CHEM 105 Quiz 7

Name ___________________________________

Use the following chemical equilibrium to answer all questions.

$$6\ C\ (s) + 3\ H_2\ (g) \rightleftharpoons C_6H_6\ (g)$$

1. Write out the Kc expression. $K_C = \frac{[C_6H_6]}{[H_2]^3}$

2. As we've discussed in class, Kp can be calculated form Kc according to $K_p = K_c(RT)^{\Delta n_{gas}}$. What is Δn_{gas} for this reaction? 1-3 = -2 (products – reactants)

3. Predict the way in which the equilibrium will shift in response to each of the following changes (products formed, reactants formed, or no change)

Adding C (s) to the flask

Solids don't influence the equilibrium – no change

Adding C_6H_6 to the flask.

Adding product – so need to make reactants

4. Kc for this reaction is 12.82 M^{-2}. If 12 grams of carbon is combined with 0.25 M H_2 (g) and 3 M C_6H_6 (g):
   a. Which way would the reaction shift? $Q = \frac{3}{0.25^3} = 192$ Q > K, so need to make more reactants.
   b. Set up an ICE table. You do not need to do any algebra, but make sure you set up the table correctly.

	C (s)	**3 H_2**	**C_6H_6**
I	Solid – doesn't matter	0.25 M	3 M
C		+3x (shifts to make reactants!)	-x
E		0.25 + 3x	3 - x