

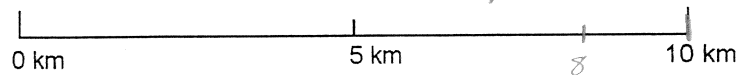
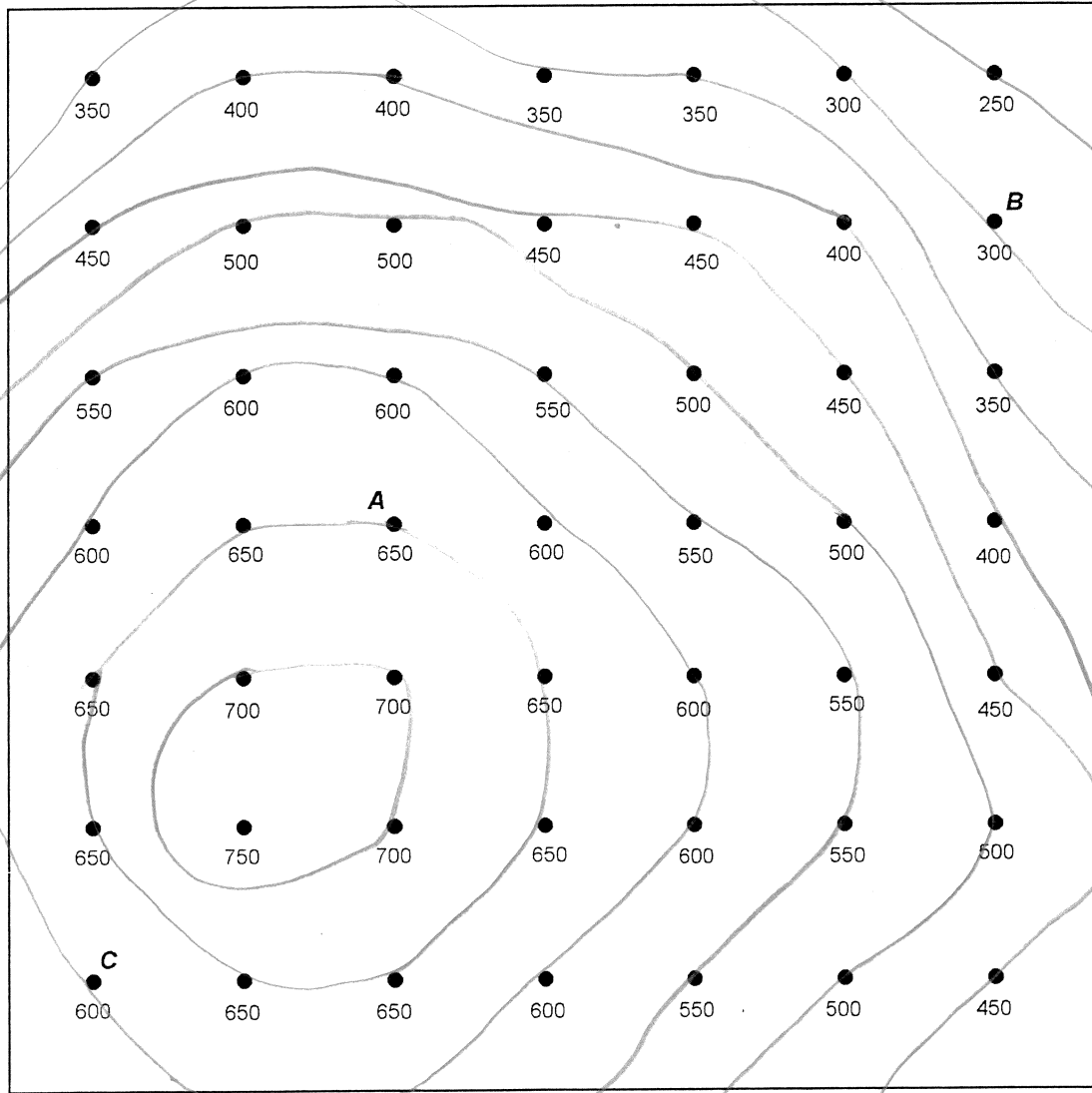
Name Key

# 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.

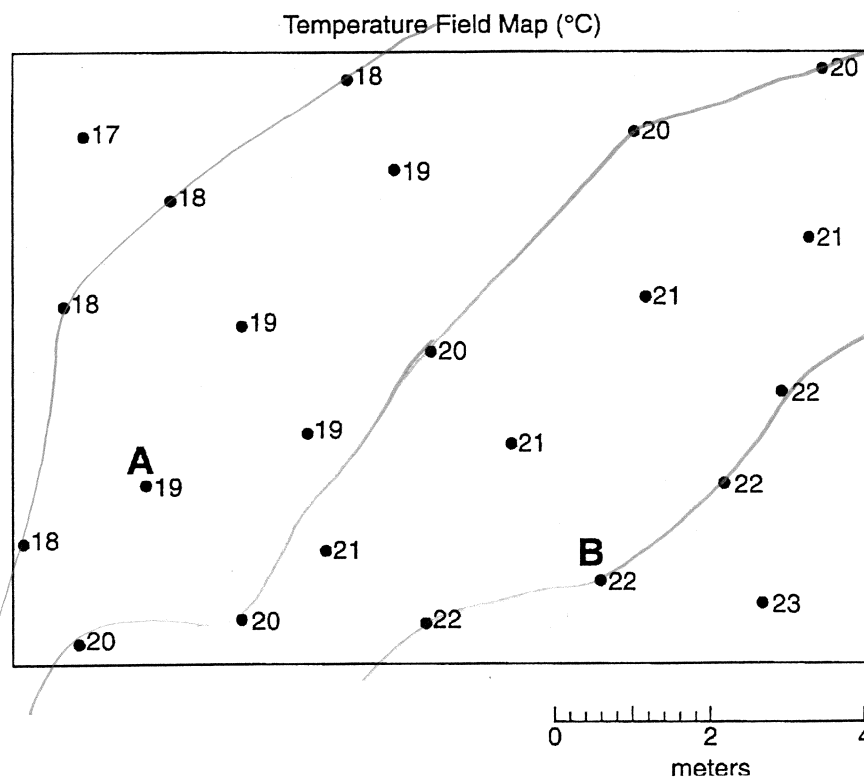
$$\frac{\text{change in field value}}{\text{distance}} = \frac{A-B}{\text{distance}} = \frac{650 \text{ feet} - 300 \text{ feet}}{10 \text{ km}} = \frac{350 \text{ ft}}{10 \text{ km}} = \boxed{35 \text{ ft/km}}$$

Calculate the gradient from point A to point C.

$$\frac{A-C}{\text{distance}} = \frac{650 \text{ ft} - 600 \text{ ft}}{8 \text{ km}} = \frac{50 \text{ ft}}{8 \text{ km}} = \boxed{6.25 \text{ ft/km}}$$

Key

Base your answers to questions **6** and **7** on the temperature field map below. The map shows temperature readings ( $^{\circ}\text{C}$ ) 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  $18^{\circ}\text{C}$ ,  $20^{\circ}\text{C}$ , and  $22^{\circ}\text{C}$  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.

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

$$\text{Gradient} = \frac{\text{change in field value}}{\text{distance}}$$

$$= \frac{22^{\circ} - 19^{\circ}}{6\text{m}} = \frac{3^{\circ}}{6\text{m}} = \boxed{0.5^{\circ}/\text{m}}$$