Stellenbosch
UNIVERSITY
IYUNIVESITHI
UNIVERSITEIT

QUALITY MANAGEMENT 444

Tutorial 9 Week 10

Prof Imke de Kock
imkedk@sun.ac.za

Tutorial 9

Practical exposure to a full factorial 3-factor DOE

Optimizing the design of paper helicopters.

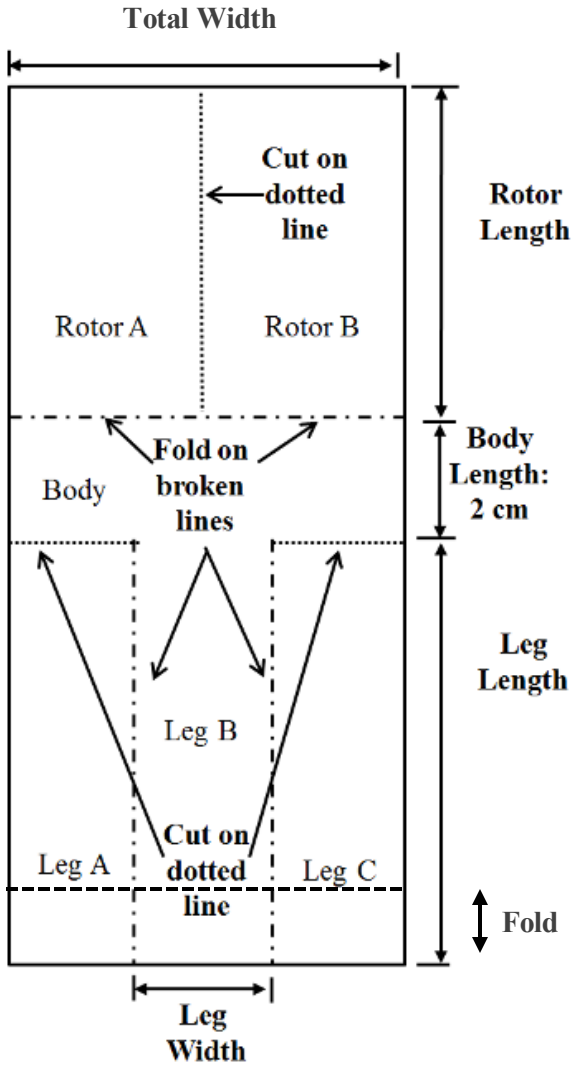
You will need:

- Scissors
- Ruler
- Pencil
- A4 paper (at least 8 pages)
- Laptop capable of running Excel

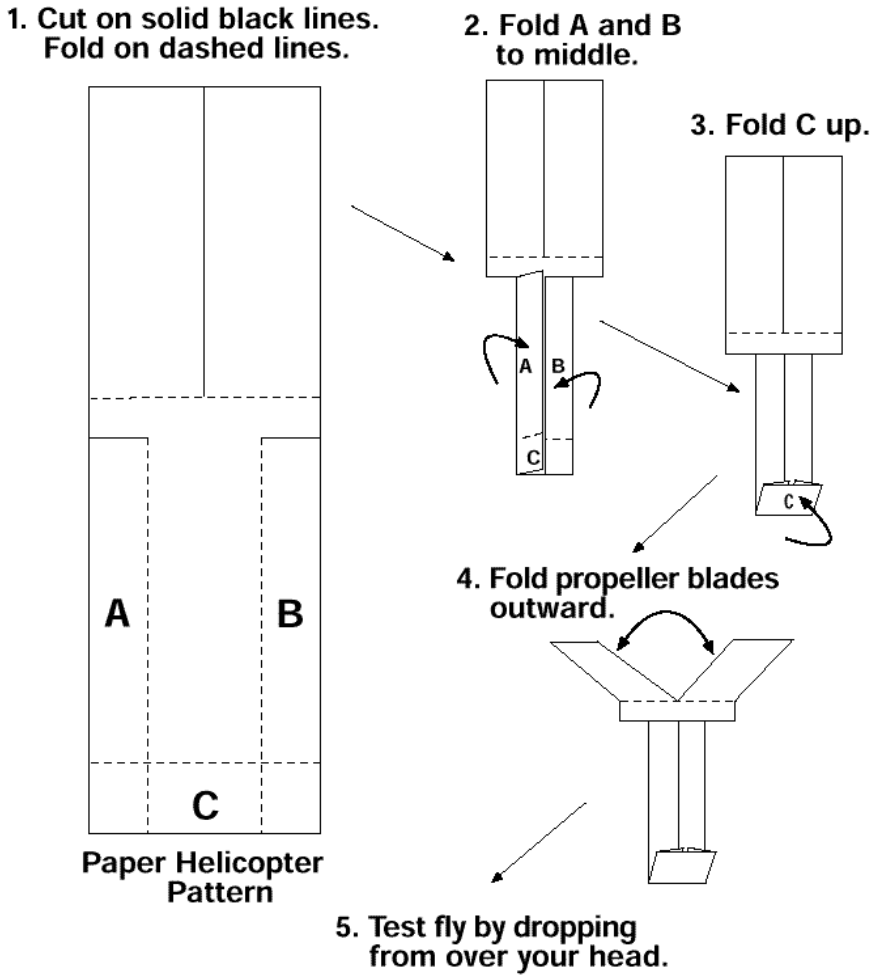
Paper helicopters

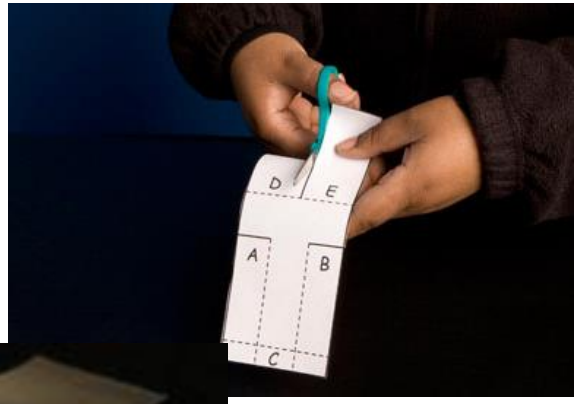
Decide on 3 factors, and two levels

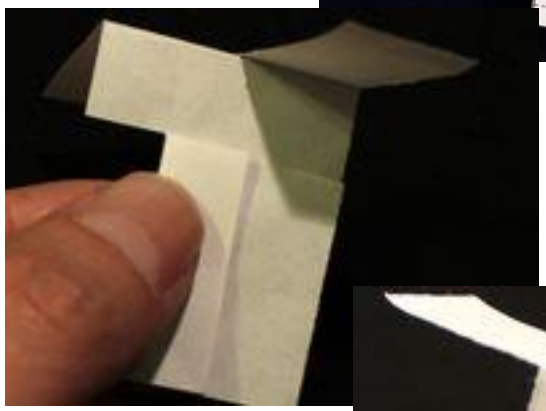
- Full factorial DOE using 3 factors
  - 2^3 = 8 runs (Excel template)
- Assume:
  - Rotor width = 1/2 total width
  - Leg Width = 1/3 total width
- Choose
  - 2 x rotor lengths
  - 2 x leg lengths
- Third = your choice
  - Total width
  - Bottom fold (yes/no or height)
  - Thickness of paper
  - Paper clip
  - Body Length

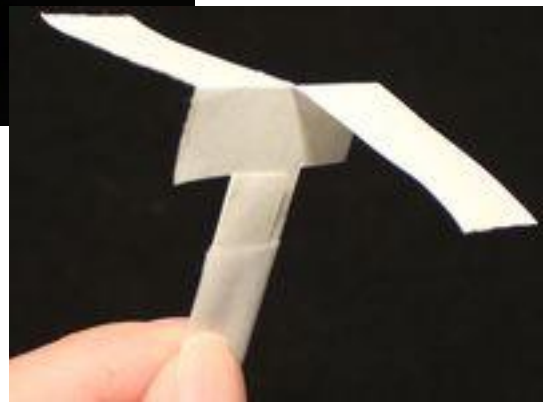


Making the helicopters

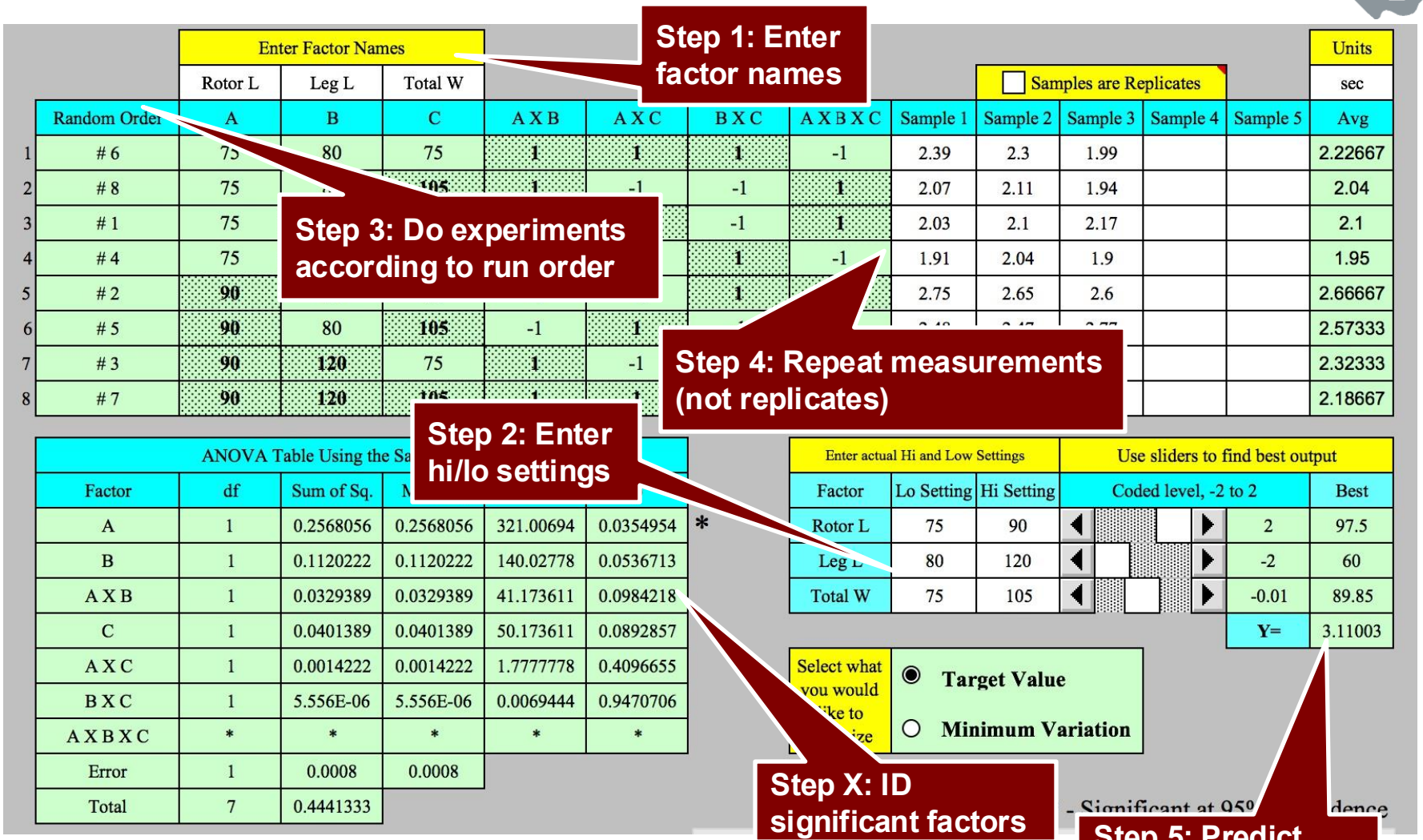








3_Factor_DoE_Template



Tutorial / Assignment submission

- 3 – 5 slide presentation
- Videos & photos
- Excel outputs
- Clear description of findings (…what could you not / did you not control that had / may have had an influence on outcome?
- A brief reflection of the applicability and value of DoE for (i) industrial engineers, and (ii) within the context of quality management.

➢ Submit on SUNLearn by 15 October, 13h00