

Name:

Date:

Remote Learning: Health & the Body

AlcoholEDU for High School

Directions:

Read the Introduction material and review the Blood Alcohol Levels and Effects. Using this information as well as the blood alcohol charts for both men and women, answer the questions completely

Introduction: *If you do not understand a word, please look it up in a dictionary.*

Alcohol is a central nervous system depressant. The term “depressant” is often misused. In short, alcohol depresses (or slows) the central nervous system. **As one’s blood alcohol level goes up, the depressant effect becomes more pronounced.** Because the brain is a part of the central nervous system, we see the deficits in cognitive processing and motor coordination increase as individuals get more intoxicated. **It is important to remember that reaction time decreases with the first sip of alcohol.**

How alcohol gets in the bloodstream: When someone swallows a drink, the alcohol first travels to the stomach. Some of the alcohol (approximately 20%) begin going through the stomach wall and into the bloodstream through a process called absorption. The rest of the alcohol then travels to the small intestine, where it enters the bloodstream rapidly and completely, regardless of the food content in the small intestine at the time. Therefore, once alcohol reaches the intestine, the rate of absorption is fairly standard.

When someone has eaten recently and there is still food in the stomach, the movement of alcohol from the stomach into the small intestine is delayed. Thus, the absorption of alcohol will be slower than if that person is drinking on an empty stomach. The faster someone drinks, the faster the alcohol will get into his/her bloodstream. Effervescence also increases the rate of absorption. A bubbly drink, such as champagne, or drinks mixed with soda or other carbonated beverages, will absorb faster. **It can take as little as 10 seconds for alcohol to go from the stomach to the bloodstream.**

How alcohol leaves the body: **Approximately 90% of alcohol is broken down – or metabolized – in the body primarily by the liver** and to a lesser extent in the stomach lining. When alcohol is metabolized it eventually is changed into carbon dioxide and water, which were returned to the bloodstream to be filtered out by the kidneys and eventually excreted as urine. The 10% of the alcohol that is not oxidized in the liver leaves the body through sweat, breath, or directly through urine.

Compared with how quickly the body can absorb alcohol, the rate of metabolism is very constant. The liver can only metabolize alcohol at a rate of 0.016% per hour. The rate of metabolism can be thought of as the speed at which a person “sober up.” **There is no way to speed up the “sobering up” process.** Coffee, water, exercise, etc. might cause a shock to the system, but it won’t impact one’s blood alcohol level. It’s important to remember that alcohol goes into the bloodstream. Throwing up will not impact a person’s blood alcohol level.

Blood Alcohol Levels and Effects*

Alcohol’s effects are roughly predictable from the amount of alcohol in the bloodstream, assuming that no that no tolerance has been developed. The following list indicates what effects alcohol typically has at several Blood Alcohol Levels:

- .02% Light and moderate drinkers begin to feel some effect (about one drink).
- .04% Most people begin to feel relaxed.
- .06% Judgment is somewhat impaired; people are less able to make rational decisions about their capabilities, for example driving.
- .08% Definite impairment of muscle coordination and driving skills. Increased risk of nausea and slurred speech.
- .10% Although reaction time is affected after the first drink, there is a clear deterioration of reaction time and control at this level.
- .15% Balance and movement are impaired. Risk of blackouts, accidents, nausea, passing out and hangovers.
- .30% Many people lose consciousness.
- .40% Most people lose consciousness, some die.
- .45% Breathing stops, death occurs.

Note: these effects occur for people who have **not developed a high tolerance for alcohol. For people with high tolerances, these effects may not occur until higher levels of intoxication. Heavy drinkers must therefore consume more alcohol to achieve the same effects as moderate drinkers which costs more money and is more harmful to the body.*

ONE DRINK = 4 ozs. wine **OR** 1 cocktail **OR** 12 ozs. beer **OR** 1 oz. shot

Approximate Blood Alcohol Levels as a Function of Number of Drinks and Time Determined by Weight for Women

100 lb. Female	NUMBER OF HOURS							
	1	2	3	4	5	6	7	8
NUMBER OF DRINKS	1	2	3	4	5	6	7	8
1	.029	.013	-	-	-	-	-	-
2	.074	.058	.042	.026	.010	-	-	-
3	.119	.103	.087	.071	.055	.039	.023	.007
4	.164	.148	.132	.116	.100	.084	.068	.052
5	.209	.193	.177	.161	.145	.129	.113	.097
6	.254	.238	.222	.206	.190	.174	.158	.142
7	.299	.283	.267	.251	.235	.219	.203	.187
8	.344	.328	.312	.296	.280	.264	.248	.232
9	.389	.373	.357	.341	.325	.309	.293	.277
10	.434	.418	.402	.386	.370	.354	.338	.322
11	.479	.463	.447	.431	.415	.399	.383	.367
12	.524	.508	.492	.476	.460	.444	.428	.412

140 lb. Female	NUMBER OF HOURS							
	1	2	3	4	5	6	7	8
NUMBER OF DRINKS	1	2	3	4	5	6	7	8
1	.016	-	-	-	-	-	-	-
2	.048	.032	.016	-	-	-	-	-
3	.080	.064	.048	.032	.016	-	-	-
4	.112	.096	.080	.064	.048	.032	.016	-
5	.144	.128	.112	.096	.080	.064	.048	.032
6	.176	.160	.144	.128	.112	.096	.080	.064
7	.209	.193	.177	.161	.145	.129	.113	.097
8	.241	.225	.209	.193	.177	.161	.145	.129
9	.273	.257	.241	.225	.209	.193	.177	.161
10	.305	.289	.273	.257	.241	.225	.209	.193
11	.337	.321	.305	.289	.273	.257	.241	.225
12	.369	.353	.337	.321	.305	.289	.273	.257

180 lb. Female	NUMBER OF HOURS							
	1	2	3	4	5	6	7	8
NUMBER OF DRINKS	1	2	3	4	5	6	7	8
1	.009	-	-	-	-	-	-	-
2	.034	.018	.002	-	-	-	-	-
3	.059	.043	.027	.011	-	-	-	-
4	.084	.068	.052	.036	.020	.004	-	-
5	.109	.093	.077	.061	.045	.029	.013	-
6	.134	.118	.102	.086	.070	.054	.038	.022
7	.159	.143	.127	.111	.095	.079	.063	.047
8	.184	.168	.152	.136	.120	.104	.088	.072
9	.209	.193	.177	.161	.145	.129	.113	.097
10	.234	.218	.202	.186	.170	.154	.138	.122
11	.259	.243	.227	.211	.195	.179	.163	.147
12	.284	.268	.252	.236	.220	.204	.188	.172

120 lb. Female	NUMBER OF HOURS							
	1	2	3	4	5	6	7	8
NUMBER OF DRINKS	1	2	3	4	5	6	7	8
1	.021	.005	-	-	-	-	-	-
2	.059	.043	.027	.011	-	-	-	-
3	.096	.080	.064	.048	.032	.016	-	-
4	.134	.118	.102	.086	.070	.054	.038	.022
5	.171	.155	.139	.123	.107	.091	.075	.059
6	.209	.193	.177	.161	.145	.129	.113	.097
7	.246	.230	.214	.198	.182	.166	.150	.134
8	.284	.268	.252	.236	.220	.204	.188	.172
9	.321	.305	.289	.273	.257	.241	.225	.209
10	.359	.343	.327	.311	.295	.279	.263	.247
11	.396	.380	.364	.348	.332	.316	.300	.284
12	.434	.418	.402	.386	.370	.354	.338	.322

160 lb. Female	NUMBER OF HOURS							
	1	2	3	4	5	6	7	8
NUMBER OF DRINKS	1	2	3	4	5	6	7	8
1	.012	-	-	-	-	-	-	-
2	.040	.024	.008	-	-	-	-	-
3	.068	.052	.036	.020	.004	-	-	-
4	.096	.080	.064	.048	.032	.016	-	-
5	.124	.108	.092	.076	.060	.044	.028	.012
6	.152	.136	.120	.104	.088	.072	.056	.040
7	.180	.164	.148	.132	.116	.100	.084	.068
8	.209	.193	.177	.161	.145	.129	.113	.097
9	.237	.221	.205	.189	.173	.157	.141	.125
10	.265	.249	.233	.217	.201	.185	.169	.153
11	.293	.277	.261	.245	.229	.213	.197	.181
12	.321	.305	.289	.273	.257	.241	.225	.209

200 lb. Female	NUMBER OF HOURS							
	1	2	3	4	5	6	7	8
NUMBER OF DRINKS	1	2	3	4	5	6	7	8
1	.006	-	-	-	-	-	-	-
2	.029	.013	-	-	-	-	-	-
3	.051	.035	.019	.003	-	-	-	-
4	.074	.058	.042	.026	.010	-	-	-
5	.096	.080	.064	.048	.032	.016	-	-
6	.119	.103	.087	.071	.055	.039	.023	.007
7	.141	.125	.109	.093	.077	.061	.045	.029
8	.164	.148	.132	.116	.100	.084	.068	.052
9	.186	.170	.154	.138	.122	.106	.090	.074
10	.209	.193	.177	.161	.145	.129	.113	.097
11	.231	.215	.199	.183	.167	.151	.135	.119
12	.254	.238	.222	.206	.190	.174	.158	.142

**ONE DRINK = 4 ozs. wine; or
1 cocktail; or
12 ozs. beer; or
1 oz. shot**

These charts are for your information and are not intended to convey that drinking is safe. Drinking alcoholic beverages is unlawful for those under 21 years of age.

Approximate Blood Alcohol Levels as a Function of Number of Drinks and Time Determined by Weight for Men

120 lb. Male	HOURS			
	1	2	3	4
1	.015	-	-	-
2	.046	.030	.014	-
3	.077	.061	.045	.029
4	.109	.093	.077	.061
5	.140	.124	.108	.092
6	.171	.155	.139	.123
7	.202	.186	.170	.154
8	.234	.218	.202	.186
9	.265	.249	.233	.217
10	.296	.280	.264	.248
11	.327	.311	.295	.279
12	.359	.343	.327	.311

140 lb. Male	HOURS			
	1	2	3	4
1	.010	-	-	-
2	.037	.021	.005	-
3	.064	.048	.032	.016
4	.091	.075	.059	.043
5	.117	.101	.085	.069
6	.144	.128	.112	.096
7	.171	.155	.139	.123
8	.198	.182	.166	.150
9	.225	.209	.193	.177
10	.251	.235	.219	.203
11	.278	.262	.246	.230
12	.305	.289	.273	.257

160 lb. Male	HOURS							
	1	2	3	4	5	6	7	8
1	.007	-	-	-	-	-	-	-
2	.030	.014	-	-	-	-	-	-
3	.054	.038	.022	.006	-	-	-	-
4	.077	.061	.045	.029	.013	-	-	-
5	.101	.085	.069	.053	.037	.021	.005	-
6	.124	.108	.092	.076	.060	.044	.028	.012
7	.148	.132	.116	.100	.084	.068	.052	.036
8	.171	.155	.139	.123	.107	.091	.075	.059
9	.194	.178	.162	.146	.130	.114	.098	.082
10	.218	.202	.186	.170	.154	.138	.122	.106
11	.241	.225	.209	.193	.177	.161	.145	.129
12	.265	.249	.233	.217	.201	.185	.169	.153

180 lb. Male	HOURS							
	1	2	3	4	5	6	7	8
1	.004	-	-	-	-	-	-	-
2	.025	.009	-	-	-	-	-	-
3	.046	.030	.014	-	-	-	-	-
4	.067	.051	.035	.019	.003	-	-	-
5	.088	.072	.056	.040	.024	.008	-	-
6	.109	.093	.077	.061	.045	.029	.013	-
7	.129	.113	.097	.081	.065	.049	.033	.017
8	.150	.134	.118	.102	.086	.070	.054	.038
9	.171	.155	.139	.123	.107	.091	.075	.059
10	.192	.176	.160	.144	.128	.112	.096	.080
11	.213	.197	.181	.165	.149	.133	.117	.101
12	.234	.218	.202	.186	.170	.154	.138	.122

**ONE DRINK = 4 ozs. wine; or
1 cocktail; or
12 ozs. beer; or
1 oz. shot**

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Approximate Blood Alcohol Levels as a Function of Number of Drinks and Time Determined by Weight for Men

200 lb. Male	HOURS							
	1	2	3	4	5	6	7	8
1	.002	-	-	-	-	-	-	-
2	.021	.005	-	-	-	-	-	-
3	.040	.024	.008	-	-	-	-	-
4	.059	.043	.027	.011	-	-	-	-
5	.077	.061	.045	.029	.013	-	-	-
6	.096	.080	.064	.048	.032	.016	-	-
7	.115	.099	.083	.067	.051	.035	.019	.003
8	.134	.118	.102	.086	.070	.054	.038	.022
9	.152	.136	.120	.104	.088	.072	.056	.040
10	.171	.155	.139	.123	.107	.091	.075	.059
11	.190	.174	.158	.142	.126	.110	.094	.078
12	.209	.193	.177	.161	.145	.129	.113	.097

260 lb. Male	HOURS							
	1	2	3	4	5	6	7	8
1	-	-	-	-	-	-	-	-
2	.013	-	-	-	-	-	-	-
3	.027	.011	-	-	-	-	-	-
4	.042	.026	.010	-	-	-	-	-
5	.056	.040	.024	.008	-	-	-	-
6	.071	.055	.039	.023	.007	-	-	-
7	.085	.069	.053	.037	.021	.005	-	-
8	.099	.083	.067	.051	.035	.019	.003	-
9	.114	.098	.082	.066	.050	.034	.018	-
10	.128	.112	.096	.080	.064	.048	.032	-
11	.143	.127	.111	.095	.079	.063	.047	-
12	.157	.141	.125	.109	.093	.077	.061	-

220 lb. Male	HOURS							
	1	2	3	4	5	6	7	8
1	.001	-	-	-	-	-	-	-
2	.018	.002	-	-	-	-	-	-
3	.035	.019	.003	-	-	-	-	-
4	.052	.036	.020	.004	-	-	-	-
5	.069	.053	.037	.021	.005	-	-	-
6	.086	.070	.054	.038	.022	.006	-	-
7	.103	.087	.071	.055	.039	.023	.007	-
8	.120	.104	.088	.072	.056	.040	.024	.008
9	.137	.121	.105	.089	.073	.057	.041	.025
10	.154	.138	.122	.106	.090	.074	.058	.042
11	.171	.155	.139	.123	.107	.091	.075	.059
12	.188	.172	.156	.140	.124	.108	.092	.076

280 lb. Male	HOURS							
	1	2	3	4	5	6	7	8
1	-	-	-	-	-	-	-	-
2	.011	-	-	-	-	-	-	-
3	.024	.008	-	-	-	-	-	-
4	.038	.022	.006	-	-	-	-	-
5	.051	.035	.019	.003	-	-	-	-
6	.064	.048	.032	.016	-	-	-	-
7	.078	.062	.046	.030	.014	-	-	-
8	.091	.075	.059	.043	.027	.011	-	-
9	.105	.089	.073	.057	.041	.025	.009	-
10	.118	.102	.086	.070	.054	.038	.022	-
11	.131	.115	.099	.083	.067	.051	.035	-
12	.145	.129	.113	.097	.081	.065	.049	-

**ONE DRINK = 4 ozs. wine; or
1 cocktail; or
12 ozs. beer; or
1 oz. shot**

These charts are for your information and are not intended to convey that drinking is safe. Drinking alcoholic beverages is unlawful for those under 21 years of age.

Questions:

Scenario One

If a 160 lb. man and a 140 lb. man each have four drinks over two hours, what will their blood alcohol level and symptoms be?

•160lb male:

•140lb male:

Scenario Two

If a 160 lb. man and a 120 lb. woman each have five drinks over three hours, what will their blood alcohol level and symptoms be?

•160lb male:

•120lb female:

Scenario Three

If a 100 lb. woman and a 140 lb. woman each have three drinks over one hour, what will their blood alcohol level and symptoms be?

•100lb female:

•140lb female:

Reflection Questions

Why would it be important to understand the effects of alcohol on someone else?

When a group of people, each with a different body type or size, are drinking together, what are some potential outcomes?