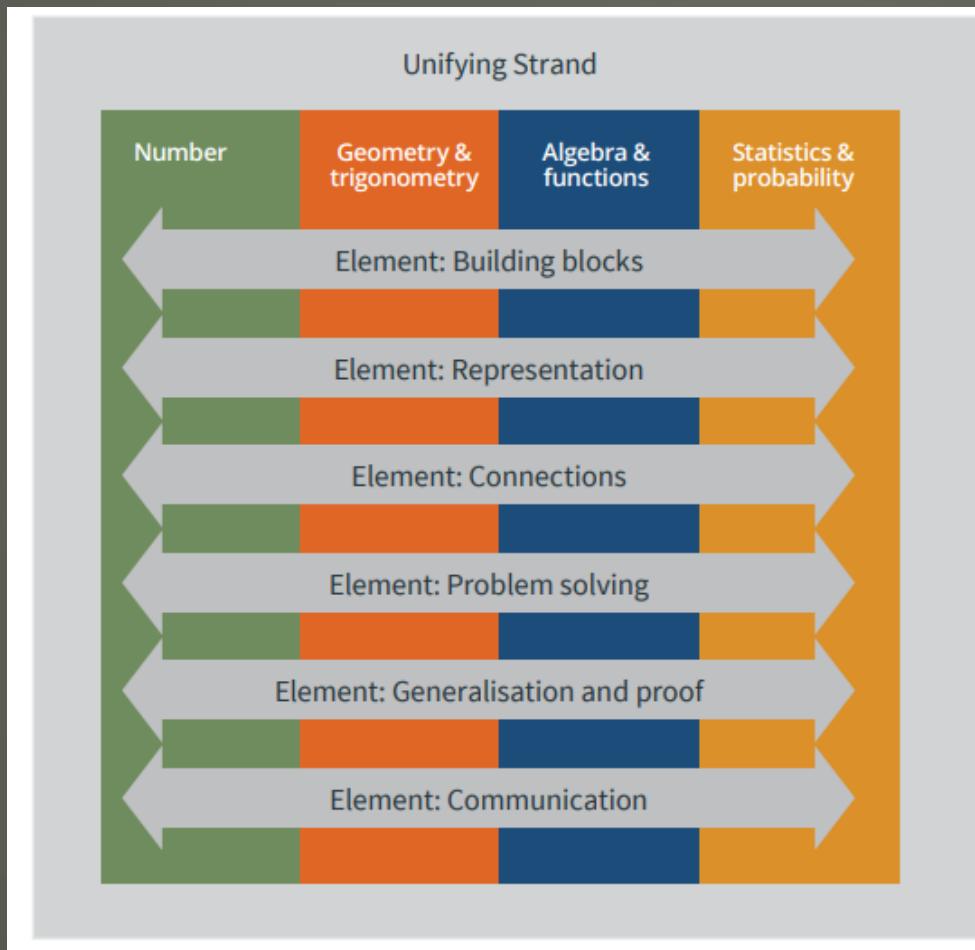
*New JC
Mathematics

New Junior Cycle (NJC)

- 8 Key Skills to be taught by all teachers in all subjects and Short Courses
- 24 statements of learning to be covered
- Irish, English and Maths 240 hours over 3 years



Junior Cycle Mathematics



New Junior Cycle Maths

Classroom-Based Assessment 1:



CBA	Format	Student preparation	Completion of assessment	SLAR meeting
Mathematical investigation	Report which may be presented in a wide range of formats	Students will, over a three-week period, follow the Problem-solving cycle to investigate a mathematical problem. Problem-solving cycle: define a problem; decompose it into manageable parts and/or simplify it using appropriate assumptions; translate the problem to mathematics if necessary; engage with the problem and solve it if possible; interpret any findings in the context of the original problem.	End of second year	One review meeting

New Junior Cycle Maths

Classroom-Based Assessment 2:



CBA	Format	Student preparation	Completion of assessment	SLAR meeting
Statistical investigation	Report which may be presented in a wide range of formats	<p>Students will, over a three-week period; follow the Statistical enquiry cycle.</p> <p>Statistical enquiry cycle: formulate a question; plan and collect unbiased, representative data; organise and manage the data; explore and analyse the data using appropriate displays and numerical summaries and answer the original question giving reasons based on the analysis section.</p>	End of first term of third year	One review meeting

Common Verbs Used

Interpret

Investigate

Select suitable strategies

Apply

Discuss

Demonstrate understanding

Evaluate

Analyse

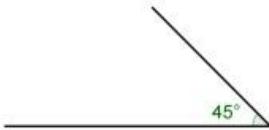
Explore

Mathematical Language

Glossary of mathematical terms for 5th/6th class in primary and Junior Cycle

Bridging Materials for Mathematics

The following is a glossary of mathematical terms. The glossary is designed to inform students/parents/teachers of the vocabulary and meaning of terms in mathematics that students may have encountered in primary school and will encounter when they transfer to post-primary education. Many of these terms are used throughout the strands in junior cycle, but it is not a comprehensive list for Junior Cert. The definitions and examples here are specifically chosen for use in 5th and 6th classes in primary and junior cycle mathematics in post-primary schools in Ireland.

	Term	Diagram, Definition, explanation and example
A	abacus	Helps to perform calculations by sliding beads along rods. 
	acute	An angle that is greater than 0° but less than 90°. 

NCCA Bridging
Glossary

Mathematical Language

Mathematics Register

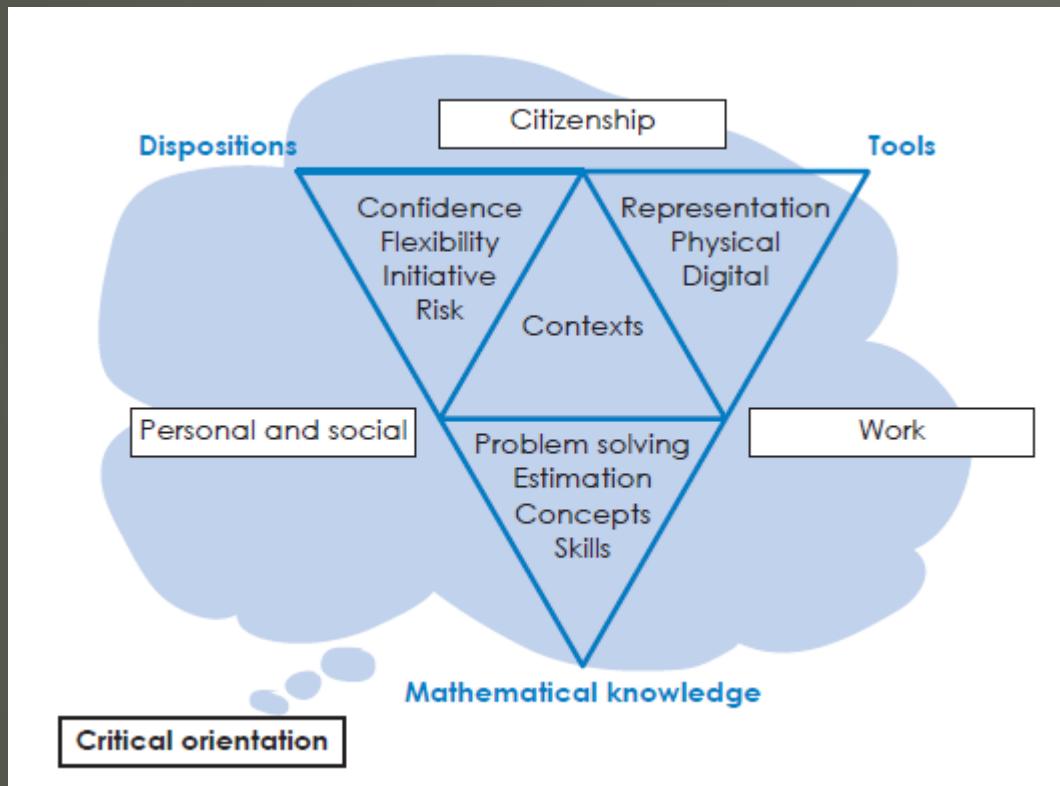
The following words have more than one meaning (everyday and mathematical). Please

1. Make a statement in everyday English (EE)
2. Make a statement in mathematical English (ME), and
3. Give a pictorial/symbolic (S) for each word.

Word	EE	ME	S
More			
Equal			
Sum			

Dr Máire
Ní Ríordáin

A model for numeracy



Goos et al., 2012

Professor Jo Boaler

 **Jo Boaler**  @joboaler · Sep 23

This is a short (1 min) video of me explaining some of the recent findings on the ways people reach high achievement. Struggle and pushing at the edge of your understanding is the best! If you would like the version with youcubed super heroes, it's here: youcubed.org/resources/the-...



were those who were always pushing
at the edge of their understanding.

25 586 1.0K 

Number/Algebra

Investigate the underlying concept? How is this related to:
 $2a+3b +2a +5a$

 Professional Development Service for Teachers

Adding and Subtracting Decimals

Simplify $0.5 + 1.34$

$$\begin{array}{r} 0.5 \\ + 1.34 \\ \hline 1.84 \end{array}$$

In this example we've obeyed the rule of adding like terms to like terms.
How do we know which terms are the like terms?

Simplify the following: $0.8 - 0.008$

$$\begin{array}{r} 0.800 \\ - 0.008 \\ \hline 0.792 \end{array}$$

What is the value of the 8 in 0.8?
What is the value of the 8 in 0.008?

 Professional Development Service for Teachers

Common Approach to Fractions

Diagram Estimate Calculate

Problem 1. If Donald ate $\frac{2}{3}$ of his own bar of chocolate and if he ate $\frac{1}{4}$ of Tim's chocolate bar. What fraction of a bar of chocolate did he eat?

Diagram

Diagram showing a fraction strip from 0 to 1 divided into 3 equal parts. The first two parts are shaded red, representing $\frac{2}{3}$. Below the strip, a number line shows 0, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{2}{4}$, and 1.

What fraction remains?

Diagram showing a fraction strip from 0 to 1 divided into 4 equal parts. The first part is shaded red, representing $\frac{1}{4}$. Below the strip, a number line shows 0, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{2}{4}$, and 1.

Estimate

Since the sum of $\frac{2}{3}$ and $\frac{1}{4}$ on the fraction strip above is less than one, represent the sum of the two fractions with an X on the number line.

Estimate-Calculate-Check



1. Estimate the length of the room
2. Estimate the width of the room
3. Measure these
4. How did your estimate compare to the answer?
5. Explain what you learned from this

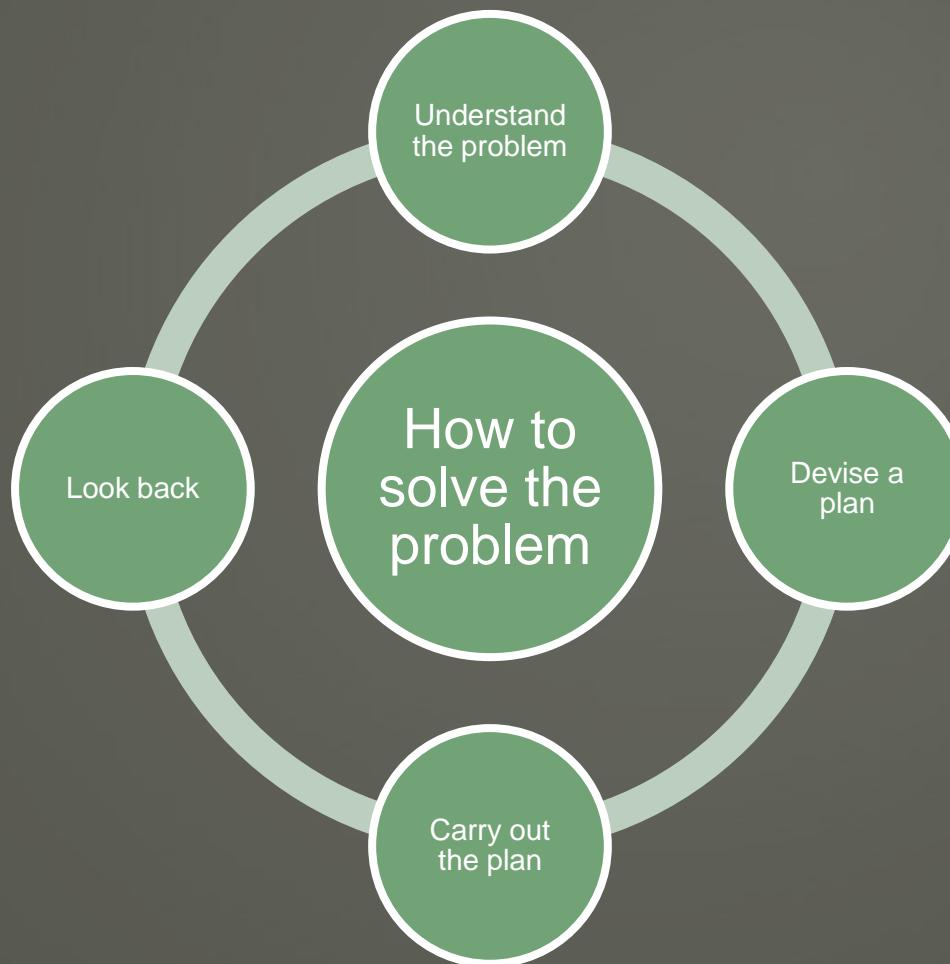
Proportional Reasoning

My vegetable garden is 2m long and 1m wide
I can plant 10 cauliflowers in it

If I make my garden twice as long and twice as wide, I can plant twice as many cauliflowers.

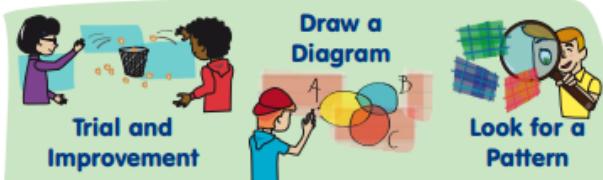
True or false?
Why/Why not?

Teaching through problem solving



Polya, 1956

Problem Solving Strategies



www.projectmaths.ie



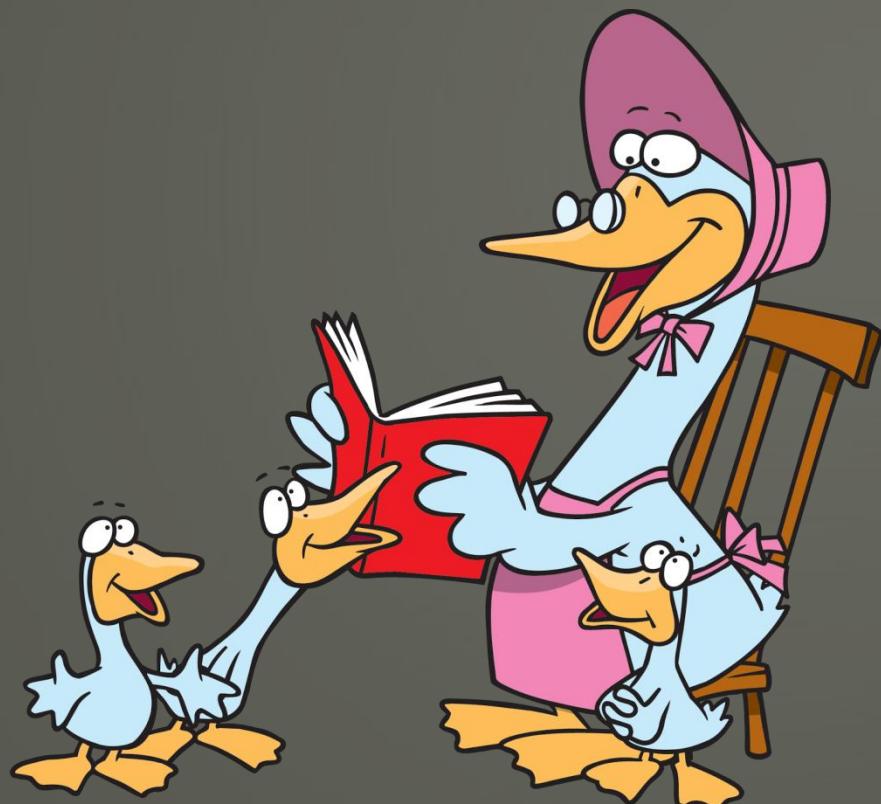
Lateral Thinking Problem

You are driving down the road in your car on a wild, stormy night, when you pass by a bus stop and you see three people waiting for the bus:

1. An old lady who looks as if she is about to die.
2. An old friend who once saved your life.
3. The perfect partner you have been dreaming about.

Knowing that there can only be one passenger in your car, whom would you choose? (<http://www.folj.com/lateral/>)

Student Engagement through Story Telling



Questions/Suggestions

