Estimating a Population by Sampling

Name

What's a population? A population is all the members of one species living in a particular area.

Investigation Question: What is the population of Dandelions in GMMS's West Field?

Procedure:

1. Work with your table-team of 2-3 students and study this procedure.
2. Decide on roles: recorder and counter(s). Recorders write down the number of Dandelions that counters count.
3. Take your supplies (4 flags and 1 meter stick) and go outside to the West Field.
4. Mark off a 2-meter by 2-meter square or survey plot. Choose your plot randomly.
5. Count all the Dandelion plants (not flowers) found in your survey plot. Write down the number in the table.
6. Move your plot to a new location. Count all the Dandelions in your second plot.
7. Move your plot to a new location. Count all the Dandelions in your third plot.
8. Return inside to complete your estimation of sample size.

Data:

Survey Plot area in meters squared	
Length of GMMS West Field in meters	165 m
Width of GMMS West Field in meters	90 m
Area of GMMS West Field in meters squared	
Dandelion count in Survey Plot 1	65 dandelions
Dandelion count in Survey Plot 2	32 dandelions
Dandelion count in Survey Plot 3	40 dandelions
Average count of your 3 Plots	
Calculate the population density for your plots (dandelions per m^2)	

1. Calculate your estimate of the dandelions growing in the West Field (show your work):

2. If a dandelion takes one minute to dig up, how long would it take you to dig up all the dandelions in the field? (Give your answer in hours and minutes. Show your work):

Population Notes

Section 2, Pages 23-28

* Population density is the number of individuals in a specific area.
  - → Population density = $\frac{\#\text{ of individuals}}{\text{unit area}}$
  - → Example: $\frac{50 \text{ flowers}}{10 \text{ m}^2} = 5 \text{ flowers/m}^2$

* Population Size can be
  - → Observed (counted)
  - → Sampled (estimated based on a count)
    example: $5 \text{ flowers/m}^2 \times 100 \text{m}^2 = 500 \text{ flowers}$
  - → Mark and Recapture
    example: Counting Turtles (page 29)

* How does population size change?
  - → Births (increase)
  - → Deaths (decrease)
  - → Immigration (increase) "moving in"
  - → Emigration (decrease) "moving out/away"

* Limiting Factors are environmental factors that prevent a population from growing. Examples: Lack of food, lack of space, competition, and weather