

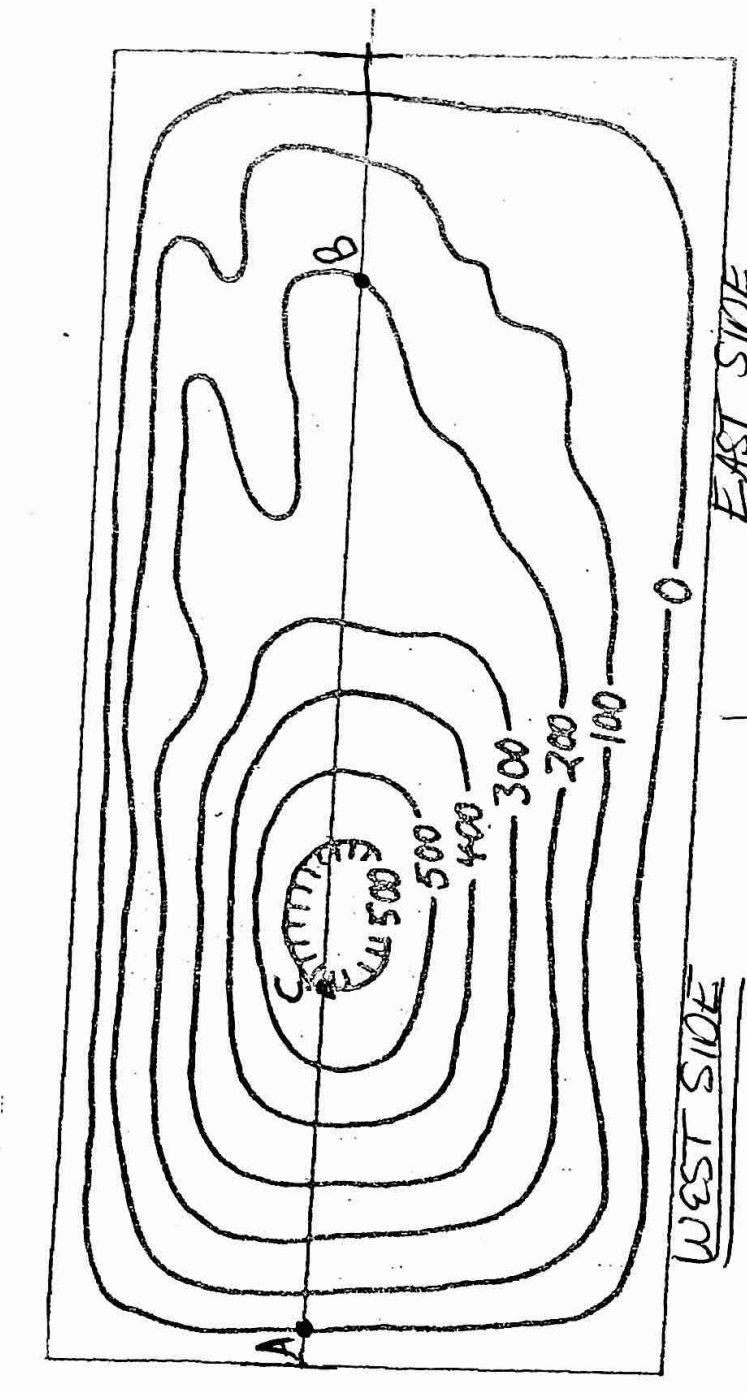
## Gradient Problem Solving

*Directions: Use your formula for gradient and complete the following problems.*  
**SHOW ALL WORK!!**

1. You are climbing a mountain that starts at sea level and reaches an elevation of 5000m. The distance traveled up the side of the mountain is 2km. What is the gradient of the mountain?
  
2. A plane takes off from an elevation of 0m and reaches a final elevation of 3000m. It takes the plane 100km to reach its final altitude. What is the gradient of the plane's flight?
  
3. You're driving a car that can climb a maximum gradient of 500m/km. The hill in front of you starts at an elevation of 20m and reaches 500m. The total distance up the hill is 0.5km? What is the gradient of the hill and will your car make it?
  
4. You're driving a car that can climb a maximum gradient of 500m/km. The hill in front of you starts at an elevation of 20m and reaches 100m. The total distance up the hill is 1.5km? What is the gradient of the hill and will your car make it?
  
5. Fausto is riding his bike and comes to the bottom of a hill. He has two roads to choose from to get to the top, so he pulls out his topographic map to determine which road will be easier to ride up. The hill has an elevation of 500m. **Road A** is 5km long, while **Road B** is 50km long. Calculate the gradient of BOTH roads and determine which road will be easier to ride up.
  
6. Ashley is flying a plane that has to reach a gradient of 360m/km in order to take off and not crash. Her goal is to travel from sea level to an elevation of 1000m in a distance of 2.8km. Calculate the gradient of Ashley's flight and determine if she will crash!
  
7. Johnny is riding his favorite red tricycle and is getting ready to go down a hill. His mommy warned him that his tricycle will fall apart if he goes down a hill with a slope greater than 100ft/mi. Johnny ignores his mommy and takes on the hill, which goes from 300ft all the way down to 35ft. The distance he travels is 0.2 miles. Calculate the gradient of the hill and determine if Johnny's tricycle will fall apart.
  
8. You are climbing a mountain that starts at sea level and reaches an elevation of 50000m. The distance traveled up the side of the mountain is 22km. What is the gradient of the mountain?
  
9. A plane starts its decent from 3560m and lands at an elevation of 320m. It takes the plane 4.3km to reach the ground. What is the gradient of the plane's landing?
  
10. A plane starts its decent from 4567m and lands at an elevation of 654m. It takes the plane 7.2km to reach the ground. What is the gradient of the plane's landing?

\* You are planning a camping trip with friends. After calculating the gradient of both the West and East sides of the mountain, decide where you would pitch your tent. Include 2 reasons for your decision.

- (3) I would choose the West side of the mountain because...
- (4)
- (5)



① Gradient of line AC

② Gradient of line CB

