Introduction to ISOLINES

PENCIL ONLY!!!!

On the field map below connect the points of EQUAL value with a smooth, curved line. You cannot intersect other lines you have drawn. For example, the line connecting the 400s cannot cross over (intersect) with the line connecting the 300s. If a number is missing you may write it in as long as it would be in that location. For example: When connecting the 450s, I would write in 450 between 400 and 500 on the map. This works because 450 is in between 400 and 500 if we were counting. Connect the numbers at a 50 foot interval: 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750. Lines may NOT intersect!

Calculate the gradient from point A to point B.

\[
\text{gradient} = \frac{\text{change in field value}}{\text{distance}} = \frac{A-B}{\text{distance}} = \frac{650\text{ft} - 300\text{ft}}{10\text{km}} = \frac{350\text{ft}}{10\text{km}} = 3.5\text{ft/km}
\]

Calculate the gradient from point A to point C.

\[
\text{gradient} = \frac{A-C}{\text{distance}} = \frac{650\text{ft} - 600\text{ft}}{8\text{km}} = \frac{50\text{ft}}{8\text{km}} = 6.25\text{ft/km}
\]
Base your answers to questions 6 and 7 on the temperature field map below. The map shows temperature readings (°C) recorded by students in a science classroom. The readings were taken at the same time at floor level. Temperature readings for points A and B are labeled on the map.

6 On the temperature field map, use solid lines to draw the 18°C, 20°C, and 22°C isotherms. Isotherms must extend to the boundary of the map. Label each isotherm to indicate its temperature.

7 Determine the temperature gradient from point A to point B by following the directions below.

a Write the equation used to determine the gradient.
b Substitute values from the field map into the equation.
c Solve the equation and label the answer with the proper units.

Gradient: \[
\frac{\text{change in field value}}{\text{distance}}
\]\n
\[
= \frac{22^\circ\text{C} - 19^\circ\text{C}}{6\text{m}} = \frac{3^\circ\text{C}}{6\text{m}} = \frac{0.5^\circ\text{C}}{\text{m}}
\]