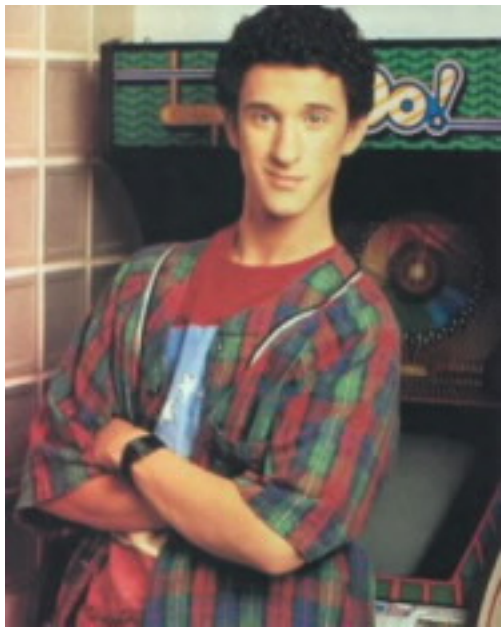# Thinking

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Beni-Suef University

Cognition

- Another term for thinking, knowing and remembering

Understanding Thinking

- Thinking is the mental activity that allows us to understand, process, and communicate information.

- The basic units of thought include symbols, concepts, and prototypes.

PSYCHOLOGY CLOSE UP

A Life-Saving $ymbol

How do you know a sign warns of danger even though you don't read Turkish?
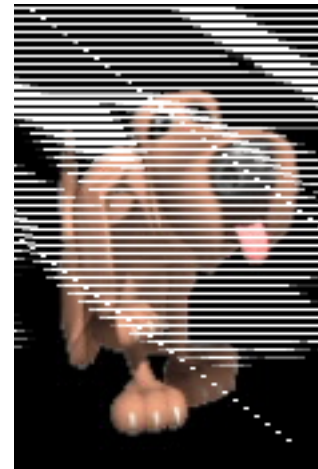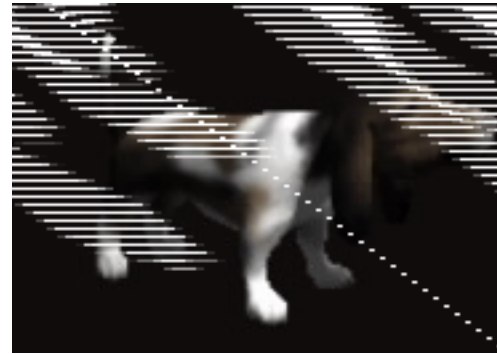
ÖLÜM TEHLİKESİ

Do you know what these signs are telling you? Symbols are useful not only on signs. When we think, we use symbols.

In order to think about the world, we form……..

Concepts

- A mental grouping of similar objects, events, ideas or people.

- Concepts are similar to Piaget's idea of…. Schemas

These animals all look different, but they fall under our concept of "dogs".

Basic Elements of Thinking

Symbols

- A **symbol** is an object or an act that stands for something else.
- Letters and words are symbols.
- Mental images are symbols.
- Symbols help us think about things that are not present.

Concepts

- A **concept** is a mental structure used to categorize objects, people, or events that share similar characteristics.
- People organize concepts into hierarchies.
- People learn concepts through experience.

Thinking: How is it different from remembering?

- Thinking involves not only retrieving information but also doing something with it
  - Deciding something
  - Solving a problem
  - Judging something
  - Creating something
  - Finding something
  - Etc.,

Thinking: What's involved?

- Concepts—mental representations
- Contents of Concepts:
    - Classes or categories (dogs, books, etc.,)
    - Attributes or characteristics (red, tall, painful)
    - Abstractions or non-tangible ideas (love, hate)
    - Procedures or processes (how to do _____)
    - Goals or intentions (future plans)

- **Types of Concepts**
  - **Natural**:
    - Based on everyday experiences
    - Usually unanalyzed until we are asked to define the *natural concepts (home, game….)*
  - **Formal**:
    - Usually based on formal set of experiences
    - Based on rules for inclusion/exclusion
    - Usually formed by intentional efforts to learn

Concept Formation

- **Generalization**
  collecting information

- **Differentiation**
  finding differences

- **Abstraction**
  selection and grouping

- **Schema:**

✓ Icons of object in our mental representation

✓ Help us to understand the world

✓ For example (if you borrow a friend's car, your car schema will give you a good idea of where to put the ignition key, where the accelerator and brake…..etc)

- **Scripts**
  - Schema for process or sequence of events;

  - Scripts are useful in routine sequences of events (e.g. fast food restaurant; listening to a lecture)

  - Scripts allow us to operate on "automatic" as long as things are predictable.

Information Processing

- Mechanism of receiving information, representing it with symbols and using it

- Thinking: mental activity for problem solving
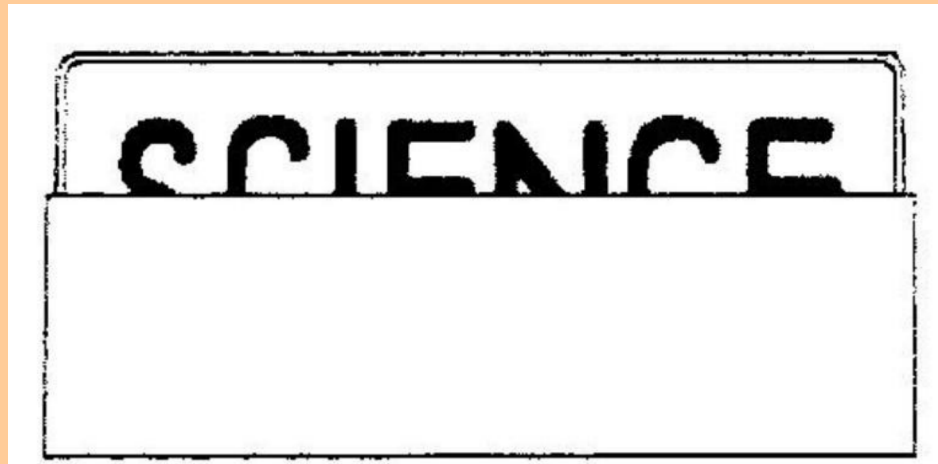
Top-Down Processing

- We perceive by filling the gaps in what we sense.
  I _ant ch_co_ate ic_ cr_am.
  Based on our experiences and schemas.

  If you see many old men in glasses, you are more apt to process a picture of an old man.

What do you see?

Now what do you see?

Bottom-Up Processing

- Also called feature analysis.

- We use the features on the object itself to build a perception.

- Takes longer that top-down but is more accurate.

Kids.exe

Click to see an example of bottom –up

Types of Thinking

1- Simple (reflexive)

2- Compound (Trial and error)

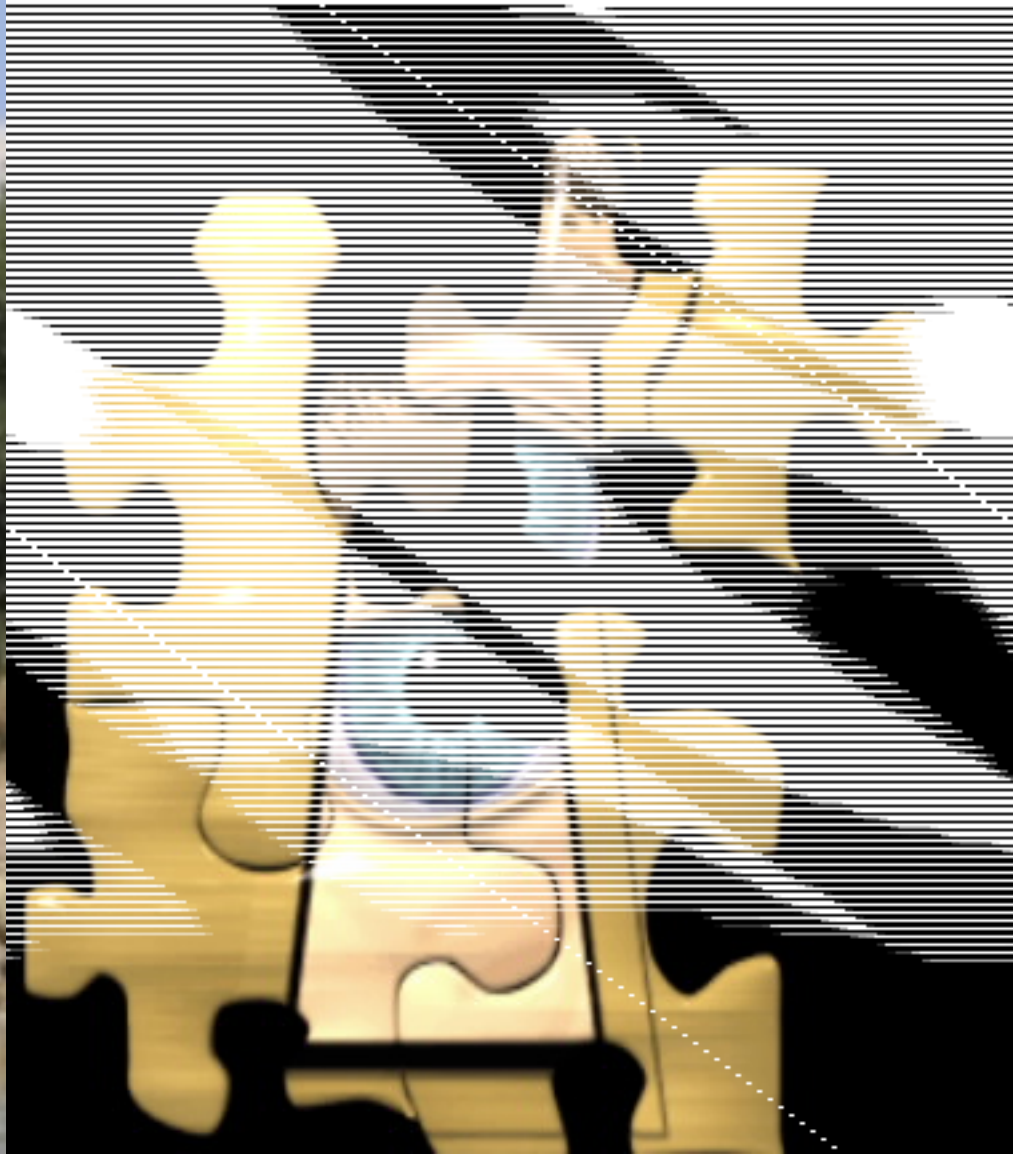3- Abstract thinking

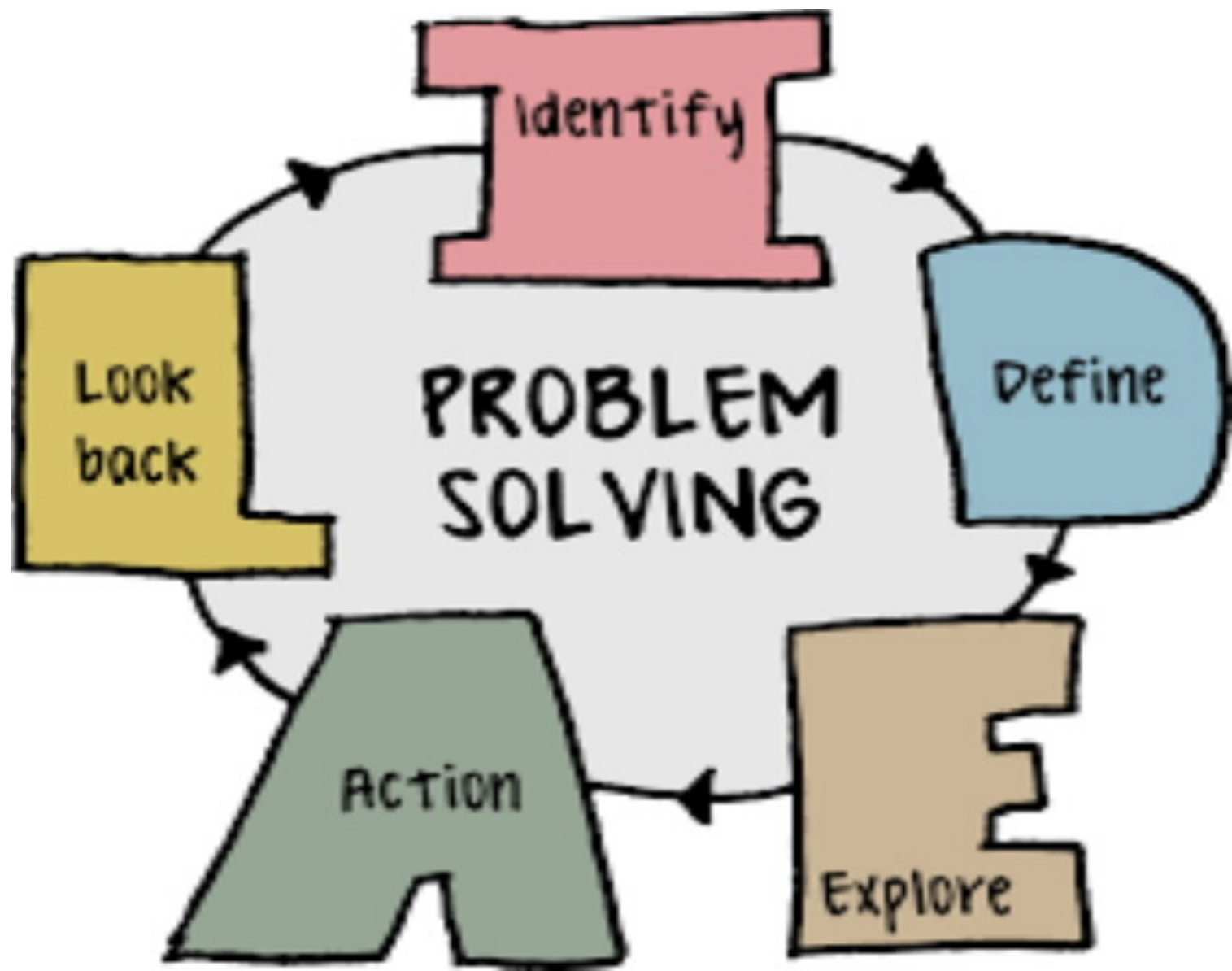4- Concrete thinking

A Chimpanzee's Insight

This series of contemporary photos documents the chimpanzee's problem-solving abilities. *What process allowed the chimp to solve the problem?*
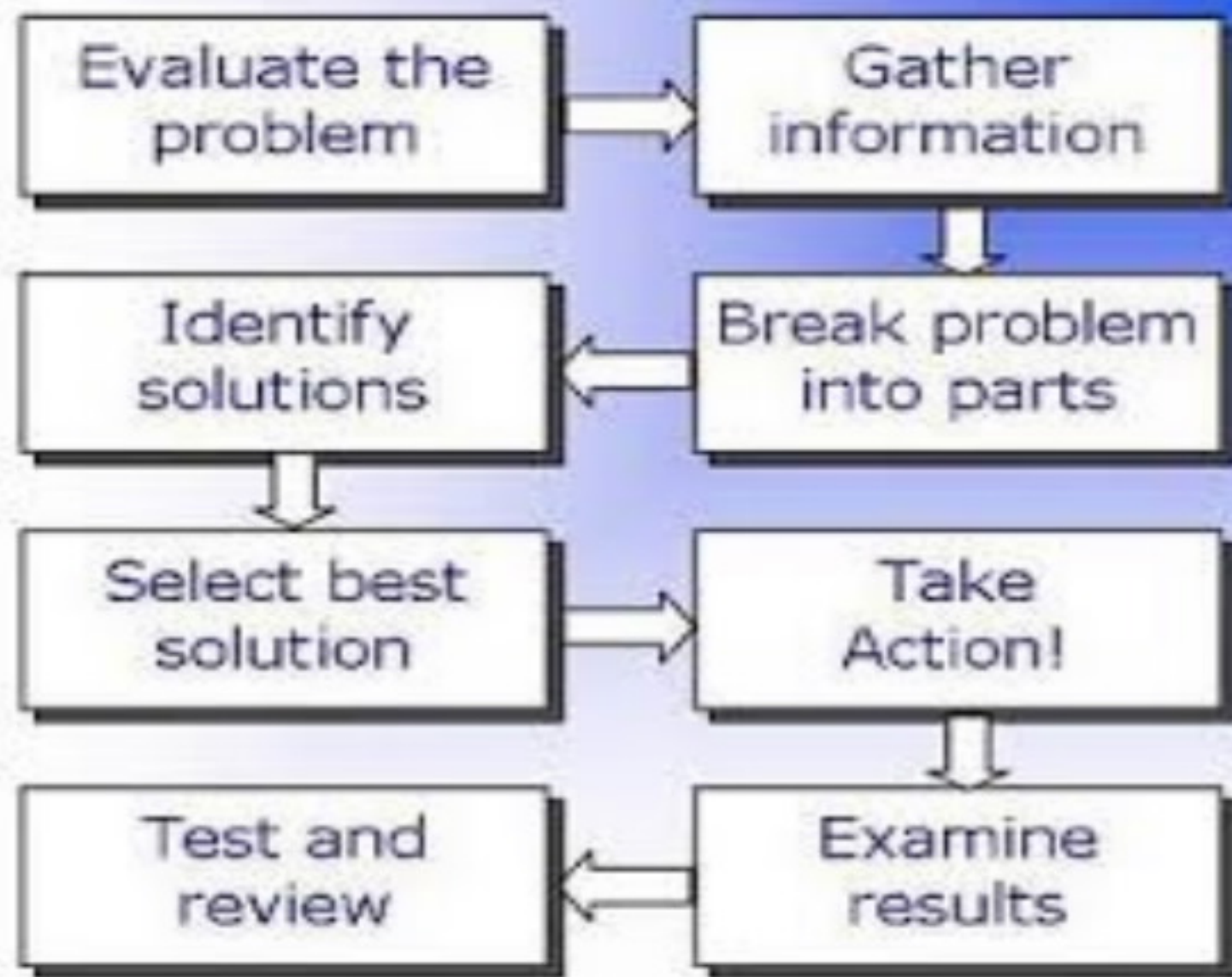
TYPES OF THINKING

- **Autistic thinking** preoccupation with inner thoughts, daydreams, fantasies, private logic; egocentric, subjective thinking lacking objectivity and connection with external reality.

- **Realistic Thinking** is controlled, constructive, directive, realistic and factual based thinking.

How do we solve problems?

PROBLEM SOLVING

Identify
Define
Explore
Action
Look back

```
┌─────────────────┐        ┌─────────────────┐
│  Evaluate the   │───────▶│     Gather      │
│    problem      │        │   information   │
└─────────────────┘        └─────────────────┘
                                    │
                                    ▼
┌─────────────────┐        ┌─────────────────┐
│    Identify     │◀───────│  Break problem  │
│   solutions     │        │   into parts    │
└─────────────────┘        └─────────────────┘
        │
        ▼
┌─────────────────┐        ┌─────────────────┐
│   Select best   │───────▶│      Take       │
│    solution     │        │    Action!      │
└─────────────────┘        └─────────────────┘
                                    │
                                    ▼
┌─────────────────┐        ┌─────────────────┐
│    Test and     │◀───────│    Examine      │
│     review      │        │    results      │
└─────────────────┘        └─────────────────┘
```

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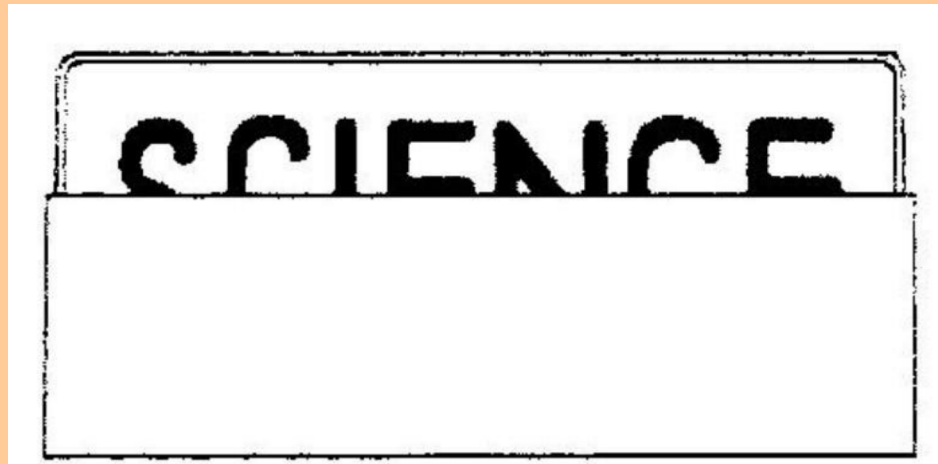
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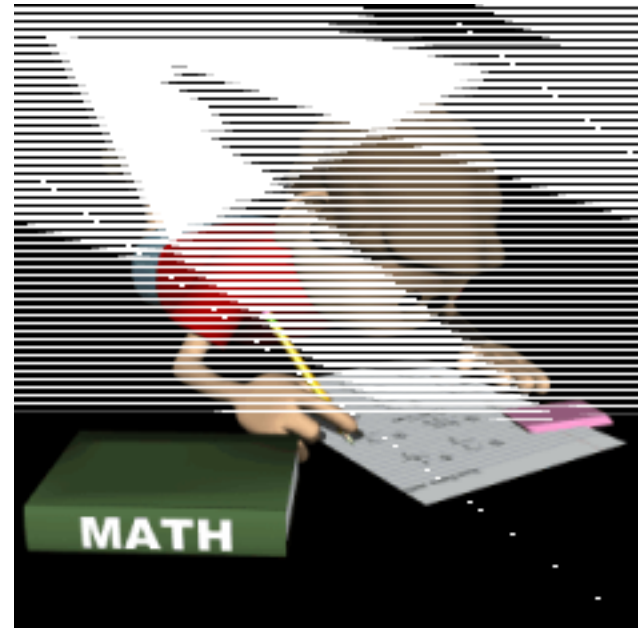
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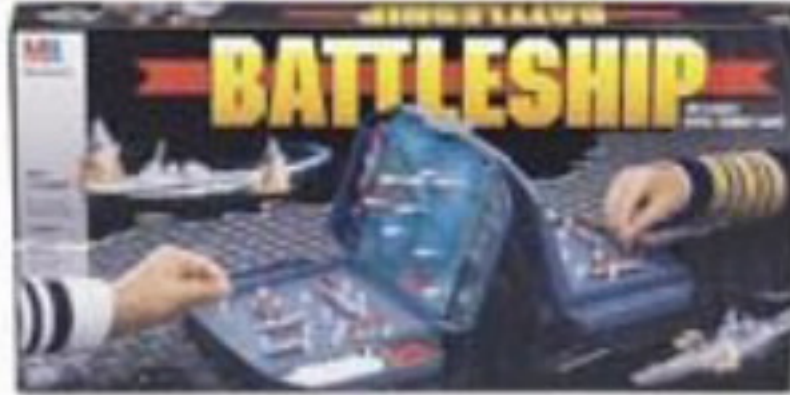
How do we solve problems?

Algorithms

- A methodical, logical rule or procedure that guarantees solving a particular problem.
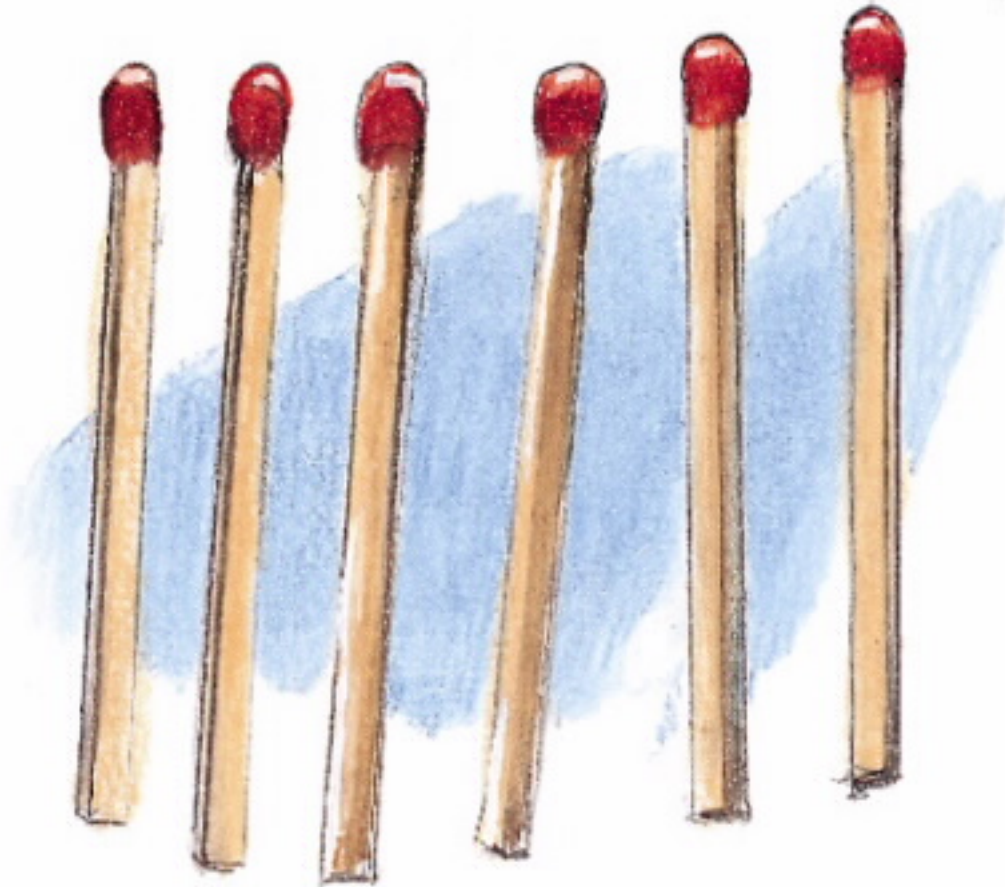
Trial and Error

Insight

- A sudden and often novel realization of the solution to a problem.

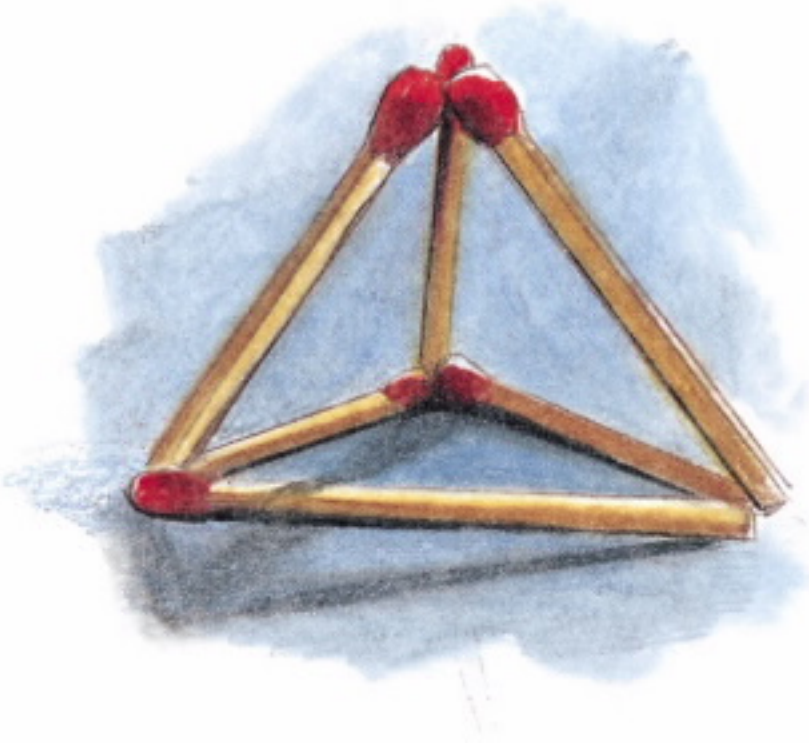- No real strategy involved

Match Problem

Can you arrange these six matches into four trianales?

Match Problem

Fixation

- The inability to see a problem from a new perspective.

Imagination

Free:

- Imaginative play
- Day dreaming

Controlled

creation

Applied Psychology

Disorders of thinking:

➢ Disorders in the <u>form</u> of thinking

➢ Disorders of <u>content</u> of thinking
preoccupation
obsessions
delusions

- Disorders of <u>possession</u>

Thank You