

# ***The Passing Rate Simulator***

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# Motivation

- Mathematical questions usually require multi-level solutions.
- The questions should not be too discriminating nor require lengthy solutions that may propagate student's previous errors.
- **Creating exams is not easy!**

# Motivation

**A fair and balanced exam is crucial in assessing student's performance.**

Can you give some techniques in evaluating the questions, and the whole exam?

# Motivation

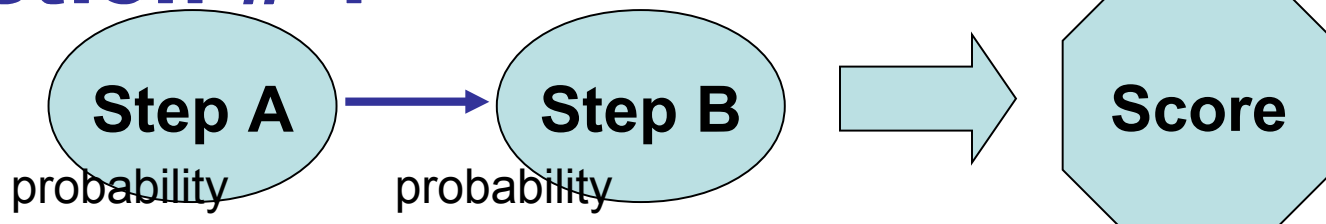
## For Problem-Solving?

Passing Rate Simulator would help us evaluate the difficulty and appropriateness of an exam (especially those with Problem-Solving) considering the profile of our students.

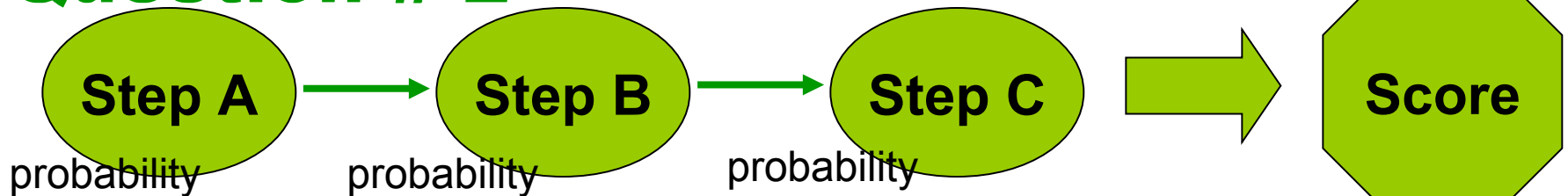
# The Simulation

Using the concept of Stochastic Process

## Question # 1

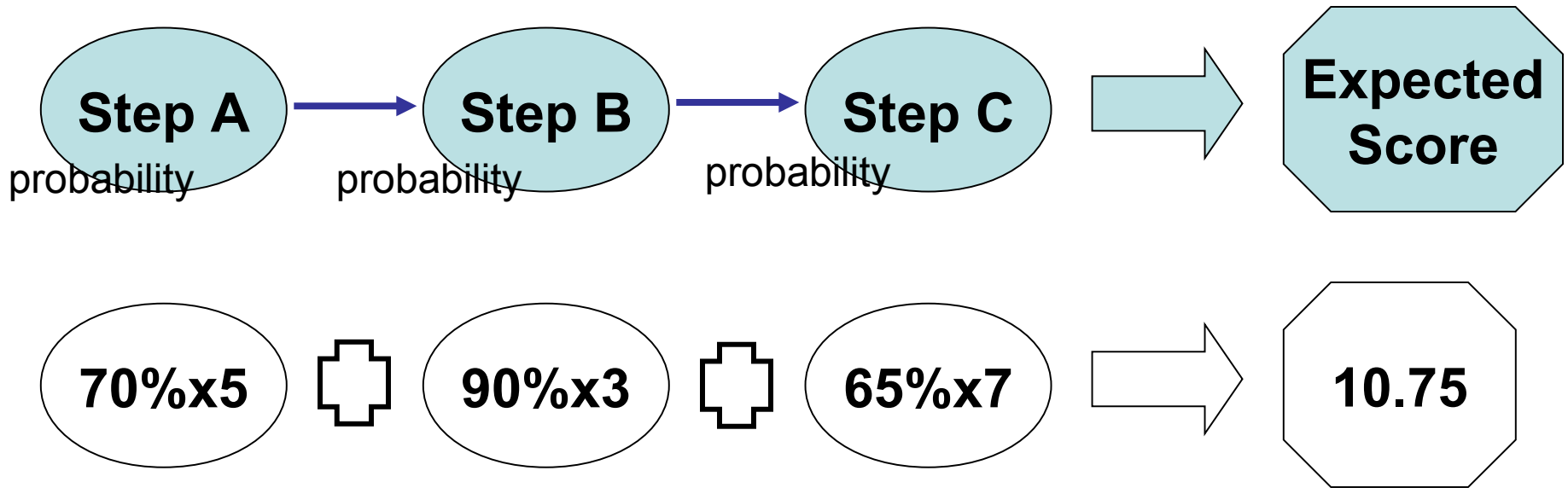


## Question # 2



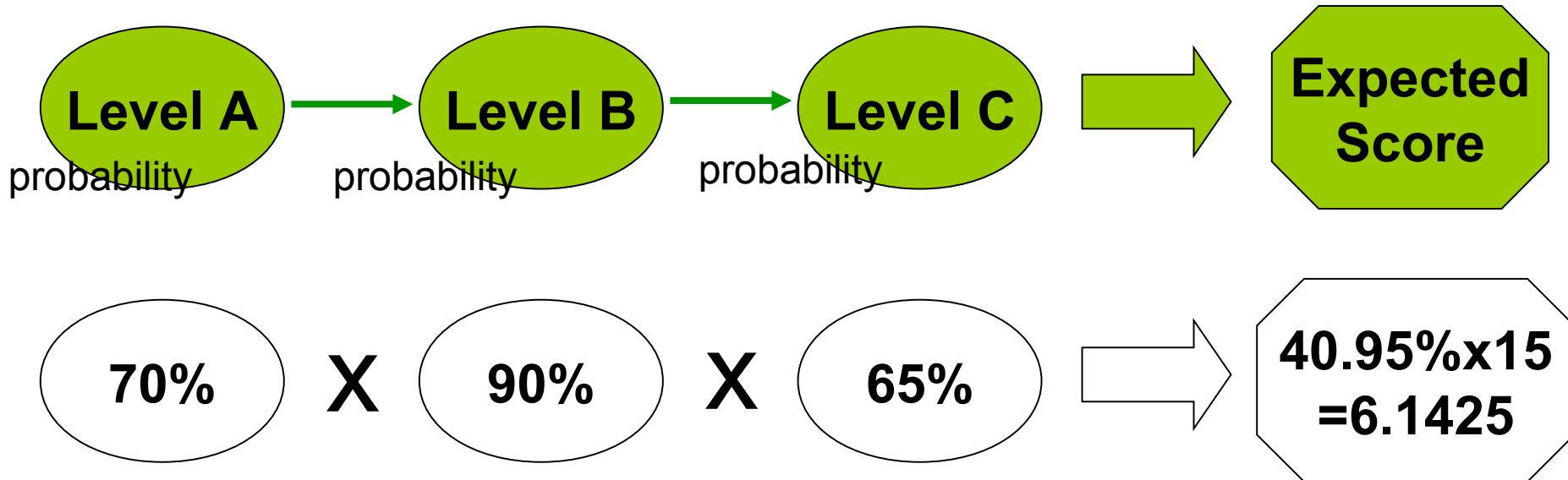
# The Simulation

## Simple Example:



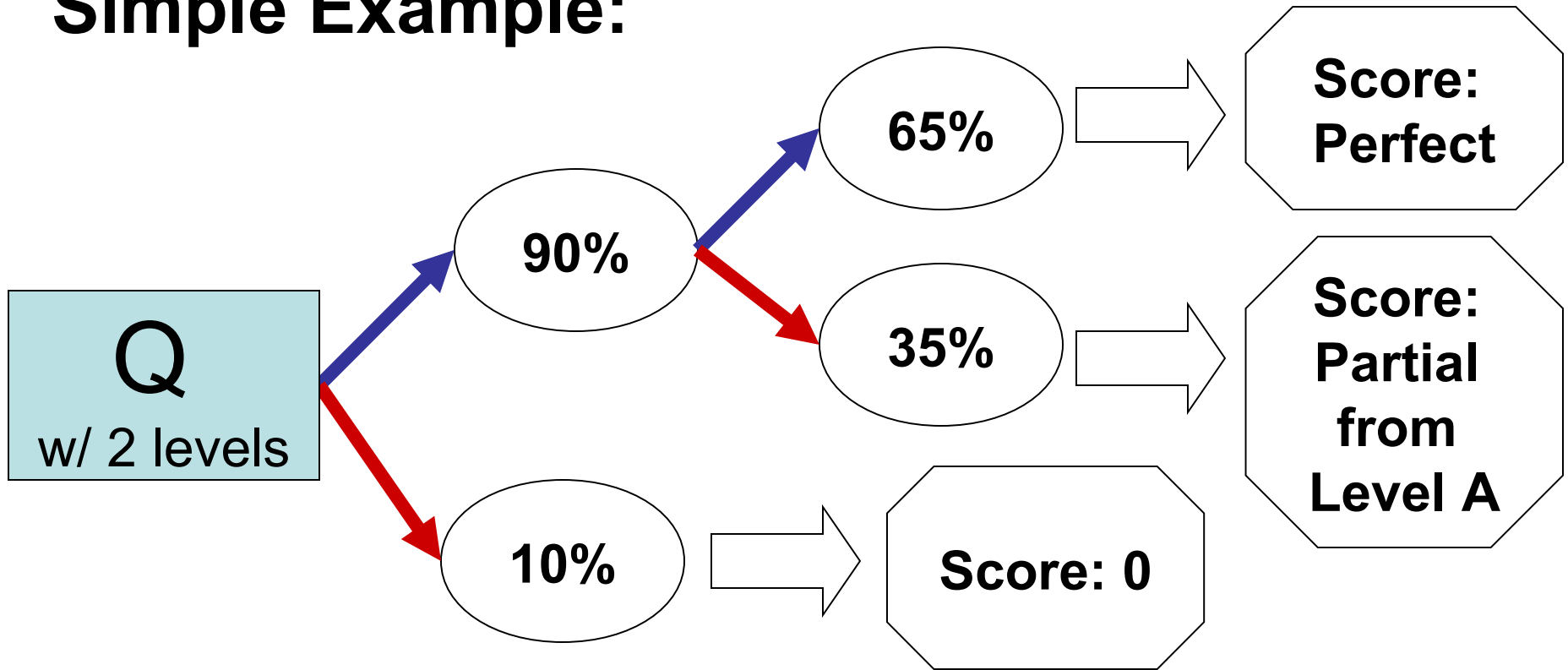
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## Simple Example:



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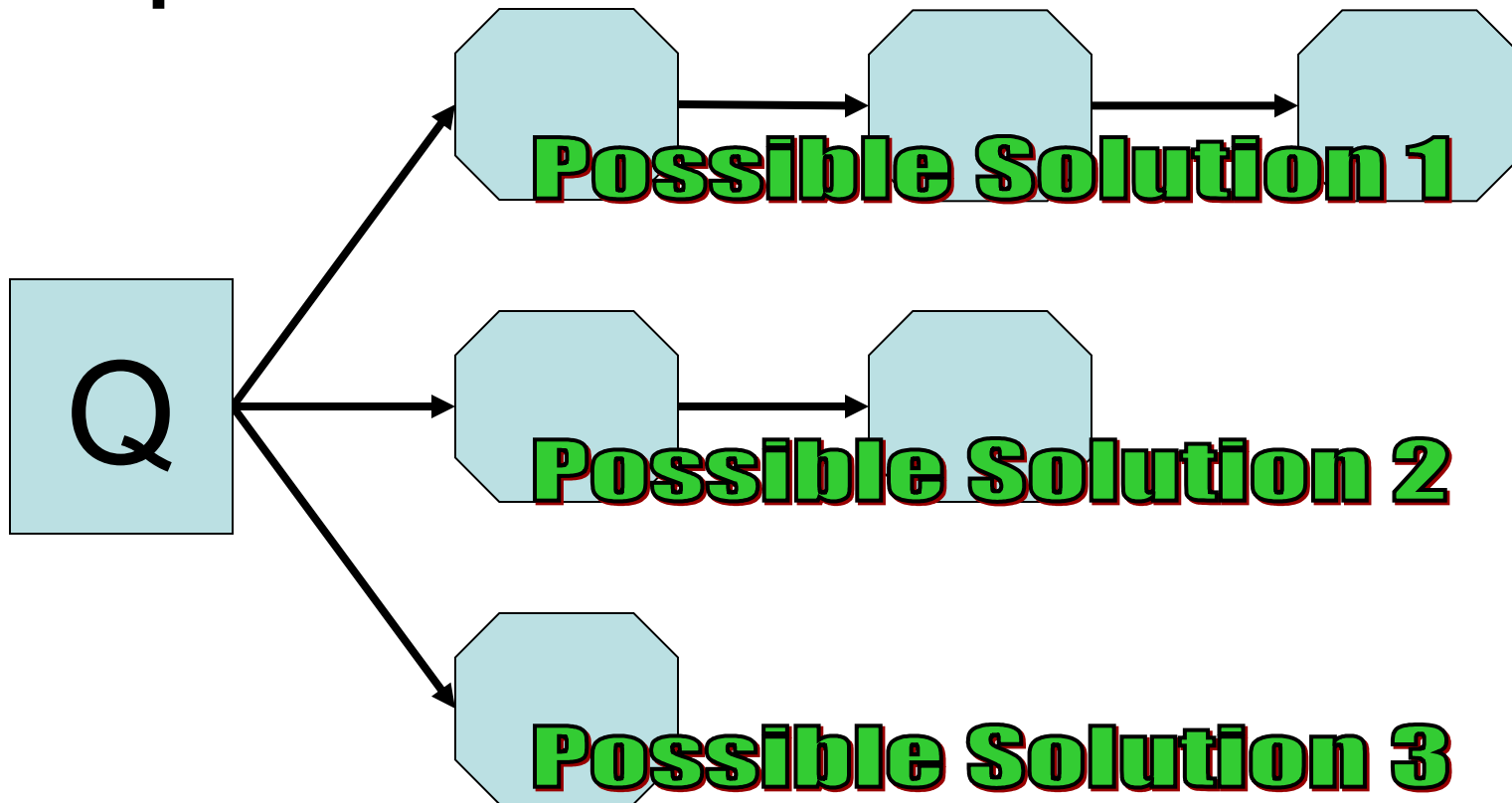
## Simple Example:





# The Simulation

Multiple Solutions:



# The Simulation

Simulating the students' test scores will help predict the overall passing rate of the class.

Standardized preliminary exams/quizzes can be given to approximate each student's chance of passing the different levels of difficulty or different categories.

# It's time to decide...

## Is class passing rate acceptable?

If not, the teacher may decide to increase or decrease the number of easy, average or difficult questions. The teacher may also reduce the levels of the solutions required to minimize error propagation.

# Follow-up Q's

- Do the scores of my students in quizzes positively correlated with their scores in long exams?
- Are my students global or local learners?

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