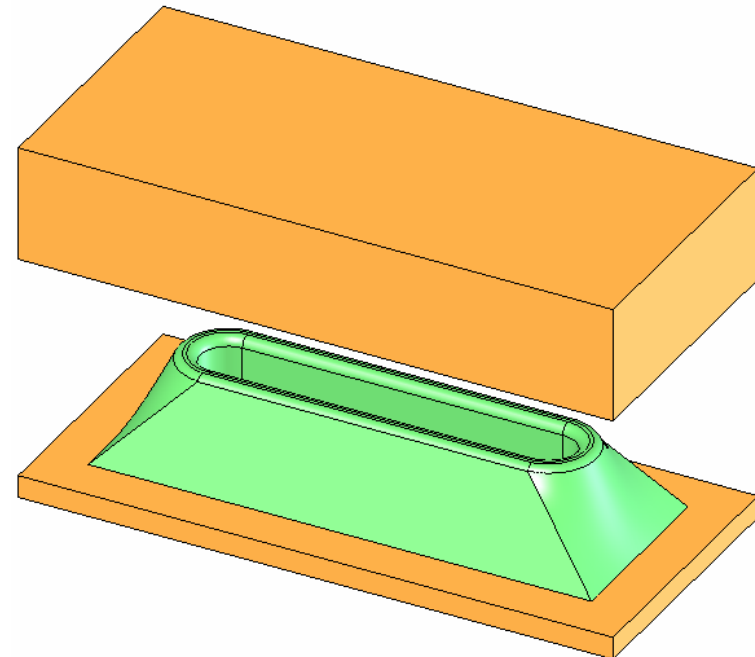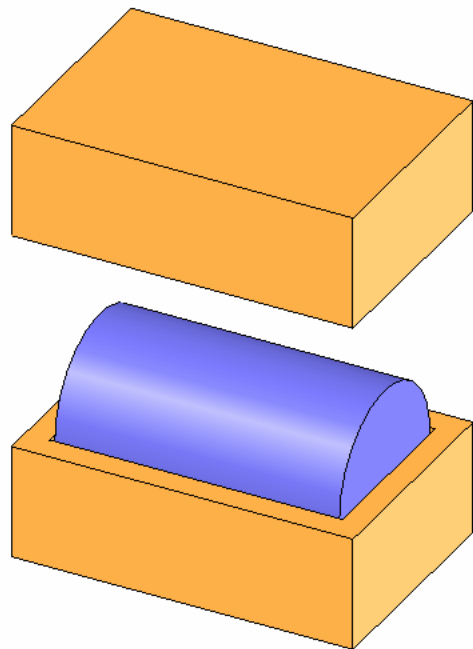# Mold Design

Mold Design

- Mold design is a very specialized field
- Features for adding material to the mold, venting, heating, and cooling are highly dependent of the type of material and process
  - Plastic injection molding
  - Liquid polymer molding
  - Metal die casting, etc
- We will concentrate on the creation of the mold cavity and mold halves, operations that are common to most molding processes

Assembly – Part and Mold Base

- The mold base must be large enough to completely contain the part
- Use of symmetry when creating parts is very helpful for centering part within base
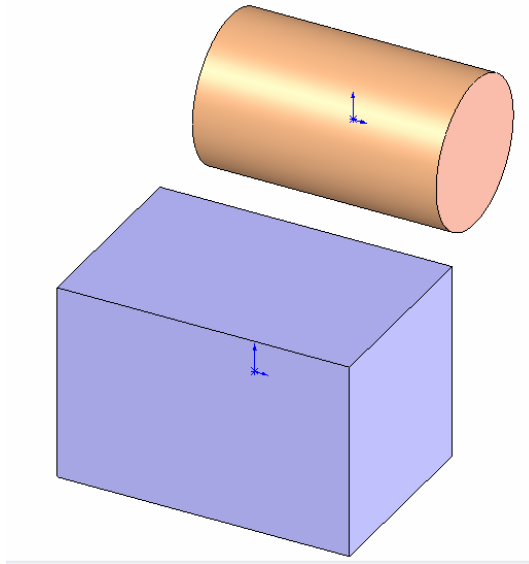
Center Part in Base

- Use mates to locate part within mold
- This assembly is called an "interim assembly" from which the mold halves will be created
- Making base translucent helps visualization
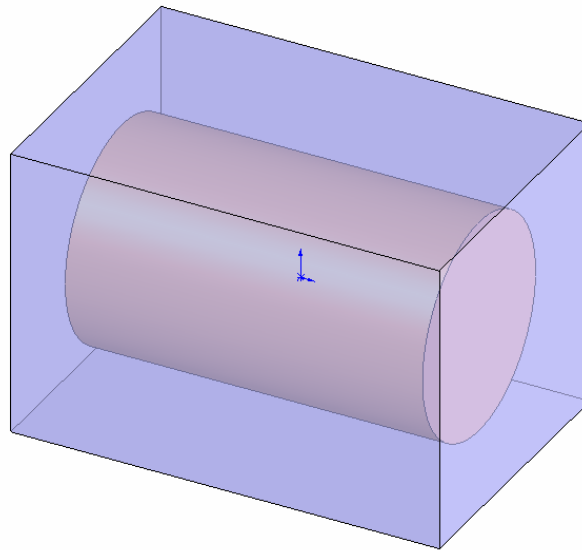
Create the Cavity

- The cavity is usually larger than the finished part to allow for material shrinkage during cool-down

*Introduction to Solid Modeling with SolidWorks 2006*
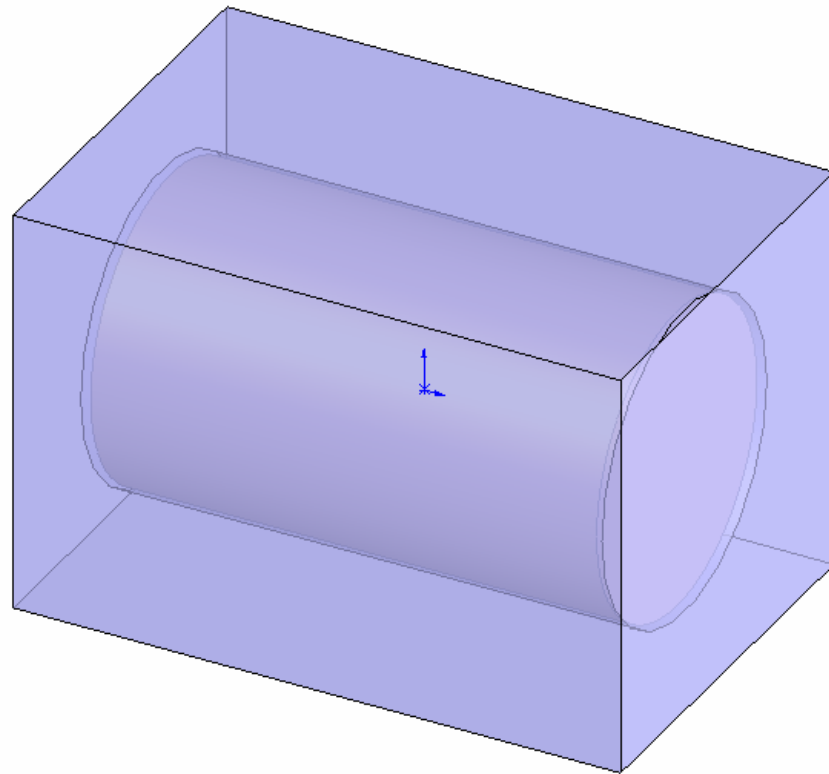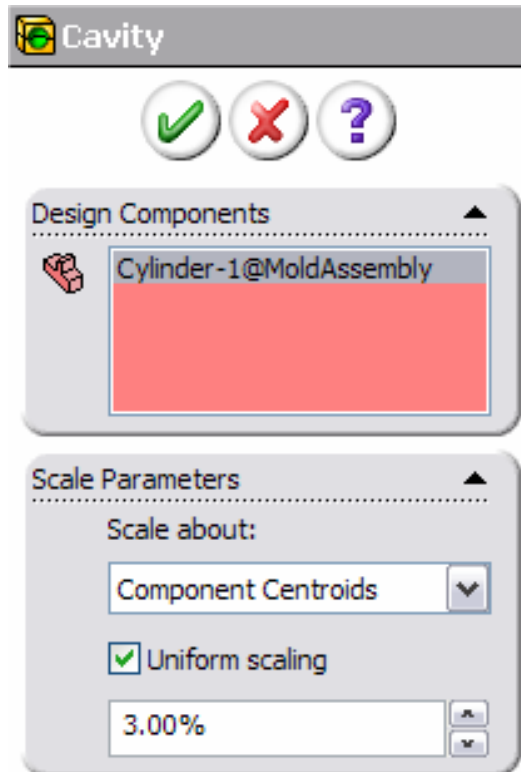
Create a Base Part with Cavity

- A *derived component* is created from an assembly, and includes assembly-level features (in this case, the cavity)

- Associativity is maintained – changes to the assembly will be reflected in the derived part
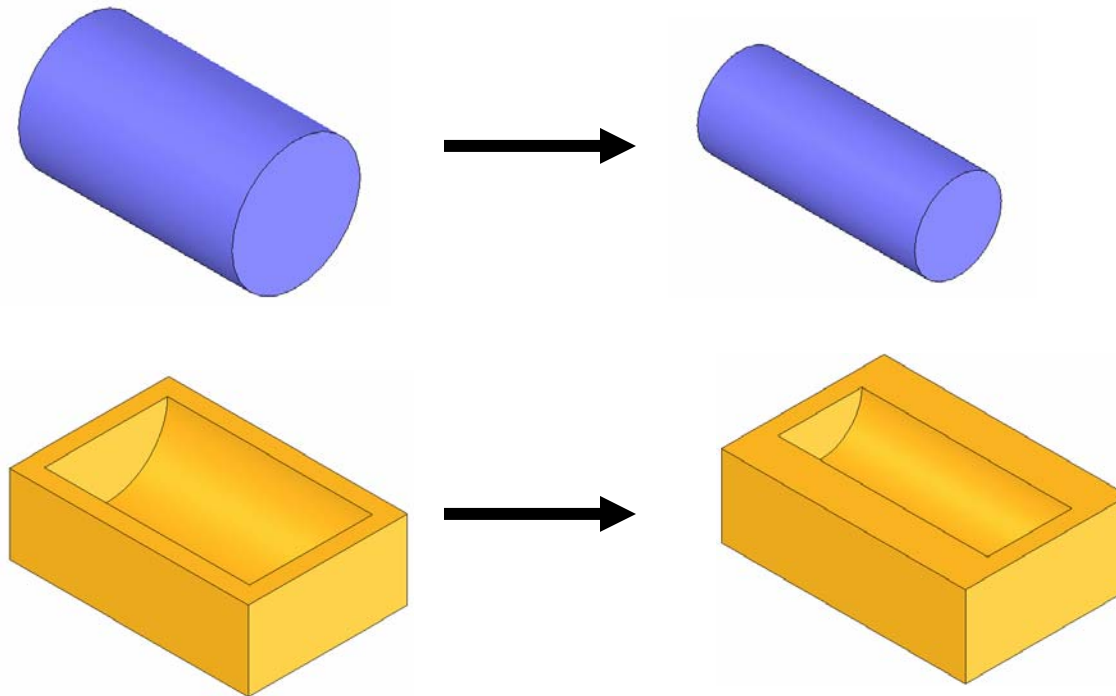

Introduction to Solid Modeling with SolidWorks 2006
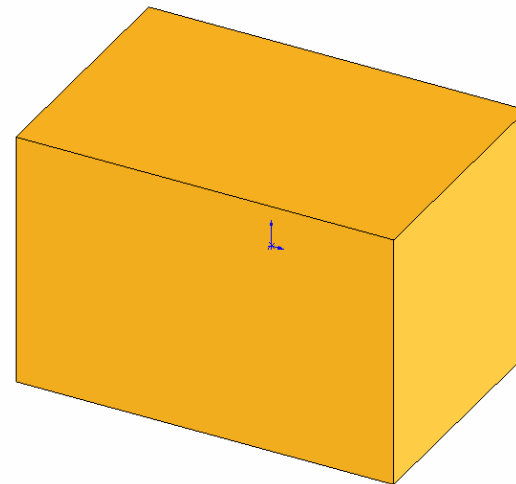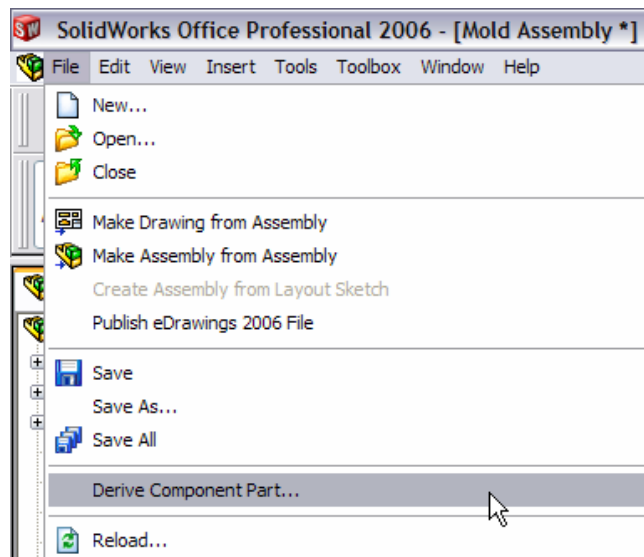
Cut Away Top Half of Mold
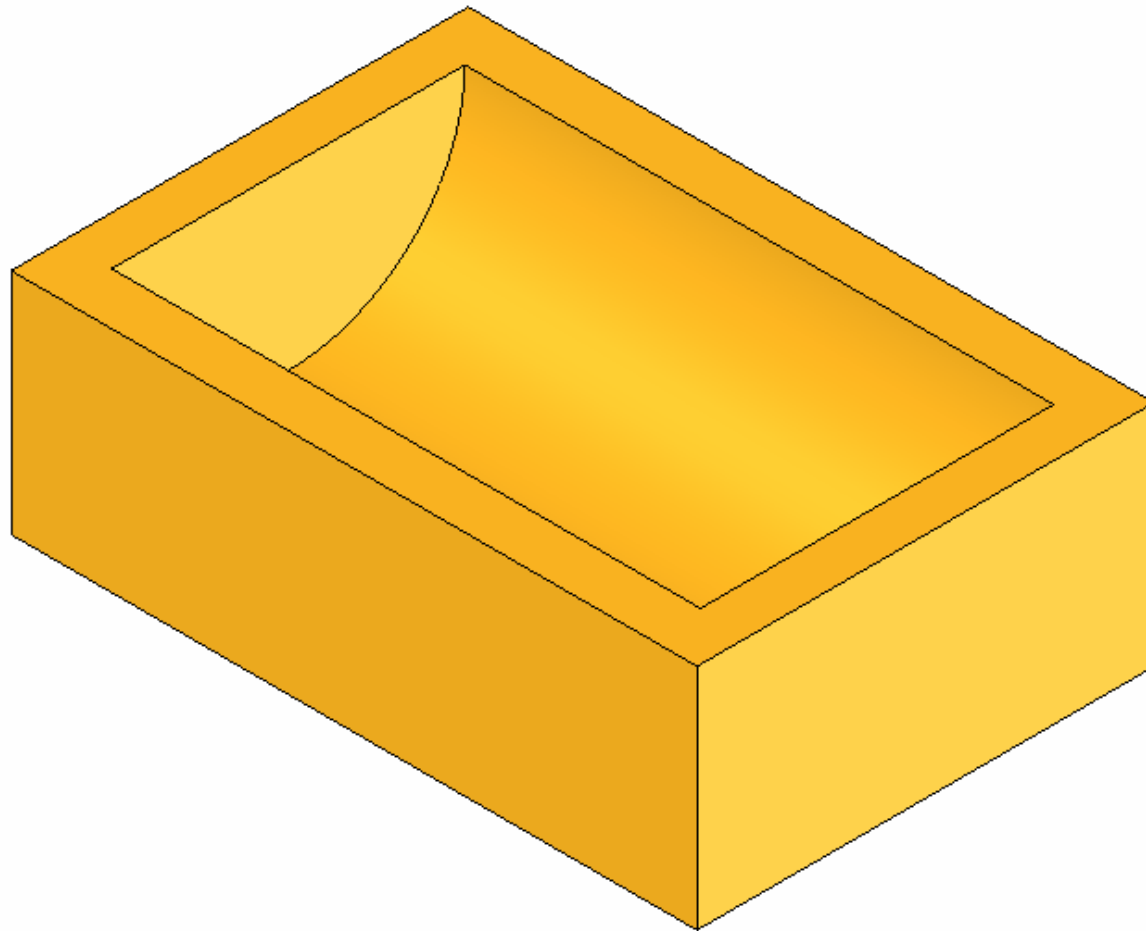
Associativity

- Changes to the original part are reflected in the interim assembly and then to the derived part (mold half)
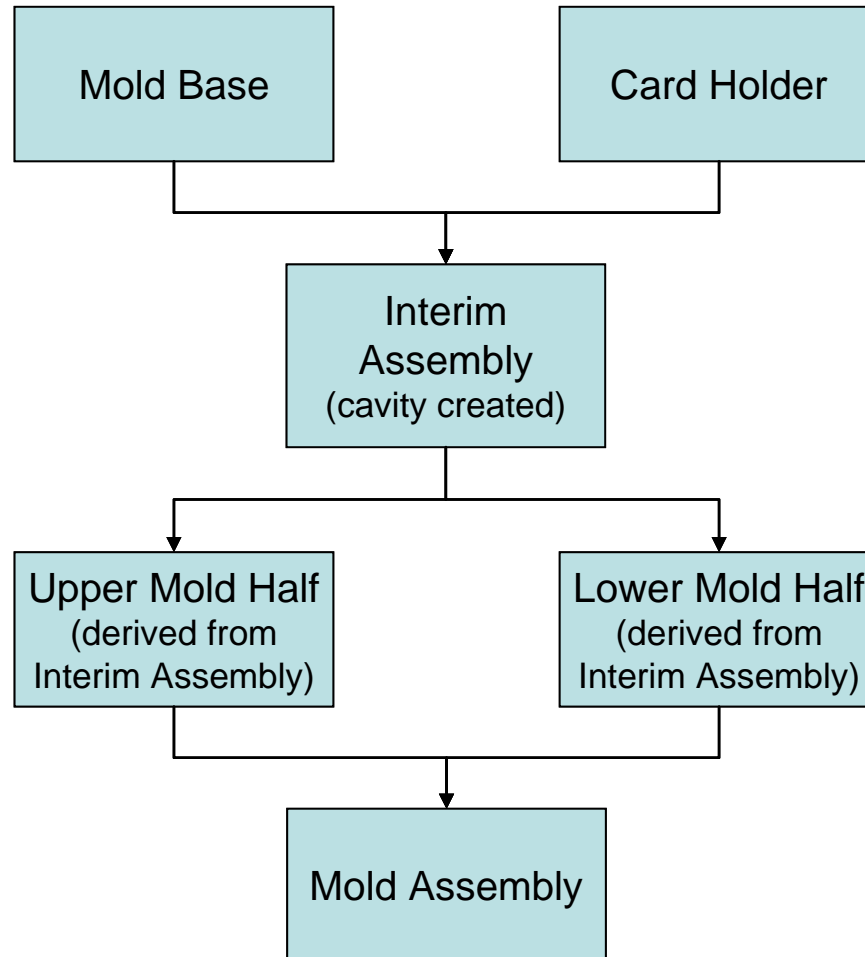
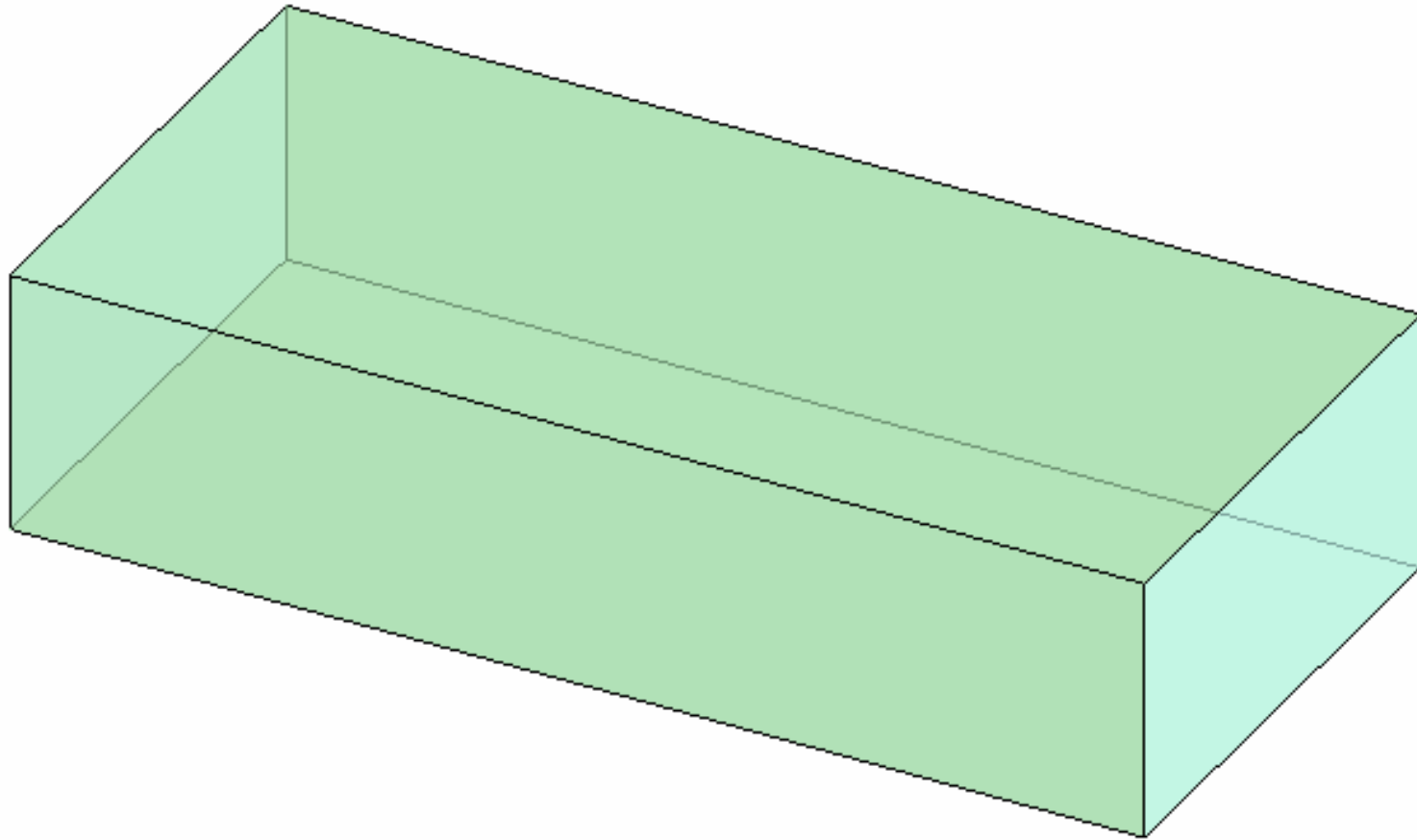# Tutorial 2: Core and Cavity Mold

- A mold for the card holder will require teo different mold halves – a core, with features prodtruding away from the parting line, and a cavity, with features cut into the mold half
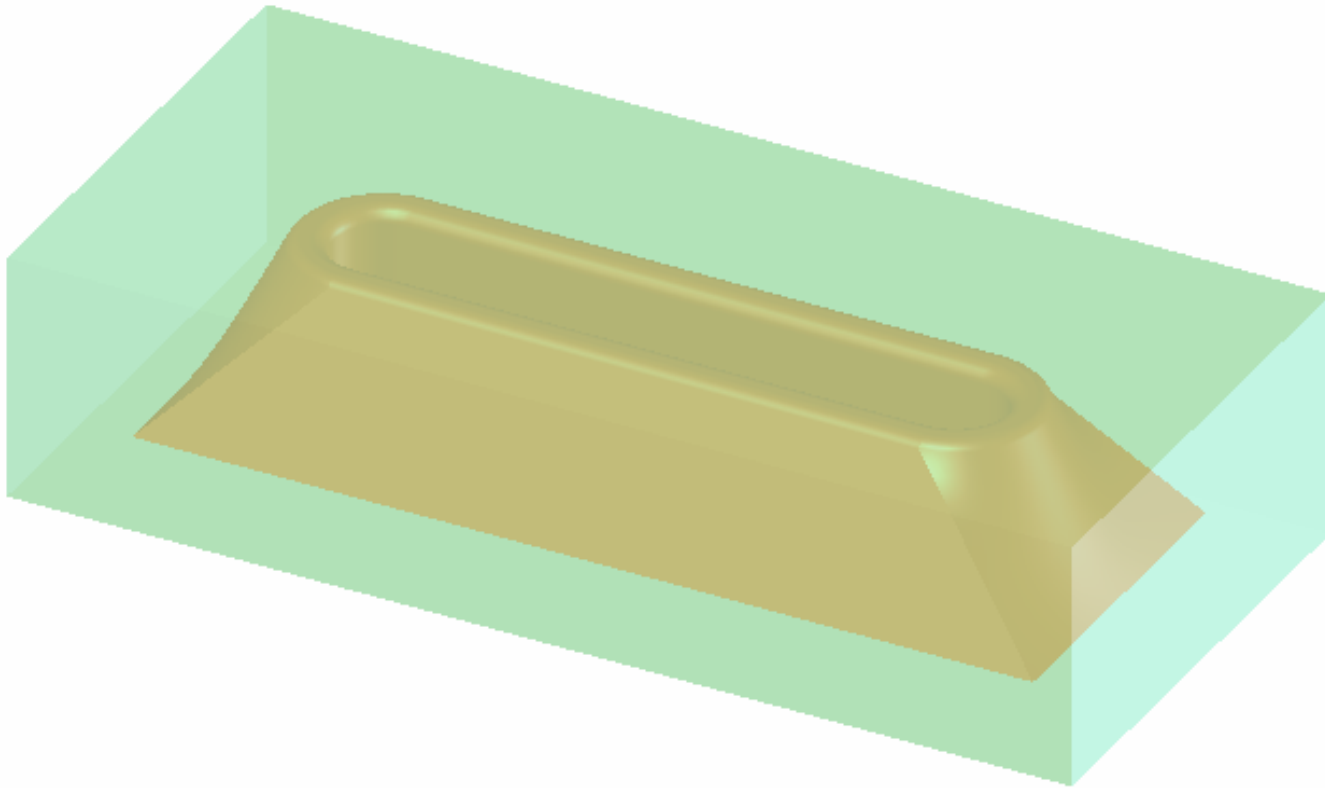
Overview of Procedure

```
┌─────────────────┐        ┌─────────────────┐
│   Mold Base     │        │   Card Holder   │
└─────────────────┘        └─────────────────┘
         │                          │
         └──────────┬───────────────┘
                    ▼
         ┌─────────────────────┐
         │      Interim        │
         │     Assembly        │
         │  (cavity created)   │
         └─────────────────────┘
                    │
         ┌──────────┴───────────┐
         ▼                      ▼
┌──────────────────┐   ┌──────────────────┐
│ Upper Mold Half  │   │ Lower Mold Half  │
│  (derived from   │   │  (derived from   │
│ Interim Assembly)│   │ Interim Assembly)│
└──────────────────┘   └──────────────────┘
         │                      │
         └──────────┬───────────┘
                    ▼
         ┌─────────────────────┐
         │   Mold Assembly     │
         └─────────────────────┘
```
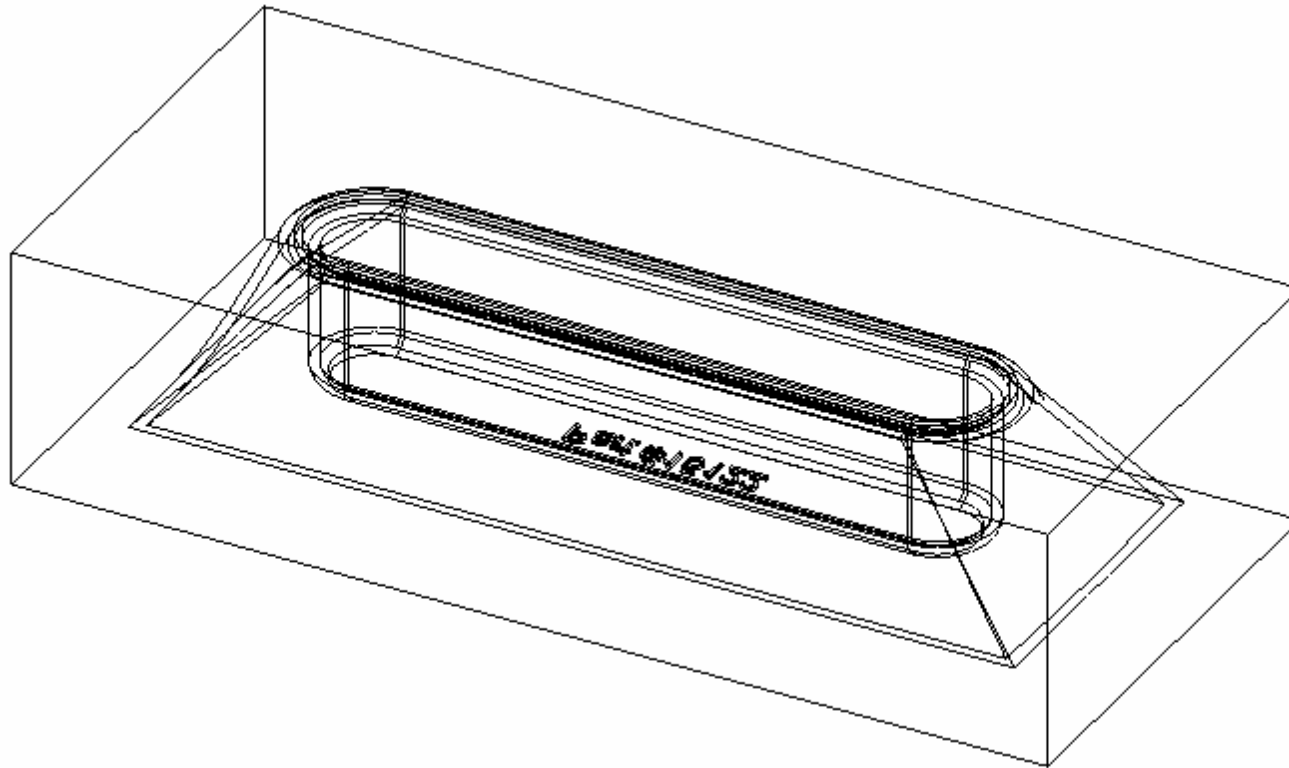
Mold Base

Interim Assembly

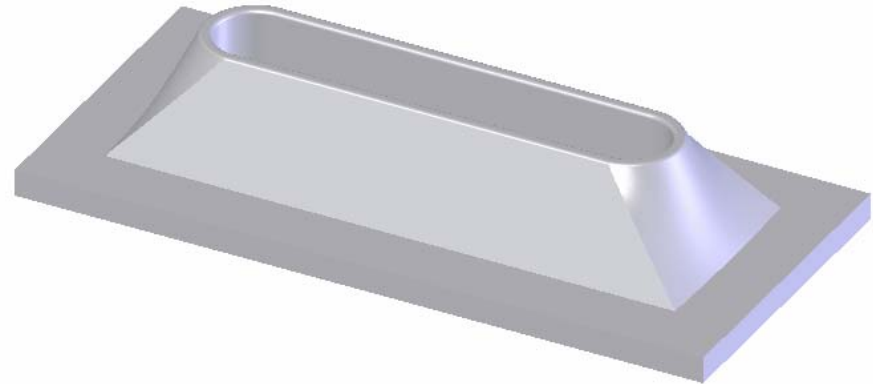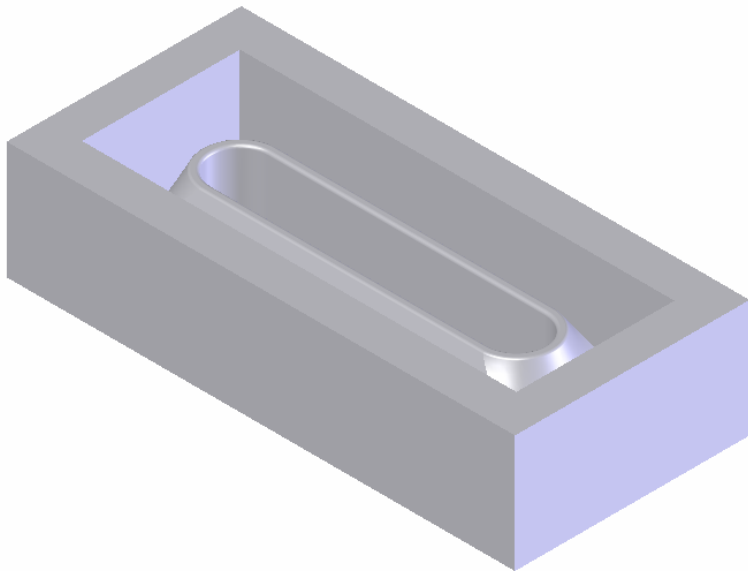- Mates added to center the part within the base

Create Cavity in Base

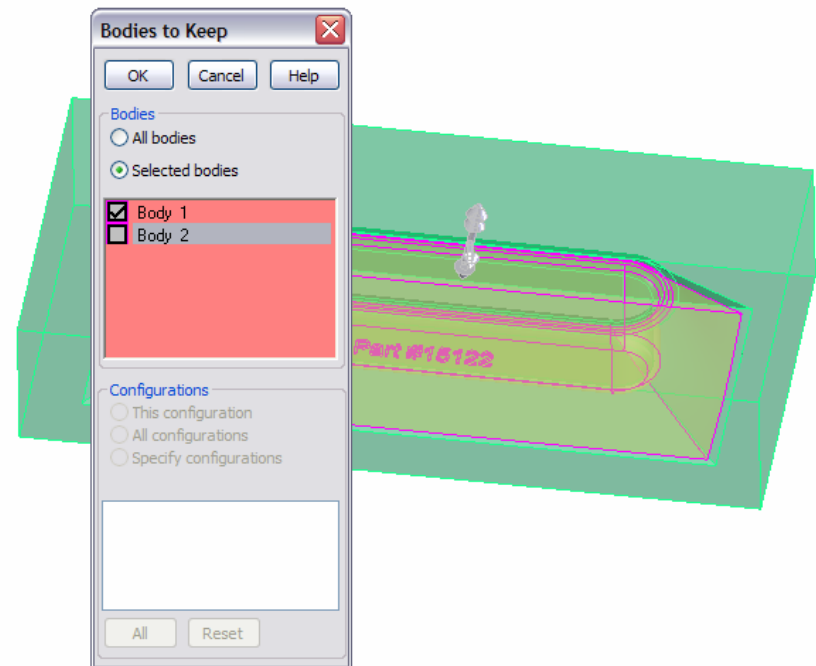- Derive two components – upper and lower mold halves

Lower Mold Half

- First Cut: Portion directly above cavity
- Type = Up to Next

- Second Cut
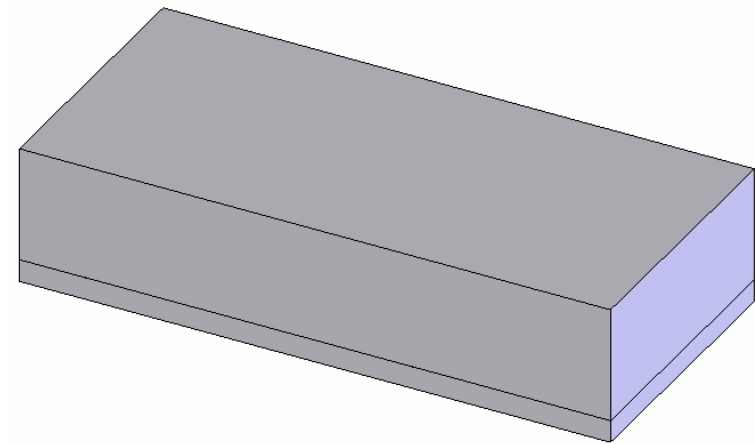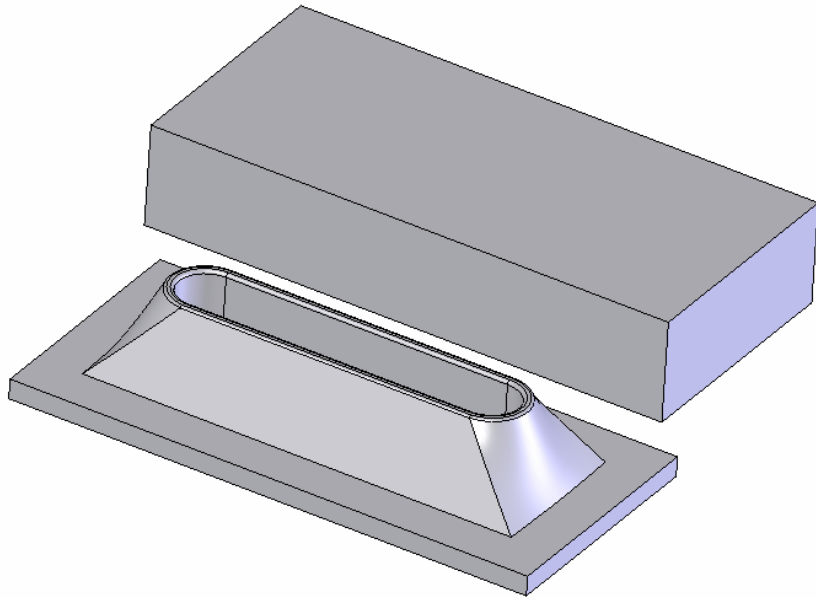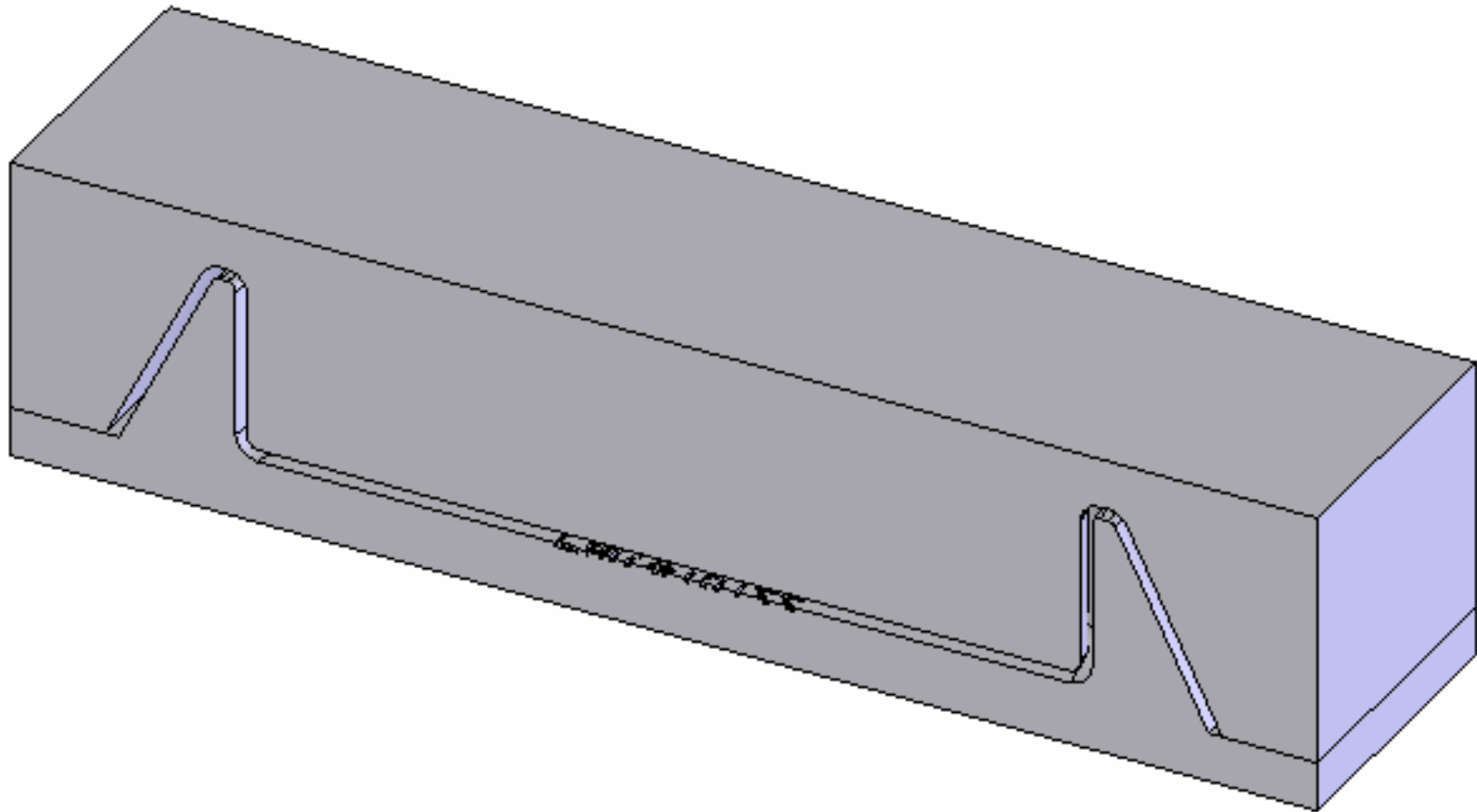- Type = Up to surface (parting surface)

Upper Mold Half

- Single cut (through all) through parting surface
- Cut creates two separate bodies – must specify which to keep

Mold Assembly

Cross Section Shows Cavity

Associativity

- Change in part (increased thickness) reflected in interim assembly, mold halves, and mold assembly