

Ions That Form <i>Soluble</i> Compounds	Exceptions
Li^+ , Na^+ , K^+ , NH_4^+	
NO_3^- , ClO_4^-	
Cl^- , Br^- , I^-	

Table H
Vapor Pressure of Four Liquids

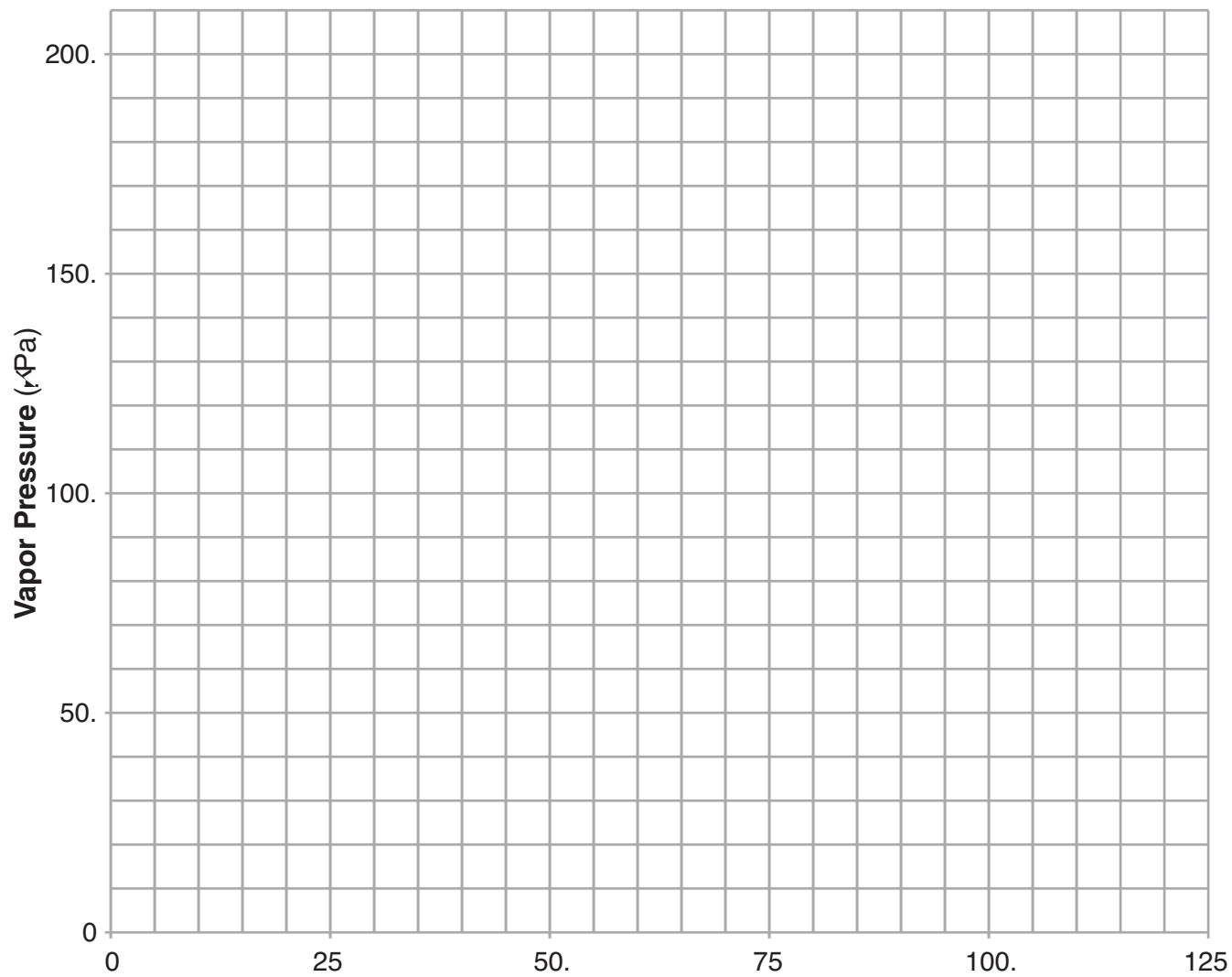


Table I
Heats of Reaction at 101.3 kPa and 298 K

Reaction	ΔH (kJ)*
<div style="text-align: center; margin-top: 20px;">  </div>	

Table J
Activity Series**

Table K
Common Acids

Table N

Table L
Common Bases

Table O

Name	General Formula	Examples	
		Name	Structural Formula
/ / /		/ / /	
/ / /		/ / /	
/ / /		/ / /	

Table R
Organic Functional Groups

Class of Compound	Functional Group	General Formula	Example
		R	
		R	
		R	
		R R'	
		R R'	

Periodic Table of the Elements

Period																			18																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
1	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1,00794 +1 H 1</td> <td colspan="17"></td> <td>4,00260 0 He 2</td> </tr> </table>																		1,00794 +1 H 1																		4,00260 0 He 2	18																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
1,00794 +1 H 1																		4,00260 0 He 2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
2	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>6.941 2-1 Li</td> <td colspan="17"></td> <td>20.180 2-8 Ne</td> </tr> </table>																		6.941 2-1 Li																		20.180 2-8 Ne	18																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
6.941 2-1 Li																		20.180 2-8 Ne																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
3	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>22.98977 2-8-1 Na</td> <td colspan="17"></td> <td>35.453 2-8-7 Cl</td> </tr> </table>																		22.98977 2-8-1 Na																		35.453 2-8-7 Cl	18																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
22.98977 2-8-1 Na																		35.453 2-8-7 Cl																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
4	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>39.0983 2-8-8-1 K</td> <td colspan="17"></td> <td>79.904 2-8-18-7 Br</td> </tr> </table>																		39.0983 2-8-8-1 K																		79.904 2-8-18-7 Br	18																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
39.0983 2-8-8-1 K																		79.904 2-8-18-7 Br																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
5	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>85.4678 2-8-18-8-1 Rb</td> <td colspan="17"></td> <td>131.29 2-8-18-18-8 Xe</td> </tr> </table>																		85.4678 2-8-18-8-1 Rb																		131.29 2-8-18-18-8 Xe	18																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
85.4678 2-8-18-8-1 Rb																		131.29 2-8-18-18-8 Xe																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
6	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>132.905 2-8-18-18-8-1 Cs</td> <td colspan="17"></td> <td>(222) 2-8-18-18-8 Rn</td> </tr> </table>																		132.905 2-8-18-18-8-1 Cs																		(222) 2-8-18-18-8 Rn	18																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
132.905 2-8-18-18-8-1 Cs																		(222) 2-8-18-18-8 Rn																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
7	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>(223) 2-8-32-18-8-1 Fr</td> <td colspan="17"></td> <td>(294) 2-8-32-18-7 Uuo</td> </tr> </table>																		(223) 2-8-32-18-8-1 Fr																		(294) 2-8-32-18-7 Uuo	18																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
(223) 2-8-32-18-8-1 Fr																		(294) 2-8-32-18-7 Uuo																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
<table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 2</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 10</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 18</td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table>																							Group 2								Group 10								Group 18								Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
				Group 2								Group 10								Group 18																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
				Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
<table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="19"> <table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table> </td> </tr> <tr> <td colspan="19"> <table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="19"> <table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table> </td> </tr> </table> </td> </tr> <tr> <td colspan="19"> <table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="19"> <table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table> </td> </tr> </table> </td> </tr> <tr> <td colspan="19"> <table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="19"> <table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table> </td> </tr> </table> </td> </tr> <tr> <td colspan="19"> <table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="19"> <table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table> </td> </tr> </table> </td> </tr> <tr> <td colspan="19"> <table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="19"> <table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table> </td> </tr> </table> </td> </tr> </table>																			<table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table>																							Group 13								Group 14								Group 15								Group 16								Group 17												Group 13								Group 14								Group 15								Group 16								Group 17								<table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="19"> <table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table> </td> </tr> </table>																			<table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table>																							Group 13								Group 14								Group 15								Group 16								Group 17												Group 13								Group 14								Group 15								Group 16								Group 17								<table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="19"> <table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table> </td> </tr> </table>																			<table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table>																							Group 13								Group 14								Group 15								Group 16								Group 17												Group 13								Group 14								Group 15								Group 16								Group 17								<table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="19"> <table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table> </td> </tr> </table>																			<table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table>																							Group 13								Group 14								Group 15								Group 16								Group 17												Group 13								Group 14								Group 15								Group 16								Group 17								<table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="19"> <table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table> </td> </tr> </table>																			<table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table>																							Group 13								Group 14								Group 15								Group 16								Group 17												Group 13								Group 14								Group 15								Group 16								Group 17								<table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="19"> <table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table> </td> </tr> </table>																			<table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table>																							Group 13								Group 14								Group 15								Group 16								Group 17												Group 13								Group 14								Group 15								Group 16								Group 17							
<table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table>																							Group 13								Group 14								Group 15								Group 16								Group 17												Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
				Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
				Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
<table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="19"> <table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table> </td> </tr> </table>																			<table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table>																							Group 13								Group 14								Group 15								Group 16								Group 17												Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
<table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table>																							Group 13								Group 14								Group 15								Group 16								Group 17												Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
				Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
				Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
<table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="19"> <table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table> </td> </tr> </table>																			<table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table>																							Group 13								Group 14								Group 15								Group 16								Group 17												Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
<table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table>																							Group 13								Group 14								Group 15								Group 16								Group 17												Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
				Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
				Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
<table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="19"> <table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table> </td> </tr> </table>																			<table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table>																							Group 13								Group 14								Group 15								Group 16								Group 17												Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
<table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table>																							Group 13								Group 14								Group 15								Group 16								Group 17												Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
				Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
				Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
<table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="19"> <table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table> </td> </tr> </table>																			<table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table>																							Group 13								Group 14								Group 15								Group 16								Group 17												Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
<table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table>																							Group 13								Group 14								Group 15								Group 16								Group 17												Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
				Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
				Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
<table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="19"> <table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table> </td> </tr> </table>																			<table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table>																							Group 13								Group 14								Group 15								Group 16								Group 17												Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
<table border="1" style="width: 100%;"> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> <tr> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 13</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 14</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 15</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 16</td> <td colspan="4"></td> <td colspan="4" style="text-align: center;">Group 17</td> <td colspan="4"></td> </tr> </table>																							Group 13								Group 14								Group 15								Group 16								Group 17												Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
				Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
				Group 13								Group 14								Group 15								Group 16								Group 17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

* ...
** ...
S: CHN C m p q , 91 ... 2010 2011, CRC P

Table S
Properties of Selected Elements

Atomic Number	Symbol	Name	First Ionization Energy	Electro-negativity	Melting Point	Boiling Point	Density**	Atomic Radius
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								

Atomic Number	Symbol	Name	First Ionization Energy	Electro-negativity	Melting Point	Boiling* Point	Density**	Atomic Radius
41								
42								
43								
44								
45								
46								
47								
48								
49								
50								
51								
52								
53								
54								
55								
56								
57								
Elements 58-71 have been omitted.								
72								
73								
74								
75								
76								
77								
78								
79								
80								
81								
82								
83								
84								
85								
86								
87								
88								
89								
Elements 90 and above have been omitted.								

* ΔH_{vap} (kJ mol⁻¹)
 ** ρ (g cm⁻³)
 r (pm)
 Source: CRC Handbook of Chemistry and Physics, 91st Edition, 2010-2011, CRC Press

Table T
Important Formulas and Equations

Density	$\rho = \frac{m}{V}$
Mole Calculations	$n = \frac{m}{M}$
Percent Error	$\% \text{ Error} = \frac{ \text{Experimental} - \text{Theoretical} }{\text{Theoretical}} \times 100$
Percent Composition	$\% \text{ Composition} = \frac{\text{mass of element}}{\text{molar mass of compound}} \times 100$
Concentration	$M = \frac{n}{V}$
	$m = \rho \times V$
Combined Gas Law	$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$
Titration	$M_A V_A = M_B V_B$
Heat	$Q = C \Delta T$ $H = C \times m \times \Delta T$ $H = H_f + H_v + H_c$
Temperature	$T(^{\circ}\text{C}) = T(^{\circ}\text{F}) - 32$