Making a net of a 3D object

It is a nice challenge to make a net of a basic 3D object, especially for children. After printing the net, the child can fold and glue it to get a real 3D version of the object. This provides possibilities for the child to explore the object by touching it, drawing on it and measuring it.

We will construct some nets with Geocadabra.

A net of a cube

Start with a cube:

➢ File, New, Three dimensional, Cube

We will make a net from the cube:

Maintenance, 3D specials, Make a net.

A control window appears.

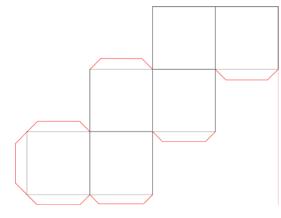
Complete it as shown.

- Edge of first rotation: click on the first button, and click on AB.
- Vertex in base plane: click on the second button and click on D.
- Click on [vvv] to extend the window.
- Check boxes as shown.
- ➢ Click [Start].

The animation shows how the object is split into a net. When the net is ready, it rotates to get it into printable view.

Now you can click *near* edges to get glue flaps. The distance between the edge and cursor arrow determines the width of the flap.

(Challenge: Which flap belongs to which edge?)



Define the basic object	×
-Select dimension	
C Two dimensional C Statistical methods	
Three dimensional C Applications	
Select a basic object	
🕞 Cube) 🕜 cuboid 🔿 Cylinder	
C Construction box C Cone	
C Tetrahedron C Sobere	

Make a net	×	
Edge for first rotation	AB	
Vertex in base plane	[]	
Number of frames of each rotation	100	
^^^	Start	
Check for edges and lateral faces		
☐ Show edges ✓ Fit net to screen at the end		
Show names of vertices at the end ✓ Draw glue flaps afterwards		
User selects rotation edges Pause before each side rotation	300	
 Show the object fit on the screen Keep the object fit on the screen 	1	

Now print the net, cut it out, fold and glue.

In this example all handlings on the computer are performed automatically by the software. The user only has to define how the process has to start and behave. But it is also possible to control the process. By checking "User selects rotation edges" the software waits each time when there can be chosen between two or more rotation edges. This way also other outcomes of the net can be accomplished.

> Restart above exercise, and try to create a different net.

A net of a pyramid

Start with one of the basic pyramid objects:

- File, New, Three dimensional, Pyramid with square as base
- ➢ Make a net, and print it.

Define the basic object 🛛 🔀		
Select dimension		
C Two dimensional C Statistical methods		
Three dimensional C Applications		
Select a basic object		
C Cube C cuboid C Cylinder		
C Construction box C Cone		
C Tetrahedron C Sphere		
O Pyramid with equal edges		
Pyramid with square as base		
C Pyramid with rectangle as base		
O Pyramid with regular polygon as base		
O Prism with regular polygon as base		
C Antiprism C Isocahedron		

A net of a prism

Build a net of a prism. Do some experiments: select several different prisms, switching the number of vertices or the height.

Define the basic object			
Select dimension			
🔿 Two dimensional 🛛 🔿 Statistic	al methods		
🖲 Three dimensional) 🔿 Applica	tions		
Select a basic object	Out-to-		
	Cylinder		
C Construction box C C Tetrahedron C	Cone		
	Sphere		
O Pyramid with equal edges			
C Pyramid with square as base C Pyramid with rectangle as base			
 Pyramid with regular polygon as base 			
Pyramic with regular polygon as base			
C Antiprism	Isocahedron		
C Octahedron	Bucky ball		
	Only axes		
C Only origin	Unity axes		
C Linear programming model	Coordinate axes type		
Radius of Base	4		
Number of vertices of the base	6		
Height	6		
Base edge	4		
-	9		
🔲 Wire model	Cancel		
🔲 Emphasize visual lines	ок		
🔲 Emphasize edges			

Nets of more complicated objects

Build (and print) a net of an octahedron, a dodecahedron, an icosahedron, a bucky ball.