Grid-in question

- Start your answer in any column, space permitting. Unused columns should be left blank.

- Write your answer in the boxes at the top of the grid and fill in the corresponding circles. Mark only one circle in any column. You will receive credit only if the circles are filled in completely.

- Provide your answer in the format specified by the question. The requested answer may be an integer, a decimal, or a fraction, and it may have a negative value.

- To enter a fraction, use one of the division slashes to separate the numerator from the denominator, as shown in the example below. Fractions only need to be reduced enough to fit in the grid.

- Do not enter a mixed number, as this will be scored as a fraction. For example, 2 1/2 (two and one-half) will be scored as 21/2 (twenty-one halves).

Integer answer: 5024
(either position is correct)

Decimal answer:
−4.13

Fraction answer: −2/10
(does not have
to be reduced)

124. Phenylketonuria (PKU) is an inherited disease caused by an autosomal recessive allele.

If two individuals who are carriers of PKU have two children, what is the probability that neither child will have PKU? Give your answer as a fraction or decimal.
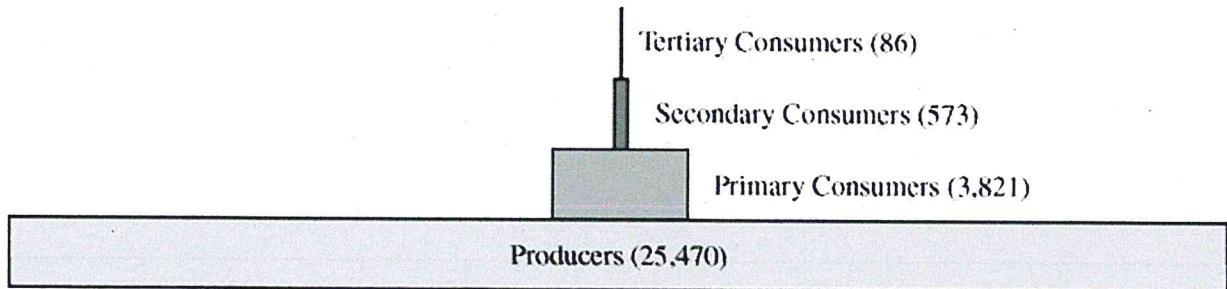
Write your answer on the space below

$\frac{4}{1}$ 4

9/16 or .5625 → .563

125. A zucchini squash was peeled and cut into six identical cubes. After being weighed, each cube was soaked in a different sucrose solution for 24 hours in an open container and at a constant temperature of 21°C. The cubes were then removed from the sucrose solutions, carefully blotted on paper towels, and weighed again. The percent change in mass (due to a net gain or loss of water) was calculated for each cube, and the results are shown in the graph below. A straight line is drawn on the graph to help in estimating results from other sucrose concentrations not tested.
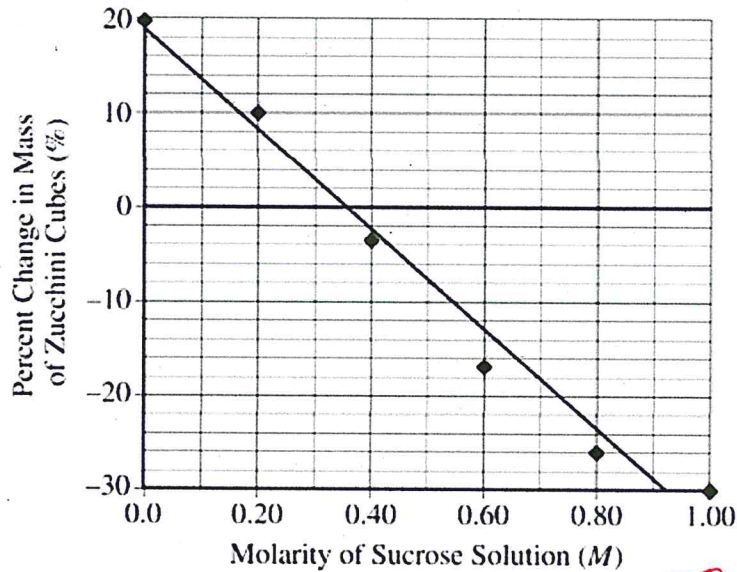
−8.8 − −8.3

Using the straight line on the graph above, calculate the water potential (in bars) of the zucchini squash at 21°C. Give your answer to one decimal place.

Tertiary Consumers (86)

Secondary Consumers (573)

Primary Consumers (3,821)

Producers (25,470)

125. A student proposes a model of an energy pyramid for an isolated ecosystem, as shown above. The amount of energy available at each trophic level is given in kcal/m²/year. According to the proposed model, what percent of the available energy is transferred from one trophic level to the next? Round your answer to the nearest whole percent, and disregard the percent sign when gridding your answer.

14−15 %

122. A cell has a surface area of 32 μm^2 and a volume of 8 μm^3. A different cell has a surface area of 36 μm^2 and a volume of 12 μm^3. What is the ratio of surface area to volume for the cell that is predicted to exchange materials with the surrounding environment at a faster rate by diffusion? Enter your answer as a fraction or a whole number.

$$\frac{4}{1}, 4$$

124. Male chickens carry two Z sex chromosomes, while female chickens carry one Z sex chromosome and one W sex chromosome. Located on the Z chromosome is a gene for barring. Barred feathers have black and white stripes. The barred trait is dominant to the unbarred trait.

Chickens have a fleshy growth on top of the head called a comb. An autosomal trait called rose comb is dominant to a trait called single comb.

An unbarred male heterozygous for the rose-comb trait is crossed with a barred female with a single comb. What proportion of the resulting progeny are expected to be barred males with single combs? Give your answer as a fraction or as a decimal to the nearest hundredth.

$$\frac{1}{4} \text{ or } .25$$