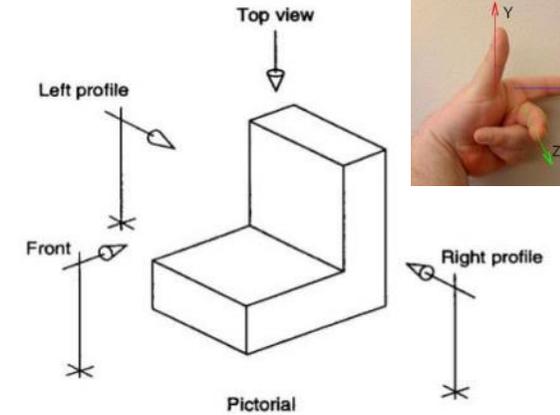
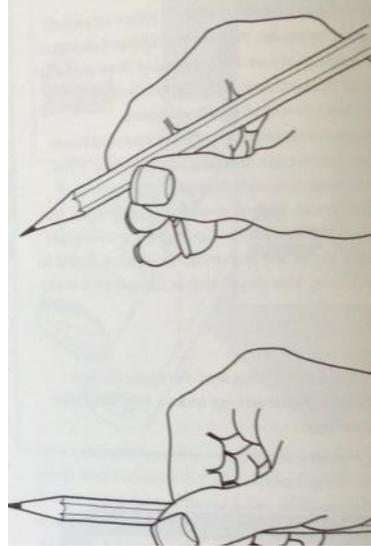


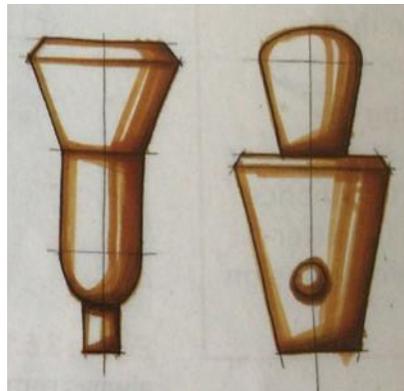
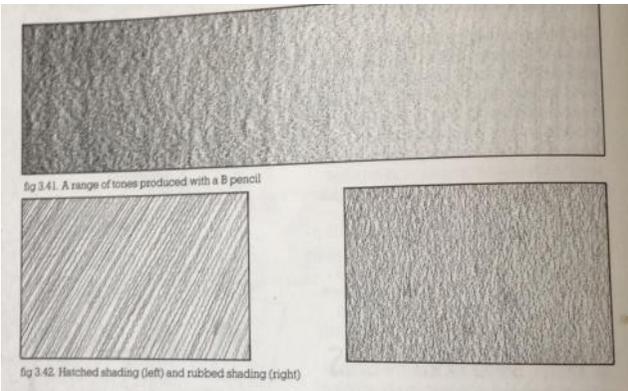
⇒ **Drawing with a pencil—Key Points**

- ⇒ Hold the pencil in the most comfortable way. If you are not sure, look at the pictures shown. The lower picture shows you how to hold the pencil when shading.
- ⇒ Hold the pencil about 20 to 30 mm from the point.
- ⇒ Do not rest your hand on the paper. Hold it just above and use your finger as a guide.
- ⇒ Do not grip the pencil tightly.
- ⇒ Keep your wrist firm and draw with your whole arm.
- ⇒ Do not fix your paper down if you are sketching. Have it free to move around, holding it steady with your free hand.
- ⇒ Do not sketch on a hard surface. A piece of card provides a good surface.
- ⇒ Use a soft pencil for sketching, HB or softer.

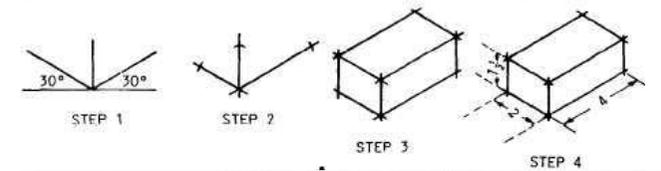
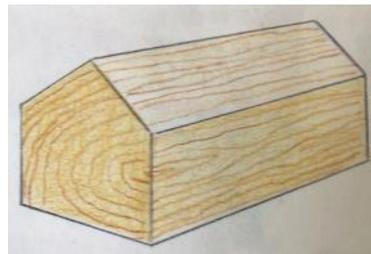


Isometric Axes

- Vertical lines remain vertical
- Horizontal lines are inclined at 30 degrees
- Used to produce realistic looking 3D views



Light pencil pressure for crates and guidelines.



ISOMETRIC CIRCLES		
Draw an isometric cube (30 by 30°, all sides even.)	Divide 1 side into 4's then connect the 2 furthest corners	Now connect the bottom right squares bottom corner to the highest rail point (line)
Place compass at point 2 and draw from 1 to 2. Now place the compass on point 3 and draw from 3 to 4.	Now place compass on point 2 and draw from point 1 to 2. Repeat by placing compass on point 3 and draw from 3 to 4.	Rub out all construction lines and you are done.

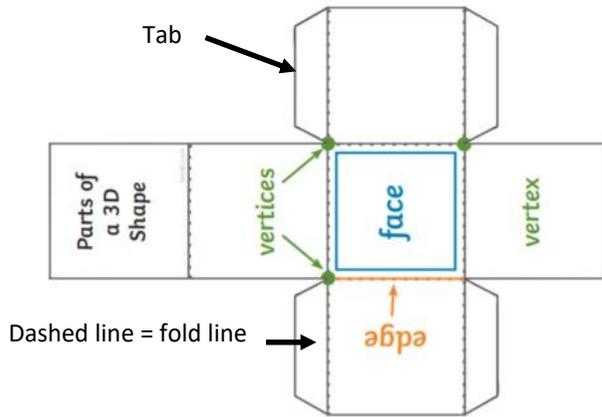
Key Terms

Freehand sketching –drawing done without the use of rulers or drawing aids. It is a way that a designer can quickly express thoughts and ideas.

Isometric drawing - means 'equal measure'. It is a technique of presenting a design sketch in three dimensions.

Rendering - the addition of colour, or texture, to enhance a sketch to better communicate design intent.

Geometric shape - figures closed by a boundary which is made by combining the definite amount of curves, points, and line segments.



- 1). What is a net?
- 2). What are nets often used for?
- 3). How are nets made in industry?

What is a net?

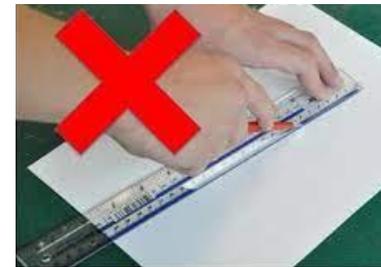
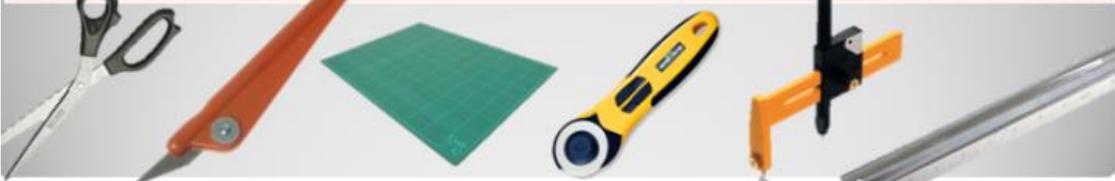
A net is often called a development net. It is a flat two dimensional shape, which contains score lines and when is folded and glued together forms a three dimensional shape. Nets are often used for packaging items such as orange cartons, point of sale display units, tissue boxes and so on.

In industry (factories) the nets are arranged onto the sheets of card, as close to each other as possible to minimise waste. This is tessellation.

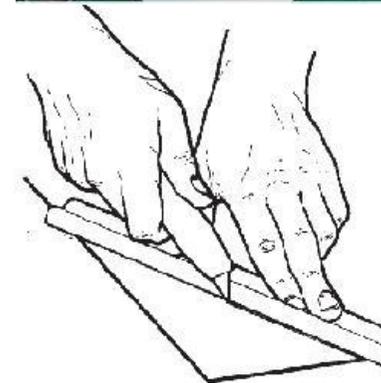
Task

Match the correct net to the correct box

Tool/Equipment	What is it used for?	Safety Advice
Scissors	Cutting paper, thin card, and thin plastic sheets.	Ensure the blades are strong enough, keep fingers away from blades.
Scalpel/Craft Knife	Cutting or scoring paper, card, thin plastic sheets, thin board.	Use a safety ruler, keep the blade against the edge of the ruler, cut away from yourself.
Cutting Mats	To give a suitable cutting surface when using various types of craft knife.	Make sure the mat is on a flat surface.
Rotary Cutter	Cutting paper, card, thin plastic sheet, thin board.	Use a safety ruler, keep the blade against the edge of the ruler, cut away from yourself.
Compass cutter	Cutting circles in paper, thin card, thin plastic sheets, or thin board.	Use this on a cutting mat, on a flat surface.
Safety rule	To make straight line cuts with a craft knife.	Hold the rule down firmly with one hand, making sure fingers are away from the knife edge.



- ⇒ **Mark your lines to be cut with a pencil before using a knife.**
- ⇒ **Use a safety rule when possible e.g. straight lines.**



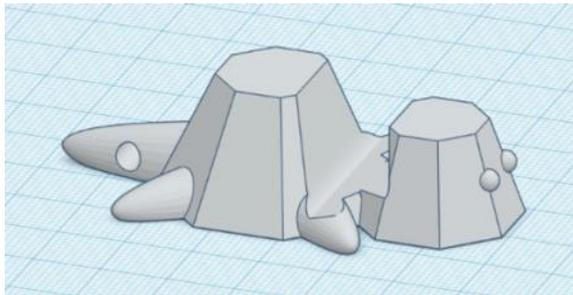
- ⇒ **For thicker materials, several passes of the knife might be needed.**
- ⇒ **Always place a cutting mat under what is being cut and ONLY cut on a firm surface.**



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Have a class code?

1. Go to <https://www.tinkercad.com/joinclass>
2. Enter your class code:
3. Enter the **Nickname** your teacher assigned you.



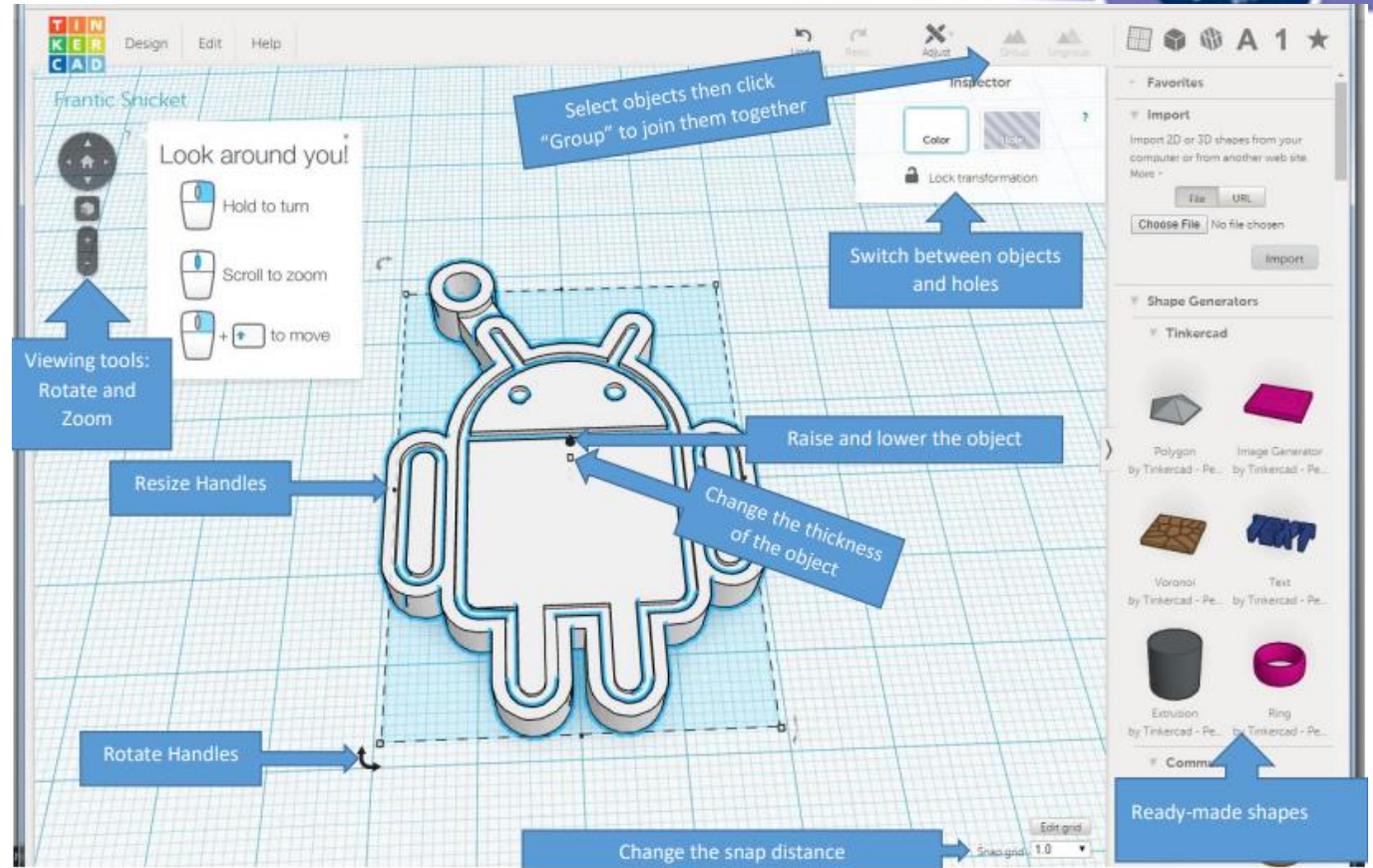
Group and Ungroup



Use these tools to group multiple objects together or to ungroup them.

Practice tasks

Once you have logged in, choose any of the tinkercad tutorials in the learn section and follow the on screen instructions.



The Alignment Icon
IMPORTANT: The Alignment Icon isn't available until you select two or more objects.

Resize, Reshape, Move

