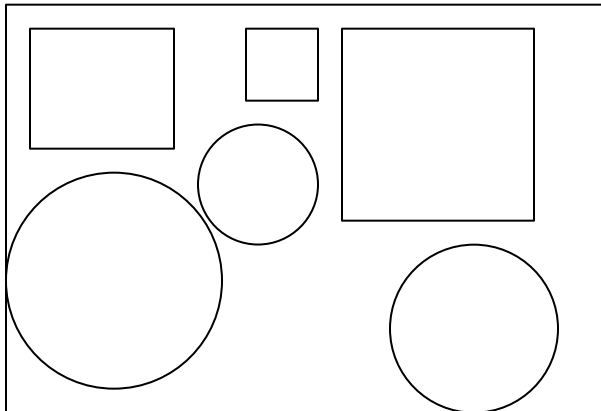


MEMO

To: Tech Algebra Teams
From: Parachutes R' Us
CC: Hryciw, Stolte
Date: Winter 2015

Parachutes R' Us is in need of developing new parachute designs. Based on the success of the Tech Algebra program, they have elected to hire Tech Algebra teams for the research and development (R&D) of the new parachute. Currently, Parachutes R' US produces parachutes made of silk. Silk is a very expensive material. Due to the price, it is important to maximize the material by demonstrating your teams understanding of lean manufacturing principles and the design process. It is important your team use what they know about the design process to maximize the material provided. Mistakes, which require the team to acquire new materials, will cost the team a **5% deduction per infraction toward the overall grade**. Below is a sample picture of a material layout.

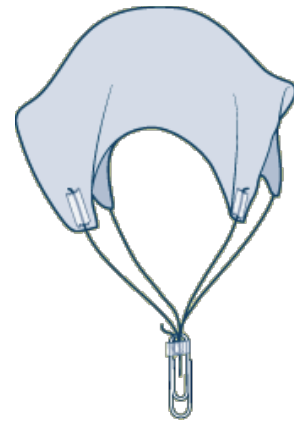


Because time is money, you will need to investigate, design, plan/create, and collect/evaluate all of your data through your design process before the end of the class period. Although time is of the essence, you must make sure you get excellent data through quality control of every step and procedure.

Paper Parachute

Your Name _____

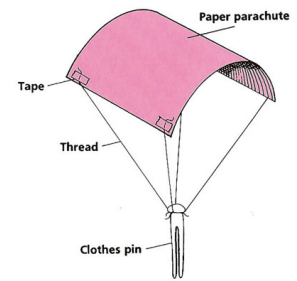
Names of your R&D Teammates _____



Goal: You will be using paper parachutes of different sizes/shapes.

Materials Needed: Paper, tape string, scissors, ruler, paperclip, and stopwatch.

- a.) Your group will make **square** parachutes and **round** parachutes.
- b.) Cut out **squares** of paper with sides of 8in., 10in., 12in., and 14in.
Cut out **round** circles of radius 3.5in., 4in., 5in., and 6in.
YOUR size of Square that you manufacture is _____.
The area of your Square parachute is _____.
YOUR size of Circle that you manufacture is _____.
The area of your Circle parachute is _____.
- c.) For each parachute, tape a piece of string to each corner of the square parachute or space 4 pieces of string equally spaced on the circular parachute. Tape the pieces of string together underneath the chute and attach the paperclip over them.
- d.) Drop each chute from a high place (the open square by Health Sciences).
Time and **Record** how long each chute takes to hit the ground.



For each size chute, repeat 3 times and average the times.

RECORD **your** manufactured parachute average times here:

Your manufactured **SQUARE** parachute:

Size: _____ **Area:** _____

Drop #1 Time	Drop #2 Time	Drop #3 Time	Average Time

RECORD **your** manufactured parachute average times here:

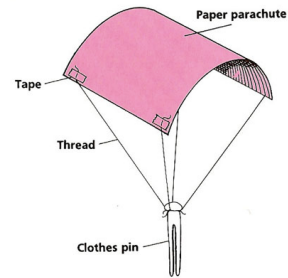
Your manufactured **CIRCLE** parachute:

Size: _____ **Area:** _____

Drop #1 Time	Drop #2 Time	Drop #3 Time	Average Time

e.) Complete the table (**square or round**) parachute sizes and times found from your data testing.

SQUARE Size (Area)	(8 in.)	(10 in.)	(12 in.)	(14 in.)	
AVERAGE Fall Time (seconds)					



CIRCLE Size (Area)	(3.5 in.)	(4 in.)	(5 in.)	(6 in.)	
AVERAGE Fall Time (seconds)					