1) Shall is a requirement.

   Will is the declaration of purpose.

   Should means goal.

2) True
   False
   True
   False

3) Msc-1: The sensor shall retrieve data from the satellite.
   MSC-2: The satellite shall store and take photos of the earth.
   MSC -3: The data shall be analyzed after the mission.
   MSC-4: The group shall draw conclusions based on the data collected.

4) lead

5) 600 degree-Fahrenheit

6) extrude

7) hole

8) assembly constraints

CONops

1. integration of your payload to the flight string
2. Send flying and collect data
   2.1. Recover box if it falls before max height
   2.2. Not good
   2.3. Doesn't collect data
3. Balloon reaches max height and descends until it touches the ground
   3.1. Unable to retrieve boxes
4. Process and deliver data to professors
   4.1. Not processed in time

10) The weather could cause the box to freefall, so the string could be checked to see if its secure.

Electrical components break in the air. The heater could be checked to see if its functioning properly

The box cannot withstand the forces at a certain altitude. The box's material could be swapped for a sturdier one.

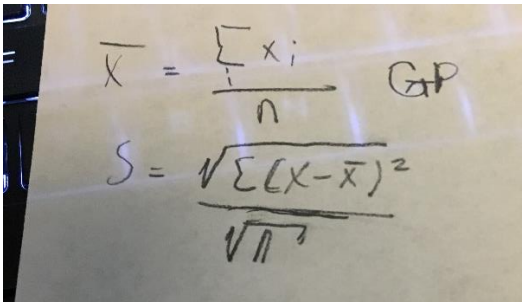
11)

```
syms x y z
B = [2 5 -3; 0 5 -3; .5 12 0]
a = [x;y;z]
```

12)

```
%q12
x = [4:.1:8];
data = load('values.mat')
value = getfield(data,'y',{[1:200]})
mn = mean(value)
dev = std(value)
norm1 = normpdf(x,mn,dev)
```

```
figure
hold on
histogram(value,20)
plot(x,norm1)
xlabel('x value'), ylabel('y value'), title('normal distribution')
hold off
```

eqns for mean and std: 

13)

```
x = (-0.1:-0.1:-1.0)';
y = [ -1.96; -0.37; 3.16; 7.23; 5.53; 11.71; 3.37; 5.64; 6.50; 9.21];

figure
scatter(x,y)
hold on

for k = 1:5
   for n=1:length(x)
      V(n,1) = 1;
      V(n,k+1) = (x(n))^k;
```

```
    end
    a = (inv(V'*V))*(V')*y;
    if k<5
        a(k+2:6)=0;
    end

    p = 0;
    for j = 0:5
        p = p + a(j+1)*x.^(j);
    end

    plot(x,p)
end

xlim ([-1, -.1]);
ylim ([-1, 12]);
title('polynomial fit');
xlabel('x');
legend ('x-y values','1st','2nd','3rd','4th','5th','Location', 'NorthEast');
```