1. Read the following situation, and use it to help you answer the questions below.

A dairy farmer is planning the size of his herd of cattle. Each cow requires about 145.2 square feet of grazing area, and his grazing pasture is a rectangle that is 3200 feet long and 2100 feet wide. How many cows can his farm support?

a) In the space below, write the goal of this question/task.

b) List the information which seems most useful for completing the task. If you write down any numbers, make sure you include some words with each number to communicate what it means.

   - Grazing Area: 145.2 sq. ft per cow
   - Pasture is a rectangle
   - Length: 3200 ft
   - Width: 2100 ft

   - 0.5
   - missing item.

   - How many cows can the farm support?

   - How many cows

   - "How many cows"

   - for

   - For

   - Grazing Area: 145.2 sq. ft per cow

   - Pasture is a rectangle

   - Length: 3200 ft

   - Width: 2100 ft

   - - 0.5

   - missing item.

   - Do ONE of the following.

   i) Write two or three sentences describing how you might use some of the given information as part of completing the task, or how parts of the given information are related.

   Area is measured in square feet.

   Area of a rectangle is L.W.

   Need area of pasture.

   Could estimate # of cows and mult. by 145.2 to get near total area. Could also do Area / Area per cow

   ii) Do relevant calculations or create relevant expressions/equations AND explain what they mean or why they are helpful steps in solving the problem.

   Find total area:

   \[ A = LW = (3200)(2100) = 6,720,000 \text{ sq. ft for farm's pasture} \]

   \[ \frac{\text{Area}}{\text{Area per cow}} = \frac{6,720,000}{145.2} \approx 46,281 \text{ cows} \]
Read the following situation, and use it to help you answer the questions below.

Imagine that you are investigating a car accident. The police report says a girl was out with friends and drank some wine. While she was driving home, her car went off the road and into some bushes, causing the girl to hit her head and pass out. When she and her car were found by an officer at 5 AM, her blood alcohol content (BAC) was 0.01. There is reason to believe the accident occurred at 1 AM. If the BAC drops an average of 0.015 every hour, does this evidence prove she was driving drunk at the time of the accident? (“Driving drunk” means she had a BAC of 0.08 or more at the time of the accident.)

a) In the space below, write the goal of this question/task.

Does the evidence prove she was driving drunk at the time of the accident?

b) List the information which seems most useful for completing the task. If you write down any numbers, make sure you include some words with each number to communicate what it means.

- Found at 5AM, had 0.01 BAC
- Crash at 1AM
- BAC drops 0.015 per hour
- “Drunk” means 0.08 BAC

- The amount of time passed was 4 hours (5-1).
  BAC fell, so going backwards it rose from 0.01.
  Could assume she was at 0.08 and subtract four times to see what BAC should be at 5AM.

- 1 AM → 5 AM = 4 hrs passed
  Going backwards:
  \[ 0.01 + 0.015 + 0.015 + 0.015 + 0.015 = 0.08 \]
  or
  \[ 0.01 + 0.015(4) = 0.01 + 0.06 = 0.07 \text{ (safe)} \]
  Going forward:
  \[ 0.08 - 0.015(4) = 0.08 - 0.06 = 0.02 \text{ (she’s below)} \]

c) Do ONE of the following.

i) Write two or three sentences describing how you might use some of the given information as part of completing the task, or how parts of the given information are related.

ii) Do relevant calculations or create relevant expressions/equations AND explain what they mean or why they are helpful steps in solving the problem.