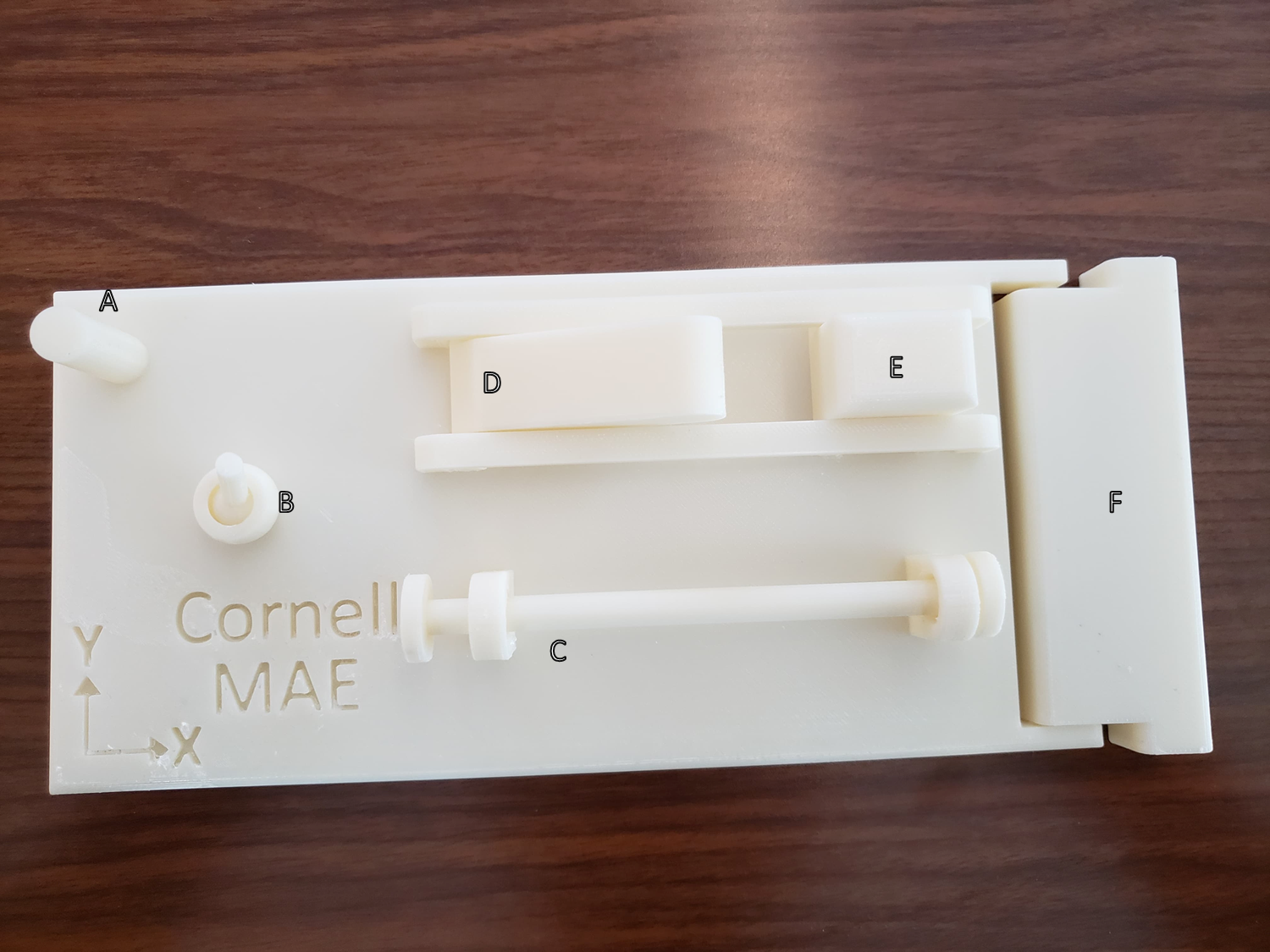
Discussion 1



**Figure 1.** Toy with six elements (A-F) demonstrating unique boundary conditions.

# Instructions

For each element:

**Force**

1. Sequentially apply a force in the and -directions (treat elements D and E as two-dimensional and only apply forces in the and z-directions).
2. Take note of which elements can generate reactions to which forces at supports.
3. Draw a free-body diagram (FBD) for each element in the second page, showing only the applicable reactions at supports*.*
4. Describe what motions (if any) are permitted.

**Moment**

1. Apply a moment about the and -directions (for elements D and E, only consider the -axis.).
2. Add the applicable reaction moments to your FBD’s.
3. Describe what motions (if any) are permitted.

Elements

A.

B.

C.

D.

E.

F.

Complete the table below by putting a “” in each box if the element can produce the relevant reaction force or reaction moment .

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Possible Reactions | | | | | |
| Element |  |  |  |  |  |  |
| A |  |  |  |  |  |  |
| B |  |  |  |  |  |  |
| C |  |  |  |  |  |  |
| D |  |  |  |  |  |  |
| E |  |  |  |  |  |  |
| F |  |  |  |  |  |  |

In the following table, identify the element depicted in each drawing (see tables 4.1 and 4.10 in the book for more examples).

|  |  |
| --- | --- |
| Drawing Representation | Toy Element |
|  |  |
|  |  |
|  |  |
|  |  |
| A close up of a sign  Description automatically generated |  |
|  |  |