

**Exhibit M3.3: Achievement in Advanced Mathematics Cognitive Domains**

| Country                 | Overall Advanced Mathematics Average Scale Score | Knowing (32 items)  |  | Applying (40 items) |  | Reasoning (29 items) |  |
|-------------------------|--|---------------------|--|---------------------|--|----------------------|--|
|                         |  | Average Scale Score | Difference from Overall Advanced Mathematics Score | Average Scale Score | Difference from Overall Advanced Mathematics Score | Average Scale Score  | Difference from Overall Advanced Mathematics Score |
| Russian Federation 6hr+ | 540 (7.8)  | 538 (8.8)           | -2 (2.0)   | 544 (8.1)           | 4 (2.0)  | 541 (7.2)            | 1 (2.1)  |
| ‡ Lebanon               | 532 (3.1)  | 543 (4.5)           | 11 (2.9) ▲   | 529 (3.8)           | -3 (2.8)   | 527 (3.9)            | -5 (2.2) ▼   |
| ‡ United States         | 485 (5.2)  | 488 (5.7)           | 3 (2.3)  | 480 (5.5)           | -5 (2.0) ▼   | 484 (5.3)            | -1 (2.2)   |
| Russian Federation      | 485 (5.7)  | 478 (6.7)           | -7 (1.7) ▼   | 491 (6.1)           | 6 (1.7) ▲  | 484 (5.3)            | -1 (1.2)   |
| † Portugal              | 482 (2.5)  | 479 (3.0)           | -3 (1.6)   | 476 (2.9)           | -6 (1.8) ▼   | 488 (3.5)            | 6 (2.2) ▲  |
| France                  | 463 (3.1)  | 475 (2.7)           | 13 (2.0) ▲   | 449 (3.4)           | -14 (1.5) ▼  | 462 (3.1)            | 0 (0.9)  |
| Slovenia                | 460 (3.4)  | 466 (3.5)           | 6 (1.7) ▲  | 465 (4.0)           | 5 (2.1) ▲  | 442 (4.0)            | -17 (1.6) ▼  |
| Norway                  | 459 (4.6)  | 445 (4.1)           | -14 (1.8) ▼  | 459 (5.1)           | 0 (2.0)  | 469 (4.4)            | 9 (1.4) ▲  |
| Sweden                  | 431 (4.0)  | 405 (4.7)           | -26 (1.4) ▼  | 434 (3.6)           | 3 (1.5)  | 447 (3.9)            | 16 (2.0) ▲   |
| Italy                   | 422 (5.3)  | 423 (5.5)           | 1 (1.9)  | 425 (5.4)           | 3 (2.2)  | 411 (5.9)            | -11 (3.1) ▼  |

- ▲ Subscale score significantly higher than overall mathematics score
- ▼ Subscale score significantly lower than overall mathematics score

The Russian Federation 6hr+ results are for a subset of the Russian Federation students. This subset of students are in an Intensive stream that have at least 6 hours of mathematics lessons per week.

See Appendix MC.5 for sampling guidelines and sampling participation notes †, ‡, and §.

( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015