Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

WATER POTENTIAL PROBLEMS #2

 Solution A has an osmotic potential of -5 bar,

 Solution B has an osmotic potential of -8 bars

Flask B

Flask A

1. Which solution has the greater molarity? EXPLAIN YOUR ANSWER

2. Which one is hypertonic to the other?

3. Which one has greater water potential?

4. What is the SOLUTE potential (Ψs) for a 0.5M solution of SODIUM CHLORIDE that is in an open beaker? (assume i = 2 and a temperature of 10°C) SHOW YOUR WORK!

5. What is the WATER potential (Ψ) for a GLUCOSE solution that is 0.1M in an open beaker at 22°C?
SHOW YOUR WORK!

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Three funnels containing three different starch solutions were placed for 24 hours into a beaker that contained a starch solution of UNKNOWN concentration. The end of each funnel was covered by a selectively permeable membrane.

6. What is the concentration of the unknown solution in the beaker?
EXPLAIN the results shown in the diagram above.

You are on a ship at sea that sinks and a few survivors (including you) escape by climbing into a life raft. You begin to get thirsty while waiting for rescue and someone suggests drinking sea water. Use what you learned in AP Bio class to determine if this is a good idea.

7. NaCl is the main dissolved ions in seawater at roughly a 0.5 M concentration.
Calculate the SOLUTE potential for seawater if you know the water temperature is -5° C.
SHOW YOUR WORK

8. Human body cells have a 0.15M NaCl concentration. Calculate the SOLUTE potential for body cells knowing body temperature is 37° C. SHOW YOUR WORK

9. Is drinking seawater a good idea? Why or why not? Include a discussion of WATER POTENTIAL in your answer.