

Item Analysis for the Forty-Seventh  
**Michigan Mathematics Prize Competition**  
 Part I, October 8, 2003

PROBLEM	ANSWER	RESPONSES											
		A		B		C		D		E		No Response	
		N	%	N	%	N	%	N	%	N	%	N	%
1	A	<b>7146</b>	<b>62.56</b>	346	3.03	1999	17.50	314	2.75	1617	14.16	69	0.60
2	B	425	3.70	<b>9400</b>	<b>81.94</b>	1009	8.80	480	4.18	158	1.38	19	0.17
3	C	311	2.71	289	2.52	<b>10665</b>	<b>92.92</b>	81	0.71	132	1.15	13	0.11
4	E	1310	11.51	1959	17.21	960	8.43	2939	25.82	<b>4214</b>	<b>37.02</b>	109	0.95
5	D	1163	10.33	1713	15.22	3658	32.50	<b>3682</b>	<b>32.71</b>	1040	9.24	235	2.05
6	E	4707	41.31	718	6.30	1052	9.23	797	7.00	<b>4119</b>	<b>36.15</b>	98	0.85
7	B	458	4.00	<b>7759</b>	<b>67.83</b>	378	3.30	542	4.74	2302	20.12	52	0.45
8	E	479	4.18	6646	57.95	302	2.63	56	0.49	<b>3986</b>	<b>34.75</b>	22	0.19
9	A	<b>9703</b>	<b>84.64</b>	281	2.45	1037	9.05	322	2.81	121	1.06	27	0.23
10	D	999	8.80	1241	10.93	2024	17.82	<b>5791</b>	<b>51.00</b>	1301	11.46	135	1.17
11	B	2061	18.01	<b>6282</b>	<b>54.90</b>	648	5.66	1568	13.70	883	7.72	49	0.43
12	D	275	2.42	1287	11.34	1958	17.25	<b>6480</b>	<b>57.07</b>	1354	11.93	137	1.19
13	B	376	3.30	<b>3557</b>	<b>31.20</b>	784	6.88	496	4.35	6189	54.28	89	0.77
14	A	<b>2642</b>	<b>23.36</b>	3398	30.04	2845	25.15	1187	10.49	1240	10.96	179	1.56
15	D	1215	10.67	3175	27.87	2348	20.61	<b>3648</b>	<b>32.03</b>	1005	8.82	100	0.87
16	D	1771	15.56	930	8.17	1428	12.54	<b>4674</b>	<b>41.06</b>	2581	22.67	107	0.93
17	A	<b>6056</b>	<b>53.61</b>	1659	14.69	1533	13.57	1139	10.08	909	8.05	195	1.70
18	C	822	7.19	1103	9.65	<b>7359</b>	<b>64.37</b>	545	4.77	1603	14.02	59	0.51
19	D	1405	12.36	2581	22.71	1373	12.08	<b>3417</b>	<b>30.06</b>	2591	22.79	124	1.08
20	C	964	8.45	2694	23.60	<b>5447</b>	<b>47.72</b>	1431	12.54	879	7.70	76	0.66
21	E	1226	10.84	2378	21.02	1657	14.65	3911	34.58	<b>2139</b>	<b>18.91</b>	180	1.57
22	B	2348	20.71	<b>3593</b>	<b>31.69</b>	2774	24.47	1974	17.41	648	5.72	154	1.34
23	A	<b>1744</b>	<b>15.43</b>	2247	19.89	3238	28.66	903	7.99	3167	28.03	192	1.67
24	C	957	8.40	1291	11.34	<b>4357</b>	<b>38.26</b>	1435	12.60	3348	29.40	103	0.90
25	A	<b>3949</b>	<b>34.89</b>	1372	12.12	2105	18.60	1095	9.68	2796	24.71	174	1.51
26	D	1235	10.90	1605	14.16	3445	30.40	<b>3980</b>	<b>35.12</b>	1066	9.41	160	1.39
27	A	<b>1659</b>	<b>14.66</b>	2072	18.31	2790	24.66	1779	15.72	3016	26.65	175	1.52
28	C	4555	40.01	1651	14.50	<b>2445</b>	<b>21.48</b>	1144	10.05	1589	13.96	107	0.93
29	B	1177	10.36	<b>2955</b>	<b>26.02</b>	1684	14.83	2978	26.22	2562	22.56	135	1.17
30	A	<b>1768</b>	<b>15.70</b>	2170	19.27	2928	26.00	3114	27.66	1280	11.37	231	2.01
31	C	3408	30.04	2576	22.71	<b>2608</b>	<b>22.99</b>	953	8.40	1800	15.87	146	1.27
32	E	1018	9.04	2714	24.11	2940	26.12	1547	13.74	<b>3037</b>	<b>26.98</b>	235	2.05
33	A	<b>939</b>	<b>8.23</b>	509	4.46	696	6.10	8792	77.08	470	4.12	85	0.74
34	E	2509	22.13	2396	21.14	2038	17.98	1376	12.14	<b>3016</b>	<b>26.61</b>	156	1.36
35	D	1283	11.34	2444	21.60	1839	16.25	<b>3887</b>	<b>34.35</b>	1864	16.47	174	1.51
36	C	1179	10.52	1660	14.82	<b>3264</b>	<b>29.13</b>	2432	21.71	2669	23.82	287	2.50
37	E	533	4.71	1123	9.91	1085	9.58	4371	38.59	<b>4215</b>	<b>37.21</b>	164	1.43
38	B	2471	21.93	<b>3457</b>	<b>30.68</b>	2425	21.52	1872	16.61	1043	9.26	223	1.94
39	C	1761	15.63	2440	21.66	<b>3506</b>	<b>31.13</b>	1969	17.48	1588	14.10	227	1.98
40	D	2405	21.15	1316	11.58	2813	24.74	<b>1825</b>	<b>16.05</b>	3010	26.48	122	1.06

Notes: Numbers for correct responses are **bolded**.  
 Percentage of A-E responses taken from sum of A-E responses.  
 Percentage of "No Response" taken from number of participants.