

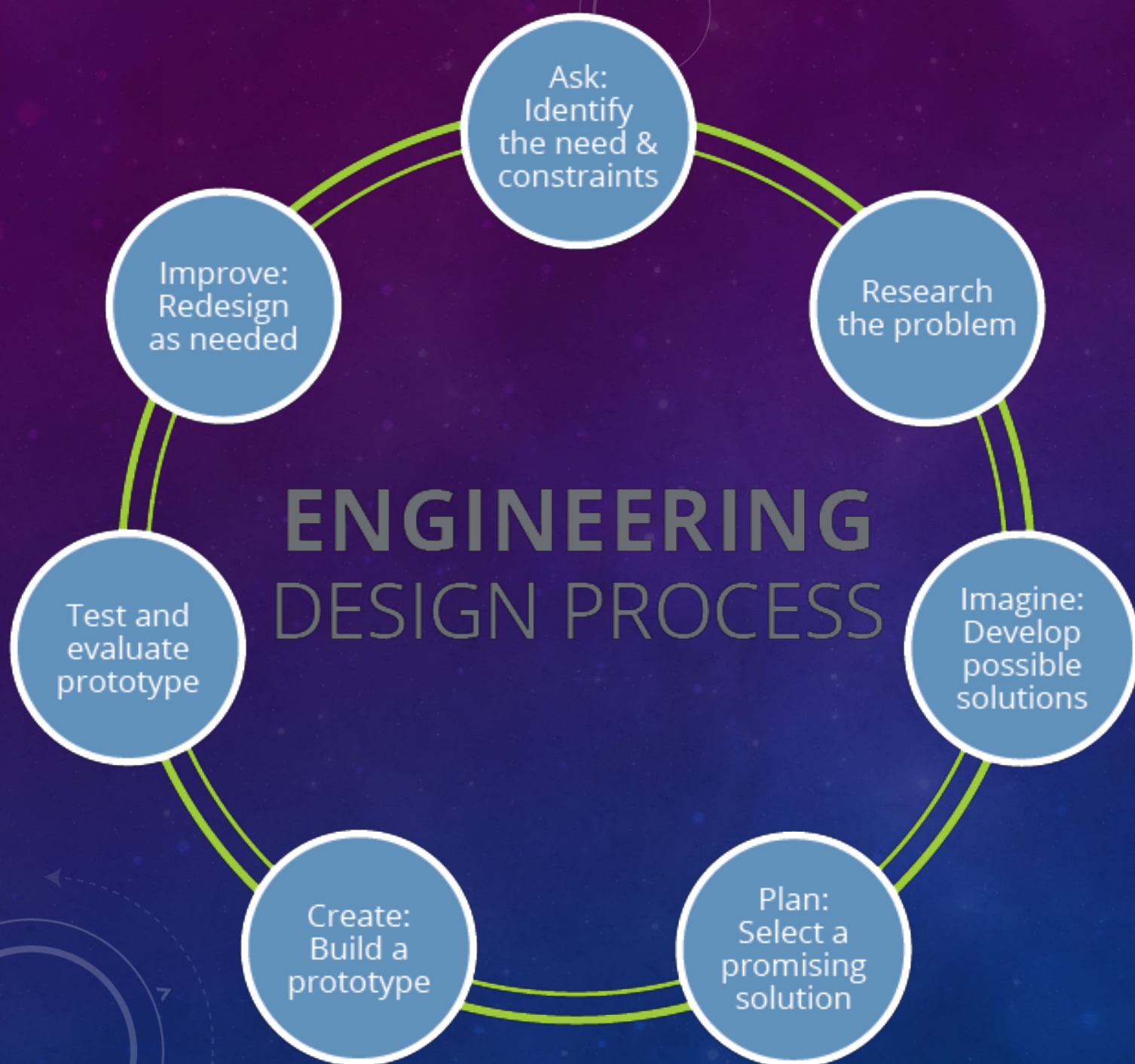
The background features a dark blue gradient with a subtle pattern of white stars and constellations. Overlaid on this are several technical diagrams in a lighter blue color. These include circular gauges with radial scales and tick marks, some with numbers like 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, and 260. There are also circular arrows indicating clockwise or counter-clockwise rotation, and dashed lines representing paths or orbits.

APOLLO 13 & THE ENGINEERING DESIGN PROCESS

YOUR TEACHER NAME

WHAT IS THE ENGINEERING DESIGN PROCESS?

ENGINEERING DESIGN PROCESS



Moon men fight for their lives 200,000 miles from earth

EXPLOSION IN APOLLO 13!

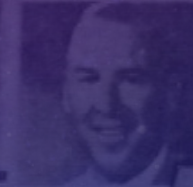
APOLLO 13: "HOUSTON, WE'VE HAD A PROBLEM"

- Intended to land on the moon
- An explosion on board caused loss of service module cryogenic oxygen and consequent loss of capability to generate electrical power, to provide oxygen and to produce water.

Near-disaster in unlucky Apollo 13 200,000

3 SPACEMEN FIGHT FOR 1

A DESPERATE battle was being fought today to save the three Apollo 13 astronauts after a near-disaster, mystery "accident," created the most dangerous space crisis yet.



A major space failure — a suspected explosion — crippled the Apollo 13 power system, leaving the crew 200,000 miles from earth. The cause of the explosion for a moon landing was uncertain, but the astronauts will have to use their own oxygen tanks to survive. The Apollo 13 crew, Fred W. Scott, William S. Pogue, and Michael Smith, are now in a desperate battle to survive.

Successful "burn"



Racing News

I am... could take... Claven

Horse sense

With... sense...

Apollo—for two
a long, agonising

FIGHT TO SAVE
THE MOON MEN

and the power fails
HOUSTON SAYS: WE CAN BRING THEM BACK ALIVE

- How important was it for the people at Mission Control and onboard Apollo 13?
- Do you think they agreed on everything they were saying?
- How do you think the Engineering Design Process played a role in how the issues aboard Apollo 13 was resolved?



EXPLORE

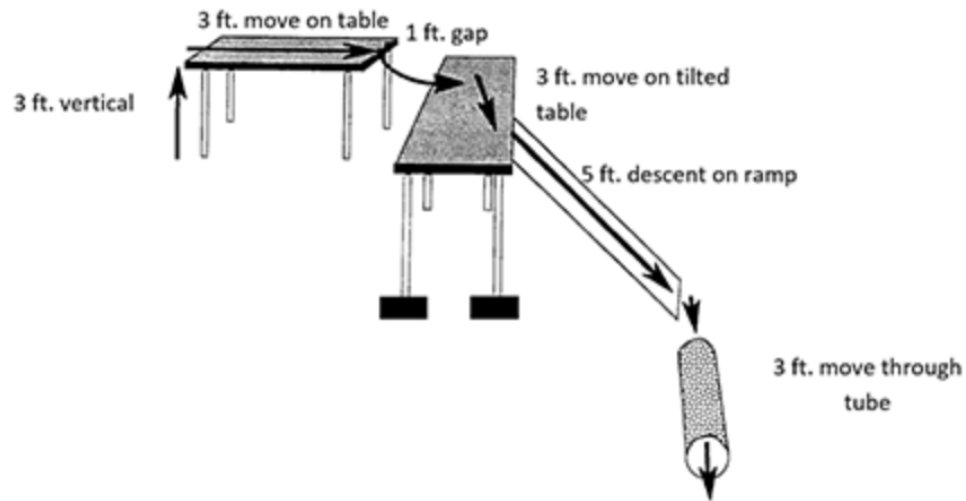


Figure 1. Example six station obstacle course setup.

- Your job as a team is to utilize the Engineering Design Process to successfully have your tennis ball complete the obstacle course
- BUT, only the tools provided can be used to help your tennis ball reach the end of your obstacle course
- IF you touch the tennis ball with your bare hands or if it falls on the floor then you will have to start over

REDESIGN

- An important part of the Engineering Design Process is the redesign
- You and your team will have 5 minutes to come up with a redesign for your obstacles course and will have a chance to test it out



EXPLAIN

- What changes were made in order to successfully complete the obstacle course?
- How many “tools” did you switch out for the redesign?
- Why did you not make any changes to your “tools”?





Old



New

ELABORATE

- Why do things have to be redesigned?
- What common design and redesign concepts can you think of?
- How important is a design and redesign concept?
- How many more redesign attempts do you think you would need to have successfully completed the obstacle course?

EVALUATION

