

CREATIVITY IN DECISION MAKING

Business Decision Making

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FACULTY OF
**ORGANIZATION
AND INFORMATICS**

4th **WEEK**

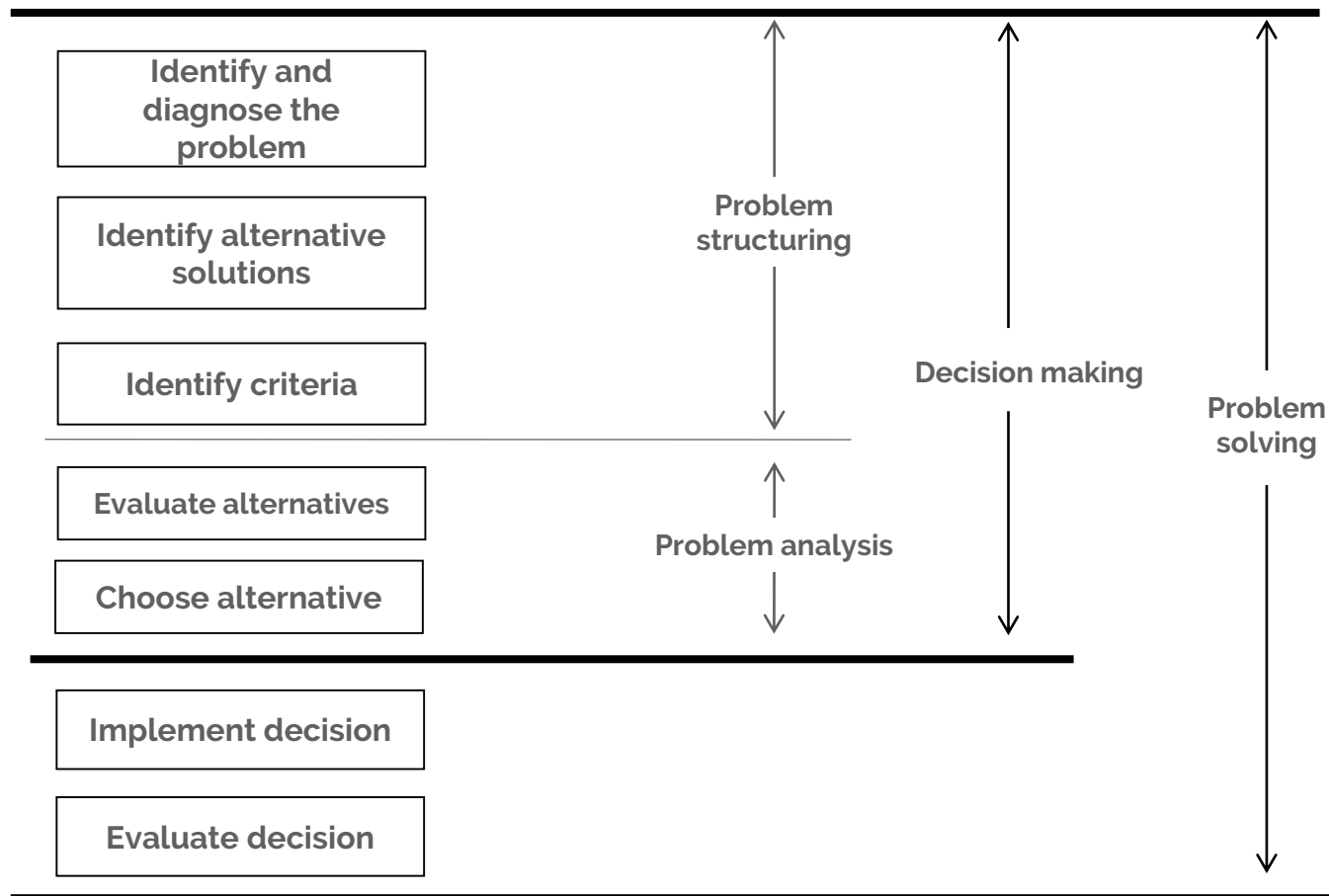
- Intelligence and creativity
 - Difference between intelligence and creativity
 - Left and right side of the brain
 - Convergent and divergent way of thinking
- Individual characteristics associated with the creativity
- Phases of the creativity process
 - Discoveries in dream
- Critical thinking
 - Low-level vs high level thinking
 - Assignment 1 (make the plane)
 - Some brain-exercises
- The Marshmallow challenge

INTELLIGENCE VS CREATIVITY

- **Intelligence** – important for problem reasoning (understanding) and problem analysis
- **Creativity** – developing the new alternatives
- Different researches about correlation between the intelligence and the creativity

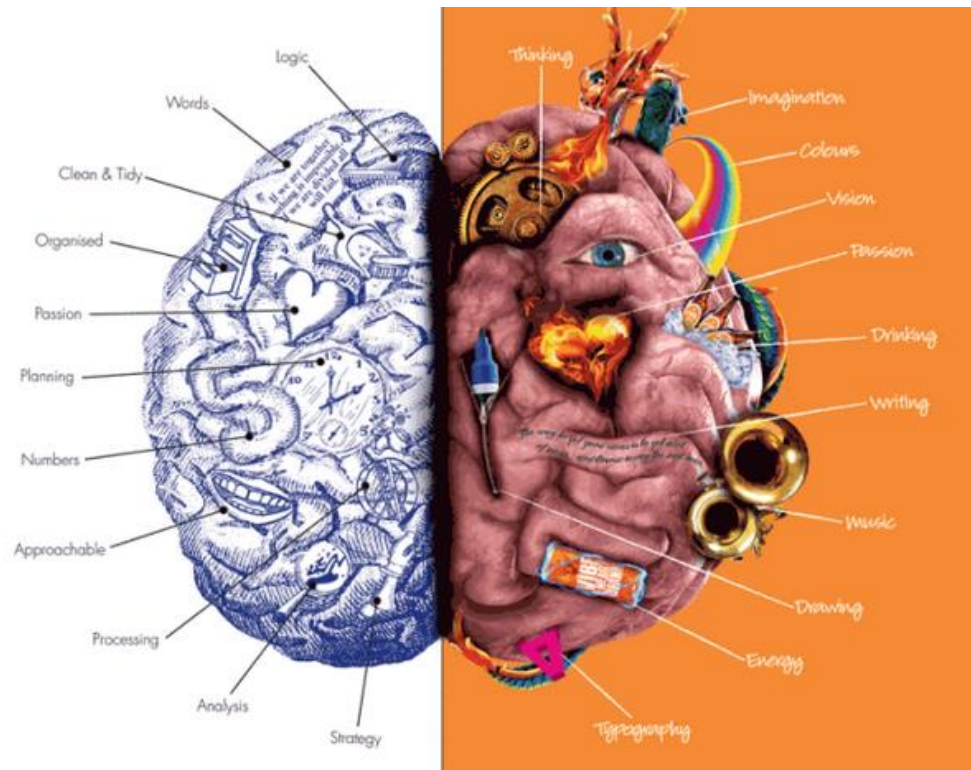


INTELLIGENCE VS **CREATIVITY**



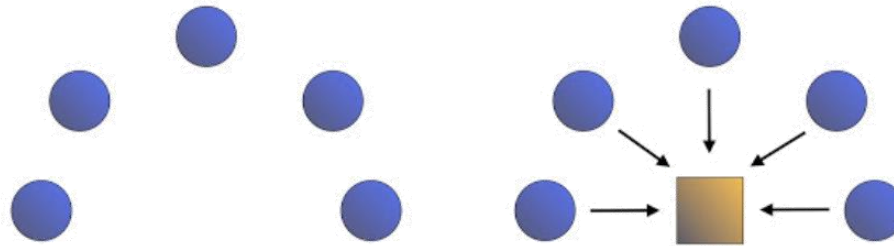
INTELLIGENCE VS **CREATIVITY**

- **LEFT SIDE OF THE BRAIN**
 - Intelligence
 - Right-handed persons
- **RIGHT SIDE OF THE BRAIN**
 - Creativity
 - Left-handed persons
- One side of the brain controls the other side of the human body

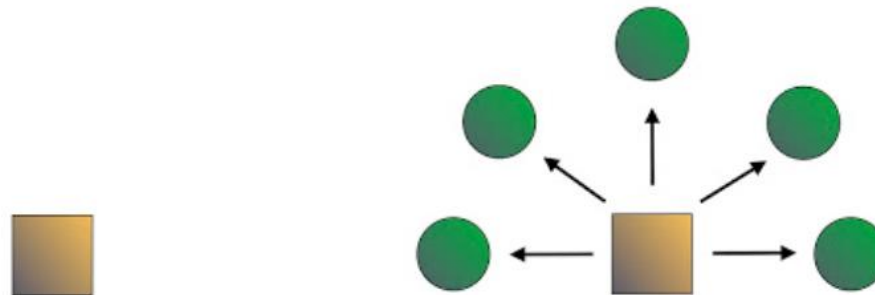


INTELLIGENCE VS **CREATIVITY**

- Convergent thinking ... focus on one solution



- Divergent thinking ... analysing several possible solutions



INTELLIGENCE VS **CREATIVITY**

- **Creative persons:** open-minded, critical, unconventional, motivated, selfconfidence, wide interests, ready for changes, divergent thinking
- **Non-creative persons:** do not accept new things, conventional, pasive, disinterest, predictable, convergent thinking



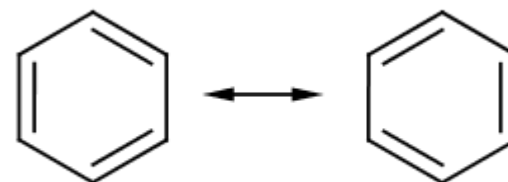
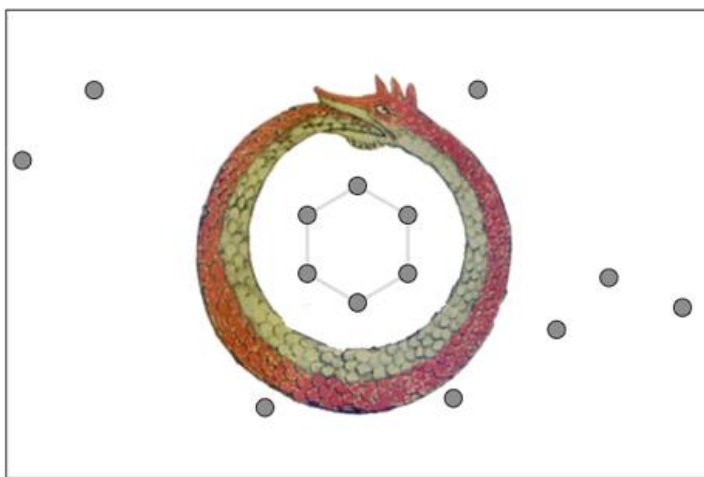
INDIVIDUAL CHARACTERISTICS ASSOCIATED WITH **CREATIVITY**

- Intellectual abilities
 - See problems in new ways
 - Recognize which ideas are worth pursuing and which are not
 - Influence on others
- Explicit knowledge (about the problem, field), and tacit knowledge (implied)
- Thinking on novel ways/style
- Personal characteristics (willingness to overcome obstacles, willingness to take risk, willingness to tolerate ambiguity (double meaning), self-efficacy, openness)
- Intrinsic task motivation



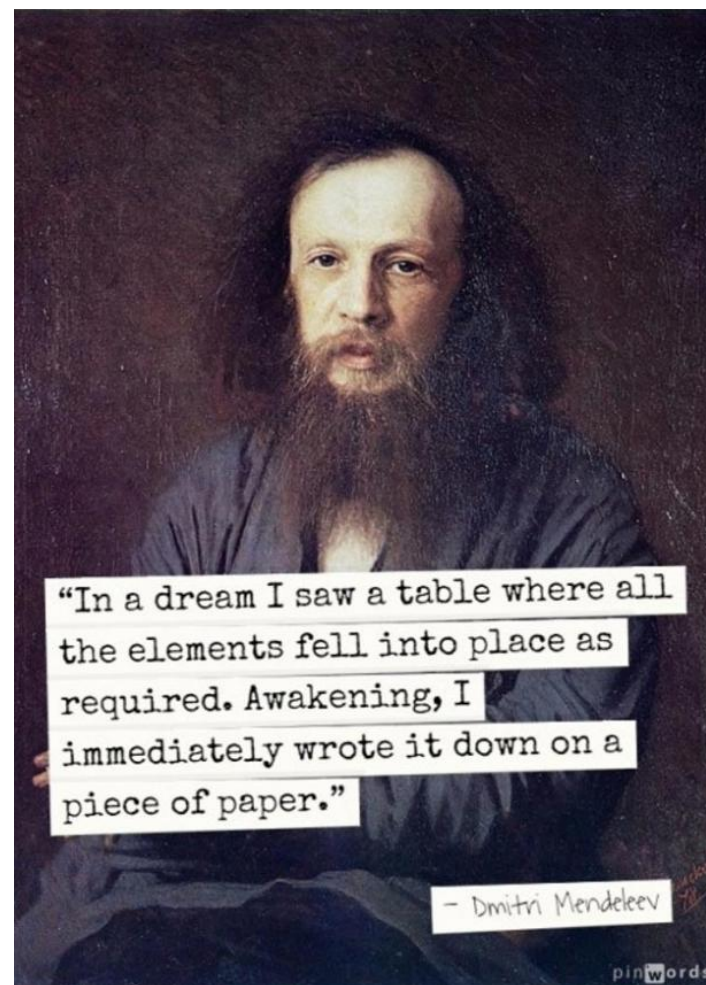
PHASES OF **CREATIVITY PROCESS**

- F.A. Kekule – Benzen
 - The structure of molecule benzen
 - Dynamic structure
 - Snake in the dream
- <http://nabreklina-ispraznosti.blogspot.com/2015/10/san-o-benzenu.html>



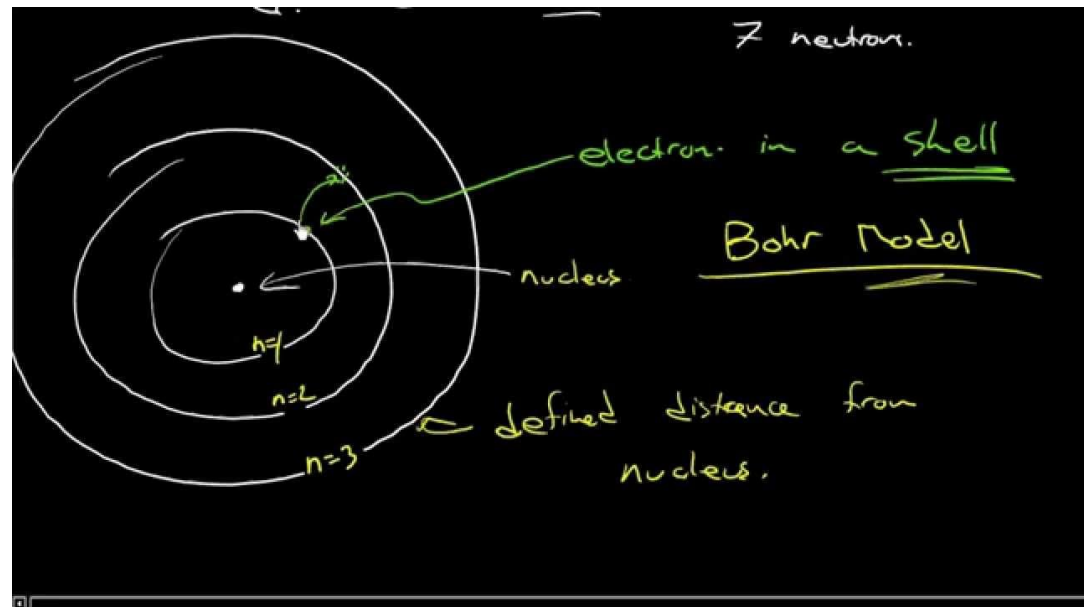
PHASES OF **CREATIVITY PROCESS**

- Dmitri Mendeleev,
Periodic Table
- Source:
<http://nabreklina-ispraznosti.blogspot.com/2015/10/san-o-benzenu.html>



PHASES OF **CREATIVITY PROCESS**

- Niels Bohr – The structure of atom (dreaming about the Sun)
- Source: Edwina Portocarrero, David Cranor, V. Michael Bove: Pillow-Talk: Seamless Interface for Dream Priming Recalling and Playback



PHASES OF **CREATIVITY PROCESS**

- Paul McCartney – Yesterday (Music/Melody of the song)
- For more than a year, the song was called “scrambled eggs.” The placeholder lyrics were absurd: “Scrambled eggs. Oh my baby how I love your legs.”
- Source:
<https://medium.com/getting-art-done/yesterday-came-to-paul-mccartney-in-a-dream-was-it-a-creative-miracle-79839cb303fe>



“Yesterday” came to Paul McCartney in a dream. Was it a creative miracle?

What hope is there for you to write a hit?



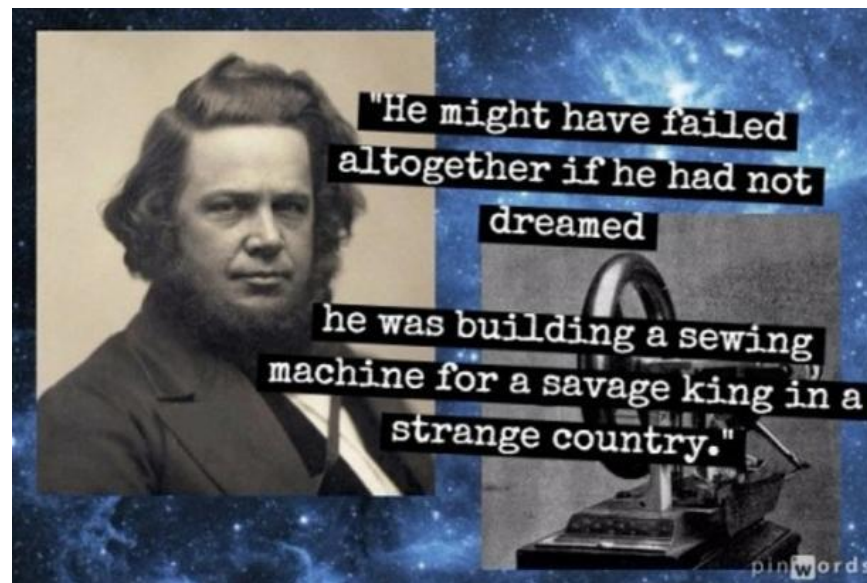
David Kadavy [Follow](#)
Apr 16, 2018 · 8 min read

“Yesterday” has been called the greatest song of the 20th century—some have even called it the greatest song of all time. It is one of the most-covered songs, and one of the highest-earning songs ever.

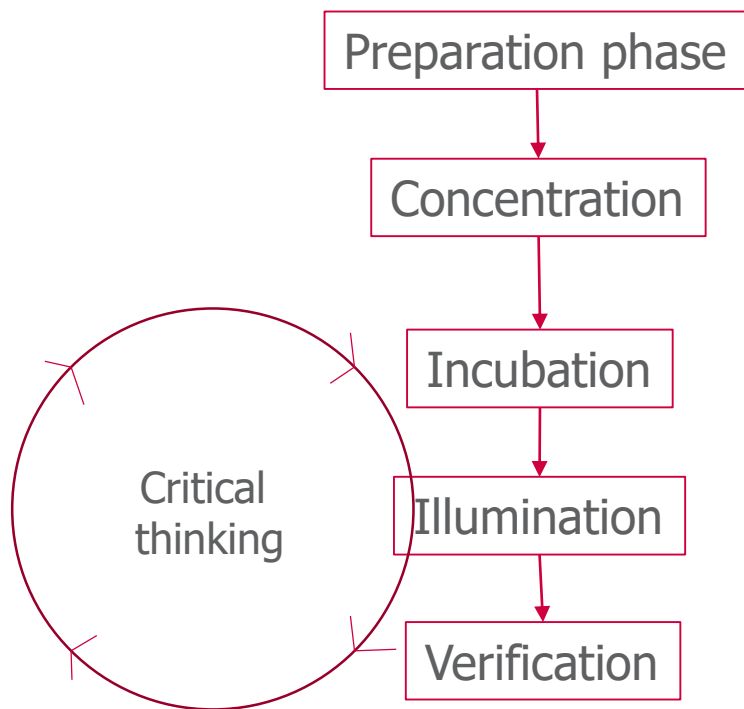
The melody to “Yesterday” came to Paul McCartney in a dream. He woke up

PHASES OF **CREATIVITY** PROCESS

- Elias Howe – Sewing machine (needlework)
- “He jumped out of bed, ran to his workshop, and by 9, a needle with an eye at the point had been rudely modeled. After that it was easy.”
- Source:
https://www.archive.org/stream/bemishistorygene00drap/bemishistorygene00drap_djvu.txt



CREATIVITY AND CRITICAL THINKING



Generally speaking, creativity is associated with generating ideas, while critical thinking is associated with judging them.

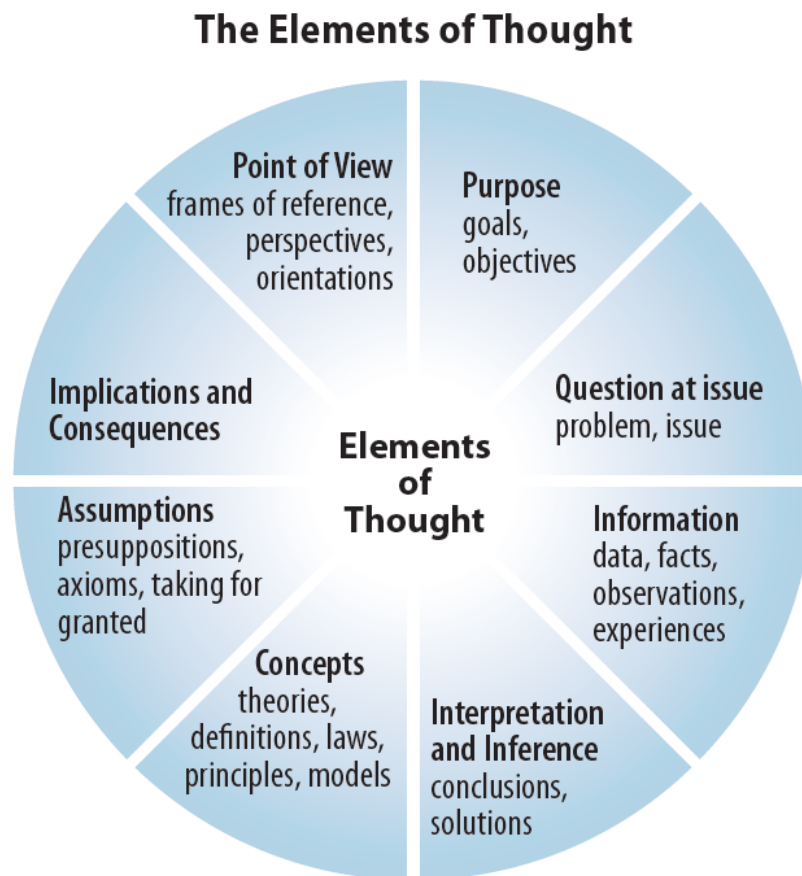
CREATIVITY AND **CRITICAL THINKING**

- Low level thinking
 - Unreflective
 - Based on intuition
 - Large self-serving/self-deceived (not fair)
- High level thinking
 - Explicitly reflective
 - Routine use of critical thinking tools in thinking
 - Consistently fair
- WHERE ARE YOU?



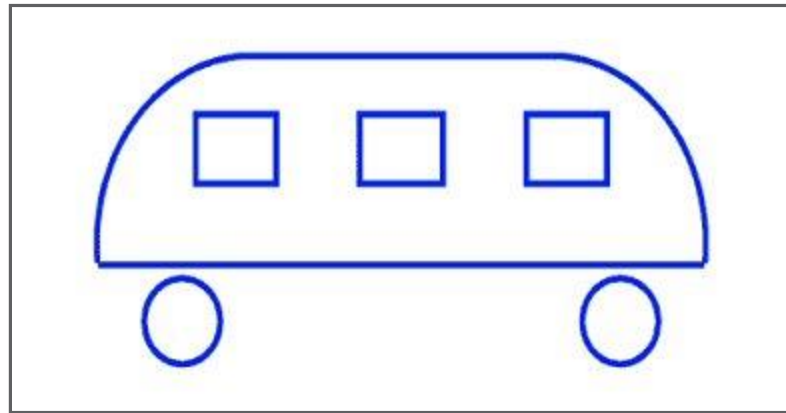
CREATIVITY AND **CRITICAL THINKING**

- Standards for creating the statements
 - Clarity
 - Accuracy
 - Precision
 - Relevance
 - Depth
 - Breadth
 - Logic
 - Significance
 - Fairness
- See The Miniature Guide to Critical Thinking Concepts and Tools





CREATIVITY AND **CRITICAL THINKING**

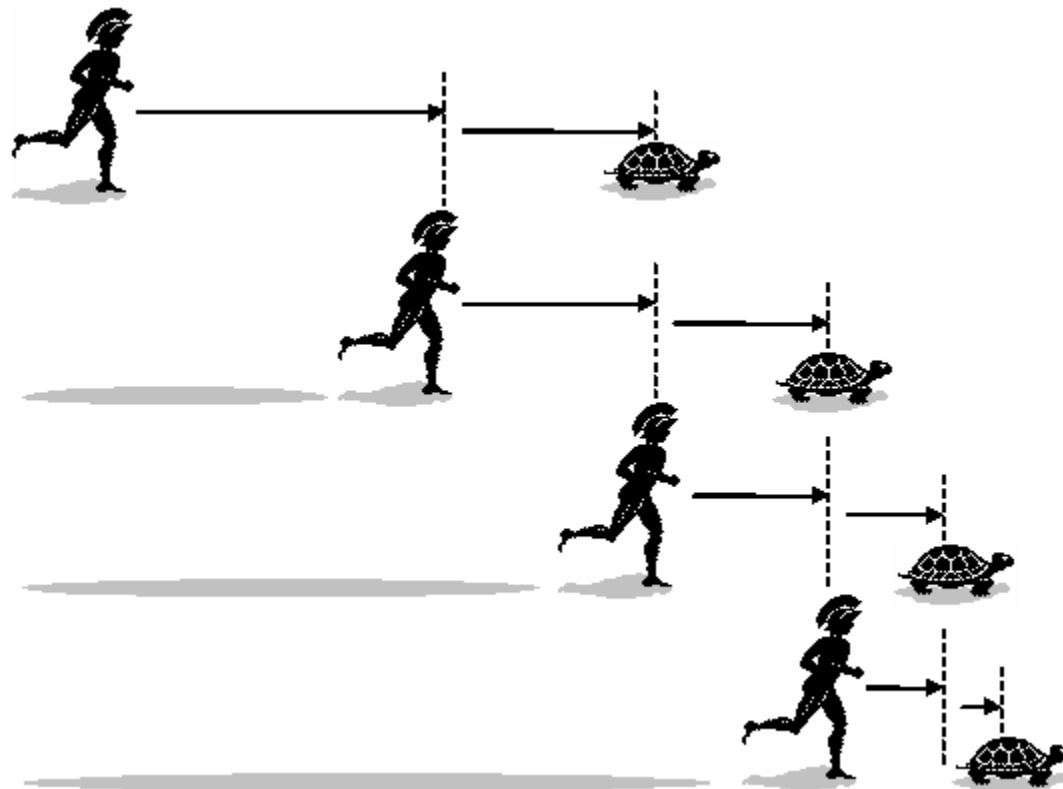


In which direction does the bus go?

- Left,
- Right,
- Impossible to determine.

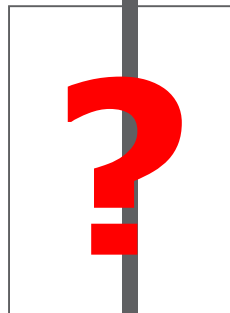
CREATIVITY AND **CRITICAL THINKING**

Greek philosopher Zenon: **Achilles** (a hero of the Trojan War) **cannot ever pass the turtle which has advantage of 10 feet even if it is 10 times faster than the turtle**



CREATIVITY AND **CRITICAL THINKING**

- Room 1: 3 switches; Room 2: 3 light bulbs
- Can we determine which switch corresponds to which bulb if we can pass the other room only once?



CREATIVITY AND **CRITICAL THINKING**



- How to measure 4 L?



5/0	3/0	Fill 5L
5/5	3/0	Transfuse the 5L to 3L
5/2	3/3	Empty 3L
5/2	3/0	Transfuse the 5L (which contains 2L) to 3L
5/0	3/2	Fill 5L
5/5	3/2	Transfuse 5L in 3L until 3L full (it can receive only 1L)
5/4	3/3	In 5L we have 4L

CREATIVITY AND **CRITICAL THINKING**

Brick is weighted 1 kilo and a half of brick

How many kilos does the brick weight?

- 1 kg
- 1.5 kg
- 1.25 kg
- 1.75 kg
- 2 kg
- 2.5 kg
- 3 kg

CREATIVITY AND **CRITICAL THINKING**

Brick is weighted 1 kilo and a half of brick



= 1 kg



2 kg

+



1 kg



1 kg

x=weight of the brick

⇒

$$x = 1 \text{ kg} + 0.5x$$

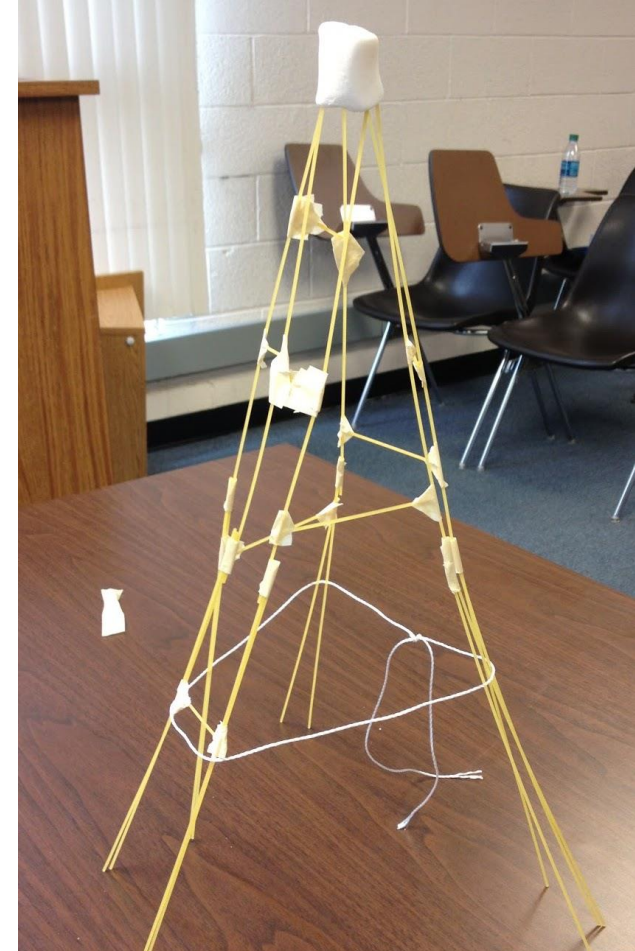
$$x - 0.5x = 1 \text{ kg}$$

$$0.5x = 1 \text{ kg} \quad / \cdot 2$$

$$x = 2 \text{ kg} \quad \heartsuit$$

THE MARSHMALLOW **CHALLENGE**

- 4 students in group
- each team get the tape, string, spaghetti, and marshmallow
- Each team has 18 minutes to build the tallest, free-standing structure using the materials supplied to each group. The marshmallow must be attached to the top of the structure you build. After 18 minutes, I will measure the height of each structure that remains standing with the marshmallow on top. The winner is the team whose free-standing structure is the tallest.



THE MARSHMALLOW **CHALLENGE**

