Confidence Intervals - Practice

Complete the following tasks, discuss in groups.

## Task 1 Heights

Suppose 𝛍 is the average height of a male university student. You measure the heights (in cm) of twenty men, getting data with sample mean .

Suppose that the are drawn from a normal distribution with unknown mean 𝛍 and standard deviation 9 cm.

(a) Construct a 90% z–confidence interval for 𝛍.

|  |
| --- |

(b) How many people in total would you need to measure to bring the width of

the 90% z–confidence interval down to 1 cm?

|  |
| --- |

## Task 2 Soda

Consider a machine that is known to fill soda cans with amounts that follow a normal

distribution with (unknown) mean 𝛍 and unknown standard deviation 𝝈.

We measure the volume of soda in a sample of bottles and obtain the following data (in mL):

*352, 351, 361, 353, 352, 358, 360, 358, 359*

Construct a 95% confidence interval for the mean 𝛍.

|  |
| --- |

## Task 3

In a study on cholesterol levels a sample of 12 men and women was chosen. The plasma cholesterol levels (mmol/L) of the subjects were as follows:

*6.0, 6.4, 7.0, 5.8, 6.0, 5.8, 5.9, 6.7, 6.1, 6.5, 6.3, 5.8*

(a) Estimate the **mean and variance** of the plasma cholesterol levels with a 95% confidence interval.

|  |
| --- |

(b) What assumptions did you make about the sample in order to make your estimate?

|  |
| --- |

## 