

# Chapter 3

## Achievement by Gender in the Mathematics Cognitive Domains at the Fourth and Eighth Grades

This chapter presents average achievement by gender for the three mathematics cognitive domains. In general, as described in Chapter 1 in conjunction with Exhibit 1.1, on average, across the TIMSS 2003 participating countries and benchmarking entities, there was essentially no difference in achievement between boys and girls at either the eighth or fourth grade. Within the cognitive domains, however, there were significant differences by gender, especially at the eighth grade.

At the eighth grade, girls had the advantage in more countries in the knowing domain of mathematics and, even more so in the reasoning domain. Internationally across the TIMSS 2003 participants, girls had significantly higher achievement, on average, than boys in both these domains. Boys had the advantage in more countries in the applying domain.

At the fourth grade, while performance was about the same internationally for boys and girls in the knowing domain, there was a significant difference, on average, favoring boys in the applying domain. Also, boys had significantly higher achievement in considerably more countries than did girls. In the reasoning domain, there was

essentially no difference internationally between boys and girls, but in the few countries where significant differences were found, girls had higher performance.

### **Gender Differences in the Knowing Cognitive Domain**

Exhibit 3.1 shows gender differences in eighth-grade (first page) and fourth-grade (second page) mathematics achievement in the knowing domain. For each grade and for each country, it presents average achievement separately for girls and boys for each of the TIMSS 2003 participants, as well as the difference between the means. Countries are shown in increasing order of this gender difference. The gender difference for each country is shown by a bar indicating the amount of the difference, whether the direction of the difference favored girls or boys, and whether the difference is statistically significant (indicated by a darkened bar).

At the eighth grade, there was a small but significant difference favoring girls, on average, across countries in the knowing domain. Girls had significantly higher achievement than boys in the knowing domain in nearly half the countries (18 countries and the Basque Country, Spain). In contrast, boys had significantly higher achievement than girls in four countries.

At the fourth grade, there essentially was no difference internationally in achievement in the knowing domain between boys and girls. There were differences in some countries, with girls outperforming boys in about the same number of countries as boys outperformed girls. Girls had significantly higher achievement than boys in four countries while boys had significantly higher achievement than girls in four countries and the two Canadian provinces.

**Exhibit 3.1: Average Mathematics Achievement by Gender for Knowing Cognitive Domain**

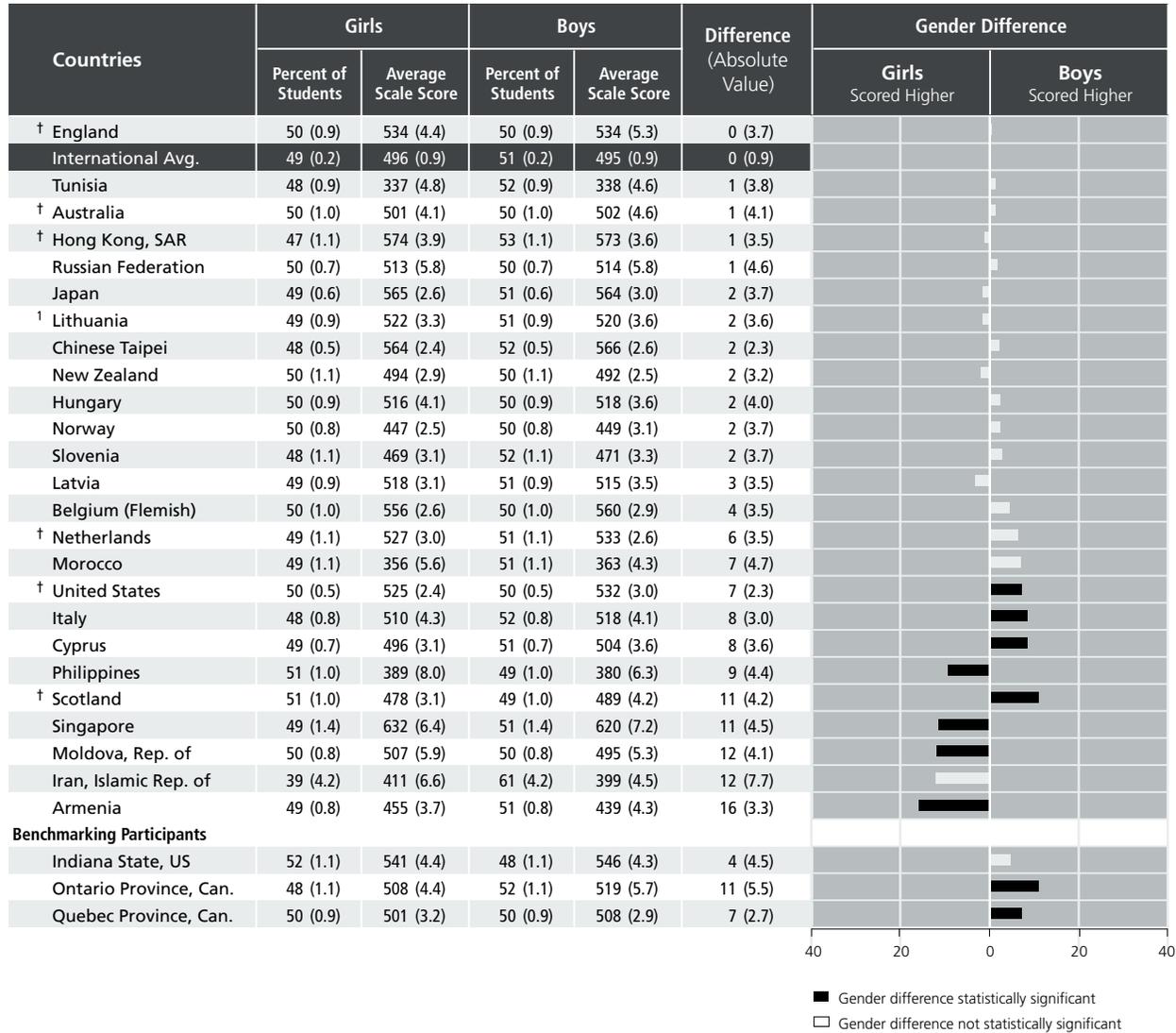
Countries	Girls		Boys		Difference (Absolute Value)	Gender Difference	
	Percent of Students	Average Scale Score	Percent of Students	Average Scale Score		Girls Scored Higher	Boys Scored Higher
Sweden	51 (0.9)	486 (2.5)	49 (0.9)	486 (2.3)	0 (2.0)		
Japan	49 (1.2)	564 (3.8)	51 (1.2)	564 (3.4)	1 (6.1)		
Hungary	50 (1.0)	537 (3.6)	50 (1.0)	536 (3.4)	1 (3.2)		
Estonia	50 (1.0)	538 (3.2)	50 (1.0)	538 (3.0)	1 (2.9)		
South Africa	51 (0.9)	260 (6.1)	49 (0.9)	261 (6.3)	1 (5.8)		
New Zealand	52 (1.7)	484 (4.3)	48 (1.7)	486 (6.5)	2 (5.3)		
Norway	50 (0.8)	451 (2.5)	50 (0.8)	449 (3.0)	2 (3.5)		
<sup>1</sup> Indonesia	50 (0.7)	423 (4.5)	50 (0.7)	421 (4.6)	2 (3.4)		
Italy	50 (0.9)	483 (3.2)	50 (0.9)	485 (3.8)	3 (2.8)		
<b>International Avg.</b>	<b>50 (0.2)</b>	<b>468 (0.6)</b>	<b>50 (0.2)</b>	<b>465 (0.6)</b>	<b>3 (0.7)</b>		
Bulgaria	48 (1.3)	487 (5.0)	52 (1.3)	484 (4.3)	3 (4.5)		
Botswana	51 (0.7)	374 (3.0)	49 (0.7)	370 (3.6)	4 (3.3)		
<sup>2</sup> Israel	52 (1.6)	499 (3.3)	48 (1.6)	503 (4.0)	4 (3.9)		
<sup>†</sup> Hong Kong, SAR	50 (2.4)	591 (3.7)	50 (2.4)	587 (4.6)	4 (5.2)		
<sup>‡</sup> United States	52 (0.7)	508 (3.0)	48 (0.7)	512 (3.0)	4 (2.0)		
Egypt	46 (2.7)	413 (4.1)	54 (2.7)	409 (4.8)	4 (6.0)		
<sup>†</sup> Netherlands	49 (1.2)	518 (3.5)	51 (1.2)	522 (3.6)	4 (3.3)		
<sup>†</sup> Scotland	50 (1.3)	483 (3.9)	50 (1.3)	478 (3.4)	4 (3.4)		
<sup>♦♦</sup> Korea, Rep. of	48 (2.8)	589 (2.9)	52 (2.8)	594 (2.4)	5 (3.2)		
Chinese Taipei	48 (1.0)	589 (5.0)	52 (1.0)	582 (5.0)	7 (4.3)		
Belgium (Flemish)	54 (2.1)	534 (3.4)	46 (2.1)	541 (3.6)	7 (4.8)		
Slovenia	50 (0.9)	502 (2.6)	50 (0.9)	495 (2.9)	7 (3.5)		
Slovak Republic	48 (1.3)	521 (3.4)	52 (1.3)	514 (3.9)	7 (3.2)		
Lebanon	57 (1.8)	444 (3.6)	43 (1.8)	452 (3.9)	8 (4.0)		
<sup>1</sup> Lithuania	50 (0.9)	514 (3.5)	50 (0.9)	507 (2.9)	8 (3.3)		
Romania	52 (0.9)	489 (5.3)	48 (0.9)	481 (5.2)	8 (3.6)		
<sup>1</sup> <sup>‡</sup> Morocco	50 (1.8)	383 (3.7)	50 (1.8)	392 (4.2)	8 (5.4)		
Latvia	49 (0.8)	523 (2.9)	51 (0.8)	514 (3.4)	10 (3.0)		
Singapore	49 (0.8)	596 (2.9)	51 (0.8)	586 (3.7)	10 (2.6)		
Saudi Arabia	43 (2.3)	309 (6.9)	57 (2.3)	319 (6.2)	10 (9.5)		
<sup>2</sup> Macedonia, Rep. of	49 (0.9)	452 (4.1)	51 (0.9)	442 (4.2)	10 (3.3)		
Russian Federation	49 (1.2)	525 (3.5)	51 (1.2)	514 (3.7)	11 (2.5)		
Iran, Islamic Rep. of	40 (4.1)	412 (4.8)	60 (4.1)	401 (4.2)	11 (7.3)		
Malaysia	50 (1.8)	511 (4.4)	50 (1.8)	501 (4.4)	11 (4.2)		
Australia	51 (2.2)	491 (5.1)	49 (2.2)	502 (5.2)	11 (6.4)		
Moldova, Rep. of	51 (0.8)	472 (4.9)	49 (0.8)	460 (4.6)	12 (4.7)		
Armenia	53 (0.7)	486 (3.2)	47 (0.7)	474 (3.4)	13 (3.2)		
<sup>1</sup> Serbia	49 (0.8)	502 (3.1)	51 (0.8)	489 (3.1)	13 (3.2)		
Philippines	58 (0.9)	395 (5.2)	42 (0.9)	379 (6.1)	15 (4.4)		
Chile	48 (1.6)	378 (3.5)	52 (1.6)	393 (4.1)	15 (4.5)		
Cyprus	49 (0.6)	474 (2.1)	51 (0.6)	458 (2.6)	16 (2.6)		
Palestinian Nat'l Auth.	55 (2.4)	398 (4.8)	45 (2.4)	382 (5.6)	17 (7.3)		
Tunisia	53 (0.7)	388 (3.6)	47 (0.7)	410 (3.0)	22 (2.8)		
Ghana	45 (0.9)	220 (7.0)	55 (0.9)	243 (6.4)	23 (6.1)		
Jordan	49 (1.7)	442 (5.5)	51 (1.7)	415 (6.2)	26 (7.2)		
Bahrain	50 (0.4)	419 (2.8)	50 (0.4)	383 (3.2)	36 (4.0)		
<sup>‡</sup> England	50 (2.4)	488 (4.5)	50 (2.4)	489 (5.2)	1 (5.6)		
<b>Benchmarking Participants</b>							
Basque Country, Spain	49 (1.7)	498 (2.2)	51 (1.7)	492 (3.0)	7 (2.8)		
Indiana State, US	49 (1.2)	512 (4.7)	51 (1.2)	518 (5.2)	6 (3.5)		
Ontario Province, Can.	51 (0.9)	512 (2.9)	49 (0.9)	513 (3.1)	1 (2.9)		
Quebec Province, Can.	50 (1.6)	535 (3.3)	50 (1.6)	540 (3.1)	5 (3.4)		

■ Gender difference statistically significant  
□ Gender difference not statistically significant

<sup>†</sup> Met guidelines for sample participation rates only after replacement schools were included (see Exhibit C.2).  
<sup>‡</sup> Nearly satisfied guidelines for sample participation rates only after replacement schools were included (see Exhibit C.2).  
<sup>‡</sup> Did not satisfy guidelines for sample participation rates (see Exhibit C.2).

<sup>1</sup> National Desired Population does not cover all of International Desired Population (see Exhibit C.1).  
<sup>2</sup> National Defined Population covers less than 90% of National Desired Population (see Exhibit C.1).  
<sup>♦♦</sup> Korea tested the same cohort of students as other countries, but later in 2003, at the beginning of the next school year.  
( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

**Exhibit 3.1: Average Mathematics Achievement by Gender for Knowing Cognitive Domain**



SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2003

† Met guidelines for sample participation rates only after replacement schools were included (see Exhibit C.2).

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

<sup>1</sup> National Desired Population does not cover all of International Desired Population (see Exhibit C.1).

### Gender Differences in the Applying Cognitive Domain

Exhibit 3.2 shows achievement differences between girls and boys for the applying domain for the eighth and fourth grades, (on the first and second pages, respectively). For the applying domain at the eighth grade, boys had significantly higher achievement in more countries than girls. Girls had significantly higher achievement than boys in seven countries, and boys had significantly higher achievement than girls in 13 countries and two benchmarking participants (the US state of Indiana and the Canadian province of Quebec).

Fourth grade had a corresponding pattern for the applying domain, with boys having significantly higher achievement in more countries than girls. Girls had higher achievement in the applying domain in four countries whereas boys had higher achievement in seven countries and the two Canadian provinces. Also, internationally, on average, there was a small but significant difference favoring boys.

## Exhibit 3.2: Average Mathematics Achievement by Gender for Applying Cognitive Domain



Countries	Girls		Boys		Difference (Absolute Value)	Gender Difference	
	Percent of Students	Average Scale Score	Percent of Students	Average Scale Score		Girls Scored Higher	Boys Scored Higher
Norway	50 (0.8)	469 (2.8)	50 (0.8)	468 (3.4)	0 (3.2)		
Slovenia	50 (0.9)	491 (3.0)	50 (0.9)	491 (2.8)	0 (3.6)		
Russian Federation	49 (1.2)	503 (3.8)	51 (1.2)	503 (4.1)	0 (2.6)		
<sup>†</sup> Hong Kong, SAR	50 (2.4)	584 (3.7)	50 (2.4)	584 (4.5)	1 (5.1)		
Romania	52 (0.9)	475 (5.4)	48 (0.9)	474 (5.3)	1 (3.9)		
<sup>1</sup> Indonesia	50 (0.7)	408 (5.0)	50 (0.7)	409 (5.3)	1 (3.3)		
New Zealand	52 (1.7)	496 (4.7)	48 (1.7)	497 (7.2)	1 (5.9)		
Bulgaria	48 (1.3)	471 (6.0)	52 (1.3)	472 (4.9)	1 (5.5)		
International Avg.	50 (0.2)	466 (0.6)	50 (0.2)	467 (0.6)	1 (0.6)		
Sweden	51 (0.9)	504 (3.2)	49 (0.9)	506 (2.8)	1 (2.2)		
Palestinian Nat'l Auth.	55 (2.4)	389 (4.1)	45 (2.4)	388 (4.6)	1 (5.8)		
Latvia	49 (0.8)	505 (3.5)	51 (0.8)	504 (4.1)	2 (3.4)		
<sup>1</sup> Lithuania	50 (0.9)	499 (3.2)	50 (0.9)	497 (3.3)	2 (2.9)		
Botswana	51 (0.7)	370 (3.0)	49 (0.7)	368 (2.9)	2 (2.4)		
Japan	49 (1.2)	563 (4.4)	51 (1.2)	565 (3.6)	2 (6.7)		
<sup>†</sup> Scotland	50 (1.3)	506 (4.8)	50 (1.3)	504 (3.8)	3 (3.8)		
<sup>1</sup> Serbia	49 (0.8)	468 (3.5)	51 (0.8)	466 (3.1)	3 (2.9)		
South Africa	51 (0.9)	267 (5.9)	49 (0.9)	271 (6.5)	3 (6.1)		
Estonia	50 (1.0)	531 (3.3)	50 (1.0)	526 (3.2)	4 (2.9)		
Chinese Taipei	48 (1.0)	584 (5.1)	52 (1.0)	580 (5.1)	4 (4.2)		
Egypt	46 (2.7)	401 (4.3)	54 (2.7)	406 (4.9)	5 (6.3)		
<sup>2</sup> Macedonia, Rep. of	49 (0.9)	431 (4.2)	51 (0.9)	426 (4.3)	6 (3.9)		
Slovak Republic	48 (1.3)	499 (4.0)	52 (1.3)	505 (4.3)	6 (3.6)		
<sup>♦♦</sup> Korea, Rep. of	48 (2.8)	581 (2.9)	52 (2.8)	587 (2.3)	6 (2.9)		
Malaysia	50 (1.8)	515 (5.1)	50 (1.8)	508 (4.8)	7 (4.6)		
Iran, Islamic Rep. of	40 (4.1)	420 (4.6)	60 (4.1)	413 (4.1)	7 (7.2)		
Italy	50 (0.9)	479 (3.0)	50 (0.9)	488 (4.0)	8 (3.0)		
Armenia	53 (0.7)	482 (3.5)	47 (0.7)	473 (3.5)	8 (3.6)		
<sup>‡</sup> United States	52 (0.7)	497 (3.5)	48 (0.7)	506 (3.5)	9 (2.1)		
Moldova, Rep. of	51 (0.8)	462 (4.0)	49 (0.8)	453 (4.5)	9 (3.3)		
Lebanon	57 (1.8)	422 (3.7)	43 (1.8)	432 (4.2)	10 (4.0)		
<sup>†</sup> Netherlands	49 (1.2)	538 (4.0)	51 (1.2)	548 (4.3)	10 (3.8)		
Philippines	58 (0.9)	383 (4.8)	42 (0.9)	373 (5.5)	10 (3.5)		
<sup>2</sup> Israel	52 (1.6)	490 (3.7)	48 (1.6)	500 (4.6)	10 (4.2)		
Singapore	49 (0.8)	617 (3.6)	51 (0.8)	606 (4.1)	11 (3.1)		
Hungary	50 (1.0)	517 (3.8)	50 (1.0)	529 (4.0)	11 (3.5)		
Saudi Arabia	43 (2.3)	332 (6.1)	57 (2.3)	344 (4.5)	12 (7.9)		
Ghana	45 (0.9)	286 (4.9)	55 (0.9)	299 (4.8)	13 (5.2)		
Australia	51 (2.2)	501 (6.1)	49 (2.2)	516 (6.0)	15 (7.5)		
Belgium (Flemish)	54 (2.1)	529 (3.3)	46 (2.1)	544 (3.7)	15 (4.6)		
Cyprus	49 (0.6)	465 (1.9)	51 (0.6)	450 (2.5)	16 (3.1)		
<sup>1</sup> <sup>‡</sup> Morocco	50 (1.8)	377 (3.4)	50 (1.8)	393 (3.3)	16 (3.4)		
Chile	48 (1.6)	382 (3.6)	52 (1.6)	399 (4.2)	18 (4.6)		
Tunisia	53 (0.7)	407 (2.6)	47 (0.7)	433 (2.4)	26 (2.1)		
Jordan	49 (1.7)	436 (4.9)	51 (1.7)	409 (5.8)	27 (6.9)		
Bahrain	50 (0.4)	411 (2.3)	50 (0.4)	384 (2.3)	27 (3.2)		
<sup>‡</sup> England	50 (2.4)	503 (5.4)	50 (2.4)	504 (6.0)	1 (6.3)		
<b>Benchmarking Participants</b>							
Basque Country, Spain	49 (1.7)	483 (2.5)	51 (1.7)	480 (3.2)	3 (3.5)		
Indiana State, US	49 (1.2)	498 (5.7)	51 (1.2)	516 (6.7)	17 (4.4)		
Ontario Province, Can.	51 (0.9)	520 (3.3)	49 (0.9)	525 (3.5)	5 (3.1)		
Quebec Province, Can.	50 (1.6)	539 (3.6)	50 (1.6)	549 (3.4)	10 (3.4)		

40 20 0 20 40

■ Gender difference statistically significant  
□ Gender difference not statistically significant

<sup>†</sup> Met guidelines for sample participation rates only after replacement schools were included (see Exhibit C.2).

<sup>‡</sup> Nearly satisfied guidelines for sample participation rates only after replacement schools were included (see Exhibit C.2).

<sup>‡</sup> Did not satisfy guidelines for sample participation rates (see Exhibit C.2).

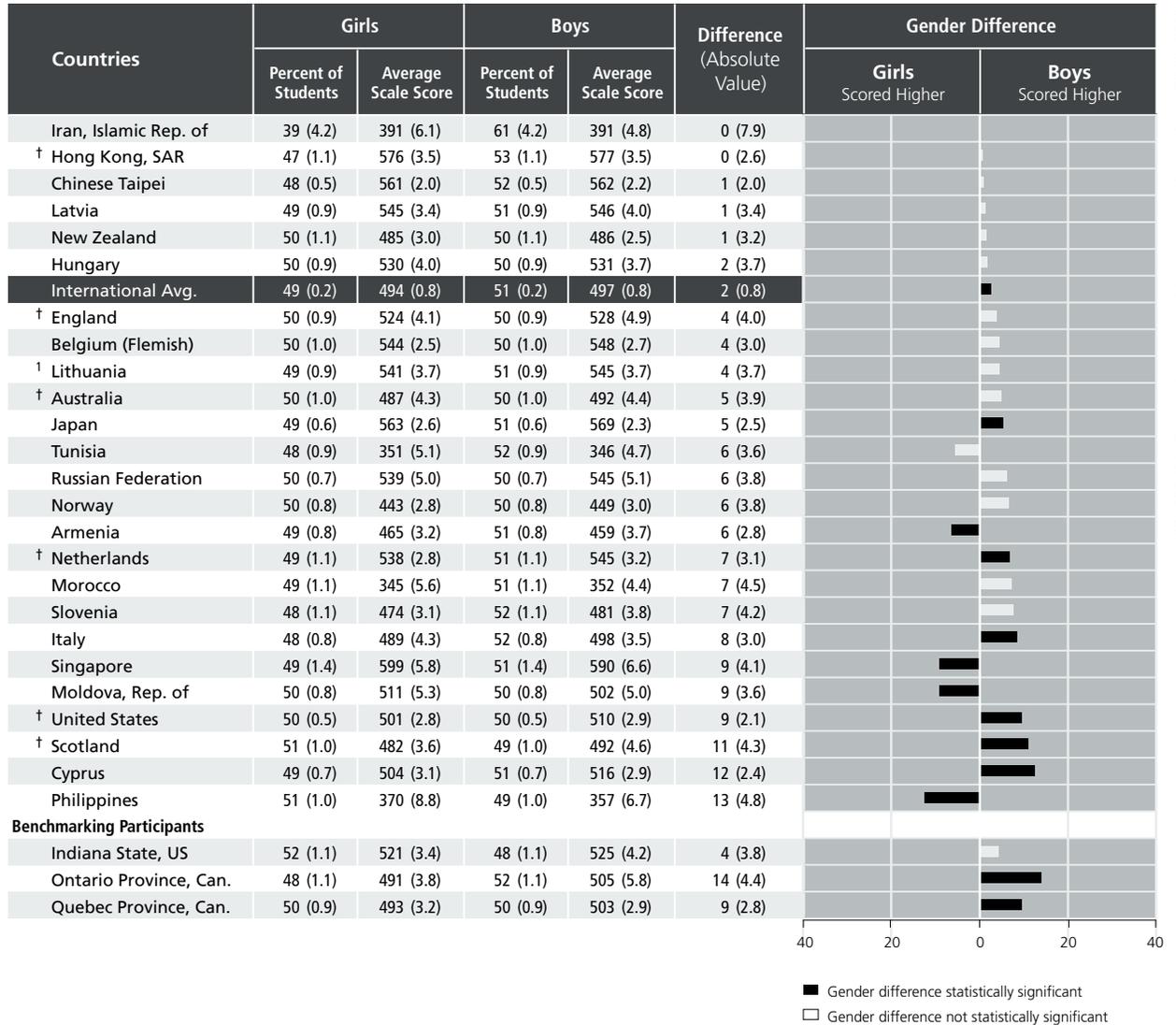
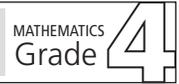
<sup>1</sup> National Desired Population does not cover all of International Desired Population (see Exhibit C.1).

<sup>2</sup> National Defined Population covers less than 90% of National Desired Population (see Exhibit C.1).

<sup>♦♦</sup> Korea tested the same cohort of students as other countries, but later in 2003, at the beginning of the next school year.

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

**Exhibit 3.2: Average Mathematics Achievement by Gender for Applying Cognitive Domain**



SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2003

† Met guidelines for sample participation rates only after replacement schools were included (see Exhibit C.2).

<sup>1</sup> National Desired Population does not cover all of International Desired Population (see Exhibit C.1).

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

### **Gender Differences in the Reasoning Cognitive Domain**

Exhibit 3.3 shows gender achievement differences in the reasoning domain at the eighth grade (first page) and fourth grade (second page). On average, across all countries, eighth-grade girls had significantly higher achievement than boys in the reasoning domain. In this domain, girls had significantly higher achievement than boys in 17 countries and the Basque Country, Spain whereas boys had higher achievement in only two countries (Morocco and Tunisia).

At the fourth grade this pattern was similar, but far less pronounced. There was essentially no difference in achievement internationally between fourth-grade boys and girls in the reasoning domain. However, girls had higher achievement than boys in three countries whereas boys did not outperform girls in any country or benchmarking entity.

**Exhibit 3.3: Average Mathematics Achievement by Gender for Reasoning Cognitive Domain**

Countries	Girls		Boys		Difference (Absolute Value)	Gender Difference	
	Percent of Students	Average Scale Score	Percent of Students	Average Scale Score		Girls Scored Higher	Boys Scored Higher
‡ United States	52 (0.7)	505 (3.3)	48 (0.7)	506 (3.7)	0 (2.4)		
<sup>2</sup> Israel	52 (1.6)	483 (3.4)	48 (1.6)	483 (4.6)	0 (4.6)		
Australia	51 (2.2)	515 (5.1)	49 (2.2)	516 (5.1)	1 (6.2)		
Bulgaria	48 (1.3)	471 (5.2)	52 (1.3)	471 (4.4)	1 (5.7)		
South Africa	51 (0.9)	287 (5.6)	49 (0.9)	286 (5.7)	1 (5.1)		
<sup>1</sup> Indonesia	50 (0.7)	405 (4.4)	50 (0.7)	406 (4.8)	1 (3.0)		
Japan	49 (1.2)	575 (3.7)	51 (1.2)	576 (3.0)	1 (5.6)		
† Netherlands	49 (1.2)	540 (4.3)	51 (1.2)	542 (4.5)	1 (4.2)		
Hungary	50 (1.0)	530 (3.7)	50 (1.0)	528 (3.5)	2 (3.6)		
Saudi Arabia	43 (2.3)	347 (5.7)	57 (2.3)	349 (6.1)	2 (8.4)		
Slovak Republic	48 (1.3)	505 (3.3)	52 (1.3)	503 (4.2)	2 (4.2)		
† Hong Kong, SAR	50 (2.4)	571 (3.5)	50 (2.4)	567 (4.4)	3 (5.0)		
Egypt	46 (2.7)	402 (4.5)	54 (2.7)	399 (5.1)	3 (6.5)		
Russian Federation	49 (1.2)	498 (4.0)	51 (1.2)	494 (3.8)	3 (3.1)		
Romania	52 (0.9)	460 (5.0)	48 (0.9)	456 (5.0)	4 (4.6)		
International Avg.	50 (0.2)	469 (0.5)	50 (0.2)	465 (0.6)	4 (0.6)		
Malaysia	50 (1.8)	505 (3.9)	50 (1.8)	501 (3.9)	4 (3.9)		
Italy	50 (0.9)	486 (3.0)	50 (0.9)	491 (3.4)	5 (2.7)		
♣ Korea, Rep. of	48 (2.8)	580 (2.4)	52 (2.8)	584 (2.1)	5 (2.8)		
Belgium (Flemish)	54 (2.1)	531 (3.8)	46 (2.1)	536 (3.6)	5 (4.8)		
Sweden	51 (0.9)	511 (4.1)	49 (0.9)	505 (3.3)	5 (3.6)		
Botswana	51 (0.7)	356 (3.5)	49 (0.7)	351 (4.5)	6 (3.0)		
Lebanon	57 (1.8)	407 (3.5)	43 (1.8)	413 (4.9)	6 (5.9)		
Chile	48 (1.6)	406 (4.1)	52 (1.6)	412 (4.2)	6 (4.5)		
Estonia	50 (1.0)	526 (3.4)	50 (1.0)	519 (3.4)	7 (3.2)		
<sup>1</sup> Serbia	49 (0.8)	472 (3.3)	51 (0.8)	464 (2.8)	7 (3.2)		
Latvia	49 (0.8)	504 (3.6)	51 (0.8)	496 (4.4)	8 (4.2)		
<sup>1</sup> Lithuania	50 (0.9)	492 (3.0)	50 (0.9)	484 (3.3)	8 (2.9)		
† Scotland	50 (1.3)	517 (4.3)	50 (1.3)	509 (3.4)	8 (3.7)		
Ghana	45 (0.9)	309 (4.6)	55 (0.9)	317 (5.0)	8 (5.2)		
Chinese Taipei	48 (1.0)	581 (4.3)	52 (1.0)	572 (4.8)	9 (3.8)		
Armenia	53 (0.7)	473 (3.4)	47 (0.7)	463 (4.3)	9 (5.3)		
Moldova, Rep. of	51 (0.8)	458 (4.2)	49 (0.8)	448 (4.6)	10 (3.7)		
Iran, Islamic Rep. of	40 (4.1)	423 (3.8)	60 (4.1)	413 (4.4)	10 (6.2)		
Singapore	49 (0.8)	589 (3.3)	51 (0.8)	579 (4.4)	10 (3.5)		
<sup>1</sup> ‡ Morocco	50 (1.8)	387 (3.9)	50 (1.8)	397 (4.0)	11 (4.4)		
Slovenia	50 (0.9)	500 (3.1)	50 (0.9)	488 (3.2)	12 (3.9)		
Philippines	58 (0.9)	363 (5.9)	42 (0.9)	350 (6.4)	13 (4.1)		
<sup>2</sup> Macedonia, Rep. of	49 (0.9)	444 (4.1)	51 (0.9)	432 (4.7)	13 (4.7)		
Palestinian Nat'l Auth.	55 (2.4)	410 (3.8)	45 (2.4)	397 (4.2)	14 (6.0)		
Norway	50 (0.8)	486 (3.1)	50 (0.8)	472 (3.5)	14 (3.3)		
Jordan	49 (1.7)	442 (4.1)	51 (1.7)	425 (5.3)	18 (6.2)		
New Zealand	52 (1.7)	519 (5.4)	48 (1.7)	499 (6.7)	19 (6.2)		
Cyprus	49 (0.6)	465 (2.3)	51 (0.6)	446 (2.4)	20 (3.3)		
Tunisia	53 (0.7)	390 (3.3)	47 (0.7)	410 (3.3)	20 (3.8)		
Bahrain	50 (0.4)	435 (2.5)	50 (0.4)	412 (3.2)	23 (3.8)		
‡ England	50 (2.4)	513 (4.8)	50 (2.4)	506 (5.9)	8 (5.4)		
<b>Benchmarking Participants</b>							
Basque Country, Spain	49 (1.7)	500 (2.8)	51 (1.7)	488 (3.8)	13 (4.6)		
Indiana State, US	49 (1.2)	502 (4.6)	51 (1.2)	503 (6.5)	1 (4.6)		
Ontario Province, Can.	51 (0.9)	527 (3.8)	49 (0.9)	528 (3.6)	1 (4.3)		
Quebec Province, Can.	50 (1.6)	537 (3.7)	50 (1.6)	540 (3.9)	2 (4.2)		

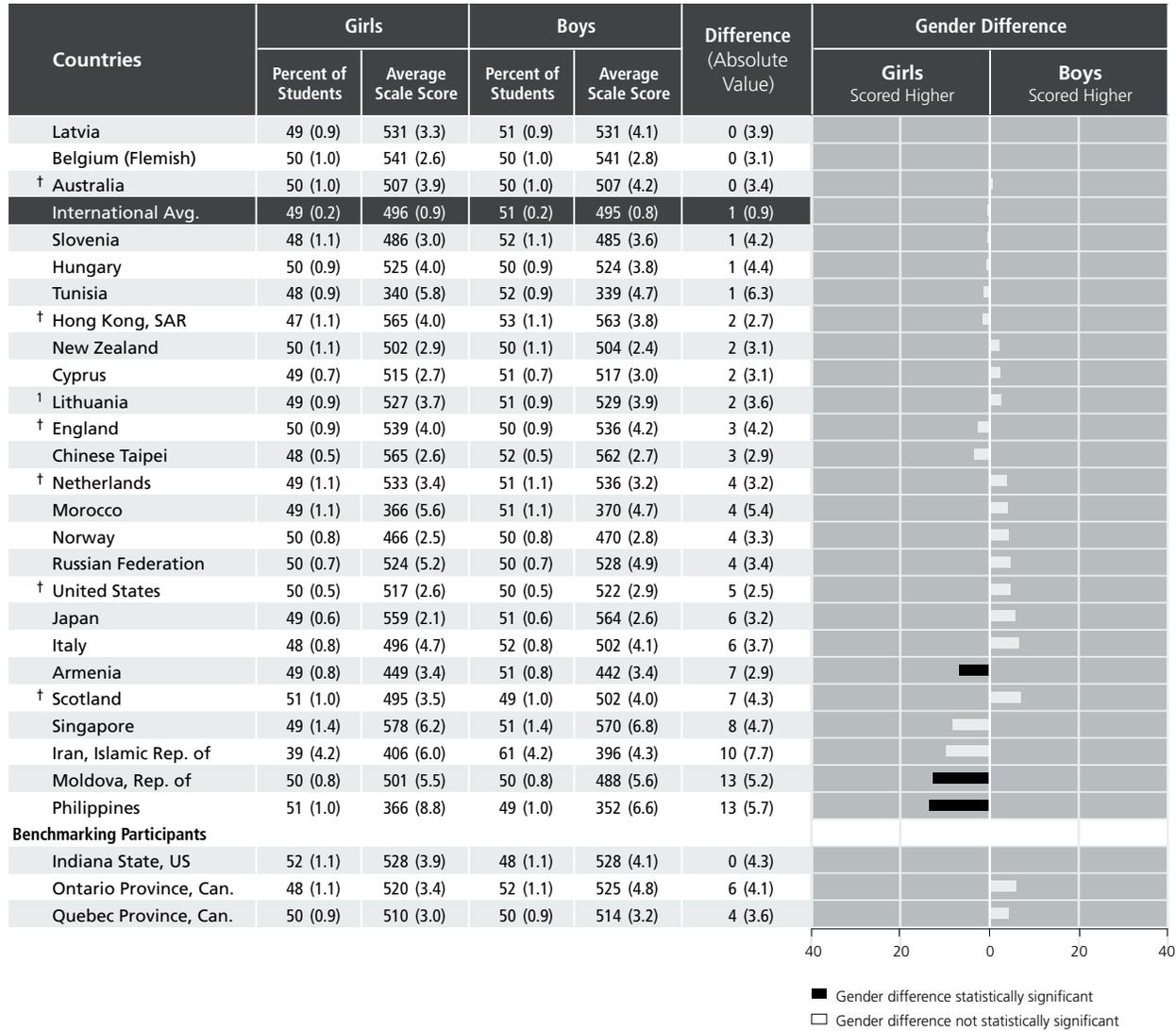
■ Gender difference statistically significant  
□ Gender difference not statistically significant

† Met guidelines for sample participation rates only after replacement schools were included (see Exhibit C.2).  
‡ Nearly satisfied guidelines for sample participation rates only after replacement schools were included (see Exhibit C.2).  
‡ Did not satisfy guidelines for sample participation rates (see Exhibit C.2).

<sup>1</sup> National Desired Population does not cover all of International Desired Population (see Exhibit C.1).  
<sup>2</sup> National Defined Population covers less than 90% of National Desired Population (see Exhibit C.1).  
♣ Korea tested the same cohort of students as other countries, but later in 2003, at the beginning of the next school year.  
( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2003

**Exhibit 3.3: Average Mathematics Achievement by Gender for Reasoning Cognitive Domain**



SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2003

† Met guidelines for sample participation rates only after replacement schools were included (see Exhibit C.2).

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

<sup>1</sup> National Desired Population does not cover all of International Desired Population (see Exhibit C.1).