DISCUSSION 8

-Exercies:

1. review on some terms/notation:
   (a) compounding, alias
   (b) defining relation, generators, resolution, e.g. 2_{IV}^{7-4} design:
   (c) higher-order interaction negligible:
   1, Large factorial designs allow for estimation of many higher order effects. If we can make assumptions that three-factor or higher-order interactions are negligible. Fractional factorial designs employ such redundancy by arranging that lower order effects are compounded with those of higher order.
   (d) parsimony, projectivity = R -1
   the vital few factors and trivial many – Pareto Principle / Occam's Razor

2. Question 3 from page 276. Consider a 2^{8-4} fractional factorial design:
   (a) How many factors does this design have?
   (b) How many runs are involved in this design?
   (c) How many levels for each factor?
   (d) How many independent generators are there for this design?
   (e) How many words in the defining relation (counting 1).

3. Question 7 from page 276.
   (a) Construct a 2^{6-2} fractional factorial with a(j high a resolution as possible.
   (b) What are the generators of your design?
   (c) What is the defining relaton of your design?
   (d) What is confounded with the main effect 3 of your design?
   (e) What is confounded with the 1 x 2 interaction?

4. Suppose un engineer wants to study the effects of seven factors on the yield of a chemical reaction and is willing to make 32 runs. He elects to perform a 27- 2 fractional factorial design with lhe generators 1=1237 and 1= 126. The main effect of 1 is confounded with what other effects? Suggest an altemative plan that produces less confounding of low-order terms.