For each of the following questions, outline how you could use an A/B test to find an answer. Be sure to identify all five key components of an A/B test we outlined above.

Does a new supplement help people sleep better?
Will new uniforms help a gym's business?
Will a new homepage improve my online exotic pet rental business?
If I put 'please read' in the email subject will more people read my emails?

****Does a new supplement help people sleep better?****

Two Versions: Control (No sleep aids) vs Test (supplement treated)

Sample:
  Control group: Random sample of individuals who take no sleep aids
  Treated group: Random sample of individuals who take no sleep aids who are given supplement
  For each group, track measurements for 30 days. Time went to sleep, Time woke up, # Hours slept
  Groups should have similar age and sleeping habits (ie. go to sleep at about same time, wake up at about same time)

Hypothesis: New supplement helps people sleep better

Outcome: "# hours slept" is greater for treated group

Other measured variables: Time it takes to fall asleep

Will new uniforms help a gym's business?

Two Versions: Control (Existing Uniforms) vs Test (New Uniforms)

Sample:
Control data: Data from gym's operation prior to testing the new uniforms when no promotions were active
Tested data: Data from 60 days of the gym's operation with the new uniforms
For each sample, measure data including: Avg # Visitors per day, New Sign Ups, Cancelled Memberships
Must confirm that no other promotions occurred during each sample. Must confirm no seasonality exists that can bias the samples.

Hypothesis: New uniforms helps gym's business

Outcome: "Net Change in Members per day" is greater for treated group

Other measured variables: Member activity (Avg # Visitors)

Will a new homepage improve my online exotic pet rental business?

Two Versions: Control (Existing homepage) vs Test (New Homepage)

Sample:
Control data: Data from business prior to changing homepage
Tested data: Data from 60-90 days with new homepage
For each sample, measure data including. # website visits, time spent on website, online revenue, offline revenue, total revenue
Must confirm that no other promotions occurred during the test. Must confirm no seasonality exists that can bias the samples.

Hypothesis: New homepage improves business

Outcome: "Total revenue" is greater for treated group with new homepage

Other measured variables: # website visits, time spent on website, online revenue, offline revenue

****If I put 'please read' in the email subject will more people read my emails?****

Two Versions: Control (Existing emails) vs Test (New Emails)

Sample:
  Control data: Data from emails prior to making change
  Tested data: Data from 60-90 days with change
  For each sample, measure data including. # emails delivered, # emails engaged with
  Must confirm that no other promotions occurred during the test. Must confirm no seasonality exists that can bias the samples. Must confirm the 2 samples were sent to a similiar demographic.

Hypothesis: New email subject results in more read emails

Outcome: "% Emails interacted with" is greater for treated group with new email subject

Other measured variables: Which link was clicked on. Number of calls. Business revenue. Number of unsubscribed.