# Suica projects

### Project №1. Furniture arithmetic.
Make a lesson about number adding. There should be a rectangular room in which to arrange with the mouse some furniture (tables, chairs, beds, cabinets ...). The furniture has a price, the arithmetic is in determining the price of the furniture.

### Project №2. Pool with water.
Make a tutorial for solving problems by filling a pool with water. The dimensions of the pool can be changed interactively with the mouse. The amount of water is determined by a tap that can be rotated by the mouse, thus changing the flow rate.

### Project №3. The other solar system.
Make a lesson about the solar system and the planets in it. Use the mouse to interactively change the radii of the orbits of the planets, changing their temperature and duration of the planetary year.

### Project №4. Normal distribution.
Make a lesson about the normal distribution. Have a model of falling balls in a barrier system. In manual mode a new ball is dropped with the mouse. In automatic mode many balls are falling and shaping the curve as a bell.

### Project №5. The size of the planet.
Make a lesson with calculating the size of a fictitious planet using the Eratosthenes method. Support interactive changing of the size of the planet, the position of the pylons and the position of the sun that illuminates them.

### Project №6. The Hanoi Towers.
Make a lesson about the Hanoi Towers puzzle. Be able to interactively lift, move and put the discs on the three pylons with the mouse. In case of a wrong move (placing a larger disk on a smaller one), it should automatically and smoothly return to its old place.

### Project №7. Two flies on cheese.
Make a lesson for the shortest distance on the surface of a cube. Have a cubic piece of cheese and two flies on two adjacent sides. Use the mouse to set the location of the flies. One fly has to automatically move to the other along the shortest path on the surface of the cheese.

### Project №8. Swing.
Make a lesson about levers and weights. Have a swing-lever model. At both ends of the swing you can put (with the mouse) people of different sizes and weights. The goal is to balance forces so that people can swing.

### Project №9. Flight.
Make a lesson about calculating the shortest distance between two cities on the Earth's surface. Interactively select a series of cities and fly to them in the given order measuring the distance.

### Project №10. A historical battle.
Make a lesson about a historical battle. Model the troops movement and the battle timeline. Interactively select a moment from the timeline and to see the location of the troops at that moment.

### Project №11. Ballet.
Make a lesson about the six ballet poses (five classical and one added later). Construct a model of a ballerina that can demonstrate the six poses, moving smoothly from one to the other. Use the mouse to rotate the ballerina and choose which pose to occupy.

### Project №12. Areas in the country.
Make a lesson about the areas in your country. Construct (with cubes) an interactive map of the country and the regions. Have a way to calculate the approximate area of each area by the number of cubes in it.

### Project №13. Luggage in the airplane.
Make a tutorial for filling a rectangle with a set of smaller rectangles. Have a model of a luggage compartment of an airplane in which to put as much as possible suitcases of given proportions. In addition to moving the suitcases with the mouse, they can also be turned 90 degrees.

### Project №14. Whipping tops.
Write a lesson about spinning. Have a colorful whipping top that is spun by repeatedly vertically pushing its handle (with the mouse). If not pressed, it gradually slows down its rotation until it.

### Project №15. Bulgarian sewn decorations.
Make a lesson about the traditional Bulgarian stitch decorations. Have a blank piece of cloth. Use the mouse to select a thread color. When you click on the fabric, the thread needle goes over the other side to interactively create a stitch.

### Project №16. Bottles and vases.
Prepare a lesson on volumes of cylinders and truncated cones. Have a 2D outline drawing defined by points that can be moved by the mouse. Use this contour to construct a 3D body of cylinders and truncated cones. Calculate its volume.

### Project №17. Baby teeth.
Make a lesson about baby teeth and their replacement. Have a 3D model of the teeth with the correct arrangement and shapes, indicating whether they are incisors, canines, molars ... When the mouse clicks on a tooth, it shakes, falls and a permanent tooth grows in its place.

### Project №18. Gears.
Make a lesson about gears. The user must be able to drag, touch and rotate gears with different teeth. If they are attached to one another, the rotation of one wheel rotates the ones attached to it.

### Project №19. Syllables.
Write a lesson about syllables. Have syllable cubes that can be arranged (with the mouse) into words. The user can also turn the cubes to select the appropriate syllable. It may be for your native language but also for some other language.

### Project №20. Checkers.
Make a lesson about the checkers game. Have a checkerboard with white and black checkers. The board can be rotated with the mouse. The movement of any pool is done interactively with the mouse by clicking on the pool and then on cells where it jumps to.

### Project №21. Genetics.
Write a lesson about genetics. Have models of people with different hair, eyes, skin, height. Pick two people and produce their generation – other people with random characteristics, but still according to the characteristics of their parents.

### Project №22. Wolf, goat and cabbage.

Make a lesson about the task of the wolf, goat and cabbage that must cross a river by boat. Have 3D models of river, boat, wolf, goat, cabbage. The mouse is used to position or remove the models from the boat. Also use the mouse to move the boat itself between the two shores.

### Project №23. Puzzle 15.

Make a "puzzle 15" lesson explaining basic game tactics. Have a model of the tiles and the box where they are. Use the mouse to smoothly slide a tile to the empty cell. There may be other characters instead of numbers.

### Project №24. Refraction.

Do a tutorial on optical refraction. Have a model of three layers with different optical densities, choosing each layer of what material it is. Use the mouse to direct a beam of light that passes through the layers with the corresponding refraction.

### Project №25. Center of mass.

Make a center of mass lesson. Build curved towers of different cubes by using the mouse. Put a cube on top of another cube. The tower should fall when the center of mass (of the entire tower or part of it) moves too far.

### Project №26. Decimal clock.

Make a lesson about the decimal clock after the French Revolution. Have a model of such a clock whose arrows can be moved interactively, smoothly and intuitively with the mouse. The clock can also show the real time.

### Project №27. Measurement units.

Make a lesson about the SI International Unit System. Have a graphical representation of the basic 7 units. At least 10 derivative units to be constructible with the mouse, with a clear relationship with the basic units.

### Project №28. Dice.

Make a lesson about dice. Have a 3D model of several identical dice that can be thrown individually or together with the mouse, and when dropped they bounce and roll. Be able to play the game by two alternating players.

### Project №29. Parentheses calculator.

Write a lesson about parentheses in math. Have a virtual calculator with numbers, operations of addition, subtraction, multiplication, division, equal sign and opening and closing parentheses. Use the mouse to press the keys and to use the calculator.

### Project №30. Match sticks.

Make a tutorial for recreational math problems with match sticks. Have a board on which the mouse can easily move and rotate match sticks, arrange them in configurations to illustrate interesting problems and their solutions.