

# Appendix D

## Percentiles and Standard Deviations of Science Achievement

## Exhibit D.1: Percentiles of Achievement in Science



Countries	5th Percentile	25th Percentile	50th Percentile	75th Percentile	95th Percentile
Armenia	324 (6.7)	407 (5.4)	463 (3.9)	520 (4.7)	589 (6.1)
Australia	397 (6.6)	478 (5.3)	531 (4.1)	580 (3.6)	644 (5.1)
Bahrain	311 (4.3)	389 (2.3)	441 (2.4)	491 (3.4)	556 (4.6)
Belgium (Flemish)	394 (7.2)	477 (3.2)	523 (2.9)	562 (1.8)	613 (2.3)
Botswana	220 (5.0)	306 (3.6)	367 (2.9)	425 (3.7)	503 (8.7)
Bulgaria	310 (13.8)	421 (6.9)	487 (3.9)	544 (4.2)	618 (5.2)
Chile	275 (5.2)	355 (3.0)	412 (3.0)	471 (4.7)	550 (6.4)
Chinese Taipei	434 (4.9)	519 (4.6)	577 (4.4)	628 (3.3)	690 (4.4)
Cyprus	306 (4.1)	390 (3.5)	445 (2.5)	497 (2.3)	567 (2.4)
Egypt	243 (11.8)	348 (5.9)	428 (6.5)	498 (2.6)	581 (4.5)
England	413 (7.3)	492 (4.7)	547 (6.0)	597 (5.2)	665 (3.5)
Estonia	445 (6.1)	509 (4.1)	553 (3.3)	596 (2.8)	659 (5.6)
Ghana	52 (7.2)	168 (5.8)	256 (7.9)	345 (6.7)	450 (6.2)
Hong Kong, SAR	438 (8.2)	519 (3.7)	562 (2.3)	600 (3.3)	654 (3.0)
Hungary	415 (6.9)	492 (4.5)	543 (4.1)	595 (4.3)	666 (4.9)
Indonesia	287 (8.8)	368 (4.3)	422 (4.7)	475 (4.9)	546 (2.8)
Iran, Islamic Rep. of	336 (3.5)	403 (2.5)	453 (2.1)	502 (1.9)	573 (4.8)
Israel	342 (3.2)	432 (4.7)	492 (3.5)	548 (3.2)	623 (2.8)
Italy	358 (4.8)	439 (6.6)	494 (3.2)	545 (3.1)	614 (4.9)
Japan	429 (3.7)	507 (2.9)	556 (1.9)	601 (1.6)	663 (4.3)
Jordan	319 (4.3)	417 (4.4)	481 (4.8)	538 (2.9)	612 (3.4)
Korea, Rep. of	438 (4.8)	513 (2.4)	562 (1.9)	606 (2.1)	666 (2.0)
Latvia	399 (1.5)	467 (3.1)	514 (2.4)	560 (2.9)	621 (2.5)
Lebanon	240 (5.5)	329 (4.3)	393 (5.7)	460 (5.5)	544 (4.9)
Lithuania	404 (3.3)	472 (3.4)	521 (1.9)	567 (3.1)	633 (2.6)
Macedonia, Rep. of	287 (7.7)	390 (4.9)	457 (3.8)	515 (4.6)	588 (4.7)
Malaysia	398 (7.2)	467 (4.1)	513 (4.4)	556 (4.5)	615 (6.0)
Moldova, Rep. of	346 (4.1)	423 (5.3)	475 (3.8)	524 (5.0)	589 (3.8)
Morocco	282 (4.5)	350 (2.6)	397 (3.0)	444 (3.3)	510 (5.0)
Netherlands	430 (11.0)	496 (3.3)	538 (3.4)	579 (3.6)	631 (2.6)
New Zealand	393 (6.7)	471 (4.4)	523 (4.8)	570 (4.9)	637 (11.6)
Norway	372 (4.5)	450 (3.4)	498 (1.8)	542 (3.2)	601 (3.2)
Palestinian Nat'l Auth.	273 (7.3)	373 (4.1)	441 (4.0)	503 (3.3)	576 (4.0)
Philippines	208 (5.7)	305 (5.6)	378 (7.7)	452 (6.3)	542 (7.0)
Romania	314 (7.9)	409 (6.5)	472 (7.1)	533 (5.3)	612 (9.2)
Russian Federation	389 (9.0)	464 (4.1)	515 (4.1)	565 (3.7)	633 (5.4)
Saudi Arabia	277 (8.1)	349 (3.7)	398 (4.6)	448 (4.6)	513 (3.1)
Scotland	380 (6.7)	462 (4.3)	515 (4.9)	565 (4.0)	630 (4.8)
Serbia	327 (3.9)	412 (3.6)	471 (2.9)	525 (3.9)	602 (4.5)
Singapore	403 (13.4)	522 (6.7)	589 (5.4)	644 (2.9)	709 (2.8)
Slovak Republic	390 (9.6)	467 (2.9)	520 (3.8)	569 (3.2)	637 (5.5)
Slovenia	409 (4.2)	476 (2.8)	521 (2.5)	566 (2.8)	629 (2.6)
South Africa	53 (7.6)	151 (4.0)	226 (5.1)	319 (9.5)	499 (19.2)
Sweden	397 (6.3)	476 (3.7)	528 (3.1)	575 (2.5)	640 (4.6)
Tunisia	305 (3.4)	362 (2.8)	403 (2.4)	444 (2.3)	505 (3.3)
United States	387 (5.1)	474 (4.5)	531 (3.2)	584 (3.5)	653 (4.6)
<b>Benchmarking Participants</b>					
Basque Country, Spain	371 (3.0)	441 (3.9)	489 (1.6)	537 (4.1)	605 (5.5)
Indiana State, US	411 (6.0)	484 (6.3)	533 (5.8)	579 (4.2)	643 (5.0)
Ontario Province, Can.	423 (4.2)	490 (3.6)	536 (2.8)	577 (2.5)	635 (3.4)
Quebec Province, Can.	427 (5.6)	491 (2.9)	533 (4.1)	572 (4.0)	629 (4.8)

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

() Standard errors appear in parentheses.

## Exhibit D.1: Percentiles of Achievement in Science

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Countries	5th Percentile	25th Percentile	50th Percentile	75th Percentile	95th Percentile
Armenia	271 (8.5)	371 (4.6)	445 (4.3)	506 (3.4)	579 (5.9)
Australia	374 (8.5)	473 (7.3)	528 (4.5)	576 (4.0)	644 (3.0)
Belgium (Flemish)	424 (3.1)	483 (2.1)	520 (1.8)	555 (1.4)	607 (3.8)
Chinese Taipei	434 (3.3)	509 (1.9)	554 (2.4)	598 (3.9)	659 (4.0)
Cyprus	353 (5.4)	432 (3.4)	485 (2.6)	533 (1.8)	594 (3.6)
England	396 (9.2)	488 (5.8)	545 (3.1)	597 (3.0)	669 (6.1)
Hong Kong, SAR	437 (8.5)	506 (2.8)	546 (3.4)	583 (3.9)	634 (2.2)
Hungary	393 (8.4)	479 (4.9)	536 (4.1)	584 (3.4)	652 (7.3)
Iran, Islamic Rep. of	243 (6.2)	351 (4.1)	420 (3.5)	484 (3.0)	561 (3.9)
Italy	371 (7.7)	462 (4.9)	519 (5.1)	573 (3.8)	650 (4.4)
Japan	413 (2.2)	501 (2.1)	548 (2.0)	592 (2.4)	656 (2.3)
Latvia	411 (7.6)	489 (3.5)	536 (2.4)	578 (2.6)	638 (1.4)
Lithuania	396 (6.9)	469 (4.3)	516 (2.8)	558 (2.6)	615 (2.3)
Moldova, Rep. of	342 (8.0)	443 (6.6)	505 (4.2)	555 (3.3)	624 (9.5)
Morocco	94 (13.0)	215 (9.5)	308 (8.7)	397 (7.2)	501 (4.9)
Netherlands	435 (4.8)	491 (2.0)	527 (2.6)	561 (2.1)	611 (3.6)
New Zealand	366 (6.3)	469 (3.1)	528 (2.2)	578 (2.4)	646 (3.3)
Norway	319 (7.3)	412 (5.9)	472 (4.3)	525 (2.4)	595 (4.9)
Philippines	97 (9.0)	222 (7.1)	327 (9.6)	446 (15.8)	564 (20.3)
Russian Federation	389 (7.2)	471 (5.6)	528 (5.8)	582 (4.6)	659 (6.6)
Scotland	369 (6.1)	453 (4.8)	506 (3.5)	555 (3.3)	624 (6.0)
Singapore	406 (13.6)	515 (7.8)	573 (6.1)	624 (6.3)	694 (6.8)
Slovenia	356 (5.0)	440 (4.5)	498 (3.2)	543 (2.4)	607 (4.4)
Tunisia	99 (7.4)	226 (7.3)	320 (6.3)	407 (5.5)	513 (7.4)
United States	393 (4.6)	484 (3.2)	541 (3.5)	592 (1.9)	661 (3.5)
<b>Benchmarking Participants</b>					
Indiana State, US	434 (5.8)	511 (3.8)	556 (4.7)	600 (4.0)	662 (7.4)
Ontario Province, Can.	405 (6.3)	491 (3.1)	545 (3.6)	593 (3.8)	661 (7.8)
Quebec Province, Can.	379 (3.6)	453 (2.7)	505 (3.0)	550 (2.7)	609 (7.5)

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

( ) Standard errors appear in parentheses.

## Exhibit D.2: Standard Deviations of Achievement in Science



Countries	Overall		Girls		Boys	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Armenia	461 (3.5)	81 (1.7)	468 (4.0)	79 (2.3)	455 (3.4)	83 (1.9)
Australia	527 (3.8)	75 (2.0)	517 (4.6)	72 (2.2)	537 (4.6)	77 (2.6)
Bahrain	438 (1.8)	74 (1.0)	453 (2.7)	67 (1.1)	423 (2.3)	79 (1.4)
Belgium (Flemish)	516 (2.5)	67 (2.2)	505 (3.0)	64 (2.7)	528 (3.4)	68 (3.0)
Botswana	365 (2.8)	86 (2.2)	364 (3.2)	84 (2.5)	366 (3.4)	89 (2.3)
Bulgaria	479 (5.2)	93 (3.7)	470 (6.3)	94 (4.5)	487 (5.2)	92 (3.5)
Chile	413 (2.9)	84 (1.5)	398 (3.2)	81 (1.7)	427 (3.6)	84 (1.9)
Chinese Taipei	571 (3.5)	79 (1.7)	571 (3.8)	74 (1.7)	572 (3.8)	83 (1.9)
Cyprus	441 (2.0)	79 (1.3)	443 (2.3)	75 (1.6)	440 (2.8)	83 (1.9)
Egypt	421 (3.9)	104 (1.8)	422 (4.8)	100 (2.2)	421 (5.5)	107 (2.4)
England	544 (4.1)	77 (2.4)	538 (4.7)	73 (2.2)	550 (5.1)	80 (3.4)
Estonia	552 (2.5)	65 (1.3)	554 (2.8)	66 (1.8)	551 (2.9)	64 (1.7)
Ghana	255 (5.9)	120 (2.2)	236 (6.4)	118 (2.2)	271 (6.5)	119 (3.2)
Hong Kong, SAR	556 (3.0)	66 (2.9)	552 (3.4)	63 (2.8)	561 (3.8)	68 (3.7)
Hungary	543 (2.8)	76 (1.7)	530 (3.4)	75 (2.4)	556 (3.0)	74 (1.6)
Indonesia	420 (4.1)	79 (2.3)	415 (3.9)	79 (2.6)	426 (4.6)	78 (2.3)
Iran, Islamic Rep. of	453 (2.3)	73 (1.2)	454 (3.9)	72 (2.0)	453 (3.7)	73 (2.0)
Israel	488 (3.1)	85 (1.6)	479 (3.2)	80 (2.2)	498 (4.1)	89 (2.1)
Italy	491 (3.1)	78 (1.9)	486 (2.7)	75 (2.1)	496 (3.8)	81 (2.1)
Japan	552 (1.7)	71 (1.1)	548 (3.0)	68 (1.9)	557 (2.7)	73 (1.5)
Jordan	475 (3.8)	89 (1.7)	489 (4.5)	86 (2.9)	462 (5.6)	91 (1.8)
Korea, Rep. of	558 (1.6)	70 (1.2)	552 (2.1)	67 (1.5)	564 (1.9)	71 (1.6)
Latvia	512 (2.6)	67 (1.2)	509 (2.6)	65 (1.7)	516 (3.0)	69 (1.3)
Lebanon	393 (4.3)	93 (2.3)	392 (4.8)	92 (2.8)	395 (6.0)	93 (3.0)
Lithuania	519 (2.1)	70 (1.2)	516 (2.7)	70 (1.9)	522 (2.4)	71 (1.5)
Macedonia, Rep. of	449 (3.6)	92 (2.3)	454 (3.7)	89 (2.5)	445 (4.2)	94 (2.5)
Malaysia	510 (3.7)	66 (1.9)	505 (4.3)	66 (2.4)	515 (4.0)	66 (2.2)
Moldova, Rep. of	472 (3.4)	74 (1.4)	477 (3.5)	72 (1.9)	468 (3.7)	75 (1.7)
Morocco	396 (2.5)	69 (1.2)	392 (3.2)	70 (2.0)	403 (3.8)	69 (1.7)
Netherlands	536 (3.1)	61 (2.5)	528 (3.3)	60 (2.7)	543 (3.8)	62 (2.6)
New Zealand	520 (5.0)	74 (3.1)	515 (4.8)	72 (2.8)	525 (6.7)	76 (4.0)
Norway	494 (2.2)	70 (1.2)	490 (2.2)	67 (1.7)	498 (3.0)	72 (1.7)
Palestinian Nat'l Auth.	435 (3.2)	92 (1.7)	441 (3.7)	89 (2.5)	428 (5.2)	96 (1.9)
Philippines	377 (5.8)	102 (2.4)	380 (5.9)	101 (2.5)	374 (6.4)	104 (3.0)
Romania	470 (4.9)	91 (1.9)	465 (5.5)	90 (2.6)	474 (4.9)	92 (2.5)
Russian Federation	514 (3.7)	75 (1.7)	508 (3.7)	75 (1.9)	519 (4.2)	75 (1.9)
Saudi Arabia	398 (4.0)	72 (1.5)	407 (6.2)	68 (2.1)	391 (5.4)	75 (2.1)
Scotland	512 (3.4)	76 (1.5)	506 (4.0)	73 (1.9)	517 (3.5)	78 (1.9)
Serbia	468 (2.5)	84 (1.2)	465 (2.9)	81 (1.8)	471 (2.6)	86 (1.5)
Singapore	578 (4.3)	92 (3.1)	576 (4.0)	88 (3.1)	579 (5.0)	95 (3.5)
Slovak Republic	517 (3.2)	76 (1.3)	508 (3.8)	75 (1.8)	525 (3.4)	75 (1.8)
Slovenia	520 (1.8)	67 (1.7)	517 (2.4)	64 (2.0)	524 (2.3)	69 (2.0)
South Africa	244 (6.7)	132 (5.5)	242 (7.2)	130 (6.0)	244 (7.7)	135 (6.3)
Sweden	524 (2.7)	74 (1.5)	521 (3.2)	73 (2.0)	528 (2.7)	74 (1.7)
Tunisia	404 (2.1)	60 (1.0)	392 (2.3)	59 (1.2)	416 (2.6)	60 (1.2)
United States	527 (3.1)	81 (1.6)	519 (3.2)	78 (1.7)	536 (3.4)	82 (1.8)
<b>Benchmarking Participants</b>						
Basque Country, Spain	489 (2.7)	71 (1.4)	481 (3.0)	69 (1.7)	496 (3.3)	73 (1.9)
Indiana State, US	531 (4.8)	71 (3.1)	521 (4.7)	68 (2.9)	540 (5.3)	72 (3.8)
Ontario Province, Can.	533 (2.7)	65 (1.2)	526 (3.1)	63 (1.7)	540 (2.8)	65 (1.4)
Quebec Province, Can.	531 (3.0)	61 (1.6)	522 (3.7)	60 (1.7)	540 (3.2)	60 (2.0)

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

() Standard errors appear in parentheses.

## Exhibit D.2: Standard Deviations of Achievement in Science

SCIENCE  
Grade 4

Countries	Overall		Girls		Boys	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Armenia	437 (4.3)	96 (2.2)	441 (4.5)	93 (2.5)	432 (4.7)	98 (2.5)
Australia	521 (4.2)	82 (2.6)	522 (3.8)	77 (2.7)	519 (5.5)	87 (3.1)
Belgium (Flemish)	518 (1.8)	55 (1.0)	518 (1.9)	53 (1.1)	519 (2.3)	57 (1.5)
Chinese Taipei	551 (1.7)	69 (1.3)	548 (2.0)	65 (1.6)	555 (2.2)	72 (1.5)
Cyprus	480 (2.4)	74 (1.3)	477 (2.5)	72 (1.7)	484 (2.9)	76 (1.4)
England	540 (3.6)	83 (2.2)	542 (3.3)	80 (2.2)	538 (4.6)	86 (3.0)
Hong Kong, SAR	542 (3.1)	60 (1.2)	544 (3.3)	57 (1.3)	541 (3.2)	62 (1.6)
Hungary	530 (3.0)	79 (1.8)	527 (3.7)	78 (2.6)	533 (3.2)	80 (1.8)
Iran, Islamic Rep. of	414 (4.1)	97 (2.4)	426 (7.0)	93 (4.1)	406 (4.7)	98 (2.6)
Italy	516 (3.8)	85 (1.9)	514 (4.2)	85 (2.0)	517 (3.8)	85 (2.3)
Japan	543 (1.5)	73 (1.2)	542 (1.8)	69 (1.5)	545 (2.0)	76 (1.6)
Latvia	532 (2.5)	69 (1.5)	534 (2.6)	65 (1.9)	529 (3.2)	72 (2.1)
Lithuania	512 (2.6)	66 (1.5)	513 (3.0)	65 (2.1)	513 (2.9)	68 (1.5)
Moldova, Rep. of	496 (4.6)	85 (3.0)	503 (4.8)	85 (3.2)	490 (4.9)	85 (3.3)
Morocco	304 (6.7)	125 (2.7)	306 (7.9)	126 (3.4)	303 (6.8)	124 (3.1)
Netherlands	525 (2.0)	53 (1.1)	521 (2.2)	54 (1.5)	529 (2.2)	53 (1.3)
New Zealand	520 (2.5)	85 (2.0)	523 (3.3)	83 (2.1)	517 (2.5)	87 (2.2)
Norway	466 (2.6)	84 (1.6)	467 (3.2)	83 (2.4)	466 (2.9)	84 (1.7)
Philippines	332 (9.4)	145 (5.7)	339 (10.8)	146 (6.2)	324 (8.8)	145 (5.4)
Russian Federation	526 (5.2)	82 (2.3)	527 (5.9)	81 (2.8)	526 (4.9)	83 (2.4)
Scotland	502 (2.9)	78 (1.9)	496 (3.1)	76 (1.7)	508 (4.0)	79 (2.8)
Singapore	565 (5.5)	87 (3.3)	565 (5.4)	82 (3.0)	565 (6.4)	91 (3.9)
Slovenia	490 (2.5)	77 (1.4)	491 (3.0)	75 (1.9)	490 (3.2)	79 (2.0)
Tunisia	314 (5.7)	126 (2.6)	316 (6.1)	125 (3.1)	312 (6.0)	126 (3.0)
United States	536 (2.5)	81 (1.1)	533 (2.5)	79 (1.1)	538 (2.8)	83 (1.4)
<b>Benchmarking Participants</b>						
Indiana State, US	553 (3.7)	69 (2.0)	550 (3.9)	65 (1.8)	556 (4.5)	73 (2.6)
Ontario Province, Can.	540 (3.7)	77 (1.8)	537 (4.0)	75 (1.9)	543 (4.6)	78 (2.4)
Quebec Province, Can.	500 (2.5)	70 (1.1)	501 (2.7)	68 (1.6)	500 (3.1)	73 (1.9)

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

( ) Standard errors appear in parentheses.