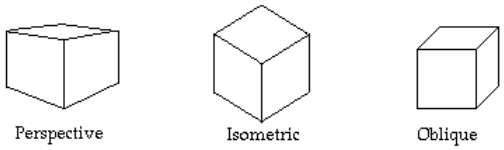
Her præsenteres 3 måder at lave skitser på:

Isometrisk, Oblique og Perspektiv:

De har hver deres styrker og sværhedsgrad:



Isometrisk

Isometrisk betyder: "*of or having equal dimensions*".

Isometrisk kan evt. tegnes med lineal og tegnetrekant. Og evt. på isometrisk tegnepapir, der har fortegnet streger som på kvadreret papir.

En isometrisk tegning kan tegnes på mål – eller målestoksforhold.

A pictorial representation of an object in which all three dimensions are drawn at full scale rather than foreshortening them to the true projection.

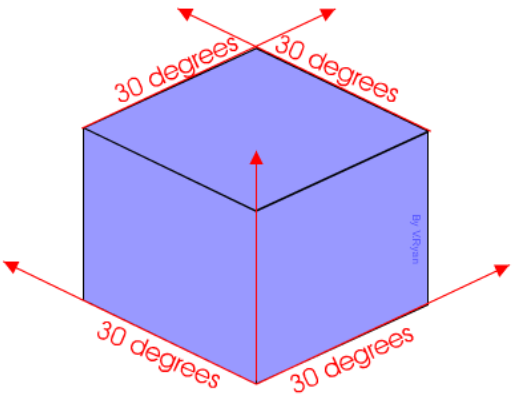
An isometric drawing looks like an isometric projection but all its lines parallel to the three major axes are measurable.

Fra: http://www.businessdictionary.com/definition/isometric-drawing.html

Her er princippet vist:

Designs drawn in isometric projection are normally drawn precisely using drawing equipment.

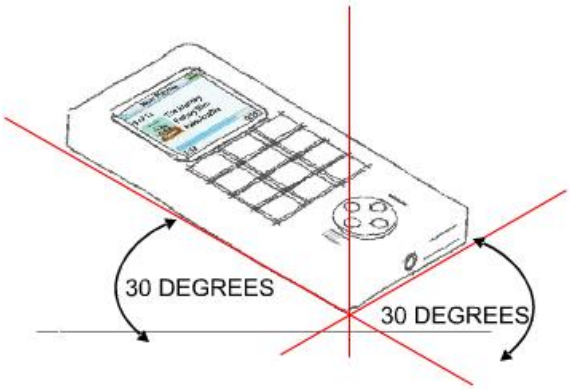
However, designers find 'free hand' sketching in isometric projection useful.



Fra: http://www.technologystudent.com/prddes1/drawtec2.html

The mobile phone / music player has been sketched in free hand isometric projection.

It allows the designer to draw in 3D quickly and with a reasonable degree of accuracy. The design is drawn at a 30 degree angle.



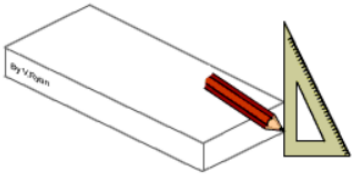
Limited colour/shade has been added to the menu of the phone. This means that the sketch is not presented entirely as a 'plain' design.

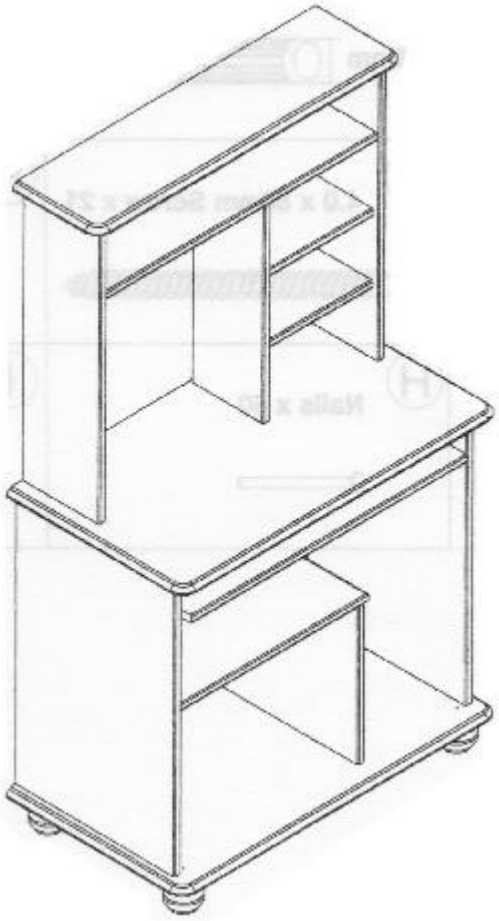
These drawings are quick sketches that allow the designer to put his / her thoughts down on paper rapidly. This helps him/her develop an idea or design concept quickly, without the need for complex drawings, at an early stage in the design process.

In early meetings with a client, the designer can display 3D drawings of this type in order to ascertain if the design is developing the way the client wants.

Se hvordan man tegner telefonen:

http://www.technologystudent.com/despro_flsh/isomt.html

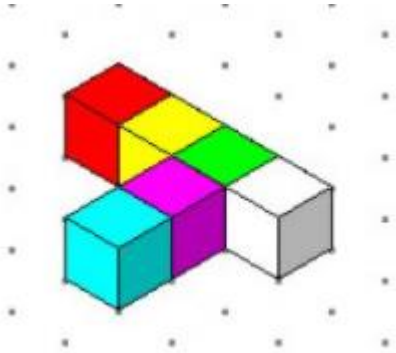


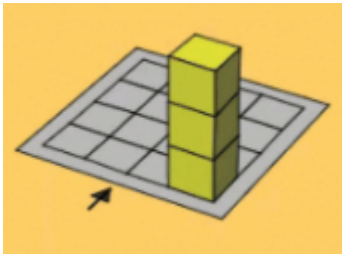


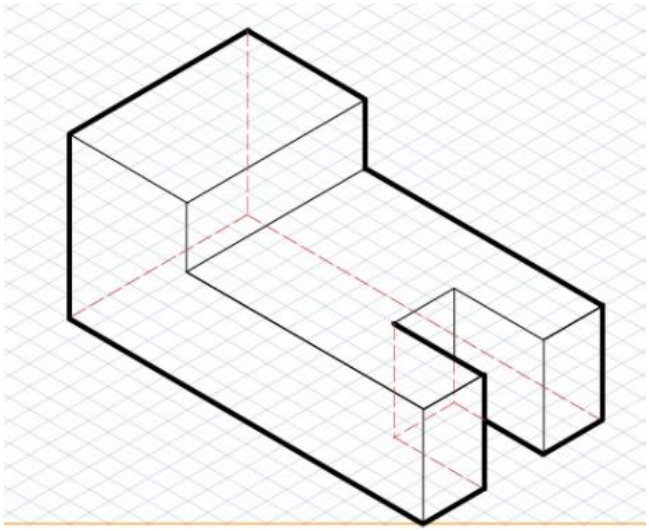
Eksempel på en skitse af et skab.

Alle linjer er enten lodrette eller 30 grader i forhold til vandret.

Her flere eksempler:

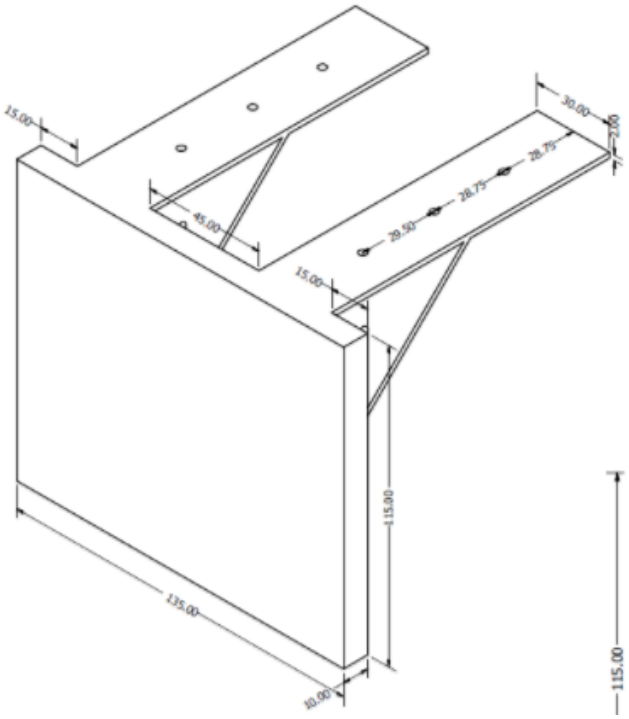






Et eksempel på en klods tegnet på isometrisk ternet papir

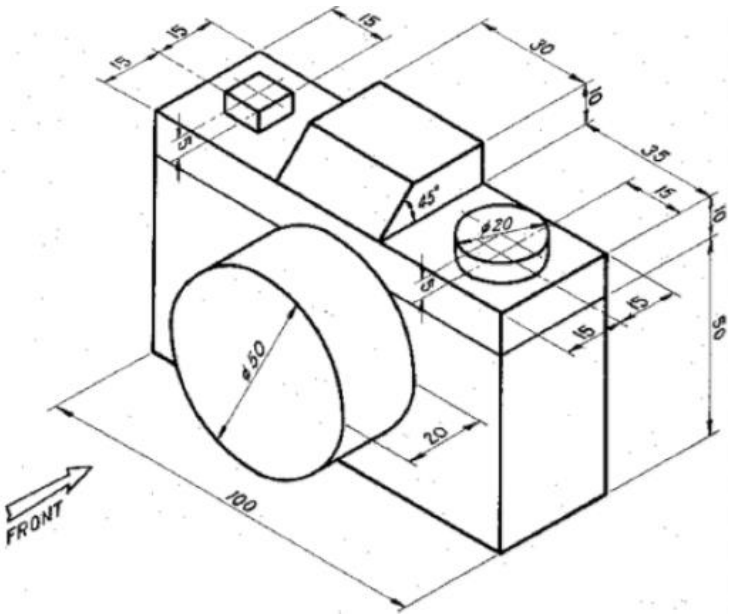
Meget illustrativ tegning, med mål:

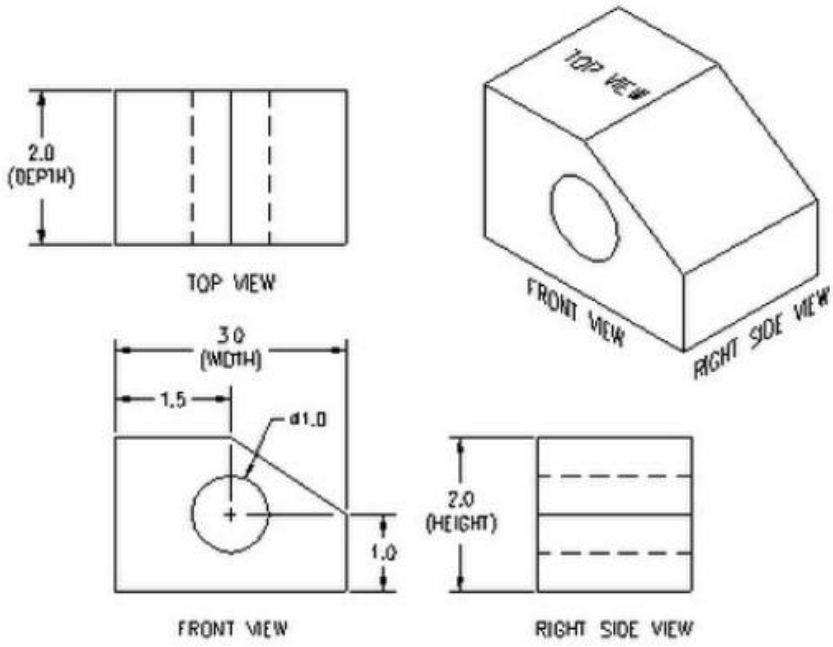


Her begynder skitsen at blive lidt mere kompleks. Der er fx cirkler på skitsen.

Cirkler bliver til ellipser i isometrisk afbildning.

Se senere:

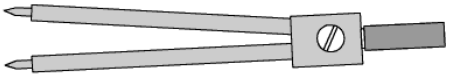




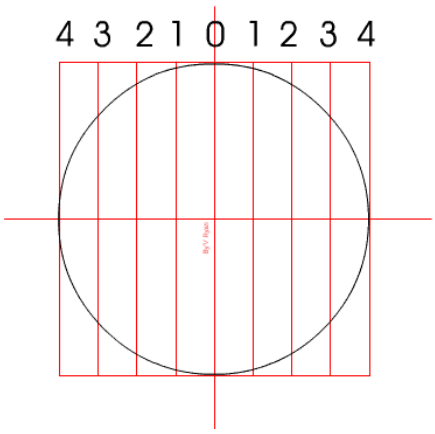
En tegnet del både som skitse og som 2D tegning til værkstedet.

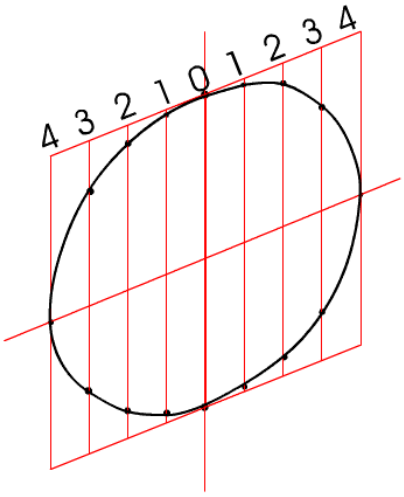
Isometrisk tegning kan testes her: https://illuminations.nctm.org/activity.aspx?id=4182

Tegning af cirkler i Isometrisk afbildning:



Se animeret hjemmeside med eksempel på, hvordan man tegner cirkler i isometrisk afbildning.





Link: http://www.technologystudent.com/designpro/isomet2.htm

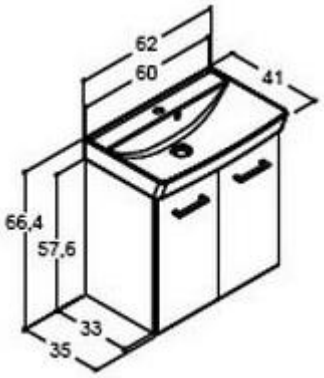
Flere eksempler:

Et nydeligt lille hus:

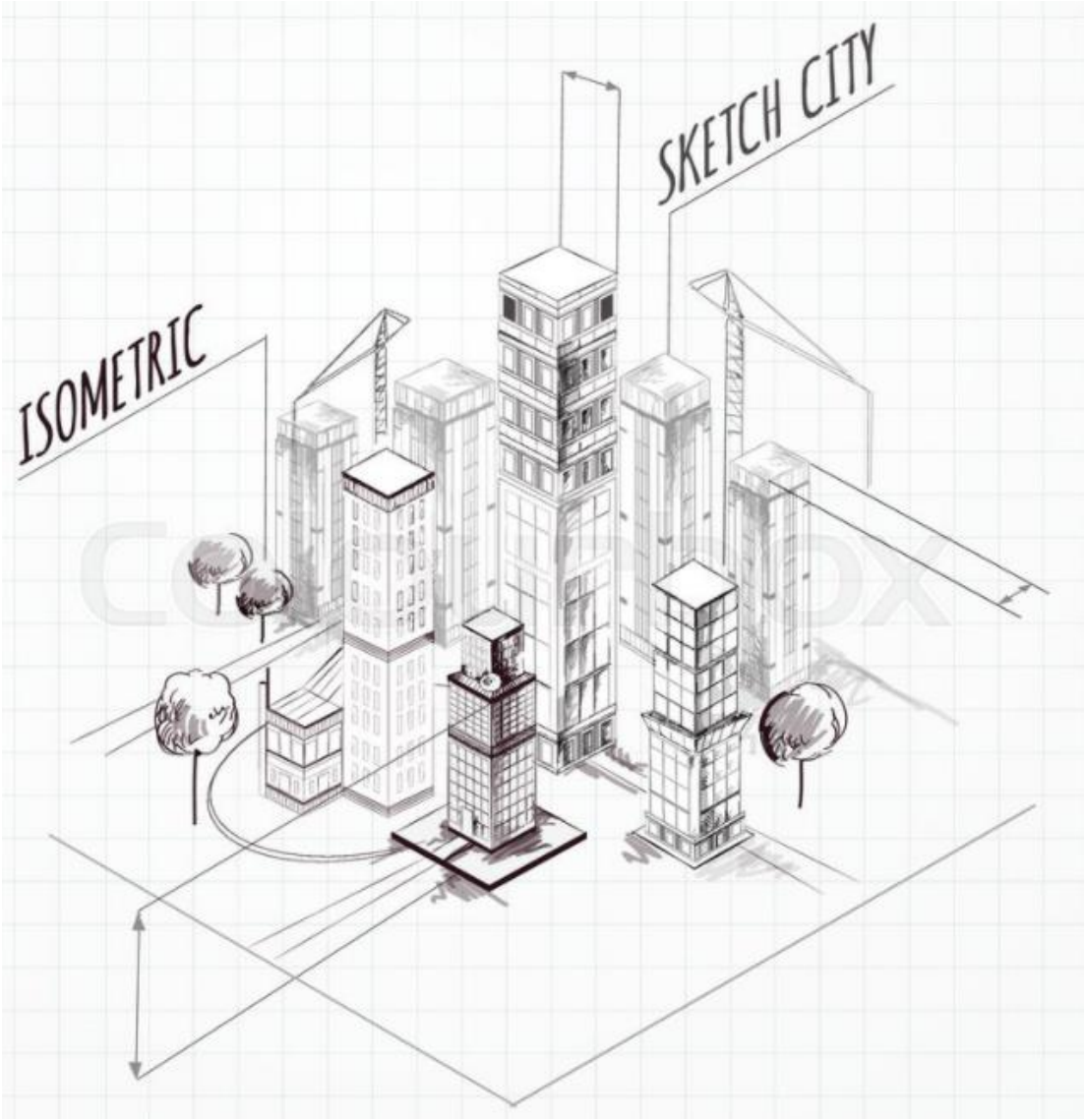
En eksploderet hus-skitse

Her er der brugt en isometrisk skitse til at vise målene på et badeværelsesmøbel.

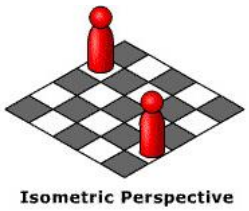
IKEA??



Og en hel by ☺



Et af ulemperne ved brug af isometrisk tegning, er, at fjerne objekter synes større



Software:

Brug helst frihånds-tegning, - men her er alligevel et par eksempler på software:

Geogebra, Gratis: https://www.geogebra.org/graphing

H-clik på arket. > Gitter > Major & minor gridlines > Isometrisk

Et par links til lidt isometri-leg:

https://illuminations.nctm.org/activity.aspx?id=4182

http://www.teacherled.com/iresources/shapesapp/isometricdots/isometricdots.html

Print selv isometrisk tegnepapir:

Isometrisk tegnepapir: https://www.waterproofpaper.com/graph-paper/isometric-paper.shtml

Flere formater: http://whistleralley.com/GSP/graph/Grid%20Paper%20A4.doc

Oblique Projection [O` blik]

En lidt mere **enkel eller simpel** tegningsform hedder Oblique. Udtales: [əˈbliːk]

Her er frontsiden firkantet og alle sider tegnes i en vinkel fx på 45 grader.

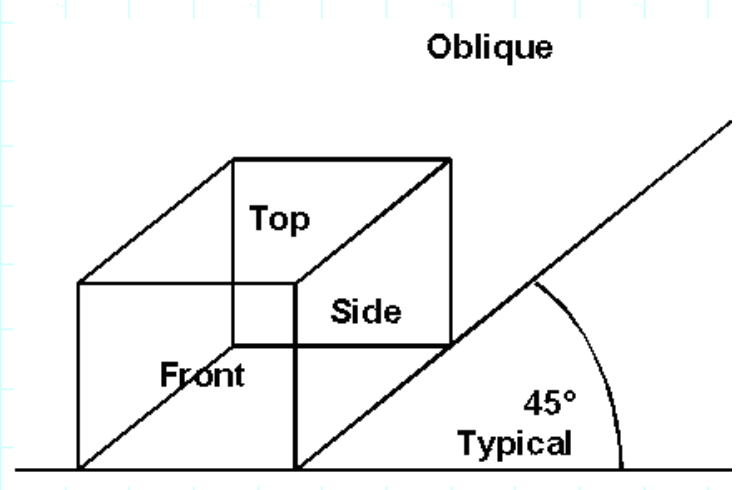
Oblique betyder: *Neither parallel nor at right angles to a specified or implied line; slanting. "we sat on the settee oblique to the fireplace"*

Eller:

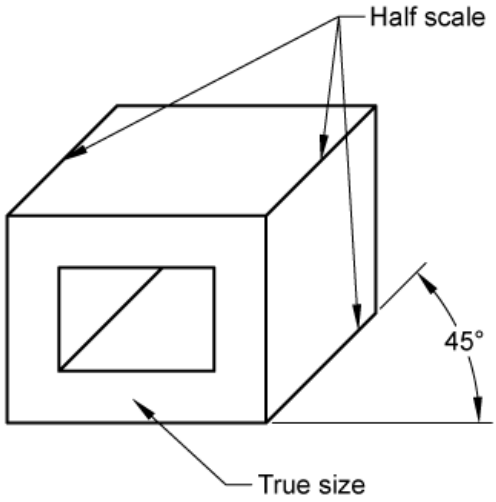
Not expressed or done in a direct way.

Forsidens vandret og højde tegnes på mål-skala.

Siderne kan enten være på mål eller tegnet med faktor 0,5. dvs. halv størrelse.



Kilde: http://hinsdale86.org/staff/mgawlik/pre-eng1/Projects/Oblique_Pictorial.htm



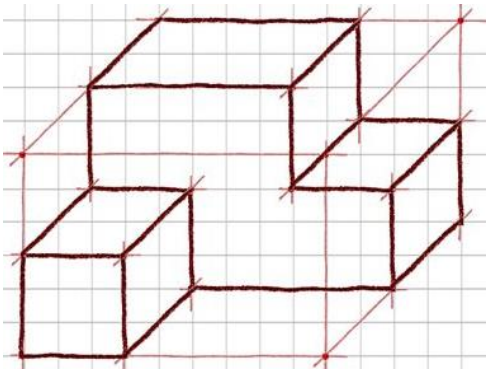
The features drawn on the plane defined by the vertical and horizontal axes are drawn at full scale and true shape.

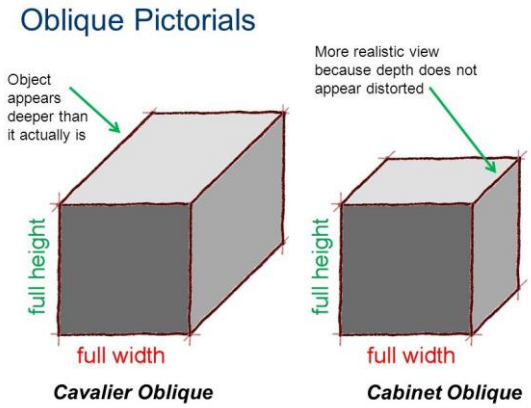
The linear features drawn on the angled axis may be full scale (cavalier projection) or may be drawn foreshortened (cabinet projection).

The most common, is half scale

http://eon.sdsu.edu/~johnston/Eng_Graphics_Essentials_5th_Ed/files/ege/pic/pic_page8.htm

Her en skitse tegnet på almindelig ternet papir





http://onvacations.co/cabinet-oblique-pictorial/

Hvis der er tegnet med dybden i skala 1:1 ser tegningen forkert ud. Derfor bruges normalt ½ skala

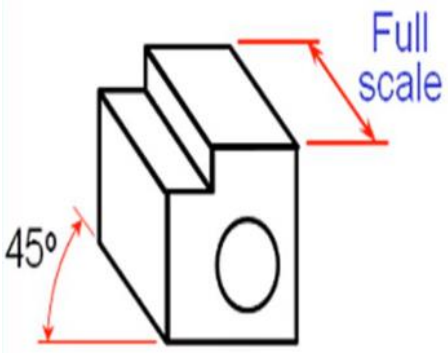
The cavalier method is the simplest form of oblique projection.

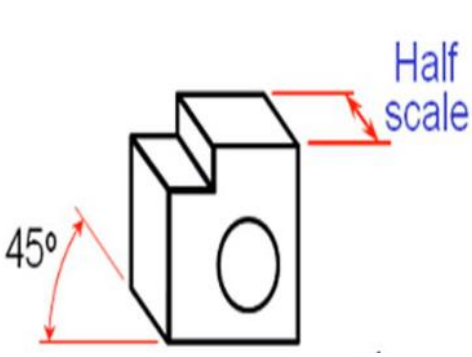
All features in the oblique projection view are drawn to the same scale eg 1:1, and the lines of sight are drawn at 45° to the horizontal as shown in the diagram.

The lines of sight may appear to diverge excessively and so the shape may appear to be very much.

Other methods of oblique proportion try to reduce these distorting effects, usually by reducing the scale used along the lines of sight to half that used for the features facing the observer to create the appearance of depth.

Fra: http://metal.brightcookie.com/2_draw/draw_t3/htm/draw3_2_2.htm





Hvis dybden tegnes på fuld skala ser emnet for dyb ud.

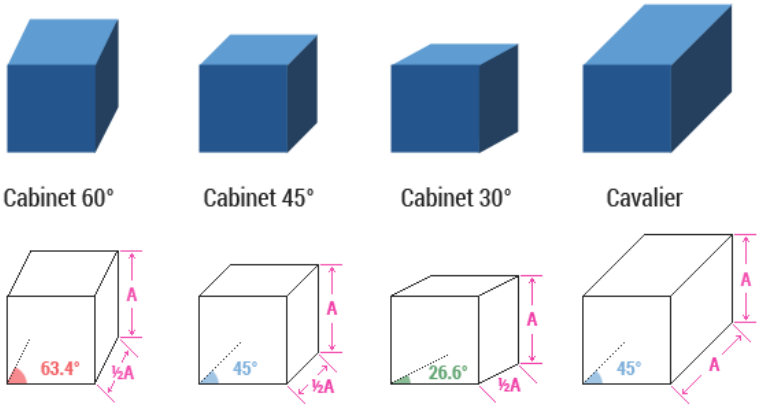
Derfor tegnes dybden med halv skala.

Fra: http://slideplayer.com/slide/3620469/

Oblique Projection, Cabinet & Cavalier

A form of Oblique Projection in which perpendicular faces are foreshortened to ½ of their original length.

Common angles for projection are ≈30°, 45°, and ≈60° (63.4° which is equal to arctan(2)).

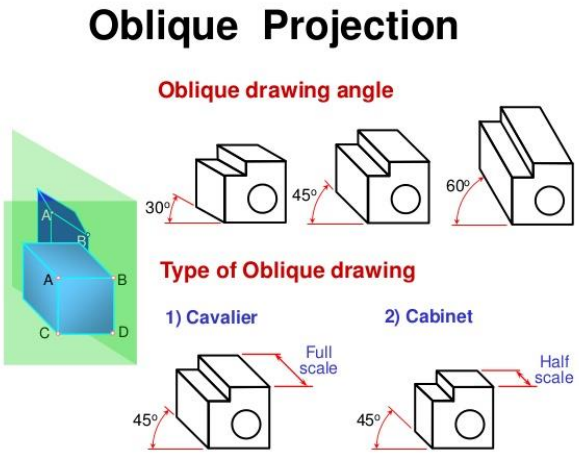


Fra: http://www.tilemapeditor.com/glossary/cabinet-projection/

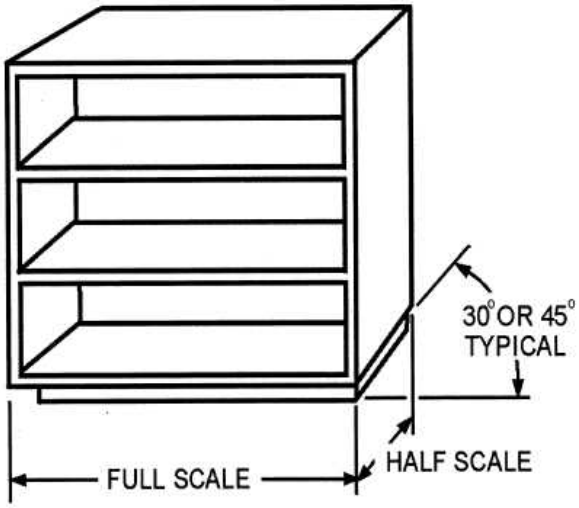
Cavalier Projection:

A form of Oblique Projection in which the angle of projection is 45 and perpendicular faces are projected at full scale rather than foreshortened. While this has the advantage of preserving measurements across oblique angle, the lack of foreshortening looks distorted and diminishes the 2.5D effect.

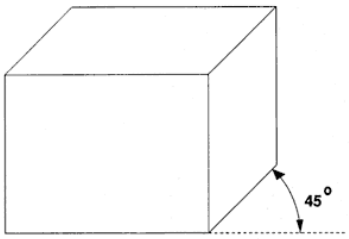
Flere eksempler:



Fra: http://keywordsuggest.org/gallery/1429434.html

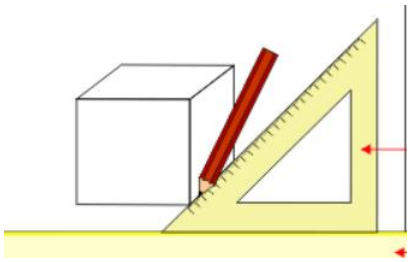


Et eksempel på en kommode tegnet på denne måde!



Oblique projektion er en simple type af teknisk tegning.

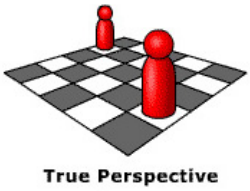
Kilde: http://draftingmanuals.tpub.com/14276/css/Cabinet-Projection-308.htm



Se animation:
http://www.technologystudent.com/despro2/obli1.htm

Perspektivtegning:

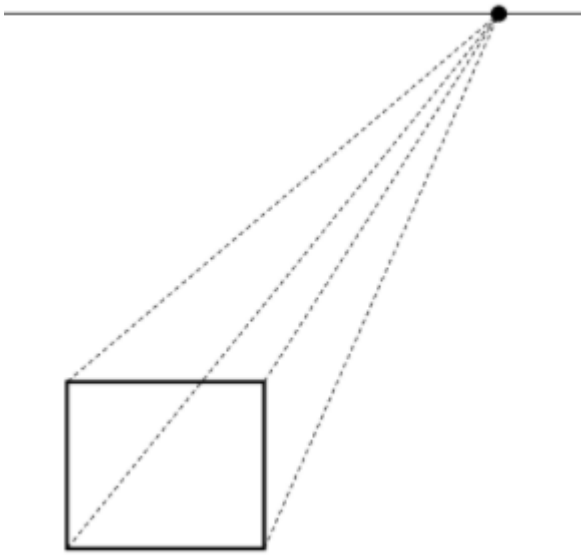
I perspektivtegning får man mere naturlig dybde i skitsen.

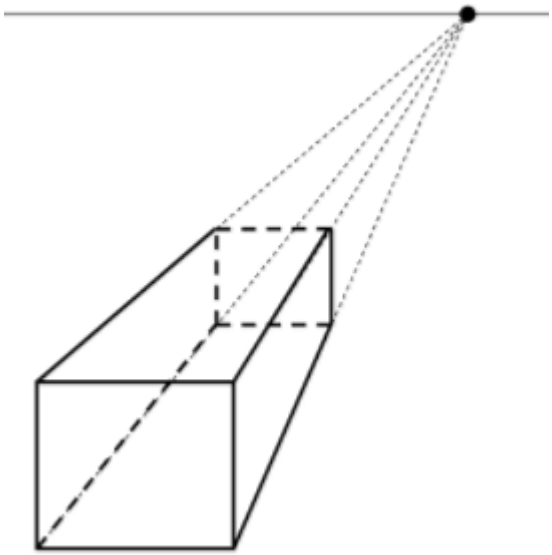


Dvs. at fjerne objekter tegnes mindre end objekter af samme størrelse, der er nærmere. Det giver et mere naturligt billede.

Der bruges lodrette og vandrette streger, men herudover streger, der alle synes at samles i et punkt i baggrunden, et såkaldt **forsvindingspunkt** eller perspektiv-punkt i horisonten.

Her et par eksempler:

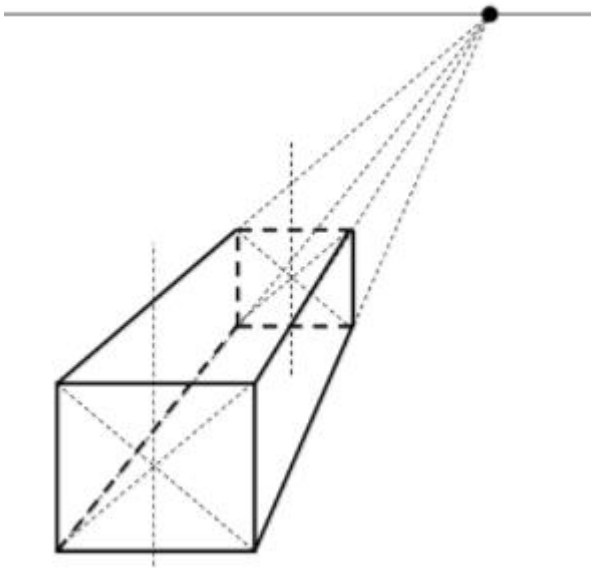


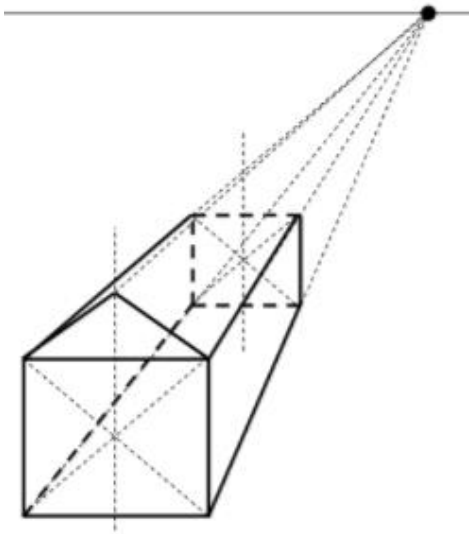


Herover er startet med en ramme.

De stiplede hjælpe-linjer går fra hjørnerne – og mod et valgt punkt i baggrunden.

Til højre er kassen tegnet op.



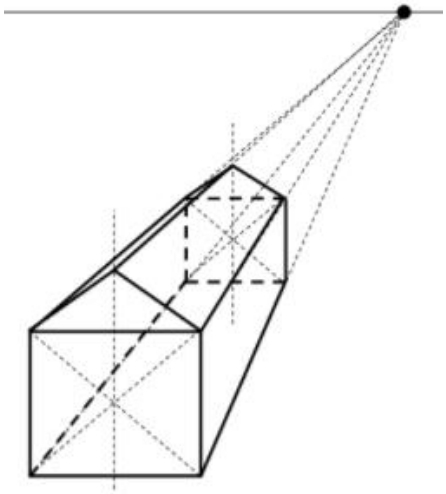


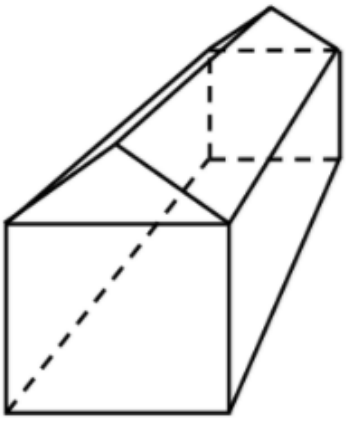
Her er midtpunktet i rammerne fundet.

Tagets spids er jo lodret over midtpunktet.

Herunder er de nødvendige streger tegnet op.

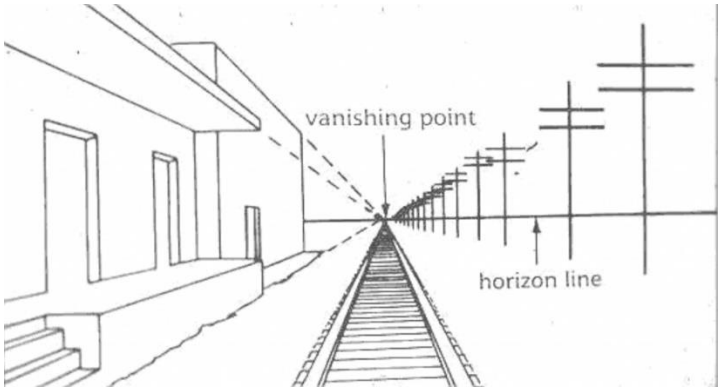
Til sidst kan hjælpelinjerne fjernes.





Kilde: http://matematikportalen.dk/artikler/perspektivtegning-med-et-forsvindelsespunkt

Flere eksempler:

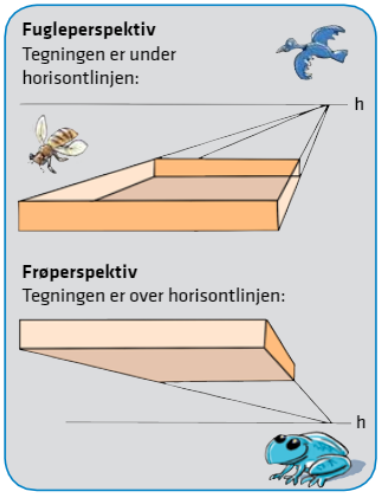


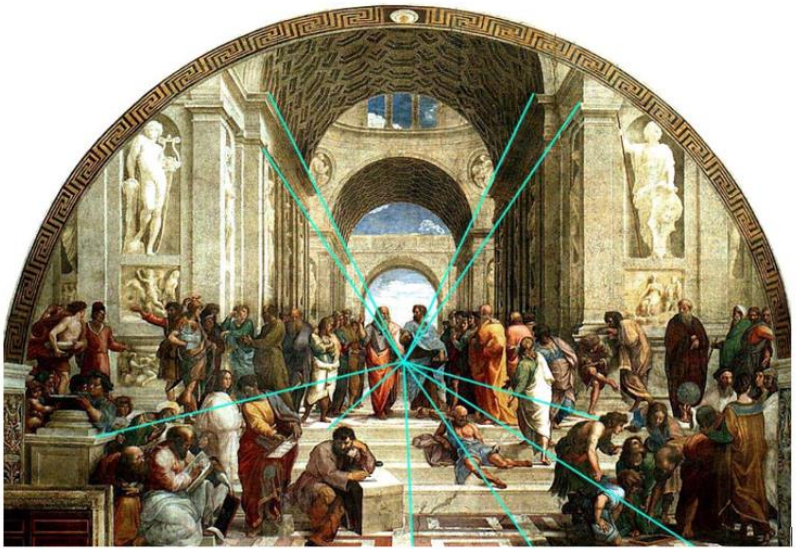
Togskinnerne og husenes linjer ender i et forsvindingspunkt i horisonten.

Her er der
Tegnet en sød lille vej der ender i Solen ☺

Et forsvindingspunkt kan tegnes over eller under emnet.

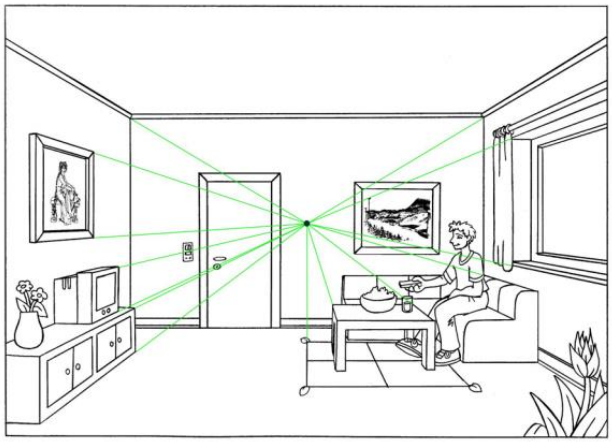
Kaldes hhv. Fugle – og Frø-perspektiv:

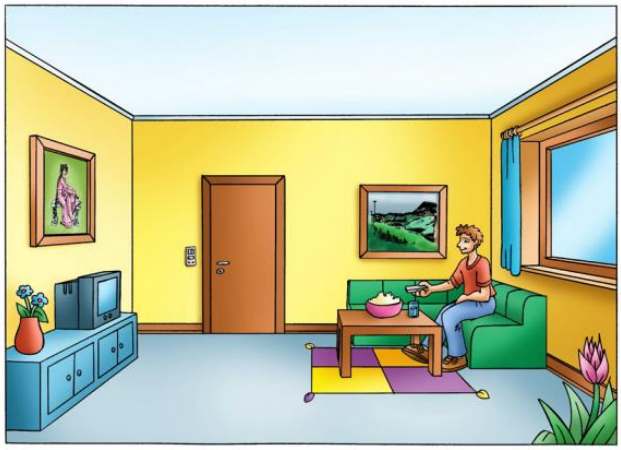




De gamle kunne også:

'The School of Athens' by Raphael (1505), a fine example of architectural perspective with a central vanishing point, marking the high point of the classical Renaissance.





http://www.matematikfysik.dk/mat/noter_tillaeg/perspektivet.pdf

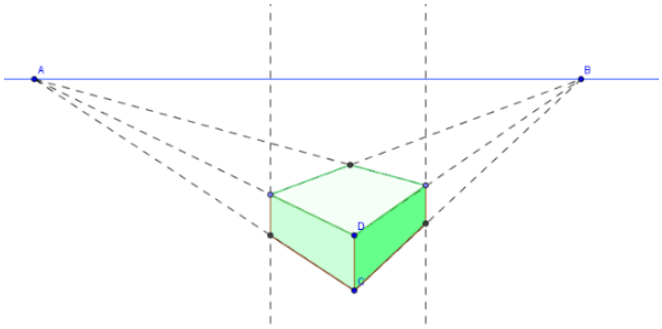
Frontperspektiv: Forsvindingspunktet er valgt lige i midten

Tegning med to forsvindingspunkter:

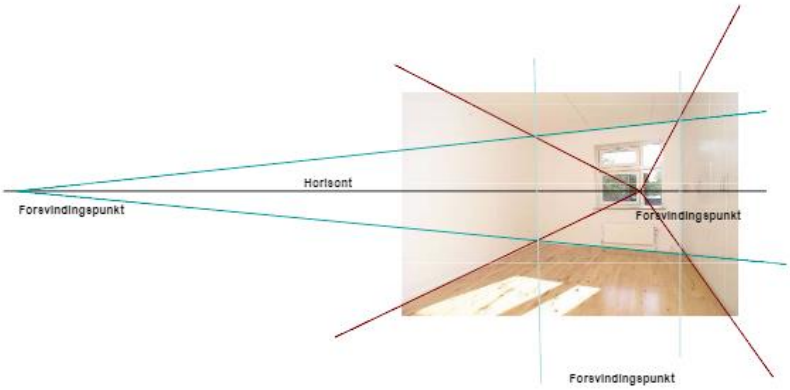
I Tegninger med ét forsvindingspunkt – eller "1-punktsperspektiv" forbliver linjer, der i virkeligheden er lodrette, også lodrette på tegningen, og vandrette linjer forbliver vandrette.

I 2-punktsperspektiv er det kun i virkeligheden lodrette linjer der forbliver lodrette på tegningen.

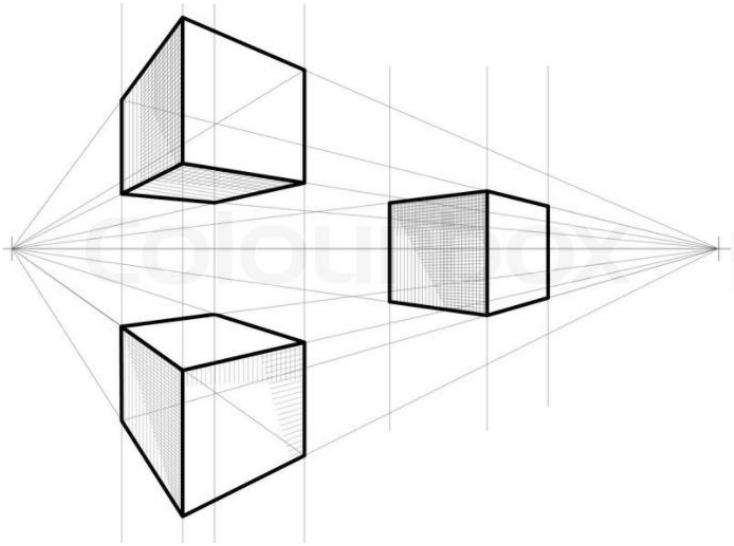
Kan også kaldes ”x-perspektiv”



Her er vist et emne, der ses lidt fra siden



Kilde: http://docplayer.dk/731588-Perspektiv-at-illustrerer-rumligt-forsvindingspunkt-horisont.html

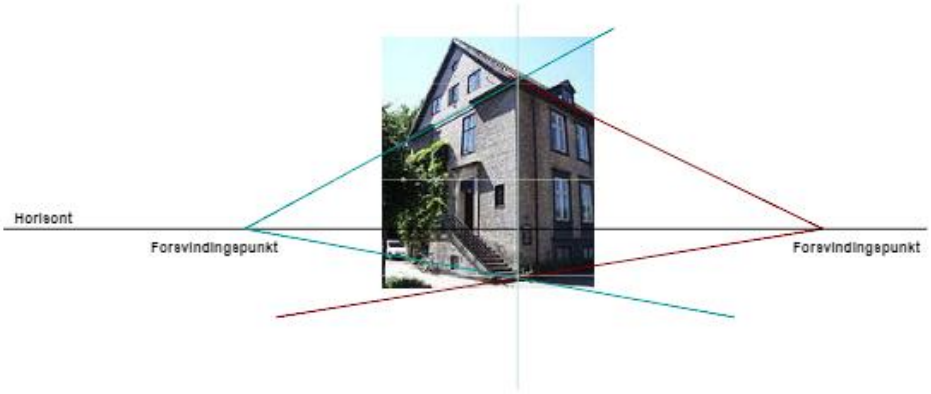


Her er vist hvordan kasser tegnes med dybde.

Kilde: https://www.colourbox.dk/vektor/tegning-af-en-terning-i-perspektiv-med-to-forsvindingspunkter-vektor-2888914

Et eksempel mere:

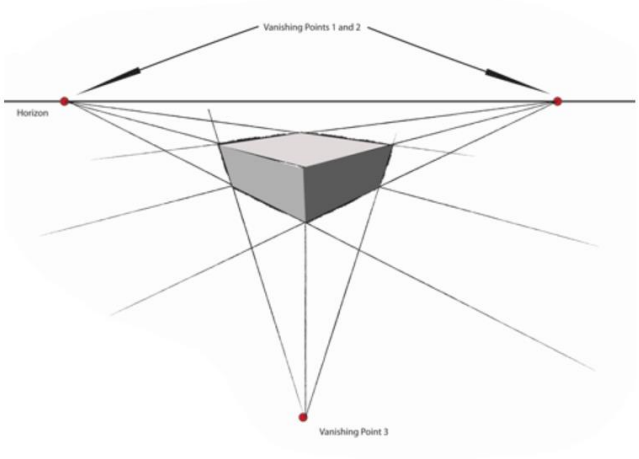
Et sødt lille eksempel mere:



Kilde: http://docplayer.dk/731588-Perspektiv-at-illustrerer-rumligt-forsvindingspunkt-horisont.html

3-punkts perspektiv; se fx: https://design.tutsplus.com/tutorials/technical-drawing-for-beginners-three-point-perspective--vector-23680

Her er der 3 forsvindingspunkter.



Bonus:

Video om tegning. Perspektiv: https://www.youtube.com/watch?v=FeUaC9cOjEg (16:02)

Se stort arbejde om skitsering:
https://clivepowseyartinstruction.weebly.com/drawing-the-basicsdrawing-and-rendering-for-metal-jewelery-designers.html

For mere om sketching, se fx: https://www.jenreviews.com/how-to-draw-better/

Og lidt pral: Mail from Jen: (editor af ovenstående link)

Dear Editor
I was searching the web for information on how to draw better and saw your great post here: http://vthoroe.dk/

I noticed you mentioned https://www.draw.io/ in your post, and just wanted to give you a heads up that I recently wrote a blog post you might like. It's a detailed, up-to-date 7,000 word guide on how to draw better that is packed with tips and advice.
If this is something you'd be interested in, here is the link to the blog post: https://www.jenreviews.com/how-to-draw-better/

This is completely free and if you like it, all I ask is for you to link to or share the article on your site. In return, would love to share your post with my newsletter subscribers and followers on social media.

Either way, keep up the great work!

Cheers
Jen

/ Valle