

## 2009 Grade 8 Math Item Analysis- Multiple Choice Items

### MATH Question 1

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	135	.1	.1	.1
*	14	.0	.0	.1
1	9257	4.1	4.1	4.1
2	6522	2.9	2.9	7.0
4	4754	2.1	2.1	9.1
C	207848	90.9	90.9	100.0
Total	228530	100.0	100.0	

### MATH Question 2

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	140	.1	.1	.1
*	30	.0	.0	.1
1	4956	2.2	2.2	2.2
3	17739	7.8	7.8	10.0
4	5045	2.2	2.2	12.2
B	200620	87.8	87.8	100.0
Total	228530	100.0	100.0	

### MATH Question 3

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	178	.1	.1	.1
*	42	.0	.0	.1
1	44745	19.6	19.6	19.7
3	7876	3.4	3.4	23.1
4	12371	5.4	5.4	28.5
B	163318	71.5	71.5	100.0
Total	228530	100.0	100.0	

### MATH Question 4

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	185	.1	.1	.1
*	28	.0	.0	.1
1	9573	4.2	4.2	4.3
2	13340	5.8	5.8	10.1
4	25904	11.3	11.3	21.5
C	179500	78.5	78.5	100.0
Total	228530	100.0	100.0	

**MATH Question 5**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	181	.1	.1	.1
*	31	.0	.0	.1
1	6467	2.8	2.8	2.9
3	21556	9.4	9.4	12.4
4	3462	1.5	1.5	13.9
B	196833	86.1	86.1	100.0
Total	228530	100.0	100.0	

**MATH Question 6**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	385	.2	.2	.2
*	52	.0	.0	.2
1	21456	9.4	9.4	9.6
2	37052	16.2	16.2	25.8
4	16922	7.4	7.4	33.2
C	152663	66.8	66.8	100.0
Total	228530	100.0	100.0	

**MATH Question 7**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	162	.1	.1	.1
*	43	.0	.0	.1
1	54808	24.0	24.0	24.1
2	16432	7.2	7.2	31.3
3	4280	1.9	1.9	33.1
D	152805	66.9	66.9	100.0
Total	228530	100.0	100.0	

**MATH Question 8**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	317	.1	.1	.1
*	41	.0	.0	.2
1	24746	10.8	10.8	11.0
2	25409	11.1	11.1	22.1
3	12661	5.5	5.5	27.6
D	165356	72.4	72.4	100.0
Total	228530	100.0	100.0	

**MATH Question 9**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	162	.1	.1	.1
*	23	.0	.0	.1
1	21537	9.4	9.4	9.5
2	24337	10.6	10.6	20.2
4	11363	5.0	5.0	25.1
C	171108	74.9	74.9	100.0
Total	228530	100.0	100.0	

**MATH Question 10**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	190	.1	.1	.1
*	28	.0	.0	.1
1	23230	10.2	10.2	10.3
2	7604	3.3	3.3	13.6
3	40561	17.7	17.7	31.3
D	156917	68.7	68.7	100.0
Total	228530	100.0	100.0	

**MATH Question 11**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	145	.1	.1	.1
*	13	.0	.0	.1
1	8714	3.8	3.8	3.9
2	7271	3.2	3.2	7.1
4	9832	4.3	4.3	11.4
C	202555	88.6	88.6	100.0
Total	228530	100.0	100.0	

**MATH Question 12**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	261	.1	.1	.1
*	33	.0	.0	.1
1	25221	11.0	11.0	11.2
3	49797	21.8	21.8	33.0
4	15578	6.8	6.8	39.8
B	137640	60.2	60.2	100.0
Total	228530	100.0	100.0	

**MATH Question 13**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	184	.1	.1	.1
*	24	.0	.0	.1
1	10048	4.4	4.4	4.5
2	11922	5.2	5.2	9.7
4	12593	5.5	5.5	15.2
C	193759	84.8	84.8	100.0
Total	228530	100.0	100.0	

**MATH Question 14**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	175	.1	.1	.1
*	33	.0	.0	.1
1	10871	4.8	4.8	4.8
3	28594	12.5	12.5	17.4
4	36982	16.2	16.2	33.5
B	151875	66.5	66.5	100.0
Total	228530	100.0	100.0	

**MATH Question 15**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	180	.1	.1	.1
*	46	.0	.0	.1
2	24562	10.7	10.7	10.8
3	9795	4.3	4.3	15.1
4	12676	5.5	5.5	20.7
A	181271	79.3	79.3	100.0
Total	228530	100.0	100.0	

**MATH Question 16**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	359	.2	.2	.2
*	49	.0	.0	.2
1	14856	6.5	6.5	6.7
3	30988	13.6	13.6	20.2
4	37530	16.4	16.4	36.7
B	144748	63.3	63.3	100.0
Total	228530	100.0	100.0	

**MATH Question 17**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	189	.1	.1	.1
*	50	.0	.0	.1
2	17897	7.8	7.8	7.9
3	8398	3.7	3.7	11.6
4	3072	1.3	1.3	13.0
A	198924	87.0	87.0	100.0
Total	228530	100.0	100.0	

**MATH Question 18**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	135	.1	.1	.1
*	43	.0	.0	.1
1	1610	.7	.7	.8
2	16712	7.3	7.3	8.1
3	6845	3.0	3.0	11.1
D	203185	88.9	88.9	100.0
Total	228530	100.0	100.0	

**MATH Question 19**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	208	.1	.1	.1
*	22	.0	.0	.1
1	4379	1.9	1.9	2.0
2	22246	9.7	9.7	11.8
3	28173	12.3	12.3	24.1
D	173502	75.9	75.9	100.0
Total	228530	100.0	100.0	

**MATH Question 20**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	178	.1	.1	.1
*	27	.0	.0	.1
1	3812	1.7	1.7	1.8
2	30030	13.1	13.1	14.9
4	2379	1.0	1.0	15.9
C	192104	84.1	84.1	100.0
Total	228530	100.0	100.0	

**MATH Question 21**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	334	.1	.1	.1
*	53	.0	.0	.2
2	18040	7.9	7.9	8.1
3	24835	10.9	10.9	18.9
4	9285	4.1	4.1	23.0
A	175983	77.0	77.0	100.0
Total	228530	100.0	100.0	

**MATH Question 22**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	224	.1	.1	.1
*	29	.0	.0	.1
1	5570	2.4	2.4	2.5
2	6010	2.6	2.6	5.2
4	3933	1.7	1.7	6.9
C	212764	93.1	93.1	100.0
Total	228530	100.0	100.0	

**MATH Question 23**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	250	.1	.1	.1
*	53	.0	.0	.1
1	95603	41.8	41.8	42.0
2	14302	6.3	6.3	48.2
3	27593	12.1	12.1	60.3
D	90729	39.7	39.7	100.0
Total	228530	100.0	100.0	

**MATH Question 24**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	229	.1	.1	.1
*	30	.0	.0	.1
1	11662	5.1	5.1	5.2
2	12097	5.3	5.3	10.5
4	4690	2.1	2.1	12.6
C	199822	87.4	87.4	100.0
Total	228530	100.0	100.0	

**MATH Question 25**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	280	.1	.1	.1
*	22	.0	.0	.1
1	8353	3.7	3.7	3.8
2	6379	2.8	2.8	6.6
4	3007	1.3	1.3	7.9
C	210489	92.1	92.1	100.0
Total	228530	100.0	100.0	

**MATH Question 26**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	348	.2	.2	.2
*	32	.0	.0	.2
2	7713	3.4	3.4	3.5
3	8320	3.6	3.6	7.2
4	22375	9.8	9.8	17.0
A	189742	83.0	83.0	100.0
Total	228530	100.0	100.0	

**MATH Question 27**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	558	.2	.2	.2
*	18	.0	.0	.3
1	25833	11.3	11.3	11.6
3	12511	5.5	5.5	17.0
4	19373	8.5	8.5	25.5
B	170237	74.5	74.5	100.0
Total	228530	100.0	100.0	

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**MATH Question 28**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	24786	10.8	10.9	10.9
1	10750	4.7	4.7	15.6
2	191996	84.0	84.4	100.0
Total	227532	99.6	100.0	
Missing System	998	.4		
Total	228530	100.0		

**MATH Question 29**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	29686	13.0	13.1	13.1
	1	46104	20.2	20.3	33.4
	2	151403	66.3	66.6	100.0
	Total	227193	99.4	100.0	
Missing	System	1337	.6		
Total		228530	100.0		

**MATH Question 30**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	44555	19.5	19.6	19.6
	1	107405	47.0	47.3	66.9
	2	75067	32.8	33.1	100.0
	Total	227027	99.3	100.0	
Missing	System	1503	.7		
Total		228530	100.0		

**MATH Question 31**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	61538	26.9	27.1	27.1
	1	47474	20.8	20.9	47.9
	2	118345	51.8	52.1	100.0
	Total	227357	99.5	100.0	
Missing	System	1173	.5		
Total		228530	100.0		

**MATH Question 32**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	58939	25.8	26.0	26.0
	1	21311	9.3	9.4	35.5
	2	25245	11.0	11.2	46.6
	3	120803	52.9	53.4	100.0
	Total	226298	99.0	100.0	
Missing	System	2232	1.0		
Total		228530	100.0		



**MATH Question 33**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	26169	11.5	11.5	11.5
	1	25976	11.4	11.4	22.9
	2	56762	24.8	25.0	47.9
	3	118559	51.9	52.1	100.0
	Total	227466	99.5	100.0	
Missing	System	1064	.5		
Total		228530	100.0		

**MATH Question 34**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	23606	10.3	10.4	10.4
	1	46005	20.1	20.2	30.6
	2	157930	69.1	69.4	100.0
	Total	227541	99.6	100.0	
Missing	System	989	.4		
Total		228530	100.0		

**MATH Question 35**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	24654	10.8	10.9	10.9
	1	68930	30.2	30.6	41.5
	2	131845	57.7	58.5	100.0
	Total	225429	98.6	100.0	
Missing	System	3101	1.4		
Total		228530	100.0		

**MATH Question 36**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	35850	15.7	15.9	15.9
	1	36356	15.9	16.1	31.9
	2	153955	67.4	68.1	100.0
	Total	226161	99.0	100.0	
Missing	System	2369	1.0		
Total		228530	100.0		

**MATH Question 37**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	38010	16.6	16.8	16.8
	1	71368	31.2	31.5	48.3
	2	117185	51.3	51.7	100.0
	Total	226563	99.1	100.0	
Missing	System	1967	.9		
Total		228530	100.0		

**MATH Question 38**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	80322	35.1	35.4	35.4
	1	50660	22.2	22.3	57.8
	2	95749	41.9	42.2	100.0
	Total	226731	99.2	100.0	
Missing	System	1799	.8		
Total		228530	100.0		

**MATH Question 39**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	52213	22.8	23.1	23.1
	1	63618	27.8	28.1	51.1
	2	110625	48.4	48.9	100.0
	Total	226456	99.1	100.0	
Missing	System	2074	.9		
Total		228530	100.0		

**MATH Question 40**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	47985	21.0	21.3	21.3
	1	90914	39.8	40.4	61.7
	2	86327	37.8	38.3	100.0
	Total	225226	98.6	100.0	
Missing	System	3304	1.4		
Total		228530	100.0		

**MATH Question 41**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	37384	16.4	16.5	16.5
	1	83465	36.5	36.7	53.2
	2	106287	46.5	46.8	100.0
	Total	227136	99.4	100.0	
Missing	System	1394	.6		
Total		228530	100.0		

**MATH Question 42**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	30777	13.5	13.5	13.5
	1	27379	12.0	12.0	25.6
	2	46004	20.1	20.2	45.8
	3	123203	53.9	54.2	100.0
	Total	227363	99.5	100.0	
Missing	System	1167	.5		
Total		228530	100.0		

**MATH Question 43**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	19741	8.6	8.7	8.7
	1	40710	17.8	17.9	26.6
	2	119778	52.4	52.7	79.3
	3	47038	20.6	20.7	100.0
	Total	227267	99.4	100.0	
Missing	System	1263	.6		
Total		228530	100.0		

**MATH Question 44**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	43199	18.9	19.1	19.1
	1	42745	18.7	18.9	38.1
	2	29112	12.7	12.9	51.0
	3	110647	48.4	49.0	100.0
	Total	225703	98.8	100.0	
Missing	System	2827	1.2		
Total		228530	100.0		

**MATH Question 45**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	61785	27.0	27.4	27.4
	1	30068	13.2	13.3	40.7
	2	21530	9.4	9.5	50.2
	3	112266	49.1	49.8	100.0
	Total	225649	98.7	100.0	
Missing	System	2881	1.3		
Total		228530	100.0		

**Statistics**

		MATH Question 28	MATH Question 29	MATH Question 30	MATH Question 31	MATH Question 32
N	Valid	227532	227193	227027	227357	226298
	Missing	998	1337	1503	1173	2232
Mean		1.73	1.54	1.13	1.25	1.92
Std. Deviation		.642	.714	.713	.854	1.290

**Statistics**

		MATH Question 33	MATH Question 34	MATH Question 35	MATH Question 36	MATH Question 37
N	Valid	227466	227541	225429	226161	226563
	Missing	1064	989	3101	2369	1967
Mean		2.18	1.59	1.48	1.52	1.35
Std. Deviation		1.032	.670	.684	.753	.750

**Statistics**

		MATH Question 38	MATH Question 39	MATH Question 40	MATH Question 41	MATH Question 42
N	Valid	226731	226456	225226	227136	227363
	Missing	1799	2074	3304	1394	1167
Mean		1.07	1.26	1.17	1.30	2.15
Std. Deviation		.879	.808	.753	.735	1.087

**Statistics**

		MATH Question 43	MATH Question 44	MATH Question 45
N	Valid	227267	225703	225649
	Missing	1263	2827	2881
Mean		1.85	1.92	1.82
Std. Deviation		.844	1.199	1.301