

## Chemistry 12 Worksheet on Acids / Bases

Use a separate sheet of paper to calculate and write your answers.

1. Complete the following table.

[H <sub>3</sub> O <sup>+</sup> ]	[OH <sup>-</sup> ]	pH	pOH
3.75 × 10 <sup>-3</sup> M	_____	_____	_____
2.55 × 10 <sup>-9</sup> M	_____	_____	_____
6.2 × 10 <sup>-6</sup> M	_____	_____	_____
_____	8.80 × 10 <sup>-2</sup> M	_____	_____
_____	2.375 × 10 <sup>-10</sup> M	_____	_____
_____	1.5 × 10 <sup>-13</sup> M	_____	_____
_____	_____	3.55	_____
_____	_____	10.7	_____
_____	_____	5.24	_____
_____	_____	_____	10.55
_____	_____	_____	1.86
_____	_____	_____	6.50

2. Write the  $K_a$  expression for the dissociation of;

(A) carbonic acid  
(C) formic acid

(B) benzoic acid  
(D) ammonium ion

3. Write the  $K_b$  expression and calculate the value of  $K_b$  for;

(A) hydrogen carbonate ion (HCO<sub>3</sub><sup>-</sup>)

(B) ammonia

(C) carbonate ion (CO<sub>3</sub><sup>2-</sup>)

(D) hydrogen sulfite ion (HSO<sub>3</sub><sup>-</sup>)

4. What is the pH of the following acids?

(A) 0.0035 M HCl

(B) 0.045 M acetic acid

(C) 1.25 M benzoic acid

(D) 0.75 M nitrous acid

5. What is the pH of the following?

(A) 0.75 M ammonia

(B) 0.50 M sodium nitrite (NaNO<sub>2</sub>)

(C) 1.00 M potassium carbonate (K<sub>2</sub>CO<sub>3</sub>)

(D) 2.00 M sodium cyanide (NaCN)