CHAMFER, FILET & SLICES

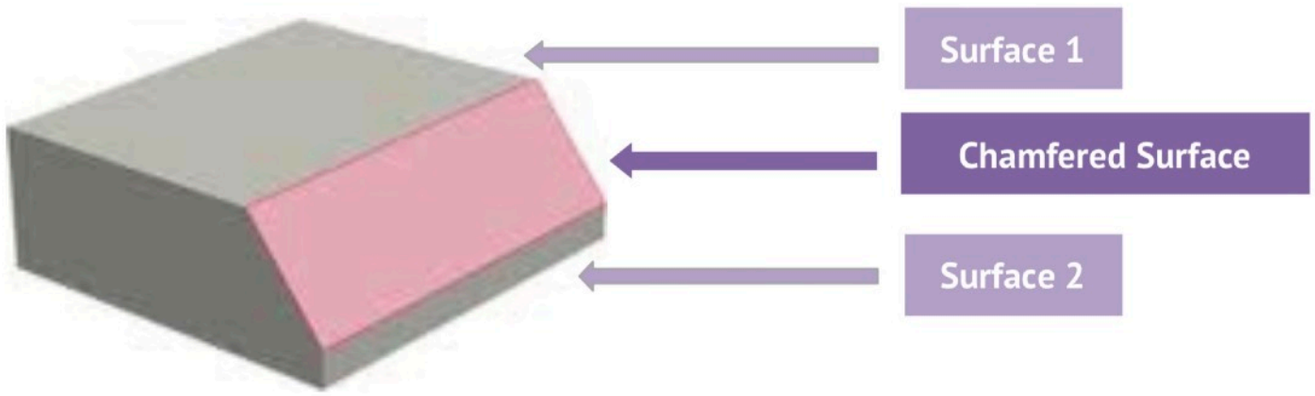
- Slices create chamfer/fillet surfaces and simple orthogonal/planar slices
- Notches most times are visual artifacts – do not change keyhole
- Slants / slopped planes most times can be used to deceivingly suggest slanted lines in the keyhole

DEFINITION

We like to think of these shapes chips off the ol' block because it really just takes some basic shape and some "slicing" to create these types of beveled edges (more specifically, chamfered or filleted surfaces). Remember, every shape comes from some basic 3D shape/block - think about how the Greeks sculpted marble by chiseling a large, uniform block to create finer details. Especially for this type of shape, thinking of it as simply sliced with a digital knife will make the shapes seem much less daunting! Usually 1-2 problems per test.

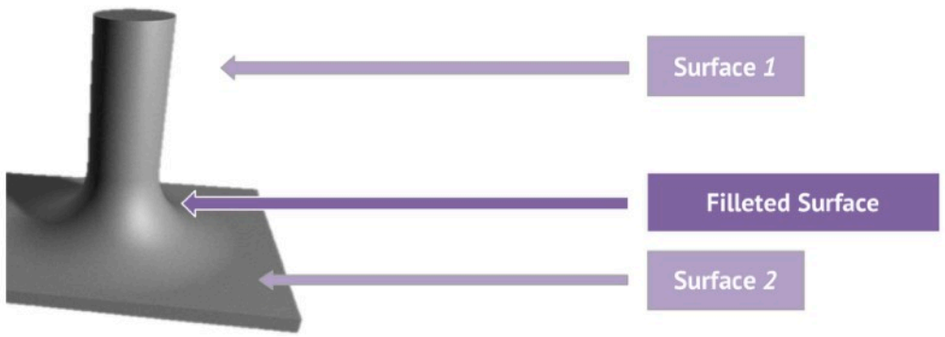
CHAMFER

Beveled Edge, connecting two or more surfaces



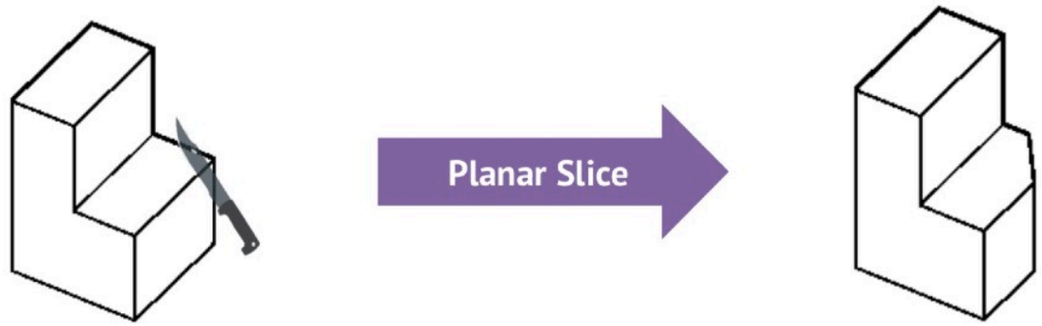
FILET

A smoother, more gradient-like beveled edge, connecting two surfaces. Much less encountered on your exam.

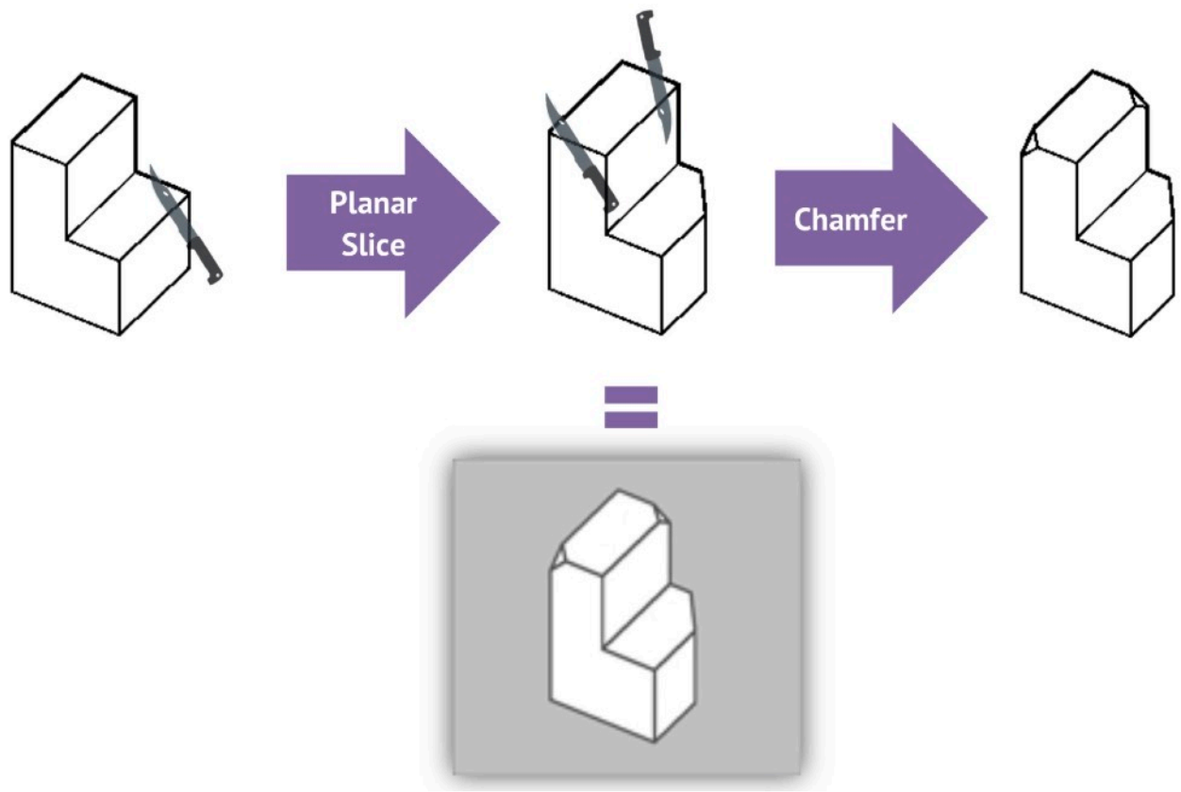


(ORTHOGONAL) PLANAR SLICE

A simple 2D/planar slice orthogonal to one of the 3D axes (x, y or z). Simply put – it's as if a knife were cutting through the object to take a chunk of a block off. Non-orthogonal (not parallel to one of the axes) slices are usually what create chamfering and the dreaded notch (see "How It's Made" below):



HOW'S IT MADE? TRICKS?

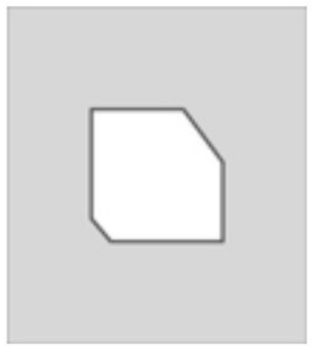
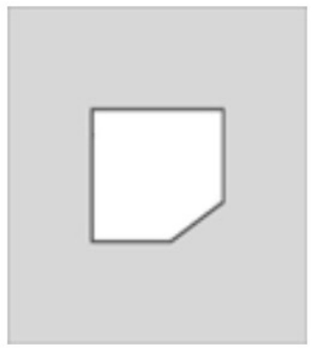


A planar slice cuts the back-right corner of the L-shaped block. Then two "notches" are created on corners through chamfering.

What's tricky about these shapes is how chamfers/fillets/plane slicing affect, if they even do, but the keyhole through which these shapes go through:

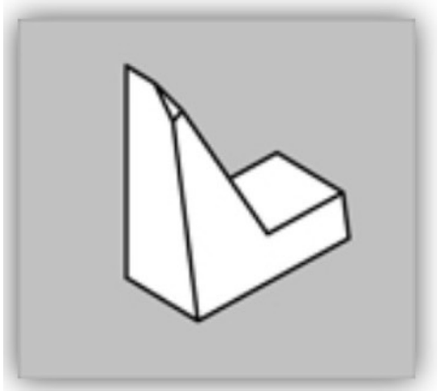
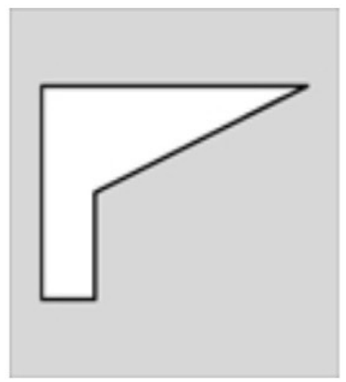
1. NOTCHES

A cut off the corner of an object (or, for the less light- hearted, a chamfered surface that connects, usually, three planes).
Notches are usually visual artifacts. An example with the TOP view:

			
EXPLANATION	**Scan this object from top to bottom focusing at the notch at the front left corner. You can see that there is solid/volume to the shape that fills that corner and ensures that the corner at the bottom left of this keyhole should not be cut off.**	**Refer to explanation to the left. Notch in the back of the object is being used as a trick when it really does nothing to the top keyhole.**	**Correct! Notches in the 3D object always try to suggest that the respective corner of the keyhole is cut off as well as the two keyholes to left suggest. Usually (there are exceptions) they do nothing to the shape of the keyhole!**

2. SLANTS/SLOPPED PLANES

A slopped plane that deceivingly suggests a slanted line in the keyhole. An example with the FRONT view:

		
EXPLANATION	**A planar slice against the front of the object causes this slope on the front façade. This makes the line on the left of the object appear slanted. However, the line w/ respect to the front of the object, is perpendicular to the base line of the object, thus having no effect on the front keyhole.**	**Correct! Watch out for that notch at the top ;)**

3. PROPORTIONS

A slopped plane that deceivingly suggests a slanted line in the keyhole. An example with the FRONT view:

		
EXPLANATION	**The rectangular extension at the top left corner of the keyhole is just a hair too short! Can't see it? Don't worry, you'll be a proportion master after going through our bank of problems!**	**Correct! The rectangular extension at the bottom left corner of the keyhole is just the right amount of length and width.**