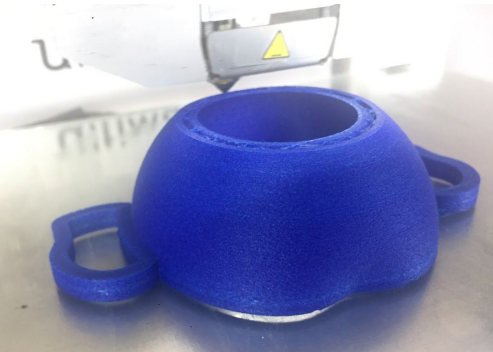




# Westerdals

Produce functional prototype:  
Ice cream cup

[jakob.a.nilsson@gmail.com](mailto:jakob.a.nilsson@gmail.com)



## This week - Produce functional prototype

- Final CAD tweaks - **based on tests!**
- Print - **problems & revisions**
- Design freeze! (Wednesday?)
- Make drawings of the **final** design



## Next week:

- Pictures of people using your product
- Documentation

# Last week with CAD and 3D print assistance

- Cad support in classroom

- Onsdag: 9:15-11:00

Focus is on drawings and improving your model based on print tests

- Support in makerspace

- Onsdag: 11:00-12:00
- Torsdag: 9:15-11:45. 12:15-13:45 (**Milano møte 13:45**)
- Fredag: 9:15-12:00

Focus is on finding good settings and print directions for your print

*There is no 3D help next week, which is the last week.*

*Get your questions now instead of later.*

# PLA Filament



## Type A Machines S1 2013

1.75 mm **Transparent**

1.75 mm **Rød**

1.75 mm **Sort**

1.75 mm **Orange** (lys/transparant)

1.75 mm **Lysblå** (Almost out!)

## Ultimaker 2+ Extended

2.85 mm **Sølv**

2.85 mm **Hvit**

2.85 mm **Blå** (matte med fibrer)

2.85 mm **Wood** natural (med fibrer)

2.85 mm **Grøn** ( Transparant) (Almost out!)

2.85 mm **Dypblå** (Almost out!)

[See the colors here](#)

# Test prints & Cura

Before final print, answer these questions:

- Which print direction?
- Use support? ([4 min video](#) covering both)
  - Try “touching buildplate” under custom settings
- Will it print nicely?
  - Preview with “layer view”
- Which filament?
  - The finish will vary!

Test with parts of your model! Or at least a downscaled version.

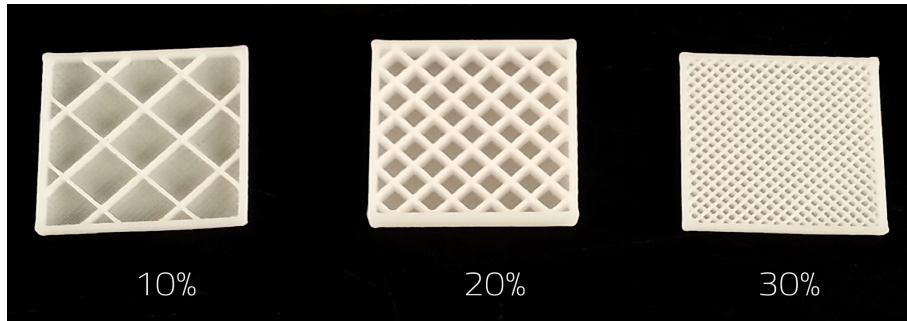
To make a part for test printing:

*Save as new file, name “test part”, cut away everything you don’t want in your test*

# Final prints

Before you attempt final printing :

- Have you tested first?
- Check the expected print time:
  - Do you really need less than 0,15 mm layer thickness?
  - Do you really need more than 15% infill?



# Design freeze (target wednesday?)

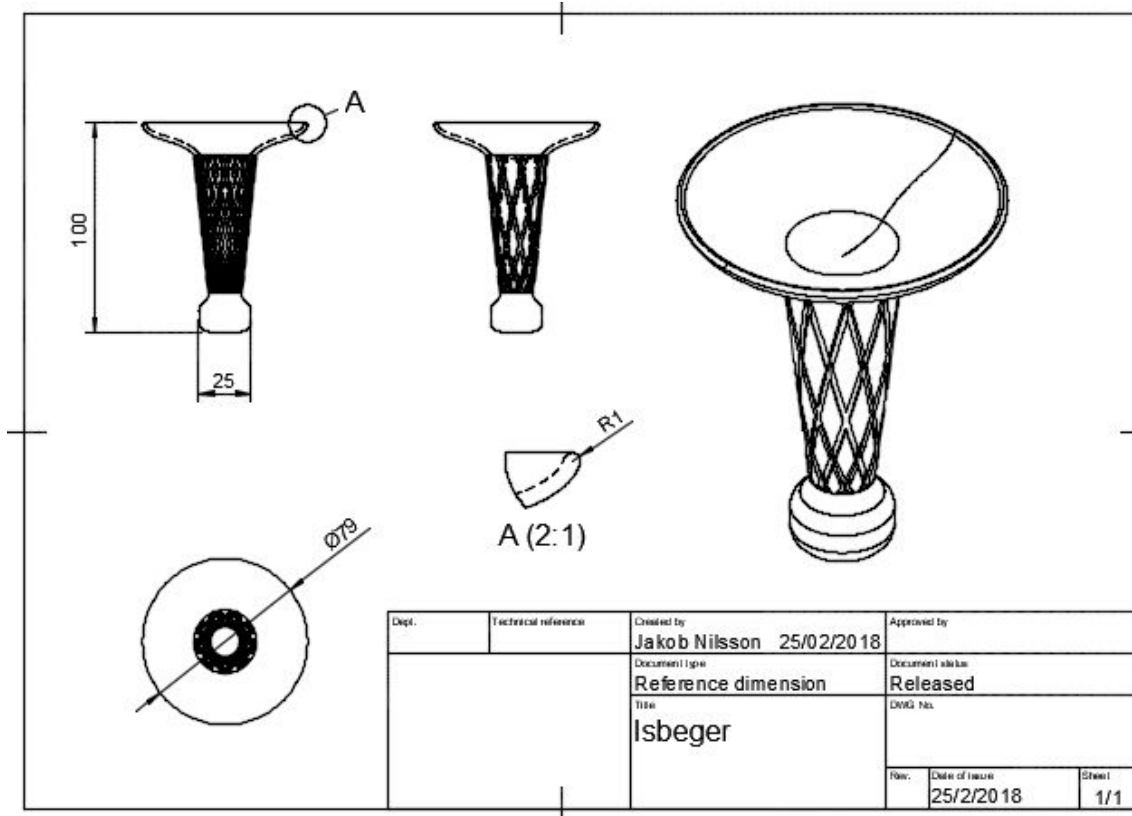
- When you have a good final print, stop changing your models. The design is frozen.
- Make drawings of the final design

*“1 teknisk tegning/ skjemategning med målsatt plan og oppriss, samt et isometrisk perspektiv og en detalj fra objektet”*

- Pictures of people using your product

*“1 godt og beskrivende miljø perspektiv/ illusstrasjon av objektet (isbegeret) brukt av målgruppen under 17.mai ( da svært gjerne med mennesker, som tar i bruk isbegeret.)”*

# Reference drawing



[Link to the drawing in fusion360](#)

[Also on itslearning as PDF](#)

*“1 teknisk tegning/  
skjemategning med målsatt  
plan og oppriss, samt et  
isometrisk perspektiv og en  
detalj fra objektet”*



# Technical drawings

Orthagonal views

[Isometric view](#)

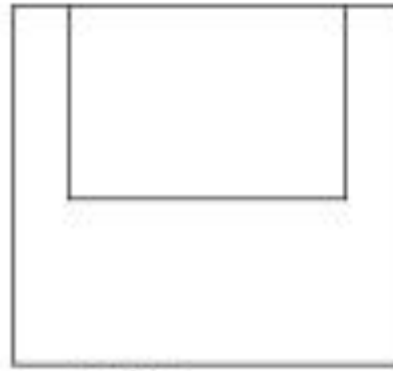
Dimensions, show the size.

Title block, fill in info

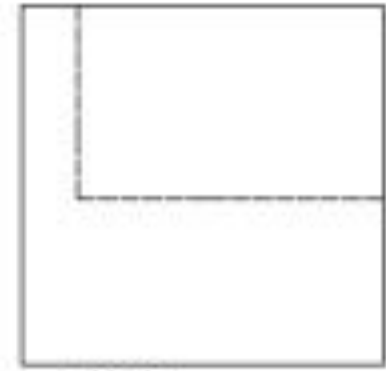
Detail view

[Included in Fusion360](#)

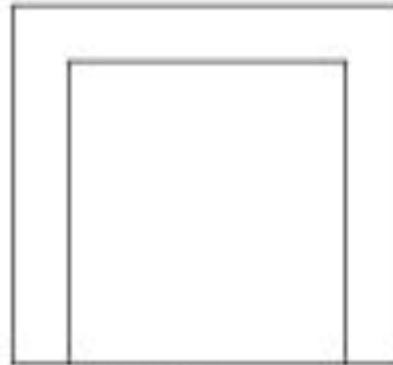
[Reference](#) in norwegian



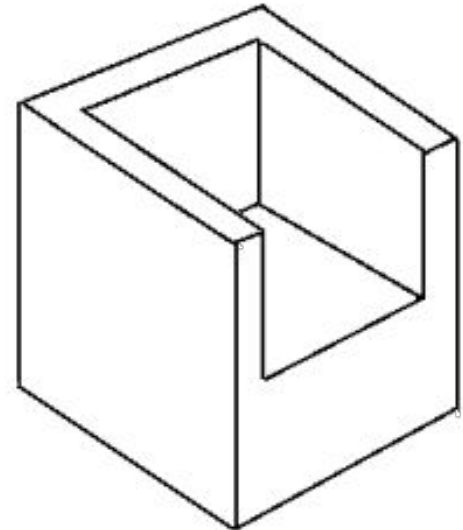
topris



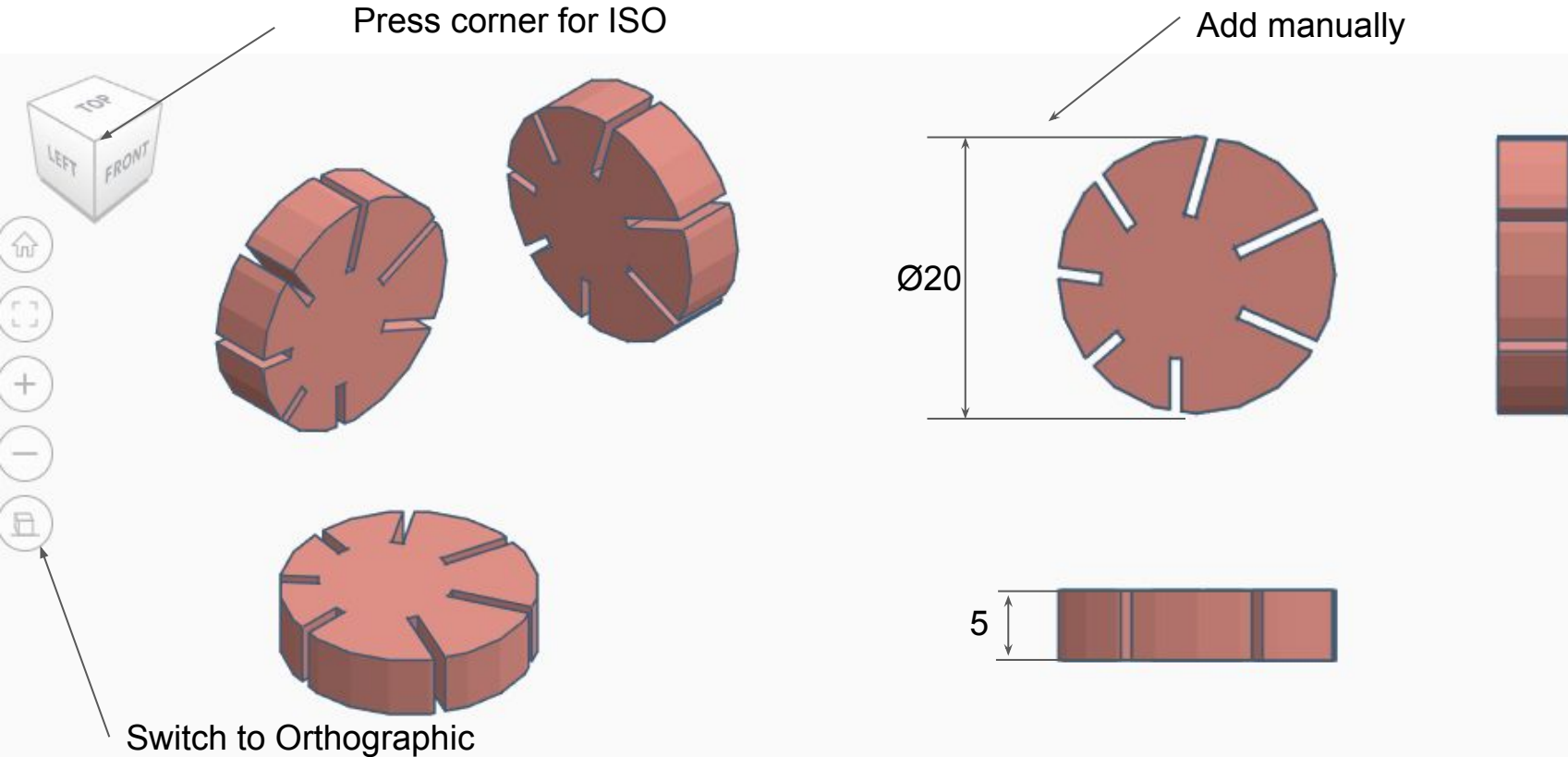
sides



frons

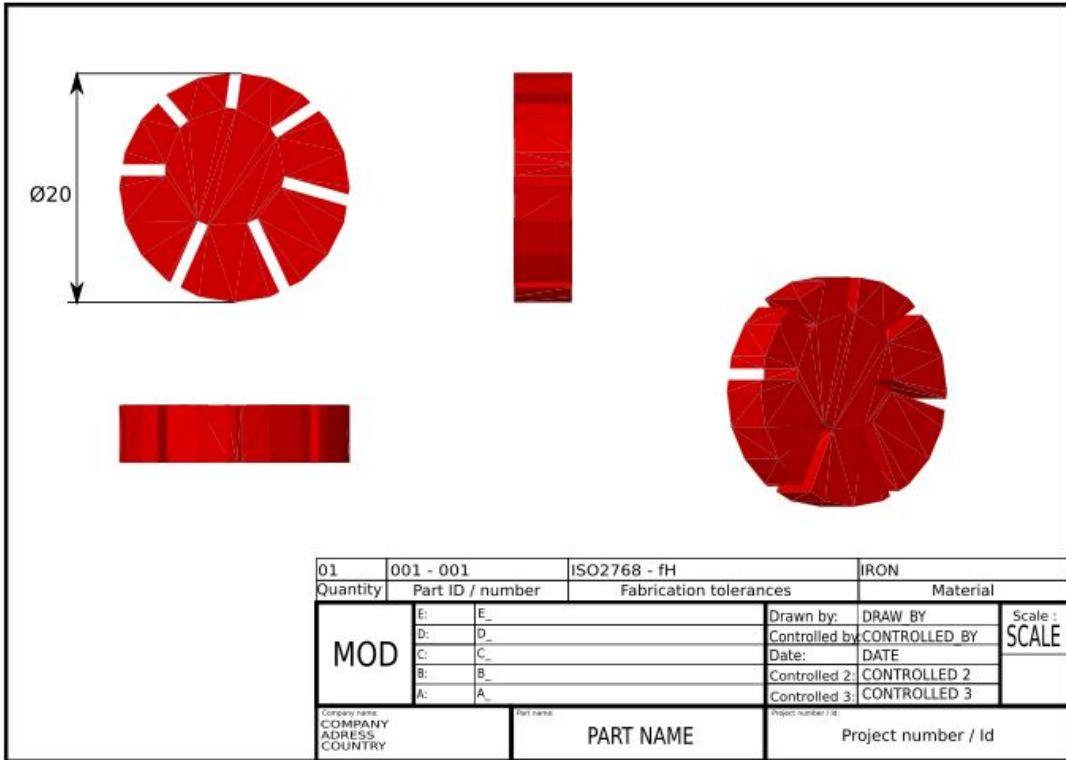


# Tinkercad screenshot method

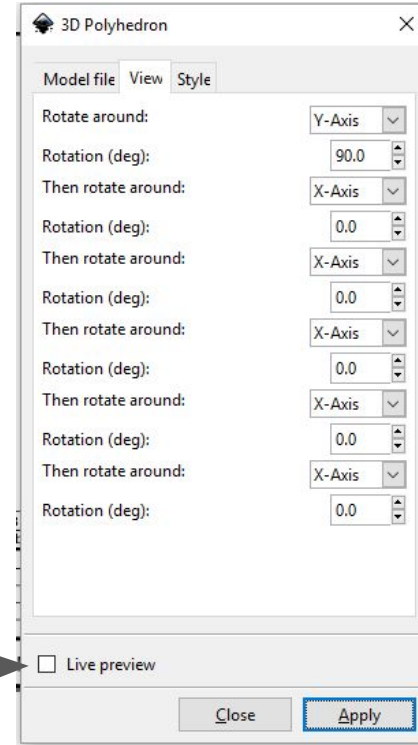


# Tinkercad + Inkscape 3D model method

[Inkscape](#) [Importing .obj files to inkscape](#) [Svg drawing template](#)



Use!



# Questions?

CAD

Printing

Drawings

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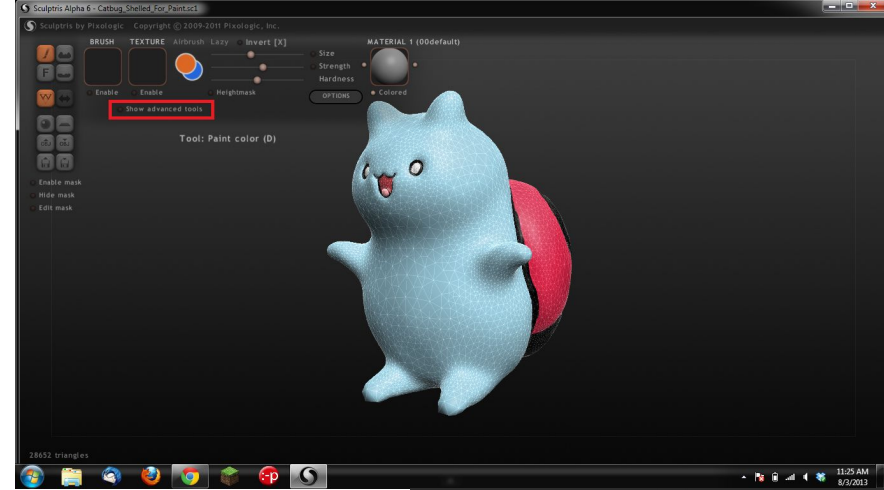
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# Bonus features

If you have time try:

[Sculptris](#) + TinkerCAD



Fusion360: [Render](#) and [animations](#) workspaces



# Special features, if you want them!

- Moving parts
  - Can be printed as one part ([like this 1 print elephant with moving legs](#))
  - Can be snapped together ([like these car wheels](#))
  - Avoid complex manual assembly, especially using fasteners glue etc.
- Support material
  - Is OK! But you will have to remove it yourself!
  - Worse surface finish
  - In batch production soluble support would be used ([Ultimaker PVA example](#))
  - Consider if rotating the print solves the problem or if you can design around it?

