GEOLOGY 12
STREAMS WORKSHEET

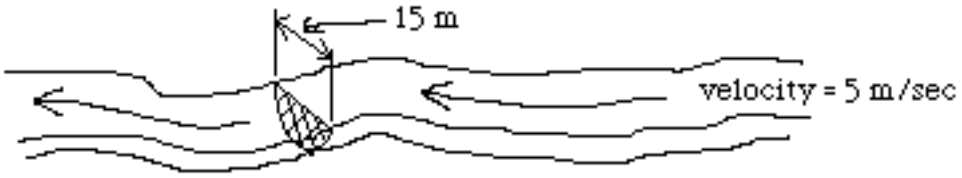
Refer to pp 54-55, 247-259 of the text as well as your notes to answer the following questions.

1. a) Explain the difference between an ocean current and a stream..
   b) What is a tributary stream?

2. In the Rocky Mountains, the continental divide is used as a boundary marker for B.C. and Alberta. With reference to *direction* of stream flow, explain the significance of this boundary.

3. a) Large streams such as the Fraser River in Vancouver appear to flow much more slowly than smaller streams like the Puntledge River. Even so, the Fraser is a far more treacherous stream to attempt to swim in. Besides pollution, explain why.
   b) The Nile is the longest river in the world, but the Amazon is considered to be the largest. Explain why.

4. Calculate the discharge of the following stream (assume a ½-circle x-section 15 meters across):

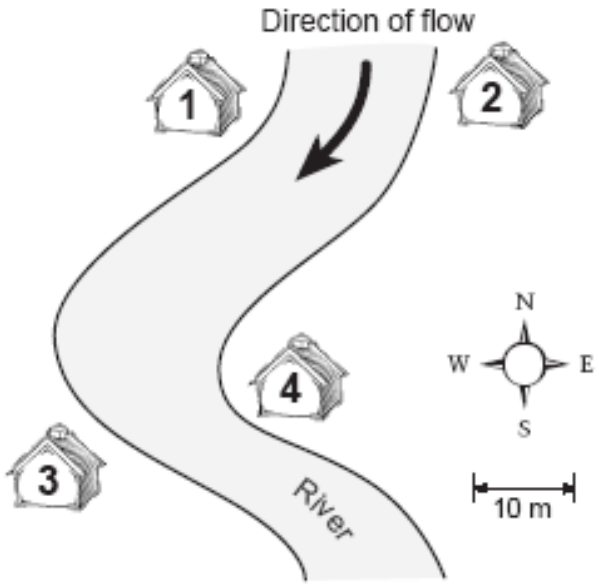


Area of a circle $= \pi r^2$

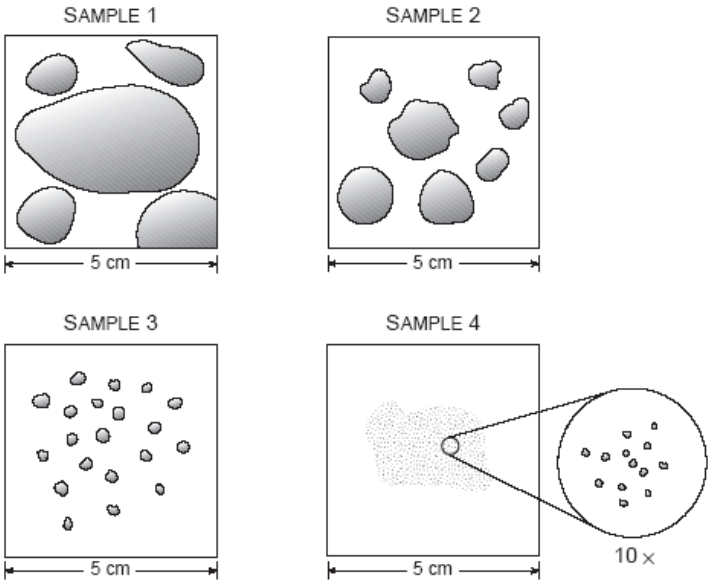
5. In terms of downcutting, explain how the following are formed:
   a) V-shaped valleys b) incised meanders c) terraces

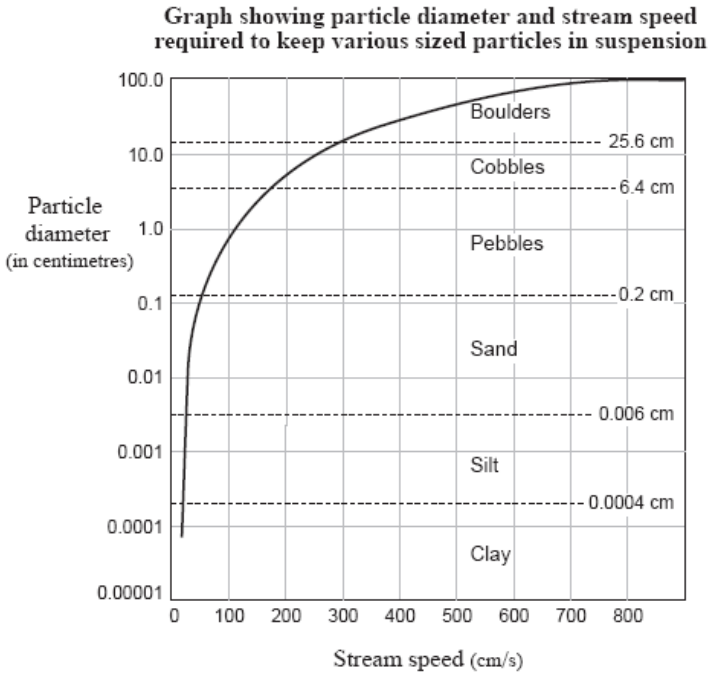
6. Describe the sedimentary load (bed, suspended, dissolved) of a stream:
   a) in early spring, during run-off;
   b) in late August, during the dry season.

7. Examine the diagram to the right. The houses shown are built on the river's floodplain.
   a) Explain the potential hazards of building homes in this area.
   b) Which of the four houses shown is in the *worst* location? Explain why.
   c) Sketch the likely location of a point bar.
   d) Identify locations on the river where you would expect to find:
      → boulders and stones
      → sand and small pebbles
      → mud and silt
   e) Assuming that the materials from question d) lithify, at which location would shale form? Conglomerate?



8. Use the sketches of stream sediments and the graph to answer the following questions.





a) What is the **largest** particle that could be moved in suspension by a stream flowing at 150 cm/s?
b) Which sample of sediment was most likely taken from the stream bottom where the stream velocity was less than 20 cm/s?
c) Compared to the roundness and sorting of the stream sediment samples shown, how would you describe a sample taken from glacial till?

9. Explain why the sediments in a suspended load will be more well-rounded if saltation occurs.

10. Have oxbow lakes *always* been lakes? Explain.

11. In terms of headward erosion, explain why Niagara Falls has a classic horseshoe shape. Hint: think of where the erosion occurs fastest.

12. Explain why braided streams are commonly associated with alluvial fans and deltas.

13. Describe potential problems associated with:
a) building artificial levees along a river bank;
b) dredging artificial channels to straighten a river.