

BLENDER EXERCISE ICE-CREAM

Corso Realtà Virtuale 2020/2021

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Exercise on GitHub in the Exe1 folder

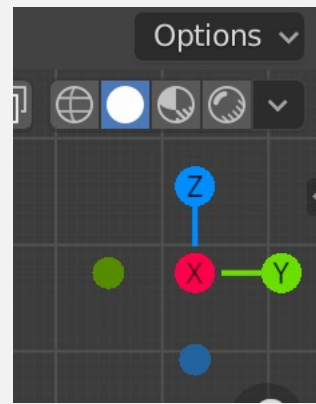


1

Ice-cream



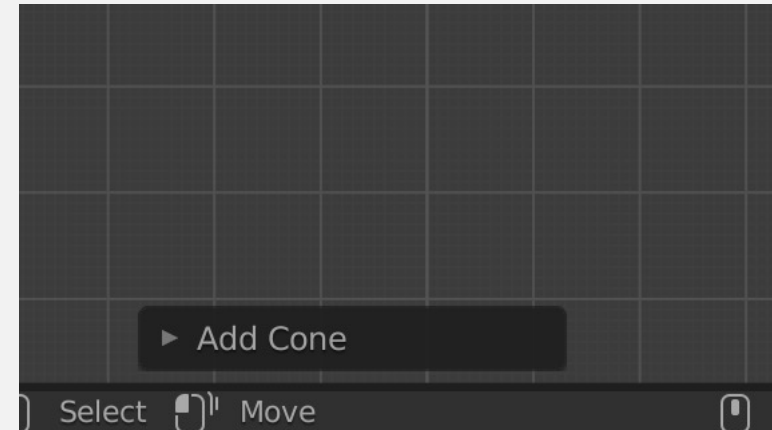
1. Align on X axis: →



2. [shift] [A] → Mesh → Cone

1. Click on the the “Add Cone” and change the values:

1. **Radius 1: 10 cm**
2. **Radius 2: 0**
3. **Depth: 30 cm**
4. **Base Fill type: Nothing**
5. **Rotation y: 180°**



4. Switch to Edit Mode
5. Click on the lower vertex of the Cone and push [G] to Grab it then push [Z] to align it with the Z axis
6. Once you have decided a good appearance of the cone (that resembles an ice-cream) do [left click] to confirm, otherwise do [right click] to cancel the action
7. Switch to Object Mode
8. [shift] [A] → Mesh → UV Sphere
9. Click on the the “Add UV Sphere” and change the values:
 1. **Segments: 16**
 2. **Rings: 8**
 3. **Radius: 12 cm**
10. Now [G] to grab the sphere, then push [Z] to align to that axis and locate the sphere on top of the cone (the two meshes should be close, but they should not touch), once you have done, do [left click] to confirm the position



11. Move the items in a new Collection

1. Click on the Sphere
2. Push [M] to move the object in a collection
3. Select from the menu + New Collection
4. Choose a name for the Collection for example as “Exercise_Icecream”
5. Click on the Cone
6. Push [M] to move the object in a collection
7. Now select the “Exercise_Icecream” collection from the menu

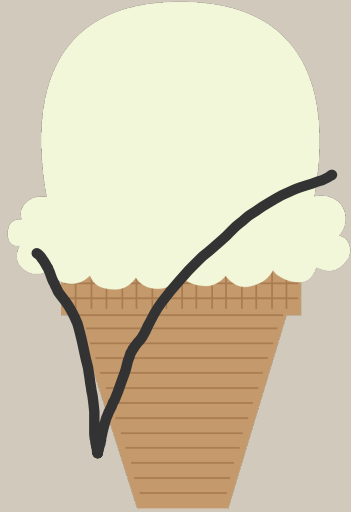
12. Duplicate the Collection

1. [right click] on the Collection “Exercise_Icecream”
2. Select “Duplicate Collection”
3. Do a double left click on the collection’s name and rename it for example as “Backup”

N.B. there cannot exist two collections with the same name, if you rename a collection with an existing name, the other collection is automatically renamed adding a 001 to the name



1

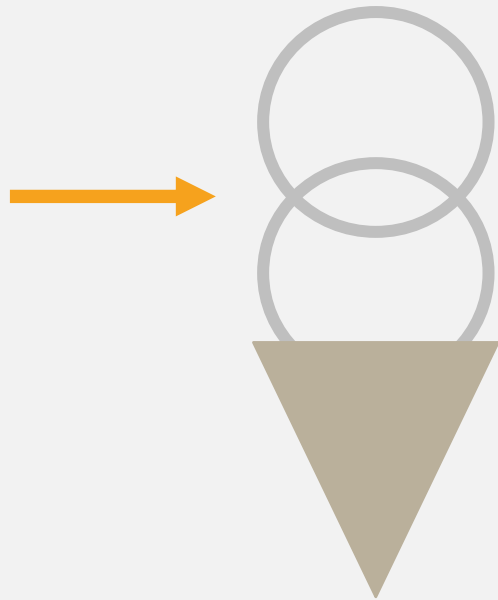


2

Multiple layers Ice-cream + materials



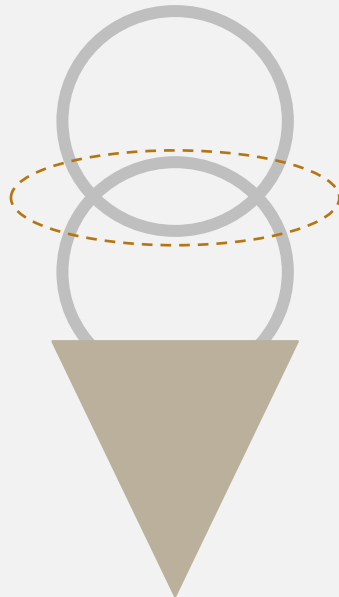
1. (In Object Mode) Select the Sphere
2. [shift] [D] to duplicate the sphere
3. Now push [Z] to align to that axis and locate the new sphere on top of the other sphere, overlapping the bottom of the new sphere with the top of the other sphere



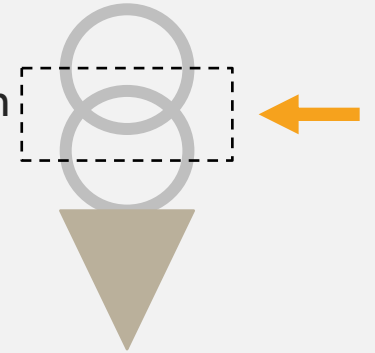
4. Now Join the two spheres:

1. Select a sphere (click on Sphere's name), then holding [ctrl] select the other sphere
2. Once both spheres are selected, push [ctrl] [J] to join the two objects, now in the Collection you can see that the two spheres are now a single object

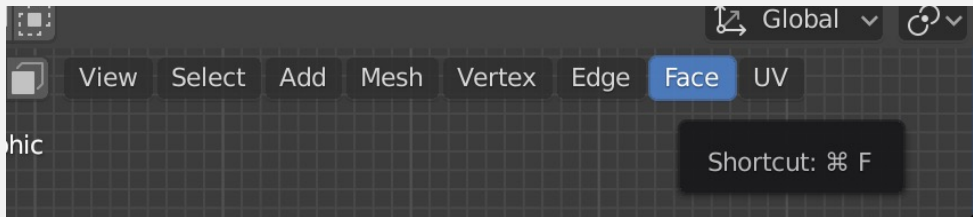
Now we should delete the parts of mesh that are overlapping...



5. Switch to Edit mode
6. Enable X Ray with [alt] [Z]
7. Click with the left button of the mouse and then drag to select the overlapping part of the mesh

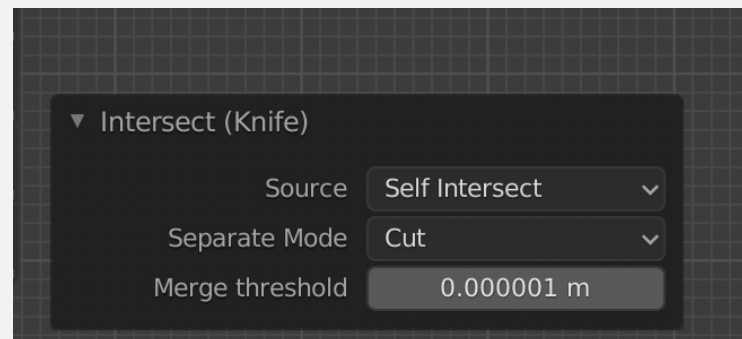


5. Now push [ctrl] [F] to open the Face Menu or click on Face btn, then select the voice “Intersect (Knife)”

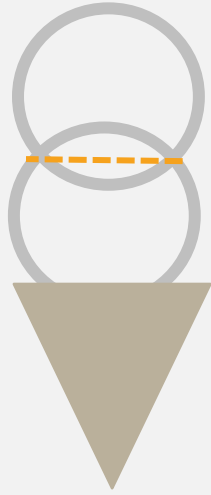


6. Click on the button in the lower left area, then change the values:

5. Source: Self Intersect
6. Separate Mode: Cut



7. Now Automatically a loop of edges appears in the middle of the Mesh, the loop is also automatically selected



8. Now push [ctrl] [E] to open the Edge Menu or click on Edge btn, then select the voice “Mark Seam”

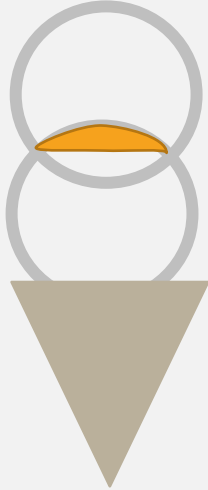


9. Now click on another area of the scene and you will see that the loop is colored **RED**



10. Click on a vertex inside the overlapping mesh

11. Push [L] so that the all part of mesh overlapping (pertaining to one sphere) is selected



12. Push [canc] to delete, from the menu select Delete Faces

13. Repeat from Step 10 to delete the other part of the overlapping mesh pertaining to the other Sphere

14. Now the ice-cream part should look like this, without overlapping parts



15. You can adjust the appearance of the Spheres of ice-cream giving a smoother appearance than now, selecting the loop above the marked as seam loop with [alt] click on an Edge/Vertex and then you can reposition it with [G] and then [Z] to align on Z axis (when you have finished click to confirm)
16. You can repeat step 15 with the loop below the one marked as seam

15. Now deactivate X Ray by pushing again [alt] [Z]

16. Switch To Object Mode

17. Select the Cone

18. Click on the Modifiers Menu and add a “Solidify” Modifier to the Cone, change the values to:

15. Thickness: 0.01 m

16. Offset: 1



The values in the following slides for the Materials are indicative, you can play with Material's values, even making a full colored green cone and ice-cream with crazy colors 😊

19. Change to the "Material Preview"

20. Now select the Cone and go to the Material Menu

21. Click on + to add a Material

22. Click on + New

23. Change the following values:

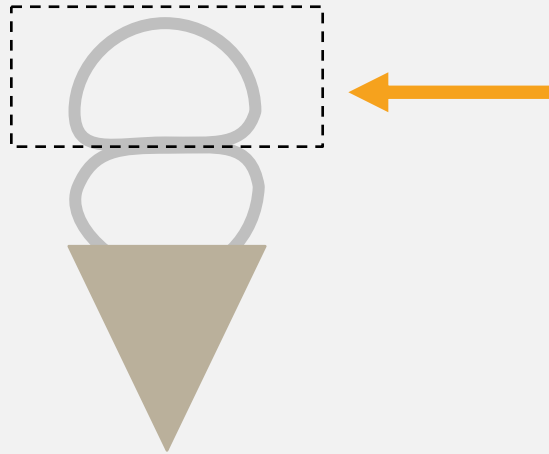
- Base Color: R: 0.800; G: 0.450; B: 0.235
- Subsurface : 0.450
- Subsurf. Radius : 0.4 ; 0.2; 0.1
- Subsurf. Color : R: 0.800; G: 0.360; B: 0.300
- Roughness: 0.744



24. Now select the ice-cream spheres and go to the Material Menu
25. Click on + to add a Material
26. Click on + New
27. Change the following values:
 - Base Color: R: 0.322; G: 0.755; B: 0.8
 - Subsurface : 0.2
 - Subsurf. Radius : 0.4 ; 0.2; 0.1
 - Subsurf. Color : R: 0.267; G: 0.319; B: 0.8
 - Roughness: 0.321
28. Now remove the already done Material with –
29. add a new Material again to the ice-cream (repeat steps 24 and 25)
30. Now Change the following values in this brand-new material:
 - Base Color: R: 0.800 G: 0.700; B: 0.400
 - Subsurface : 0.2
 - Subsurf. Radius : 0.4 ; 0.2; 0.1
 - Subsurf. Color : R: 0.800; G: 0.500; B: 0.300
 - Roughness: 0.321

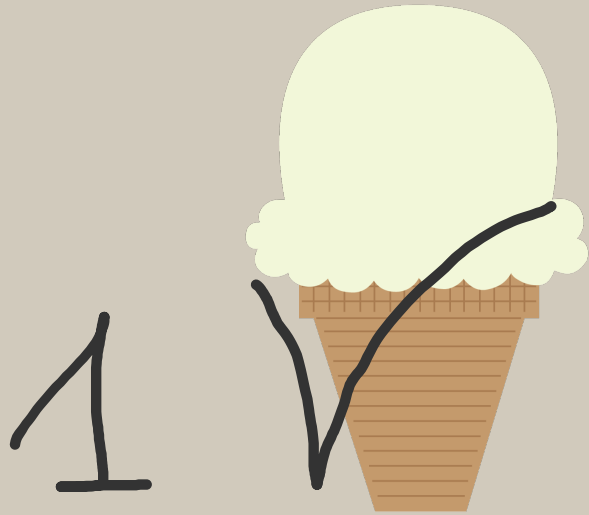


31. Now click on the ice-cream and then switch to Edit Mode
32. Activate X Ray
33. Select with the mouse drag the Top Part of the ice-cream (the one corresponding to the sphere on the top, including the loop marked as seam)



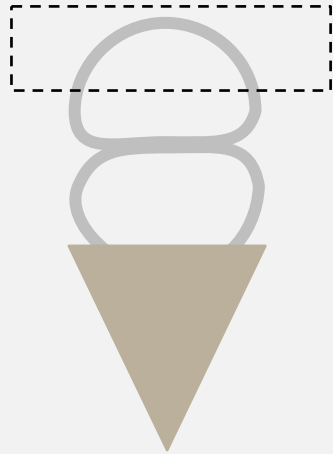
34. In the Material's menu (of the ice-cream) click on + and then from the materials, select the one you have previously removed at step 28
35. Click on Assign





Chocolate topping

1. Switch to Edit Mode and activate X Ray
2. To create the chocolate topping, select the highest part of the ice-cream



3. [shift] [D] to duplicate the section, then press [esc] to locate it in the original position
4. Press [P] to save as obj, choose: Separate -> Selection
5. Switch to Object Mode, deactivate X Ray
5. Select the ice-cream -> right click -> shade smooth
6. Select the chocolate topping -> right click -> shade smooth

7. Switch to Edit Mode, deactivate X Ray
8. Enable Transform Snapping
 - You can select ✓ Face
 - ✓ Project onto Self
 - ✓ Project individual Elements
 - Otherwise, you can select ✓ Edge
9. Start Grabbing [G] vertex per vertex to make the borders irregular (you can also cancel some border vertices)

10. Once you have finished, Switch to Object Mode
11. Add Solidify Modifier to the chocolate topping
 - Offset : 1
 - Thickness: 0.005
12. Disable from the Modifier's panel the Modifier's visibility in Edit Mode



13. Change to the "Material Preview"

14. Now select the Chocolate Topping and go to the Material Menu

15. Click on + to add a Material

16. Click on + New

17. Change the following values:

- Base Color: R: 0.236; G: 0.125; B: 0.120
- Subsurface : 0.300
- Subsurf. Radius : 0.4 ; 0.2; 0.1
- Subsurf. Color : R: 0.230; G: 0.230; B: 0.230
- Roughness: 0.200



18. Switch to Object Mode

19. Select the ice-cream and add a Subdivision Surface Modifier

20. Select the chocolate topping, add a Subdivision Surface Modifier

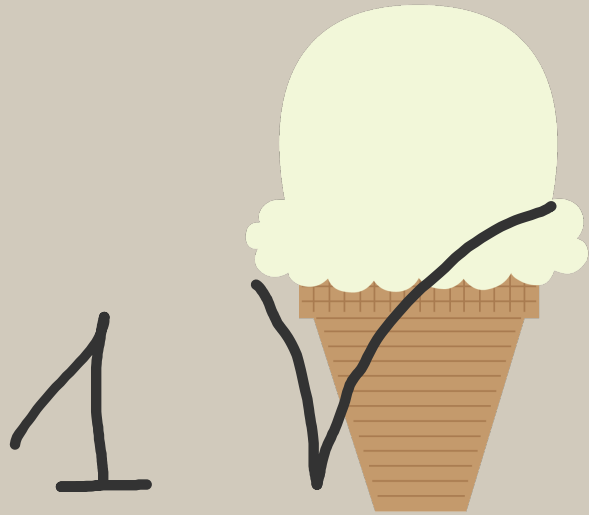
21. Change the order of Modifiers in the chocolate topping:

1. Subdiv. Surface
2. Solidify

22. Parent the topping with the ice-cream

1. Select both the topping and the ice-cream in this order
2. [ctrl] [P] → Object (Keep Transform)





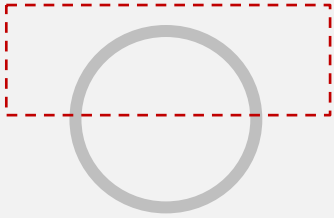
Sugar confetti particles



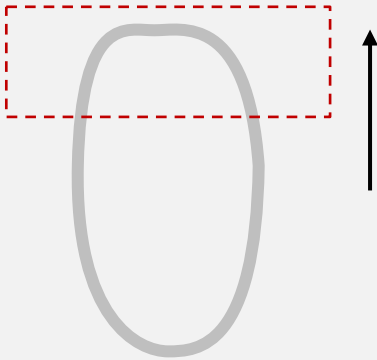
1. Switch to Object mode, with X Ray deactivated
2. [shift] [A] → Mesh → UV Sphere
3. Click on the the “Add UV Sphere” and change the values:
 1. **Radius : 1 cm**
 2. **Segments: 16**
 3. **Rings: 9**
4. Grab [G] the Sphere and move it away from the ice-cream (I will move along y axis)



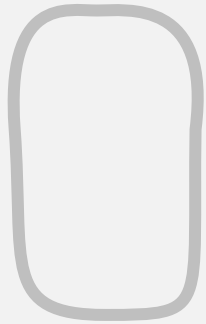
5. Switch to Edit mode, activate X Ray
6. Grab the top half part of the sphere (4 loops and the top vertex)



7. If enabled, deactivate Proportional Editing, then Grab [G] it and move it up in order to make it like a sugar confetto, I will use [Z] to align with the z axis, like this:



8. Now select the same first 4 loops and the top vertex
9. Scale them with [S], aligning on the [Z] axis
10. Now select the other 4 loops and the bottom vertex and repeat step 9 to scale [S], result should look like:



11. Switch to Object mode, deactivate X Ray
12. Duplicate the obj [shift] [D], then move [M] it in a New collection “Sugar_Particles”
13. Make some copies with [shift] [D] (move all the spheres in the “Sugar_Particles” collection, including the original one)

Now we will model the particles, each particle can have a different shape, use your fantasy 😊

In the Exercise, I duplicate the obj 2 times, for a total of 3 particles, and change shape of two of them, the following is the description of changing the shape of one particle.

14. Select one sphere in the “Sugar_Particles” collection

15. Switch to Edit Mode, activate X Ray

16. Un-select the vertices

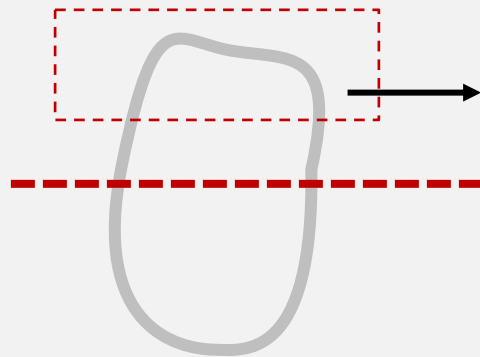
17. Do a Loop Cut:

8. [ctrl] [R]

9. Roll middle mouse to generate two loops

10. Left click to confirm

18. Select the top part and Grab [G] to move it in a *disordered* position as this (you can also enable Prop. Editing):



19. Repeat step 17 and/or 18 until the particle has an appearance you like, you can also Scale [S] or Rotate [R] the vertexes



Now we will add a particle system using the “Sugar_Particles” collection on the chocolate topping and on the ice-cream

As stated before, you can always decide to change the values in this slides to make the appearance of the ice-cream, chocolate topping and particles as you like.

20. Switch to Object Mode

21. Before Adding the Particles, we should apply the Modifiers: apply the solidify Modifier of the chocolate topping and apply the Modifiers of the ice-cream (otherwise you will see that the particles attached to the chocolate topping will be generated on the original mesh and not on the mesh changed by the Modifier)



22. Select the chocolate topping
23. Go to Particle Properties
24. Click on + to add a Particle System and select the following options
 - Hair
 - Number 250
 - Render → Render as: Collection (Now the voice Collection appears)
 - Collection → Instance Collection: “Sugar_Particles”
 - Render → Scale : 0.070
 - Render → Scale Randomness (Random variation of size): 0.5
 - Enable ✓ Advanced, then enable ✓ Rotation
 - Rotation → Orientation Axi: Normal
 - Rotation → Randomize (randomize particle’s orientation): 0.08
 - Rotation → Randomize Phase: 1

(At any time, you can check the result also in the Material’s View)



25. Select the ice-cream
26. Repeat steps 23 -24 on the ice-cream
27. Hide the chocolate topping
28. Switch to the Weight Paint Mode
29. Paint some parts of the ice-cream (the Vertex group called “Group” is automatically generated)
 - You can set the:
 - weight of the brush, 0 is blue, 1 is red
 - Size of the brush
30. Now go back to the Particle System Menu
 - Vertex Group → Density: Group
31. You can continue painting in weight paint mode, and now that the group is assigned to the particles system, the particle’s will “follow” the brush in real time



32. Now we will add a Material to the Particles

33. Select one Particle

34. Click on + to add a Material

35. Click on + New

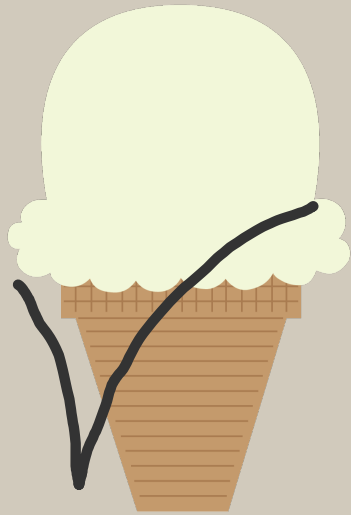
36. Change the following values:

- Subsurface : 0
- Roughness: 0.8



37. Go to Shading
38. In the Shader Nodes View push [shift] [A] to add a Color Ramp, you can find the color ramp in Converter → Color Ramp
39. Bind Color of Color Ramp with Base Color of BSFD Node
40. [shift] [A] to add a Input → Object Info
41. Bind Random of Object Info with Fac of Color Ramp
42. Add more colors to the Color Ramp
43. Now Select the other particles and add the material you have just created





You have Finished! 😊

*Now you can render it or export it,
or add more details or other objects
in the scene.*



Blender documentation

- Latest version (the latest version at today is 2.91)
<https://docs.blender.org/manual/en/latest/index.html#>
- 2.83
<https://docs.blender.org/manual/en/2.83/index.html#>