

Figures for  
CMAS Technical Report  
2016–2017

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**Figure 1. CMAS Blueprint-Grade 4**

TEST BLUEPRINT CMAS Social Studies Grade 4		SRs	3pt CRs	Total Points	Total Items	Total PE Points	% of Score Points
1	History	7	4	19	11	10-14	25%
	PGC 1			9-10			
	GLE 1	3-4	2	9-10			
	PGC 2			9-10			
	GLE 2	3-4	2	9-10			
2	Geography	14	2	20	16	9-14	27%
	PGC 1			10-11			
	GLE 1	7-8	1	10-11			
	PGC 2			9-10			
	GLE 2	6-7	1	9-10			
3	Economics	11	2	17	13	0-4	23%
	PGC 1			8-9			
	GLE 1	5-9	0-1	8-9			
	PGC 2			8-9			
	GLE 2	3-6	1-2	8-9			
4	Civics	7	4	19	11	0-6	25%
	PGC 1			8-9			
	GLE 1	2-6	1-2	8-9			
	PGC 2			10-11			
	GLE 2	2-5	2-3	10-11			
<b>TOTAL</b>		<b>39</b>	<b>12</b>	<b>75</b>	<b>51</b>	<b>24</b>	<b>100%</b>
<p><b>Operational form target ranges:</b></p> <p><b>DOK as a total percentage of test points:</b></p> <p>DOK 1=15%-20%</p> <p>DOK 2= &lt;55%</p> <p>DOK 3=25%-30%</p> <p><b>Number of TEIs as a percentage of total items:</b></p> <p>Year 1 (2014) 20% of total items</p> <p>Years 2-5 25% of total items</p>							

**Figure 2. CMAS Blueprint-Grade 5**

	TEST BLUEPRINT CMAS Science Grade 5	SRs	2 pt CRs	3 pt CRs	Total CRs	Total CR points	Total Points	Total Items	Total SI/NS Points	Total Sim Points	% of Score Points
1	Physical Science	9	4	1	5	11	20	14	8	5-8	25%
	PGC 2						20				
	GLE 1	9	4	1	5	11	20	14			
2	Life Science	17	5	1	6	13	30	23	10	10-15	38%
	PGC 3						12-15				
	GLE 1	7	2-4	0-1	2-4	5-8	12-15	9-11			
	PGC 1						15-18				
	GLE 2	10	2-4	0-1	2-4	5-8	15-18	12-14			
3	Earth Systems Science	17	5	1	6	13	30	23	12	10-15	38%
	PGC 3						9-12				
	GLE 1	6	0-3	0-1	1-3	3-6	9-12	7-9			
	PGC 2						18-21				
	GLE 2	5	0-3	0-1	1-3	3-6	8-11	7-9			
	GLE 3	6	0-3	0-1	1-3	3-6	9-12	7-9			
<b>TOTAL</b>		<b>43</b>	<b>14</b>	<b>3</b>	<b>17</b>	<b>37</b>	<b>80</b>	<b>60</b>	<b>30</b>	<b>30</b>	<b>100%</b>
4	Scientific Investigations and the Nature of Science (SI/NS)	30 Points for SI/NS will be distributed among the 3 Standards								38%	
<p><b>Operational form target ranges:</b></p> <p><b>DOK as a total percentage of test points:</b></p> <p>DOK 1 20-25%</p> <p>DOK 2 45-50%</p> <p>DOK 3 25-30%</p> <p><b>Number of TEIs as percentage of total items:</b></p> <p>Year 1 (2014) 20% of total items</p> <p>Years 2-5 25% of total items</p>											

**Figure 3. CMAS Blueprint-Grade 7**

TEST BLUEPRINT CMAS Social Studies Grade 7		SRs	3pt CRs	Total Points	Total Items	Total PE Points	% of Score Points
1	History	8	4	20	12	8-14	28%
	PGC 1			8			
	GLE 1	2-5	1-2	8			
	PGC 2			12			
	GLE 2	3-6	2-3	12			
2	Geography	9	3	18	12	8-12	25%
	PGC 1			8-10			
	GLE 1	3-6	1-2	8-10			
	PGC 2			8-10			
	GLE 2	3-6	1-2	8-10			
3	Economics	10	2	16	12	0-4	22%
	PGC 1			8			
	GLE 1	5-8	0-1	8			
	PGC 2			8			
	GLE 2	2-5	1-2	8			
4	Civics	9	3	18	12	0-6	25%
	PGC 2			9			
	GLE 1	6	1	9			
	PGC 1			9			
	GLE 2	3	2	9			
<b>TOTAL</b>		<b>36</b>	<b>12</b>	<b>72</b>	<b>48</b>	<b>24</b>	<b>100%</b>
<p><b>Operational form target ranges:</b></p> <p><b>DOK as a total percentage of test points:</b></p> <p>DOK 1= 15%-20%</p> <p>DOK 2= &lt;50%</p> <p>DOK 3= 30%-35%</p> <p><b>Number of TEIs as a percentage of total items:</b></p> <p>Year 1 (2014) 20% of total items</p> <p>Years 2-5 25% of total items</p>							

**Figure 4. CMAS Blueprint-Grade 8**

TEST BLUEPRINT CMAS Science Grade 8		SRs	2pt CRs	3pt CRs	Total CRs	Total CR points	Total Points	Total Items	Total SI/NS Points	Total Sim Points	% of Score Points
1	Physical Science	16	5	1	6	13	29	22	7	5-7 or 10-14	36%
	PGC 1						7-8				
	GLE 1	2-5	0-2	0-1	1-2	2-5	7-8	4-6			
	PGC 3						7-8				
	GLE 2	2-5	0-2	0-1	1-2	2-5	7-8	4-6			
	PGC 2						7-8				
	GLE 3	2-5	0-2	0-1	1-2	2-5	7-8	4-6			
	PGC 3						7-8				
	GLE 4	2-5	0-2	0-1	1-2	2-5	7-8	4-6			
2	Life Science	13	4	1	5	11	24	18	6	5-7 or 10-14	30%
	PGC 2						11-13				
	GLE 1	5-8	1-3	0-1	2-3	4-7	11-13	8-10			
	PGC 3						11-13				
	GLE 2	5-8	1-3	0-1	2-3	4-7	11-13	8-10			
3	Earth Systems Science	14	5	1	6	13	27	20	7	5-7 or 10-14	34%
	PGC 2						12-14				
	GLE 1	2-5	0-2	0-1	1-2	2-5	6-7	4-6			
	GLE 2	2-5	0-2	0-1	1-2	2-5	6-7	4-6			
	PGC 1						12-15				
	GLE 3	2-5	0-2	0-1	1-2	2-5	6-8	4-6			
	GLE 4	2-5	0-2	0-1	1-2	2-5	6-7	4-6			
<b>TOTAL</b>		<b>43</b>	<b>14</b>	<b>3</b>	<b>17</b>	<b>37</b>	<b>80</b>	<b>60</b>	<b>20</b>	<b>30</b>	<b>100%</b>
4	Scientific Investigations and the Nature of Science (SI/NS)	20 Points for SI/NS will be distributed among the 3 Standards									25%

\* Simulation points are dependent on whether one or two simulations are associated with a particular standard.

**Operational form target ranges:**

**DOK as a total percentage of test points:**

DOK 1 15%-20%

DOK 2 <50%

DOK 3 30%-35%

**Number of TEIs as a percentage of total items**

Year 1 (2014) 15-20% of total items

Years 2-5 25% of total items

**Figure 5. CMAS Blueprint-HS Science**

	TEST BLUEPRINT CMAS Science High School	SRs	2pt CRs	3pt CRs	Total CRs	Total CR points	Total Points	Total Items	Total SI/NS Points	Total Sim Points	% of Score Points
<b>1</b>	<b>Physical Science</b>	<b>13-15</b>	<b>4-5</b>	<b>1</b>	<b>5-6</b>	<b>11-13</b>	<b>26</b>	<b>19-20</b>	<b>6</b>	<b>5-13</b>	<b>33%</b>
	PGC 1						6-7				
	GLE1	1-4	1-2	0-1	1-2	2-5	6-7				
	PGC 2						11-13				
	GLE2	1-4	0-1	0-1	0-1	0-3	3-5				
	GLE3	1-4	0-1	0-1	0-1	0-3	3-5				
	GLE4	1-4	0-1	0-1	0-1	0-3	3-5				
	PGC 3						7-9				
	GLE5	1-4	0-1	0-1	0-1	0-3	3-5				
	GLE6	1-4	0-1	0-1	0-1	0-3	3-5				
<b>2</b>	<b>Life Science</b>	<b>14-16</b>	<b>4-5</b>	<b>1</b>	<b>5-6</b>	<b>11-13</b>	<b>27</b>	<b>20-21</b>	<b>7</b>	<b>5-13</b>	<b>34%</b>
	PGC 2						6-8				
	GLE1	1-4	0-1	0-1	0-1	0-3	3-5				
	GLE2	1-4	0-1	0-1	0-1	0-3	2-4				
	PGC 1						9-11				
	GLE3	1-4	0-1	0-1	0-1	0-3	2-4				
	GLE4	0-3	0-1	0-1	0-1	0-3	2-4				
	GLE5	1-4	0-1	0-1	0-1	0-3	2-4				
	GLE6	0-3	0-1	0-1	0-1	0-3	2-4				
	PGC 3						5-7				
	GLE7	1-4	0-1	0-1	0-1	0-3	3-5				
	GLE8	0-3	0-1	0-1	0-1	0-3	2-4				
	PGC 4						3-5				
	GLE9	1-4	0-1	0-1	0-1	0-3	3-5				
<b>3</b>	<b>Earth Systems Science</b>	<b>14-16</b>	<b>4-5</b>	<b>1</b>	<b>5-6</b>	<b>11-13</b>	<b>27</b>	<b>20-21</b>	<b>7</b>	<b>5-13</b>	<b>34%</b>
	PGC 1						6-8				
	GLE1	1-4	0-1	0-1	0-1	0-3	3-5				
	GLE2	1-4	0-1	0-1	0-1	0-3	2-4				
	PGC 2						13-15				
	GLE3	1-4	0-1	0-1	0-1	0-3	3-5				
	GLE4	1-4	0-1	0-1	0-1	0-3	3-5				
	GLE6	1-4	0-1	0-1	0-1	0-3	3-5				
	GLE7	0-3	0-1	0-1	0-1	0-3	2-4				
	PGC 3						4-6				
	GLE5	1-4	0-1	0-1	0-1	0-3	4-6				
<b>TOTAL</b>		<b>43</b>	<b>14</b>	<b>3</b>	<b>17</b>	<b>37</b>	<b>80</b>	<b>60</b>	<b>20</b>	<b>30</b>	<b>1</b>
<b>4</b>	<b>Scientific Investigations &amp; the Nature of Science (SI/NS)</b>	<b>20 Points for SI/NS will be distributed among the 3 Standards</b>									<b>25%</b>

**Operational form target ranges:**

**DOK as a total percentage of test points:**

- DOK 1 15%-20%
- DOK 2 <50%
- DOK 3 30%-35%

**Number of TEs as a percent to total items**

- Year 1 (2014) 20% of total items
- Years 2-5 25% of total items

Figure 6. Sample 2PL Item Characteristic Curve

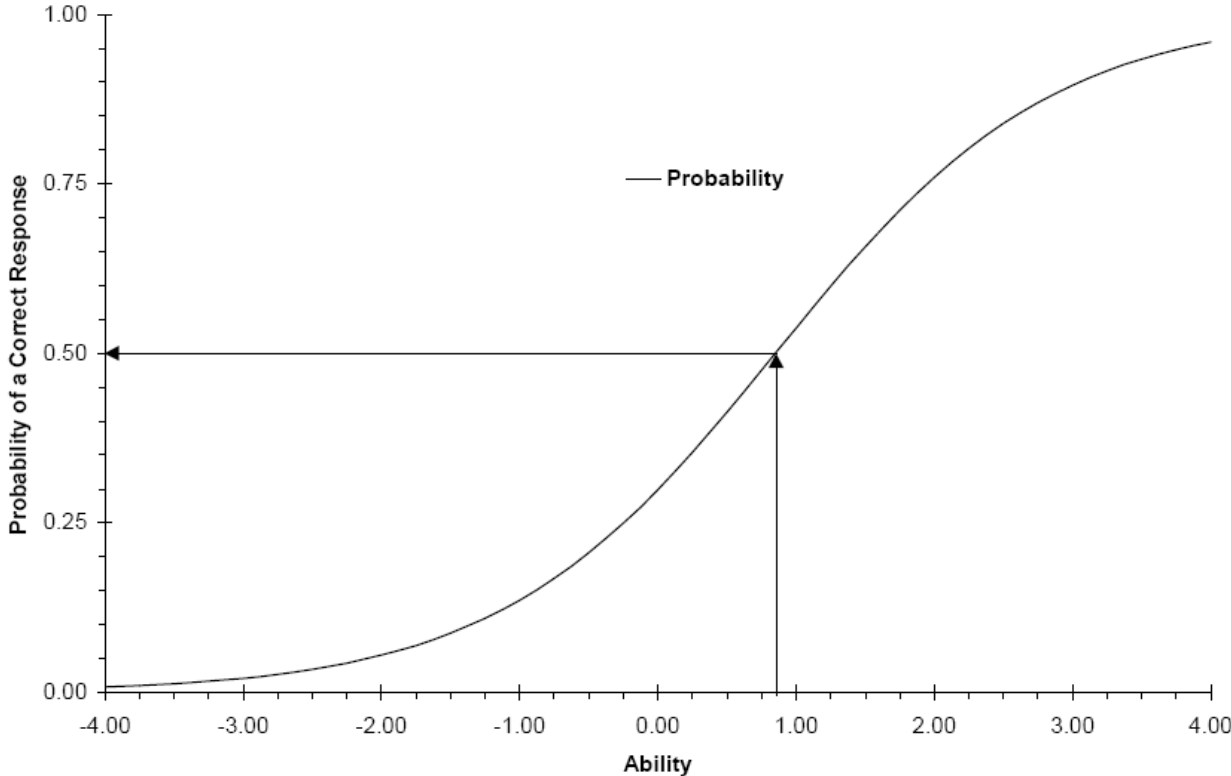




Figure 7. Sample 2PL Item Response Curves

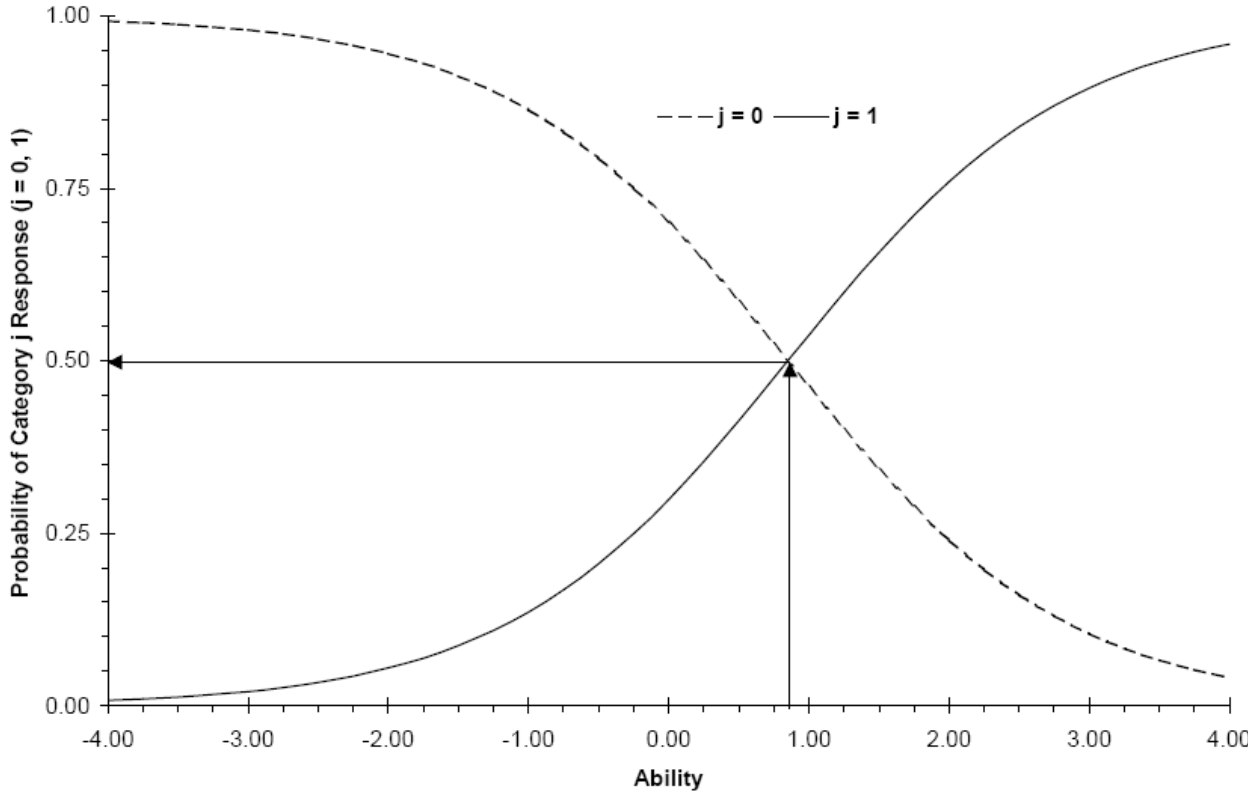
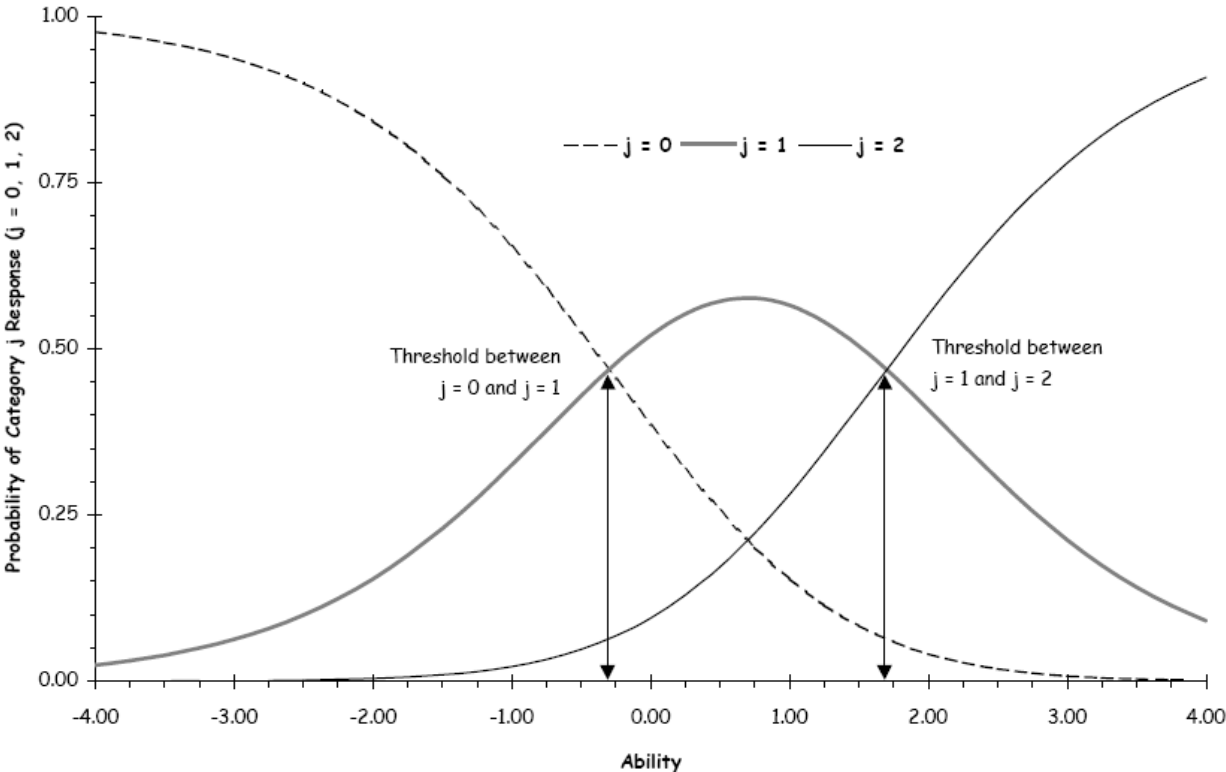


Figure 8. Item Response Curves for a 2-point Item



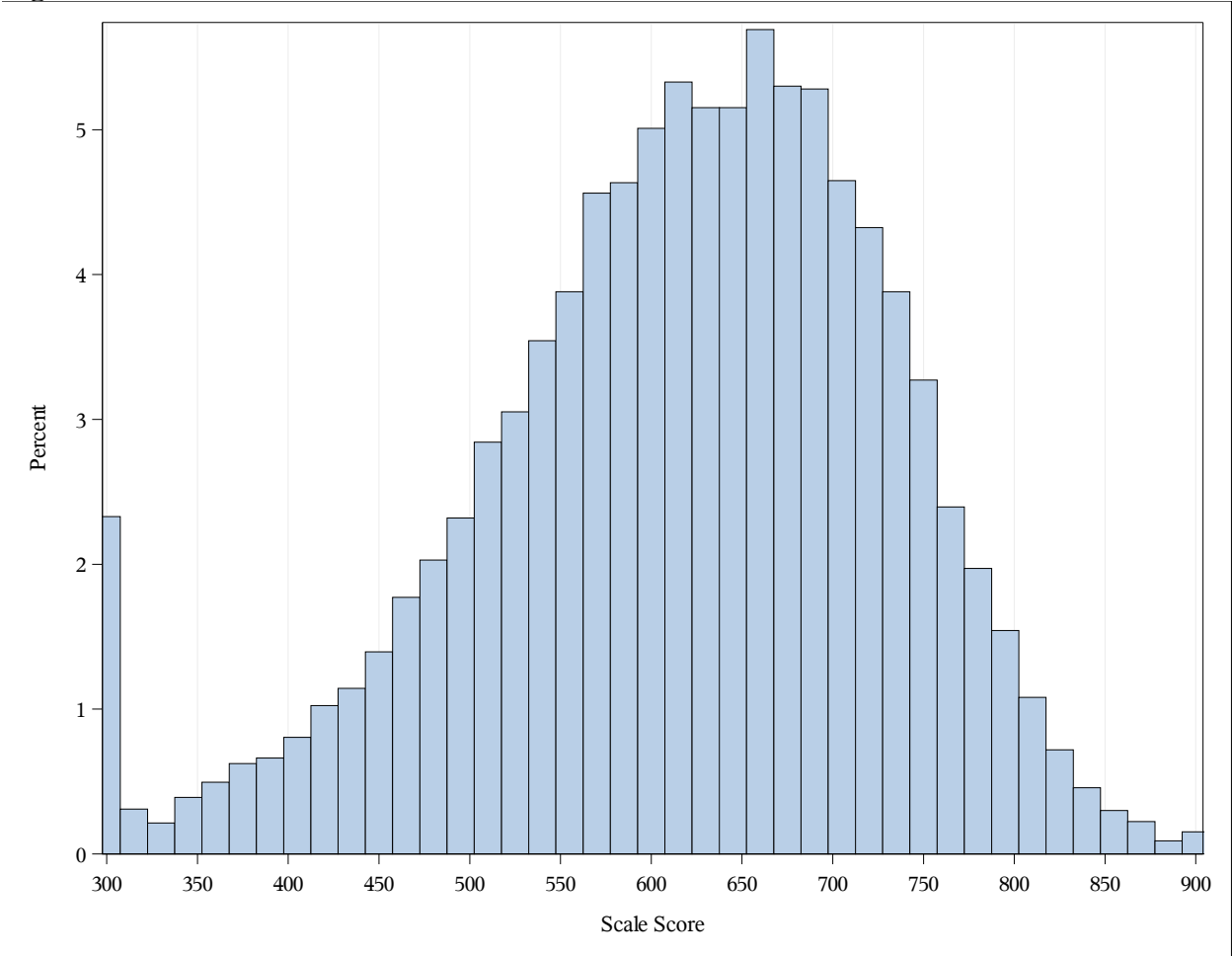
**Figure 9. Sample TRIAN Report**

Item	Form	Key	Corr.	*	PV<15	A%	*	B%	*	C%	*	D%	*	Omit%	Ncount
20	A2	A	0.12	*		16		43	*	31		11		0	1809
26	A2	A	0.28			34		13		49	*	4		0	1809
29	B3	C	0.26			5		4		41		50	*	0	1794

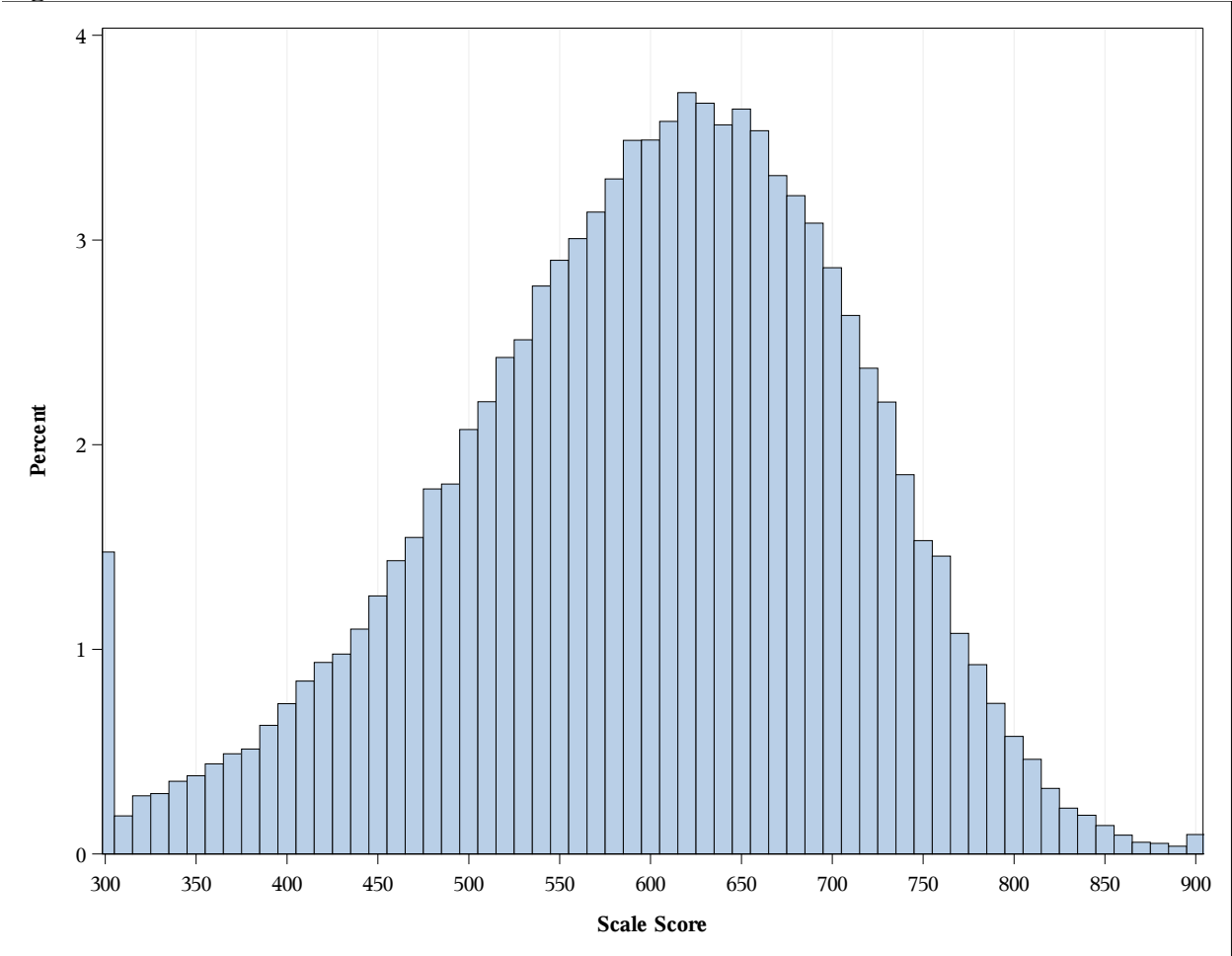
**Figure 10. Sample Adjudication Spreadsheet**

Form	ItemID	Response	Score	COUNT	PERCENT	Correct Response?
A1	123456789	d_clouds b_bay1fd_cold b_bay2fd_snow b_bay3fd_rain b_bay4	0	27	0.7	N
A1	123456789	d_clouds b_bay1fd_cold b_bay2fd_snow b_bay4fd_rain b_bay3	0	19	0.5	N
A1	123456789	d_clouds b_bay1fd_cold b_bay3fd_snow b_bay2fd_rain b_bay4	0	9	0.2	N
A1	123456789	d_clouds b_bay1fd_cold b_bay3fd_snow b_bay4fd_rain b_bay2	0	10	0.3	N
A1	123456789	d_clouds b_bay1fd_cold b_bay4fd_snow b_bay2fd_rain b_bay3	0	20	0.5	N
A1	123456789	d_clouds b_bay1fd_cold b_bay4fd_snow b_bay3fd_rain b_bay2	0	30	0.8	N
A1	123456789	d_clouds b_bay2fd_cold b_bay1fd_snow b_bay3fd_rain b_bay4	0	29	0.7	N
A1	123456789	d_clouds b_bay2fd_cold b_bay1fd_snow b_bay4fd_rain b_bay3	0	11	0.3	N
A1	123456789	d_clouds b_bay2fd_cold b_bay3fd_snow b_bay1fd_rain b_bay4	0	448	11.5	N
A1	123456789	d_clouds b_bay2fd_cold b_bay3fd_snow b_bay4fd_rain b_bay1	0	11	0.3	N
A1	123456789	d_clouds b_bay2fd_cold b_bay4fd_snow b_bay1fd_rain b_bay3	0	619	15.9	N
A1	123456789	d_clouds b_bay2fd_cold b_bay4fd_snow b_bay3fd_rain b_bay1	0	46	1.2	N
A1	123456789	d_clouds b_bay3fd_cold b_bay1fd_snow b_bay2fd_rain b_bay4	0	8	0.2	N
A1	123456789	d_clouds b_bay3fd_cold b_bay1fd_snow b_bay4fd_rain b_bay2	0	11	0.3	N
A1	123456789	d_clouds b_bay3fd_cold b_bay2fd_snow b_bay1fd_rain b_bay4	0	579	14.9	N
A1	123456789	d_clouds b_bay3fd_cold b_bay2fd_snow b_bay4fd_rain b_bay1	0	25	0.6	N
A1	123456789	d_clouds b_bay3fd_cold b_bay4fd_snow b_bay1fd_rain b_bay2	0	183	4.7	N
A1	123456789	d_clouds b_bay3fd_cold b_bay4fd_snow b_bay2fd_rain b_bay1	0	29	0.7	N
A1	123456789	d_clouds b_bay4fd_cold b_bay1fd_snow b_bay2fd_rain b_bay3	0	7	0.2	N
A1	123456789	d_clouds b_bay4fd_cold b_bay1fd_snow b_bay3fd_rain b_bay2	0	12	0.3	N
A1	123456789	d_clouds b_bay4fd_cold b_bay2fd_snow b_bay3fd_rain b_bay1	0	33	0.8	N
A1	123456789	d_clouds b_bay4fd_cold b_bay3fd_snow b_bay1fd_rain b_bay2	0	129	3.3	N
A1	123456789	d_clouds b_bay4fd_cold b_bay3fd_snow b_bay2fd_rain b_bay1	0	7	0.2	N
A1	123456789	d_clouds b_bay4fd_snow b_bay1fd_rain b_bay3	0	1	0.0	N
A1	123456789	Omitted	0	4	0.1	N
A1	123456789	d_clouds b_bay4fd_cold b_bay2fd_snow b_bay1fd_rain b_bay3	1	1586	40.7	Y

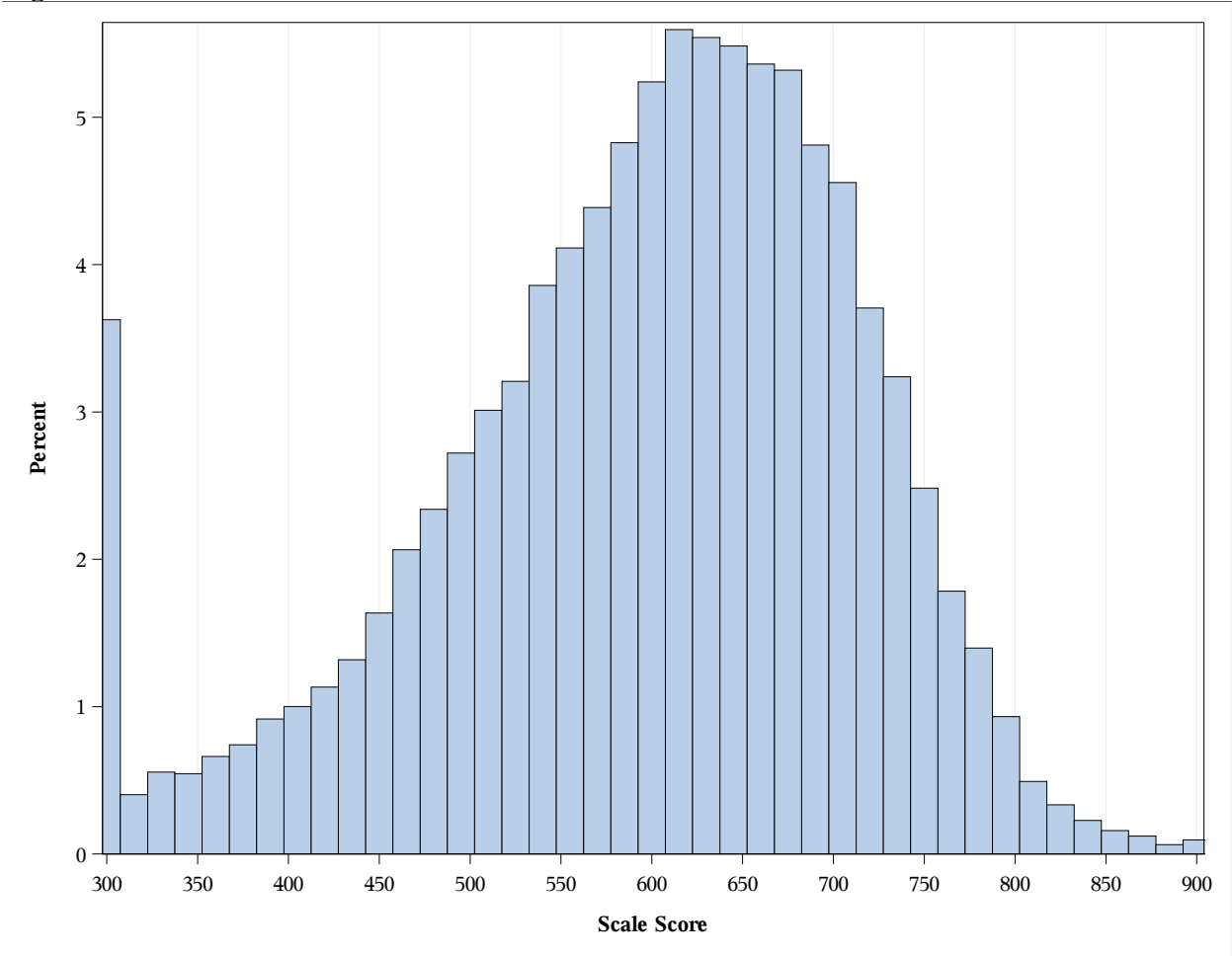
**Figure 11. Grade 4 Scale Score Distribution**



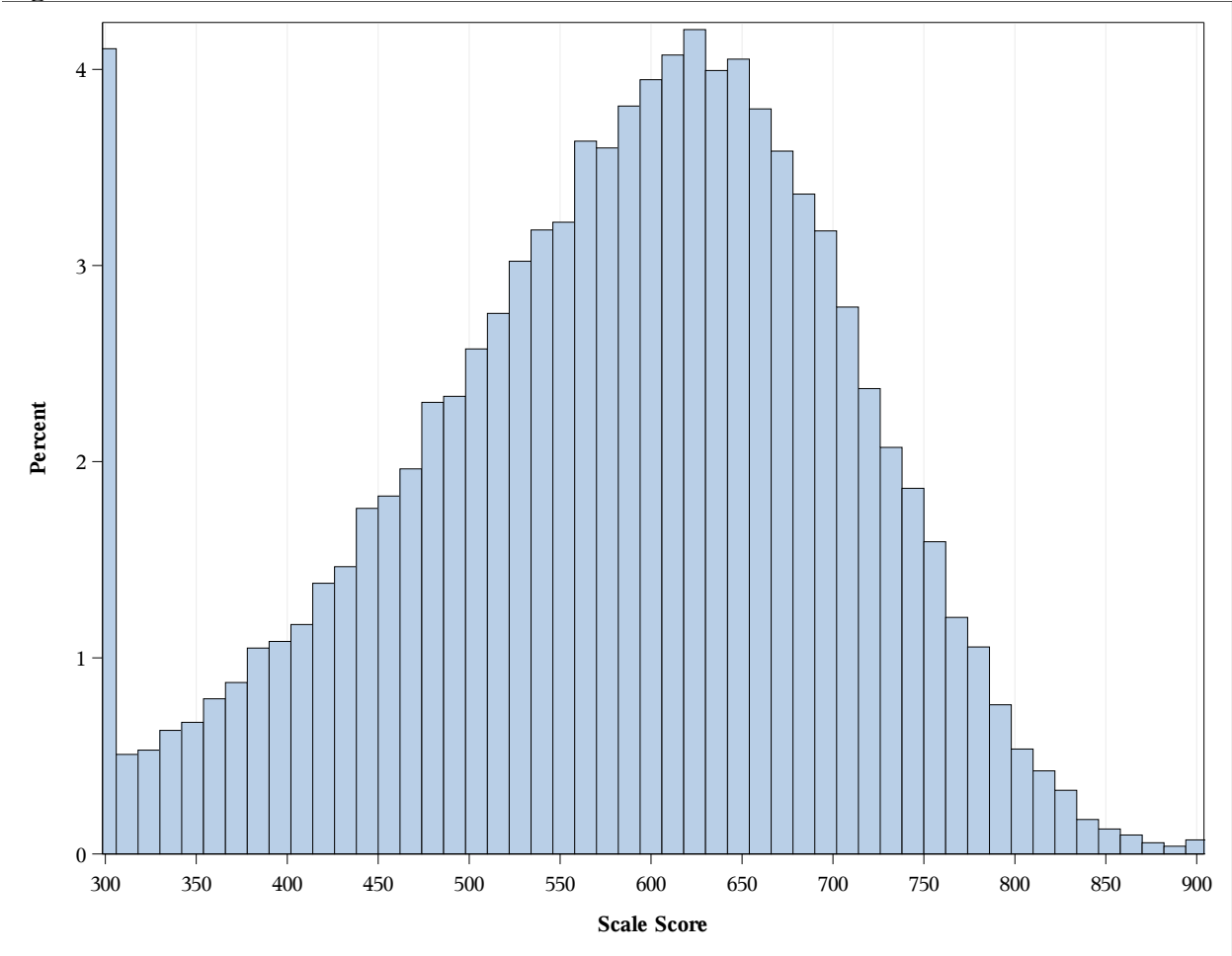
**Figure 12. Grade 5 Scale Score Distribution**



**Figure 13. Grade 7 Scale Score Distribution**

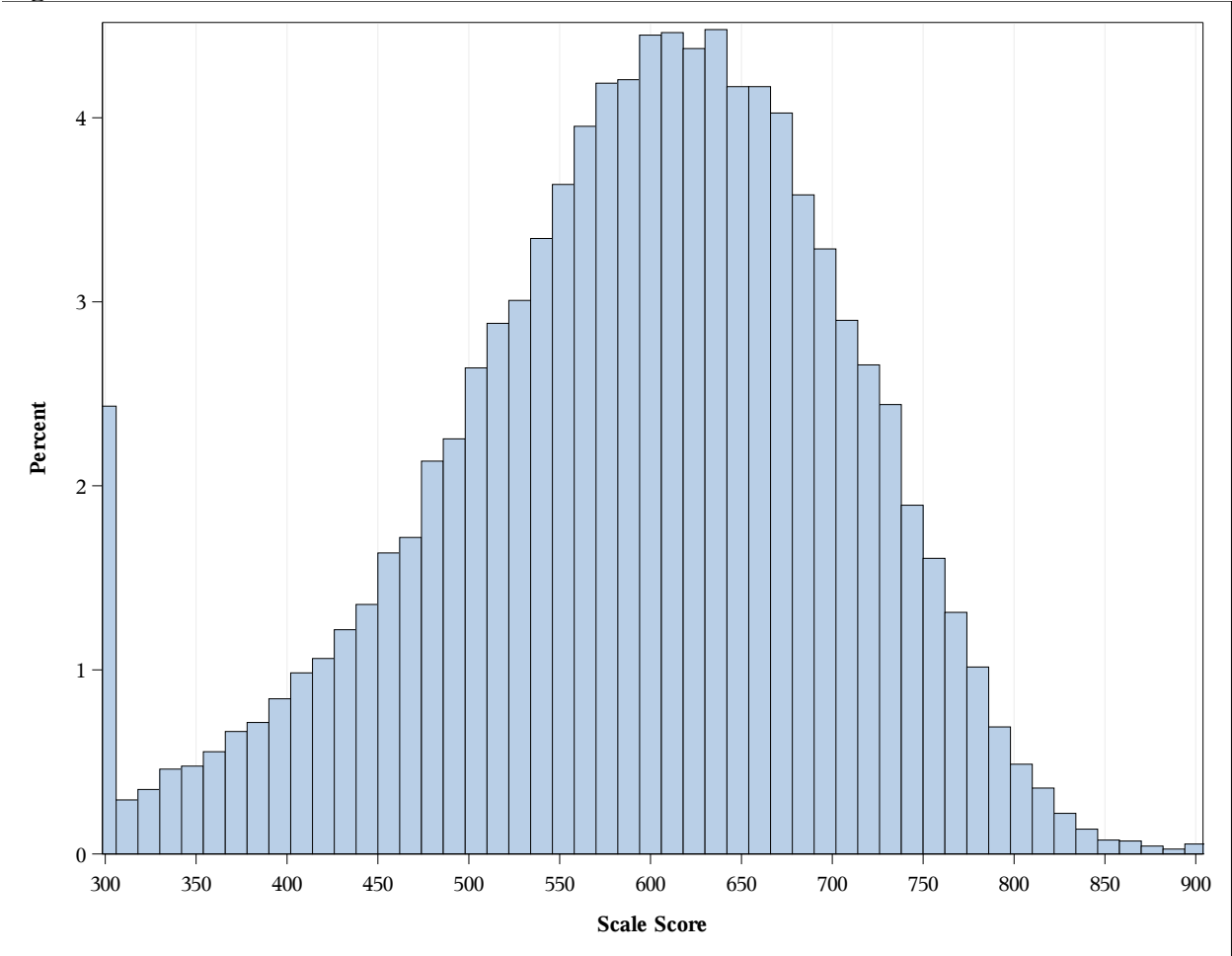


**Figure 14. Grade 8 Scale Score Distribution**





**Figure 15. HS Science Scale Score Distribution**



**Figure 16. Grade 4 Scree Plot**

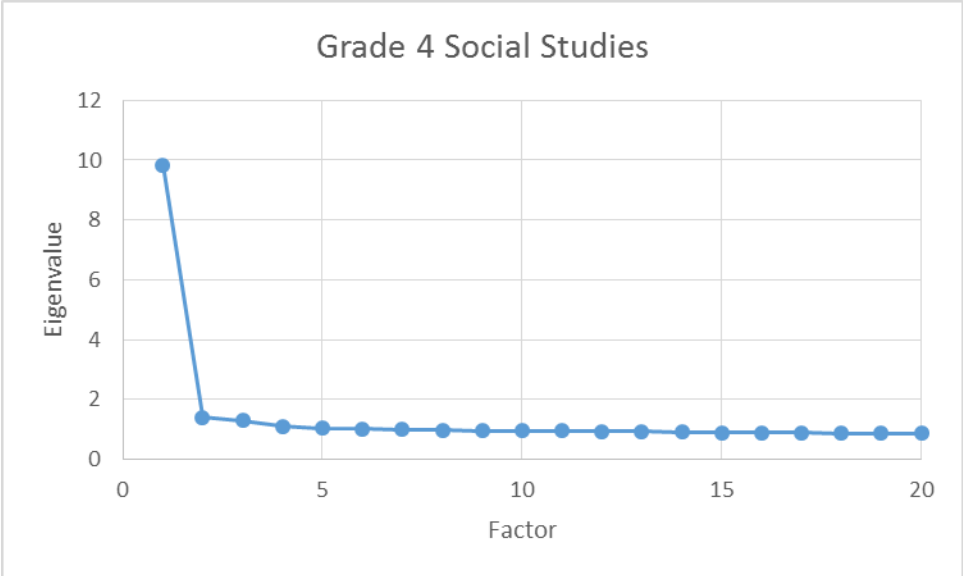


Figure 17. Grade 5 Scree Plot

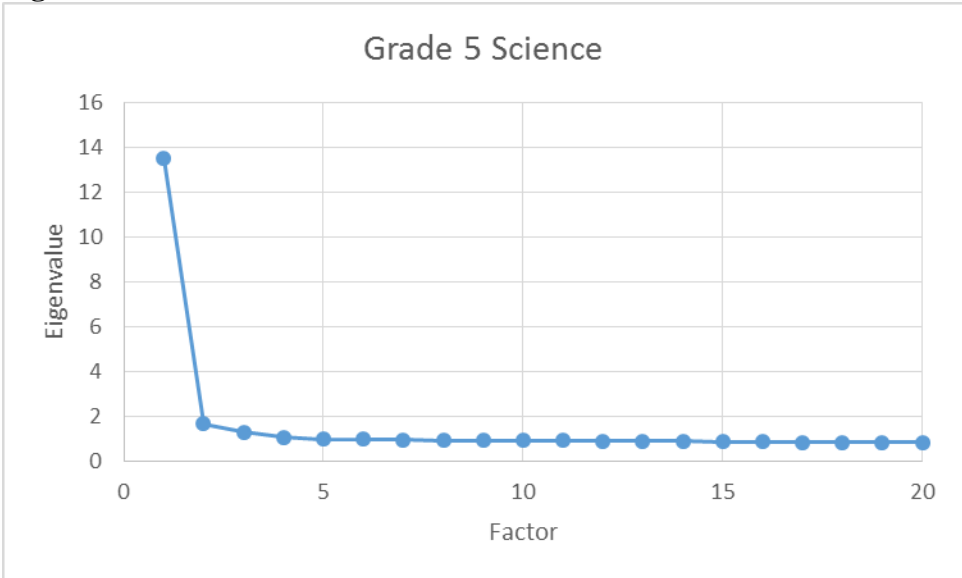


Figure 18. Grade 7 Scree Plot

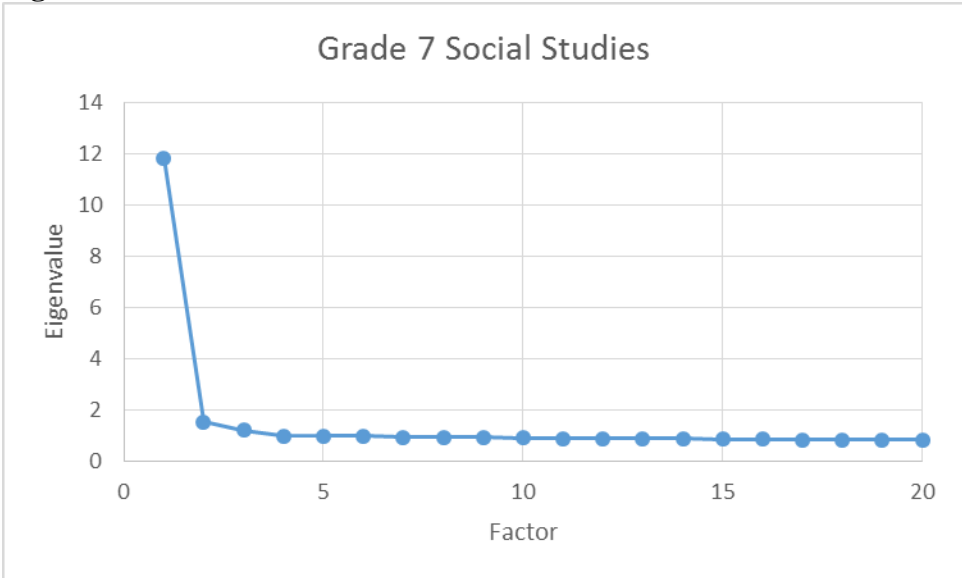


Figure 19. Grade 8 Scree Plot

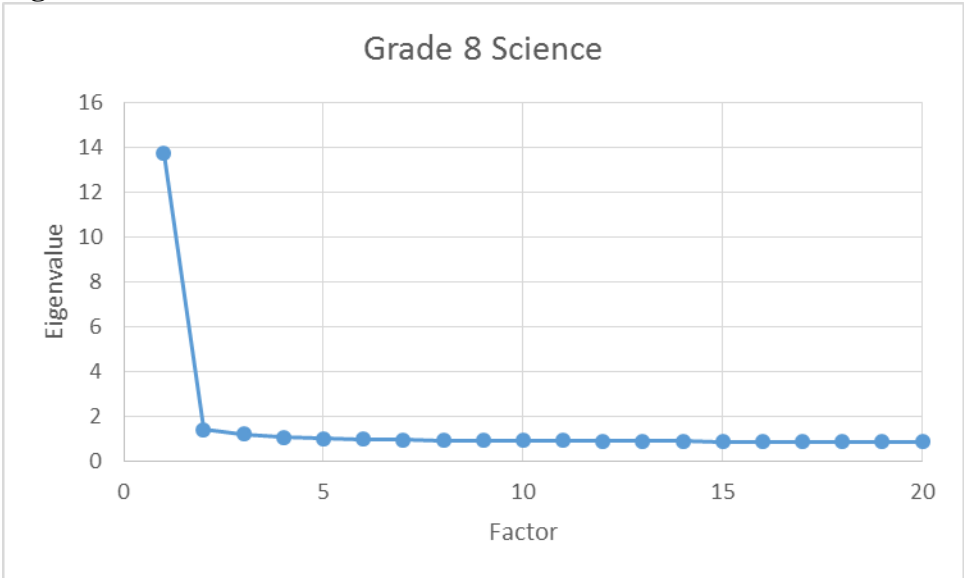


Figure 20. HS Science Scree Plot

