# Appendix A – Gender comparison

| Interest | | Totally agree (TA) | Partially agree (PA) | Undecided (U) | Partially disagree (PD) | Totally disagree (TD) |
|---|---|---|---|---|---|---|
| A2 Mathematics is exiting and interesting | boy | 22.6 | 31.4 | 13.9 | 21.2 | 10.9 |
| | girl | 15.0 | 47.9 | 9.3 | 22.9 | 5.0 |
| A3 Mathematics is one of the subjects I like the least | boy | 23.4 | 16.1 | 11.7 | 25.5 | 23.4 |
| | girl | 22.0 | 21.3 | 10.6 | 27.0 | 19.1 |
| A8 Mathematics is one of the subjects I like the best | boy | 16.7 | 19.6 | 14.5 | 18.8 | 30.4 |
| | girl | 18.1 | 22.5 | 14.5 | 21.0 | 23.9 |
| A9 I never get tired of doing mathematics | boy | 6.6 | 12.4 | 13.1 | 27.7 | 40.1 |
| | girl | 7.8 | 12.1 | 12.8 | 39.0 | 28.4 |
| A10 I like to do and think about mathematics also out of school | boy | 3.6 | 20.4 | 16.1 | 24.1 | 35.8 |
| | girl | 2.9 | 8.0 | 23.2 | 34.8 | 31.2 |
| A13 Mathematics is boring | boy | 26.1 | 25.4 | 12.3 | 22.5 | 13.8 |
| | girl | 17.9 | 30.7 | 14.3 | 23.6 | 13.6 |
| C3 Mathematics does not suit me | boy | 13.9 | 21.2 | - | 33.6 | 31.4 |
| | girl | 21.0 | 17.4 | - | 31.9 | 29.7 |

| Hard-working | | Totally agree (TA) | Partially agree (PA) | Partially disagree (PD) | Totally disagree (TD) |
|---|---|---|---|---|---|
| B5 I have to solve many tasks to become good at mathematics | boy | 36.2 | 41.3 | 10.9 | 11.6 |
| | girl | 38.8 | 42.4 | 15.8 | 2.9 |
| B7 I have to work hard in mathematics even if I do not enjoy it | boy | 34.8 | 44.9 | 11.6 | 8.7 |
| | girl | 41.3 | 38.4 | 13.8 | 6.5 |
| B8 To be good at mathematics is dependent on hard work | boy | 37.0 | 39.9 | 16.7 | 6.5 |
| | girl | 44.6 | 46.8 | 5.0 | 3.6 |
| B9 I have to solve many tasks to remember the method | boy | 31.2 | 47.1 | 13.0 | 8.7 |
| | girl | 39.6 | 42.4 | 15.1 | 2.9 |
| B11 It is my responsibility to learn mathematics | boy | 42.0 | 41.3 | 11.6 | 5.1 |
| | girl | 37.7 | 51.4 | 9.4 | 1.4 |
| B13 I have to ponder a lot in mathematics | boy | 29.7 | 58.0 | 5.8 | 6.5 |
| | girl | 34.8 | 50.7 | 12.3 | 2.2 |
| C4 If I want to be able in mathematics I have to spend plenty of time solving tasks | boy | 32.8 | 48.2 | 13.1 | 5.8 |
| | girl | 34.1 | 52.9 | 12.3 | .7 |
| C6 I can become clever in mathematics if I learn all the rules | boy | 31.2 | 49.3 | 14.5 | 5.1 |
| | girl | 25.4 | 48.6 | 23.9 | 2.2 |

Kislenko, K. (2009). An investigation of Norwegian students' affective domain in mathematics. *Nordic Studies in Mathematics Education*, 14 (4), Appendix.

| Self-confidence | | Totally agree (TA) | Partially agree (PA) | Undecided (U) | Partially disagree (PD) | Totally disagree (TD) |
|---|---|---|---|---|---|---|
| A4 Mathematics is difficult | boy | 18.1 | 47.8 | 9.4 | 18.1 | 6.5 |
| | girl | 24.1 | 40.4 | 13.5 | 18.4 | 3.5 |
| A14 Mathematics is easy | boy | 8.7 | 26.1 | 16.7 | 34.1 | 14.5 |
| | girl | 5.8 | 29.7 | 22.5 | 29.0 | 13.0 |
| C1 I am able in mathematics | boy | 23.9 | 41.3 | - | 22.5 | 12.3 |
| | girl | 15.2 | 47.8 | - | 21.7 | 15.2 |
| C2 I can solve most of the mathematical tasks if I concentrate | boy | 31.4 | 48.2 | - | 16.8 | 3.6 |
| | girl | 31.9 | 43.5 | - | 18.8 | 5.8 |
| C8 Mathematics is easy for me | boy | 10.9 | 33.6 | - | 37.2 | 18.2 |
| | girl | 6.5 | 35.5 | - | 33.3 | 24.6 |
| C10 It is bad luck if I do not do well on a mathematics task | boy | 15.4 | 33.8 | - | 33.1 | 17.6 |
| | girl | 10.2 | 30.7 | - | 40.1 | 19.0 |

| Usefulness | | Totally agree (TA) | Partially agree (PA) | Undecided (U) | Partially disagree (PD) | Totally disagree (TD) |
|---|---|---|---|---|---|---|
| A1 Mathematics is important | boy | 61.6 | 26.1 | 5.1 | 5.1 | 2.2 |
| | girl | 66.0 | 28.4 | 5.0 | 0.7 | 0 |
| A5 Mathematics is useful for me in my life | boy | 46.4 | 34.8 | 5.8 | 8.0 | 5.1 |
| | girl | 51.4 | 30.7 | 8.6 | 7.1 | 2.1 |
| A6 It is important to be good at mathematics in school | boy | 42.8 | 38.4 | 10.9 | 5.1 | 2.9 |
| | girl | 30.0 | 52.1 | 9.3 | 7.9 | 0.7 |
| A7 I need mathematics in order to study what I would like after finishing school | boy | 30.4 | 22.5 | 27.5 | 7.2 | 12.3 |
| | girl | 41.1 | 23.4 | 20.6 | 10.6 | 4.3 |
| A11 Mathematics helps me to understand life in general | boy | 13.3 | 25.2 | 21.5 | 21.5 | 18.5 |
| | girl | 8.6 | 31.4 | 28.6 | 18.6 | 12.9 |
| A16 Good mathematical knowledge makes it easier to learn other subjects | boy | 19.6 | 41.3 | 20.3 | 10.9 | 8.0 |
| | girl | 21.6 | 42.4 | 21.6 | 12.2 | 2.2 |

| Insecurity | | Never | Seldom | Often | Very often |
|---|---|---|---|---|---|
| D1 I am afraid of making mistakes when I do mathematics | boy | 20.3 | 48.6 | 24.6 | 6.5 |
| | girl | 16.7 | 37.7 | 33.3 | 12.3 |
| D2 I become nervous when we have tests in mathematics | boy | 21.0 | 44.2 | 20.3 | 14.5 |
| | girl | 15.2 | 31.9 | 28.3 | 24.6 |
| D3 I am afraid to show my teacher that I do not understand mathematical problems | boy | 42.8 | 37.7 | 13.8 | 5.8 |
| | girl | 46.4 | 32.6 | 14.5 | 6.5 |

| MAD | | Totally agree (TA) | Partially agree (PA) | Partially disagree (PD) | Totally disagree (TD) |
|---|---|---|---|---|---|
| B1 The most important in mathematics is to know many rules | boy | 21.0 | 52.9 | 16.7 | 9.4 |
| | girl | 19.4 | 49.6 | 25.2 | 5.8 |
| B2 It is important to be fast finding a right answer in mathematics | boy | 13.8 | 32.6 | 33.3 | 20.3 |
| | girl | 3.6 | 28.8 | 38.1 | 29.5 |
| B3 There is just one right answer in mathematical tasks | boy | 13.0 | 16.7 | 39.9 | 30.4 |
| | girl | 9.4 | 23.9 | 39.9 | 26.8 |
| B4 When I do mistakes in mathematics it shows that I do not have enough knowledge in mathematics | boy | 7.2 | 25.4 | 39.9 | 27.5 |
| | girl | 6.5 | 28.1 | 40.3 | 25.2 |
| B6 Right answer is more important than the procedure I have used for finding the right answer | boy | 9.5 | 18.2 | 35.8 | 36.5 |
| | girl | 8.0 | 15.9 | 38.4 | 37.7 |
| C7 It is innate to be good in mathematics | boy | 12.4 | 39.4 | 25.5 | 22.6 |
| | girl | 12.4 | 28.5 | 26.3 | 32.8 |

## Appendix B – Grade comparison

| Interest | | Totally agree (TA) | Partially agree (PA) | Undecided (U) | Partially disagree (PD) | Totally disagree (TD) |
|---|---|---|---|---|---|---|
| A2 Mathematics is exiting and interesting | 9 | 13.1 | 50.0 | 17.9 | 11.9 | 7.1 |
| | 1X | 26.8 | 39.2 | 7.2 | 22.7 | 4.1 |
| | 1Y | 21.0 | 21.0 | 11.3 | 32.3 | 14.5 |
| A3 Mathematics is one of the subjects I like the least | 9 | 17.6 | 23.5 | 17.6 | 24.7 | 16.5 |
| | 1X | 17.7 | 14.6 | 6.3 | 31.3 | 30.2 |
| | 1Y | 34.9 | 17.5 | 11.1 | 19.0 | 17.5 |
| A8 Mathematics is one of the subjects I like the best | 9 | 10.8 | 20.5 | 20.5 | 22.9 | 25.3 |
| | 1X | 24.0 | 24.0 | 14.6 | 16.7 | 20.8 |
| | 1Y | 19.0 | 12.7 | 7.9 | 20.6 | 39.7 |
| A9 I never get tired of doing mathematics | 9 | 8.2 | 9.4 | 15.3 | 37.6 | 29.4 |
| | 1X | 6.3 | 15.6 | 11.5 | 40.6 | 26.0 |
| | 1Y | 7.9 | 14.3 | 11.1 | 17.5 | 49.2 |
| A10 I like to do and think about mathematics also out of school | 9 | 2.4 | 19.0 | 13.1 | 32.1 | 33.3 |
| | 1X | 3.1 | 13.5 | 21.9 | 32.3 | 29.2 |
| | 1Y | 6.5 | 12.9 | 14.5 | 22.6 | 43.5 |
| A13 Mathematics is boring | 9 | 15.5 | 36.9 | 15.5 | 17.9 | 14.3 |
| | 1X | 12.4 | 28.9 | 10.3 | 30.9 | 17.5 |
| | 1Y | 41.3 | 17.5 | 9.5 | 20.6 | 11.1 |
| C3 Mathematics does not suit me | 9 | 14.3 | 22.6 | - | 38.1 | 25.0 |
| | 1X | 12.6 | 17.9 | - | 32.6 | 36.8 |
| | 1Y | 30.2 | 20.6 | - | 20.6 | 28.6 |

| Hard-working | | Totally agree (TA) | Partially agree (PA) | Partially disagree (PD) | Totally disagree (TD) |
|---|---|---|---|---|---|
| B5 I have to solve many tasks to become good at mathematics | 9 | 29.4 | 41.2 | 16.5 | 12.9 |
| | 1X | 44.8 | 40.6 | 8.3 | 6.3 |
| | 1Y | 34.9 | 55.6 | 9.5 | .0 |
| B7 I have to work hard in mathematics even if I do not enjoy it | 9 | 48.2 | 37.6 | 10.6 | 3.5 |
| | 1X | 27.1 | 44.8 | 17.7 | 10.4 |
| | 1Y | 36.5 | 44.4 | 9.5 | 9.5 |
| B8 To be good at mathematics is dependent on hard work | 9 | 49.4 | 34.1 | 9.4 | 7.1 |
| | 1X | 36.5 | 46.9 | 12.5 | 4.2 |
| | 1Y | 31.7 | 54.0 | 11.1 | 3.2 |
| B9 I have to solve many tasks to remember the method | 9 | 40.0 | 38.8 | 16.5 | 4.7 |
| | 1X | 36.5 | 40.6 | 15.6 | 7.3 |
| | 1Y | 33.3 | 54.0 | 9.5 | 3.2 |
| B11 It is my responsibility to learn mathematics | 9 | 42.4 | 42.4 | 10.6 | 4.7 |
| | 1X | 41.7 | 45.8 | 10.4 | 2.1 |
| | 1Y | 29.0 | 61.3 | 6.5 | 3.2 |
| B13 I have to ponder a lot in mathematics | 9 | 40.5 | 46.4 | 7.1 | 6.0 |
| | 1X | 29.2 | 56.3 | 12.5 | 2.1 |
| | 1Y | 38.1 | 54.0 | 3.2 | 4.8 |
| C4 If I want to be able in mathematics I have to spend plenty of time solving tasks | 9 | 45.2 | 41.7 | 10.7 | 2.4 |
| | 1X | 32.6 | 48.4 | 15.8 | 3.2 |
| | 1Y | 27.0 | 61.9 | 9.5 | 1.6 |
| C6 I can become clever in mathematics if I learn all the rules | 9 | 38.1 | 40.5 | 14.3 | 7.1 |
| | 1X | 25.0 | 47.9 | 24.0 | 3.1 |
| | 1Y | 14.3 | 57.1 | 27.0 | 1.6 |

| Self-confidence | | Totally agree (TA) | Partially agree (PA) | Undecided (U) | Partially disagree (PD) | Totally disagree (TD) |
|---|---|---|---|---|---|---|
| A4 Mathematics is difficult | 9 | 15.3 | 49.4 | 18.8 | 11.8 | 4.7 |
| | 1X | 22.7 | 45.4 | 5.2 | 23.7 | 3.1 |
| | 1Y | 34.9 | 41.3 | 4.8 | 14.3 | 4.8 |
| A14 Mathematics is easy | 9 | 3.6 | 27.4 | 26.2 | 29.8 | 13.1 |
| | 1X | 5.2 | 30.2 | 14.6 | 36.5 | 13.5 |
| | 1Y | 6.5 | 16.1 | 12.9 | 41.9 | 22.6 |
| C1 I am able in mathematics | 9 | 13.1 | 50.0 | - | 25.0 | 11.9 |
| | 1X | 22.9 | 46.9 | - | 19.8 | 10.4 |
| | 1Y | 15.9 | 27.0 | - | 31.7 | 25.4 |
| C2 I can solve most of the mathematical tasks if I concentrate | 9 | 29.8 | 53.6 | - | 10.7 | 6.0 |
| | 1X | 26.3 | 53.7 | - | 16.8 | 3.2 |
| | 1Y | 22.2 | 33.3 | - | 36.5 | 7.9 |
| C8 Mathematics is easy for me | 9 | 4.8 | 36.9 | - | 42.9 | 15.5 |
| | 1X | 9.4 | 36.5 | - | 34.4 | 19.8 |
| | 1Y | 6.5 | 22.6 | - | 29.0 | 41.9 |
| C10 It is bad luck if I do not do well on a mathematics task | 9 | 15.7 | 22.9 | - | 42.2 | 19.3 |
| | 1X | 10.5 | 42.1 | - | 27.4 | 20.0 |
| | 1Y | 4.8 | 32.3 | - | 46.8 | 16.1 |

| Usefulness | | Totally agree (TA) | Partially agree (PA) | Undecided (U) | Partially disagree (PD) | Totally disagree (TD) |
|---|---|---|---|---|---|---|
| A1 Mathematics is important | 9 | 75.3 | 22.4 | 0 | 0 | 2.4 |
| | 1X | 58.8 | 26.8 | 8.2 | 5.2 | 1.0 |
| | 1Y | 46.0 | 39.7 | 9.5 | 4.8 | 0 |
| A5 Mathematics is useful for me in my life | 9 | 65.9 | 20.0 | 7.1 | 4.7 | 2.4 |
| | 1X | 39.6 | 39.6 | 9.4 | 6.3 | 5.2 |
| | 1Y | 33.3 | 39.7 | 6.3 | 15.9 | 4.8 |
| A6 It is important to be good at mathematics in school | 9 | 51.2 | 35.7 | 8.3 | 2.4 | 2.4 |
| | 1X | 21.6 | 59.8 | 12.4 | 3.1 | 3.1 |
| | 1Y | 33.3 | 42.9 | 6.3 | 17.5 | 0 |
| A7 I need mathematics in order to study what I would like after finishing school | 9 | 41.2 | 27.1 | 17.6 | 4.7 | 9.4 |
| | 1X | 39.2 | 17.5 | 24.7 | 9.3 | 9.3 |
| | 1Y | 17.5 | 25.4 | 33.3 | 15.9 | 7.9 |
| A11 Mathematics helps me to understand life in general | 9 | 17.9 | 31.0 | 26.2 | 15.5 | 9.5 |
| | 1X | 3.2 | 31.6 | 23.2 | 20.0 | 22.1 |
| | 1Y | 9.7 | 19.4 | 21.0 | 30.6 | 19.4 |
| A16 Good mathematical knowledge makes it easier to learn other subjects | 9 | 25.0 | 32.1 | 21.4 | 14.3 | 7.1 |
| | 1X | 20.6 | 52.6 | 16.5 | 5.2 | 5.2 |
| | 1Y | 15.9 | 39.7 | 28.6 | 11.1 | 4.8 |

| Insecurity | | Never | Seldom | Often | Very often |
|---|---|---|---|---|---|
| D1 I am afraid of making mistakes when I do mathematics | 9 | 22.6 | 39.3 | 28.6 | 9.5 |
| | 1X | 21.9 | 40.6 | 29.2 | 8.3 |
| | 1Y | 6.3 | 44.4 | 34.9 | 14.3 |
| D2 I become nervous when we have tests in mathematics | 9 | 14.3 | 32.1 | 25.0 | 28.6 |
| | 1X | 24.0 | 41.7 | 18.8 | 15.6 |
| | 1Y | 14.3 | 38.1 | 33.3 | 14.3 |
| D3 I am afraid to show my teacher that I do not understand mathematical problems | 9 | 54.8 | 32.1 | 10.7 | 2.4 |
| | 1X | 42.7 | 36.5 | 11.5 | 9.4 |
| | 1Y | 28.6 | 34.9 | 27.0 | 9.5 |

| MAD | | Totally agree (TA) | Partially agree (PA) | Partially disagree (PD) | Totally disagree (TD) |
|---|---|---|---|---|---|
| B1 The most important in mathematics is to know many rules | 9 | 27.1 | 52.9 | 11.8 | 8.2 |
| | 1X | 14.6 | 47.9 | 27.1 | 10.4 |
| | 1Y | 12.7 | 57.1 | 27.0 | 3.2 |
| B2 It is important to be fast finding a right answer in mathematics | 9 | 3.5 | 25.9 | 35.3 | 35.3 |
| | 1X | 9.4 | 26.0 | 41.7 | 22.9 |
| | 1Y | 14.3 | 42.9 | 28.6 | 14.3 |
| B3 There is just one right answer in mathematical tasks | 9 | 10.7 | 15.5 | 50.0 | 23.8 |
| | 1X | 14.6 | 21.9 | 39.6 | 24.0 |
| | 1Y | 4.8 | 27.0 | 36.5 | 31.7 |
| B4 When I do mistakes in mathematics it shows that I do not have enough knowledge in mathematics | 9 | 8.2 | 21.2 | 36.5 | 34.1 |
| | 1X | 7.3 | 31.3 | 36.5 | 25.0 |
| | 1Y | 7.9 | 27.0 | 52.4 | 12.7 |
| B6 Right answer is more important than the procedure I have used for finding the right answer | 9 | 4.7 | 17.6 | 38.8 | 38.8 |
| | 1X | 9.4 | 12.5 | 38.5 | 39.6 |
| | 1Y | 11.5 | 21.3 | 34.4 | 32.8 |
| C7 It is innate to be good in mathematics | 9 | 8.4 | 30.1 | 19.3 | 42.2 |
| | 1X | 12.5 | 41.7 | 27.1 | 18.8 |
| | 1Y | 22.2 | 27.0 | 25.4 | 25.4 |

## Appendix C – Exploratory Factor Analysis (using SPSS 14)

### *6–factor solution's Pattern Matrix*

| Items | Factor | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| A3 Mathematics is one of the subjects I like the least | **-0.772** | 0.058 | -0.048 | -0.010 | -0.197 | -0.023 |
| A8 Mathematics is one of the subjects I like the best | **0.750** | 0.041 | 0.200 | -0.057 | 0.090 | 0.133 |
| A13 Mathematics is boring | **-0.723** | 0.035 | -0.093 | -0.147 | -0.064 | -0.022 |
| A2 Mathematics is exiting and interesting | **0.602** | 0.092 | 0.199 | 0.004 | 0.014 | 0.253 |
| C3 Mathematics does not suit me | **-0.554** | 0.086 | -0.194 | -0.219 | -0.063 | -0.147 |
| A9 I never get tired of doing mathematics | **0.482** | 0.052 | 0.214 | -0.145 | -0.073 | 0.084 |
| A10 I like to do and think about mathematics also out of school | **0.426** | -0.025 | 0.127 | -0.145 | -0.121 | 0.322 |
| B9 I have to solve many tasks to remember the method | 0.164 | **0.746** | -0.116 | 0.058 | -0.055 | -0.031 |
| C4 If I want to be able in mathematics I have to spend plenty of time solving tasks | -0.019 | **0.669** | -0.081 | 0.144 | -0.176 | -0.031 |
| B7 I have to work hard in mathematics even if I do not enjoy it | -0.238 | **0.523** | 0.052 | -0.021 | 0.142 | 0.026 |
| B8 To be good at mathematics is dependent on hard work | -0.108 | **0.514** | 0.016 | -0.066 | -0.113 | 0.123 |
| B13 I have to ponder a lot in mathematics | -0.044 | **0.505** | -0.156 | -0.033 | -0.063 | 0.011 |
| B5 I have to solve many tasks to become good at mathematics | 0.181 | **0.462** | -0.077 | -0.203 | -0.002 | 0.075 |
| B10 It is important to make many tests in mathematics | 0.244 | **0.435** | 0.098 | -0.011 | 0.037 | 0.071 |
| B12 Mathematics becomes more difficult when progressing through the grades | -0.152 | **0.430** | -0.024 | -0.001 | -0.110 | -0.024 |
| B11 It is my responsibility to learn mathematics | 0.155 | **0.370** | 0.183 | 0.020 | -0.035 | 0.086 |
| C6 I can become clever in mathematics if I learn all the rules | -0.148 | **0.350** | 0.161 | -0.036 | 0.020 | 0.122 |
| B1 The most important in mathematics is to know many rules | -0.134 | **0.256** | 0.011 | -0.138 | 0.005 | 0.242 |
| C9 I do little progress in mathematics | -0.152 | **0.209** | 0.194 | 0.043 | -0.041 | -0.018 |
| C2 I can solve most of the mathematical tasks if I concentrate | -0.022 | 0.069 | **0.747** | 0.183 | -0.117 | 0.109 |
| C8 Mathematics is easy for me | 0.080 | -0.169 | **0.722** | -0.085 | 0.136 | 0.100 |
| A14 Mathematics is easy | 0.088 | -0.100 | **0.659** | -0.119 | 0.182 | 0.118 |
| C1 I am able in mathematics | 0.264 | 0.035 | **0.656** | 0.080 | 0.113 | 0.085 |
| A4 Mathematics is difficult | -0.207 | 0.264 | **-0.482** | -0.130 | -0.183 | -0.046 |
| C10 It is bad luck if I do not do well on a mathematics task | 0.084 | 0.047 | **0.344** | -0.182 | -0.014 | -0.110 |
| C5 I am lucky if I do well on a test in mathematics | -0.144 | 0.121 | **-0.283** | -0.238 | -0.140 | -0.038 |
| B4 When I do mistakes in mathematics it shows that I do not have enough knowledge in mathematics | 0.129 | 0.018 | -0.168 | **-0.468** | -0.129 | 0.133 |

| | | | | | | |
|---|---|---|---|---|---|---|
| B3 There is just one right answer in mathematical tasks | 0.112 | 0.040 | -0.002 | **-0.423** | -0.093 | -0.092 |
| A15 I do not need to know mathematics | -0.066 | 0.104 | -0.048 | **-0.400** | 0.012 | -0.303 |
| B6 Right answer is more important than the procedure I have used for finding the right answer | -0.171 | 0.031 | 0.066 | **-0.380** | 0.089 | 0.011 |
| B2 It is important to be fast finding a right answer in mathematics | -0.018 | 0.072 | 0.026 | **-0.362** | -0.017 | 0.210 |
| C7 It is innate to be good in mathematics | -0.081 | -0.093 | 0.113 | **-0.294** | -0.136 | 0.036 |
| D2 I become nervous when we have tests in mathematics | 0.170 | -0.053 | -0.152 | -0.113 | **0.770** | -0.060 |
| D1 I am afraid of making mistakes when I do mathematics | -0.129 | -0.055 | 0.067 | 0.113 | **0.687** | 0.061 |
| D3 I am afraid to show my teacher that I do not understand mathematical problems | 0.004 | -0.035 | 0.169 | 0.111 | **0.526** | -0.001 |
| A11 Mathematics helps me to understand life in general | 0.094 | -0.006 | 0.032 | -0.055 | -0.013 | **0.660** |
| A5 Mathematics is useful for me in my life | -0.046 | 0.146 | 0.065 | 0.262 | -0.040 | **0.655** |
| A12 Mathematics helps those who make important decisions | 0.031 | 0.004 | 0.051 | -0.134 | 0.015 | **0.602** |
| A16 Good mathematical knowledge makes it easier to learn other subjects | 0.038 | 0.021 | -0.061 | -0.090 | -0.005 | **0.570** |
| A7 I need mathematics in order to study what I would like after finishing school | 0.077 | 0.011 | -0.024 | 0.131 | -0.042 | **0.562** |
| A1 Mathematics is important | 0.147 | 0.186 | 0.133 | 0.166 | 0.083 | **0.451** |
| A6 It is important to be good at mathematics in school | -0.038 | 0.181 | 0.112 | -0.148 | 0.043 | **0.429** |

Extraction Method: Maximum Likelihood.

Rotation Method: Oblimin with Kaiser Normalization.

## Appendix D – Confirmatory Factor Analysis (using AMOS 4)

### 1. Factor

KIM items (A2, A3, A8, A9, A10, A13)
EFA items (A2, A3, A8, A9, A10, A13, C3)
Final result: items A2, A3, A8, A9, A10, A13, C3; INTEREST in mathematics "I like mathematics" ($N = 7$, alpha = .90)

| CMIN/df (1<X<3) | P (>.05) | RMR (<.05) | GFI (>0.95; =AGFI) | AGFI (>.95) | TLI (>.95) | CFI (>.95) | RMSEA (<.05) |
|---|---|---|---|---|---|---|---|
| 11.56 | 0.000 | 0.068 | 0.923 | 0.846 | 0.889 | 0.926 | 0.135 |

### 2. Factor

KIM items (B5, B7, B8, B9, B11, B12, B13, C4, C6)
EFA items (B1, B5, B7, B8, B9, B10, B11, B12, B13, C4, C6, C9)
Final result: items B5, B7, B8, B9, B11, B13, C4, C6; HARD-WORKING in mathematics "I have to work hard in mathematics" ($N = 8$, alpha = .761)

| CMIN/df (1<X<3) | P (>.05) | RMR (<.05) | GFI (>0.95; =AGFI) | AGFI (>.95) | TLI (>.95) | CFI (>.95) | RMSEA (<.05) |
|---|---|---|---|---|---|---|---|
| 1.428 | 0.097 | 0.026 | 0.974 | 0.954 | 0.970 | 0.979 | 0.040 |

### 3. Factor

KIM items (A4, A14, C1, C2, C3, C5, C8, C10);
EFA items (A4, A14, C1, C2, C5, C8, C10)
Final result: items A4, A14, C1, C2, C8, C10; SELF-CONFIDENCE in mathematics "Mathematics is easy" ($N = 6$, alpha = .85)

| CMIN/df (1<X<3) | P (>.05) | RMR (<.05) | GFI (>0.95; =AGFI) | AGFI (>.95) | TLI (>.95) | CFI (>.95) | RMSEA (<.05) |
|---|---|---|---|---|---|---|---|
| 3.648 | 0.000 | 0.024 | 0.964 | 0.915 | 0.946 | 0.968 | 0.099 |

## 4. Factor

Items (A15, B2, B3, B4, B6, C7).
Final result: items B1, B2, B3, B4, B6, C7; MAD (Mathematics as an Absolute Discipline) "Right answer is more important than the procedure" ($N = 6$, alpha = .55)

| CMIN/df (1<X<3) | P (>.05) | RMR (<.05) | GFI (>0.95; =AGFI) | AGFI (>.95) | TLI (>.95) | CFI (>.95) | RMSEA (<.05) |
|---|---|---|---|---|---|---|---|
| 1.058 | 0.391 | 0.027 | 0.989 | 0.974 | 0.990 | 0.994 | 0.015 |

## 5. Factor

KIM items & EFA items (D1, D2, D3).
Cannot use AMOS 14 as too few parameters are involved.
Final result: items D1, D2, D3; INSECURITY in mathematics "I am afraid to be wrong in mathematics" ($N = 3$, alpha = 0.72)

## 6. Factor

KIM items (A1, A5, A6, A7, A11, A12, A16, A15);
EFA items (A1, A5, A6, A7, A11, A12, A16)
Final result: items A1, A5, A6, A7, A11, A15, A16; USEFULNESS of mathematics "Mathematics is useful" ($N = 7$, alpha = .77)

| CMIN/df (1<X<3) | P (>.05) | RMR (<.05) | GFI (>0.95; =AGFI) | AGFI (>.95) | TLI (>.95) | CFI (>.95) | RMSEA (<.05) |
|---|---|---|---|---|---|---|---|
| 2.121 | 0.008 | 0.027 | 0.968 | 0.937 | 0.943 | 0.962 | 0.064 |