WS 7.6.1 Dilutions **Show Work!**

1. Determine the concentrations for each of the following mixtures: (hint- you won't need a calculator!)

a) equal volumes of 3.0 M KCl & water: _____

b) equal volumes of 3.0 M KCl & 7.0 MKCl: _____

e) one vol. water & two vol's of 6.0 M KCl: _____

f) one vol. of 5.0 M KCl & 4 vol's of water: _____

g) one vol. of 2.5 M KCl & 9 vol's water: _____

h) one vol. of 2.5 M KCl & 99 vol's water: _____

2. Use the dilution equation to find the concentrations of the following mixtures...

a) 45 L of 3.6 M KCl & 71 L of water:

Ans: _____

b) 215 mL of 2.8 M KCl & 47 mL water:

Ans: _____

c) 83 mL of 2.0 M KCl & 25 mL of water:

Ans: _____

d) 38 mL of 6.0 M KCl dil. to a tot vol of 100 mL:

Ans: _____

3. To what total volume must 26.0 mL of 4.80 M KCl be diluted to reduce its concentration to 2.10 M?

Ans: _____

Ans (IRO+2): 0.025 0.25 1.0 1.4 1.5 1.5 2.3 2.3 3.0 4.0 4.5 5.0 59.4
Units (IRO): M M M M M M M M M M mL

WS 7.6.2 Dilutions **Show Work!**

(Warning: one of the questions below is impossible… When you find it, explain why it's impossible!)

4. What volume of water must be added to 35 mL of 2.6 M KCl to reduce its concentration to 1.2 M?

Ans: _____

5. What vol. of 2.5 M KCl must be added to 37 mL of 6.0 M KCl to make the total concentration 1.5 M?

Ans: _____

6. What volume of 2.5 M KCl must be added to 37 mL of water to make the total concentration 1.8 M?

Ans: _____

7. You mix 32 mL of 4.5 M KCl, 56 mL of 6.2 M KCl and some water, and the total concentration comes out to be 1.7 M. How much water must have been added?

Ans: _____

8. You have a 500.0 mL volumetric flask & need to make some 1.500 M $NaNO_3$ solution. How much 2.000 M solution is needed?

9. To make orange juice from frozen concentrate, one usually mixes the can of concentrate with three cans of water. This dilutes the concentrate to _____ (what fraction?) its original concentration.

Bonus! You need to make up some 5.0 M KCl solution but all you have is 125 mL of 3.0 M KCl.
Explain what could you do to make up the 5.0 M solution? How much 5.0 M KCl will you get? Show calculations:

Ans (IRO+1): 1/4 41 95 201 375 Units(IRO+1) mL mL mL mL mL mL mL mL gooseberries