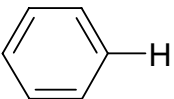
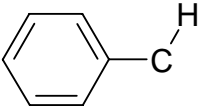


### NMR Chemical Shift Chart (approximate.)

See page 514 of your textbook (Table 15.1)

☺ **Chemical Shift:**

|   | <b>chemical shift</b> | <b>deshielding effect</b> |
|---|-----------------------|---------------------------|
| standard  | ~1                    | none                      |
| $\begin{array}{c} \text{H} \quad \text{O} \\   \quad    \\ \text{C}-\text{C} \end{array}$ | 2                     | +1                        |
| $\begin{array}{c} \text{H} \\   \\ \text{C}-\text{O} \end{array}$                         | 4                     | +3                        |
| $\begin{array}{c} \text{H} \\   \\ \text{C}-\text{X} \\ \text{(halogen)} \end{array}$     | <i>Varies</i><br>~3   | ~2                        |
| $\begin{array}{c} \text{H} \\   \\ \text{C}=\text{C} \end{array}$                         | 5                     | +4                        |
| $\begin{array}{c} \text{H} \quad \text{C} \\   \quad    \\ \text{C}-\text{C} \end{array}$ | 2                     | +1                        |
| $\begin{array}{c} \text{O} \\    \\ \text{H}-\text{C} \end{array}$                        | 10                    | +9                        |
| $\begin{array}{c} \text{O} \\    \\ \text{HO}-\text{C} \end{array}$                       | 12                    | +11                       |
| HO-C  | <i>Varies</i><br>1-5  | <i>varies</i>             |
|        | 7                     | +6                        |
|        | 2                     | +1                        |