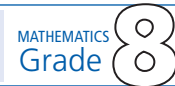


Appendix D

Percentiles and Standard Deviations of Mathematics Achievement

Exhibit D.1: Percentiles of Achievement in Mathematics



Countries	5th Percentile	25th Percentile	50th Percentile	75th Percentile	95th Percentile
Armenia	330(7.5)	423(5.1)	483(3.3)	539(3.2)	605(3.5)
Australia	368(10.4)	450(3.9)	506(3.7)	561(5.8)	634(6.6)
Bahrain	277(3.2)	347(1.5)	402(1.8)	455(2.2)	525(1.4)
Belgium (Flemish)	398(8.9)	495(3.7)	545(3.1)	588(2.8)	643(3.3)
Botswana	251(5.1)	316(3.0)	365(2.5)	415(2.7)	487(5.0)
Bulgaria	333(7.5)	421(5.5)	478(4.6)	535(4.6)	611(6.6)
Chile	258(4.5)	328(4.8)	382(3.4)	441(4.5)	531(4.9)
Chinese Taipei	407(6.0)	518(7.0)	596(4.6)	657(5.0)	733(6.0)
Cyprus	321(3.8)	405(3.4)	463(1.8)	518(1.5)	586(1.6)
Egypt	256(3.0)	341(6.0)	405(4.1)	471(3.7)	560(3.2)
England	373(5.3)	445(5.9)	497(5.9)	552(9.2)	627(5.6)
Estonia	416(4.8)	484(3.6)	531(4.0)	577(2.7)	645(4.0)
Ghana	130(5.8)	213(4.3)	274(5.3)	337(7.3)	430(9.1)
Hong Kong, SAR	455(11.9)	546(4.0)	593(3.3)	635(3.0)	691(4.6)
Hungary	398(8.1)	476(2.9)	531(3.5)	584(4.1)	656(4.2)
Indonesia	266(11.6)	350(7.9)	411(6.0)	472(4.0)	558(3.6)
Iran, Islamic Rep. of	294(4.8)	360(3.5)	408(3.0)	461(2.4)	537(6.2)
Israel	353(5.9)	438(4.8)	498(5.3)	555(3.5)	630(5.3)
Italy	355(6.0)	432(4.0)	486(2.9)	537(3.2)	606(5.0)
Japan	433(4.4)	519(2.0)	572(2.6)	623(2.2)	697(5.1)
Jordan	279(5.3)	362(4.1)	427(4.9)	488(5.0)	567(5.2)
Korea, Rep. of	439(3.1)	537(3.2)	596(2.5)	647(2.5)	715(3.0)
Latvia	386(5.2)	458(5.2)	510(2.9)	559(3.5)	625(5.4)
Lebanon	324(3.4)	387(3.9)	432(3.7)	479(4.0)	545(5.8)
Lithuania	370(4.5)	448(2.9)	503(2.4)	557(4.0)	628(2.5)
Macedonia, Rep. of	283(4.8)	376(5.1)	439(2.9)	497(3.4)	574(4.7)
Malaysia	388(3.7)	455(3.9)	507(5.5)	562(6.1)	630(5.3)
Moldova, Rep. of	321(5.8)	405(7.3)	464(4.9)	518(4.4)	585(5.1)
Morocco	275(4.8)	340(3.0)	387(3.0)	434(3.0)	497(2.8)
Netherlands	417(8.4)	488(4.5)	540(5.8)	587(4.8)	644(6.8)
New Zealand	364(9.9)	441(5.2)	495(5.3)	548(7.1)	623(12.5)
Norway	340(5.2)	414(2.2)	465(3.3)	511(1.7)	573(2.4)
Palestinian Nat'l Auth.	241(5.2)	326(3.2)	389(4.1)	455(4.2)	542(5.4)
Philippines	241(3.6)	316(5.6)	373(6.4)	437(6.5)	527(8.0)
Romania	321(7.8)	413(4.6)	479(4.9)	540(4.9)	619(9.0)
Russian Federation	381(5.5)	456(4.2)	509(4.5)	561(4.0)	632(7.5)
Saudi Arabia	204(10.0)	279(6.6)	331(5.1)	385(4.5)	460(5.4)
Scotland	368(8.5)	449(5.0)	501(4.3)	550(3.9)	615(6.0)
Serbia	326(6.2)	417(4.8)	479(4.0)	540(3.1)	618(4.8)
Singapore	455(6.6)	556(6.7)	614(4.0)	662(3.5)	723(2.8)
Slovak Republic	371(6.5)	453(4.7)	509(3.9)	564(4.3)	642(4.2)
Slovenia	375(9.3)	445(2.4)	492(2.0)	542(1.6)	610(3.7)
South Africa	117(5.2)	191(3.5)	248(4.0)	316(7.5)	484(20.1)
Sweden	378(4.0)	452(4.3)	501(2.6)	548(2.9)	614(6.3)
Tunisia	316(2.2)	368(2.4)	407(2.4)	450(2.6)	515(6.2)
United States	369(4.7)	450(2.9)	505(3.0)	560(3.5)	635(3.8)
Benchmarking Participants					
Basque Country, Spain	379(6.0)	444(4.3)	488(2.9)	531(4.2)	591(3.1)
Indiana State, US	393(4.2)	461(5.9)	507(4.1)	555(6.7)	625(6.3)
Ontario Province, Can.	411(7.1)	476(3.8)	522(3.9)	567(2.9)	628(4.2)
Quebec Province, Can.	449(2.4)	503(3.6)	542(3.0)	583(4.3)	640(4.9)

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

() Standard errors appear in parentheses.

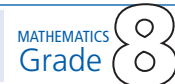
Exhibit D.1: Percentiles of Achievement in Mathematics

Countries	5th Percentile	25th Percentile	50th Percentile	75th Percentile	95th Percentile
Armenia	305 (4.7)	400 (4.7)	460 (3.3)	516 (4.5)	594 (5.8)
Australia	359 (5.0)	447 (5.8)	504 (4.4)	553 (4.0)	625 (6.4)
Belgium (Flemish)	451 (4.0)	511 (2.5)	552 (2.9)	592 (2.0)	644 (3.1)
Chinese Taipei	455 (4.0)	525 (1.9)	567 (1.8)	606 (2.2)	663 (2.2)
Cyprus	358 (3.3)	454 (4.4)	516 (2.9)	569 (2.0)	641 (5.7)
England	379 (9.5)	474 (3.6)	536 (5.3)	592 (3.3)	667 (3.7)
Hong Kong, SAR	466 (4.0)	534 (2.9)	578 (3.8)	619 (3.4)	674 (3.6)
Hungary	393 (4.9)	478 (5.0)	534 (3.7)	583 (3.4)	647 (3.1)
Iran, Islamic Rep. of	246 (6.8)	330 (5.3)	390 (5.0)	450 (2.7)	528 (4.3)
Italy	362 (6.6)	450 (4.5)	507 (3.9)	558 (4.6)	632 (11.5)
Japan	437 (3.6)	518 (3.4)	568 (1.7)	615 (1.4)	680 (4.7)
Latvia	407 (7.8)	491 (3.8)	540 (3.3)	587 (2.8)	647 (4.3)
Lithuania	405 (3.6)	487 (4.3)	539 (3.1)	585 (2.3)	648 (4.3)
Moldova, Rep. of	349 (11.5)	449 (6.1)	511 (5.4)	566 (5.2)	634 (7.0)
Morocco	199 (9.7)	283 (5.9)	347 (6.8)	412 (6.3)	493 (2.5)
Netherlands	448 (6.4)	505 (2.3)	542 (2.9)	578 (1.5)	627 (2.8)
New Zealand	346 (4.7)	438 (3.1)	499 (2.9)	553 (2.5)	623 (3.2)
Norway	310 (6.0)	399 (3.1)	456 (1.8)	508 (3.7)	574 (4.4)
Philippines	189 (11.0)	280 (7.3)	352 (6.8)	431 (11.7)	549 (21.6)
Russian Federation	401 (13.7)	479 (7.3)	533 (6.0)	586 (5.7)	658 (6.6)
Scotland	357 (4.7)	441 (3.3)	493 (3.9)	544 (2.9)	610 (5.4)
Singapore	439 (13.4)	546 (9.0)	601 (5.1)	652 (6.9)	721 (7.0)
Slovenia	343 (3.8)	427 (2.7)	485 (4.0)	534 (2.9)	598 (5.0)
Tunisia	176 (7.9)	269 (4.8)	339 (5.0)	409 (5.2)	503 (5.4)
United States	387 (3.3)	467 (2.7)	522 (4.0)	572 (3.1)	639 (3.4)
Benchmarking Participants					
Indiana State, US	421 (6.2)	491 (4.2)	535 (2.2)	577 (3.0)	638 (9.4)
Ontario Province, Can.	391 (4.3)	465 (3.7)	513 (3.7)	559 (5.8)	626 (7.1)
Quebec Province, Can.	393 (3.2)	464 (2.4)	509 (1.9)	551 (3.7)	609 (2.8)

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 Mathematics



Countries	Overall		Girls		Boys	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Armenia	478 (3.0)	84 (1.4)	483 (3.3)	81 (1.6)	473 (3.4)	86 (2.0)
Australia	505 (4.6)	82 (3.2)	499 (5.8)	78 (3.0)	511 (5.8)	84 (4.3)
Bahrain	401 (1.7)	76 (0.9)	417 (2.4)	70 (1.3)	385 (2.4)	79 (1.3)
Belgium (Flemish)	537 (2.8)	73 (2.6)	532 (3.5)	72 (3.2)	542 (3.8)	74 (3.0)
Botswana	366 (2.6)	72 (1.5)	368 (2.6)	71 (1.7)	365 (2.9)	72 (1.7)
Bulgaria	476 (4.3)	84 (2.3)	476 (5.5)	84 (3.0)	477 (4.3)	84 (2.5)
Chile	387 (3.3)	83 (1.9)	379 (3.5)	81 (1.9)	394 (4.3)	85 (2.5)
Chinese Taipei	585 (4.6)	100 (2.2)	589 (4.9)	94 (2.1)	582 (5.2)	105 (2.7)
Cyprus	459 (1.7)	81 (1.3)	467 (1.9)	78 (1.7)	452 (2.3)	84 (1.6)
Egypt	406 (3.5)	93 (1.5)	407 (4.4)	90 (1.9)	406 (5.0)	95 (2.0)
England	498 (4.7)	77 (3.1)	499 (5.3)	76 (2.8)	498 (5.8)	78 (4.3)
Estonia	531 (3.0)	69 (1.6)	532 (3.4)	69 (2.1)	530 (3.3)	69 (1.8)
Ghana	276 (4.7)	91 (2.3)	266 (5.1)	89 (2.6)	283 (4.9)	92 (2.6)
Hong Kong, SAR	586 (3.3)	72 (3.2)	587 (3.8)	70 (3.1)	585 (4.6)	74 (3.9)
Hungary	529 (3.2)	80 (2.3)	526 (3.7)	78 (2.6)	533 (3.5)	81 (2.6)
Indonesia	411 (4.8)	89 (2.6)	411 (4.9)	88 (3.2)	410 (5.3)	89 (2.6)
Iran, Islamic Rep. of	411 (2.4)	74 (1.4)	417 (4.3)	71 (1.9)	408 (4.2)	76 (2.6)
Israel	496 (3.4)	85 (1.8)	492 (3.3)	80 (1.8)	500 (4.5)	89 (2.6)
Italy	484 (3.2)	77 (1.8)	481 (3.0)	74 (2.0)	486 (3.9)	79 (2.2)
Japan	570 (2.1)	80 (1.3)	569 (4.0)	76 (3.6)	571 (3.6)	83 (2.2)
Jordan	424 (4.1)	89 (1.8)	438 (4.6)	86 (2.3)	411 (5.8)	90 (2.7)
Korea, Rep. of	589 (2.2)	84 (1.3)	586 (2.7)	82 (1.6)	592 (2.6)	86 (1.4)
Latvia	508 (3.2)	73 (1.4)	511 (3.3)	70 (1.7)	506 (3.7)	76 (1.9)
Lebanon	433 (3.1)	67 (1.6)	429 (3.6)	66 (1.9)	439 (3.9)	67 (2.1)
Lithuania	502 (2.5)	78 (1.3)	503 (2.9)	77 (1.8)	499 (3.0)	82 (1.6)
Macedonia, Rep. of	435 (3.5)	88 (2.3)	439 (4.0)	86 (2.8)	431 (3.9)	90 (2.5)
Malaysia	508 (4.1)	74 (2.2)	512 (4.7)	73 (2.5)	505 (4.5)	76 (2.3)
Moldova, Rep. of	460 (4.0)	81 (1.7)	465 (4.1)	78 (1.8)	455 (4.8)	82 (2.1)
Morocco	387 (2.5)	68 (1.0)	381 (2.8)	68 (1.4)	393 (3.0)	68 (1.3)
Netherlands	536 (3.8)	69 (2.8)	533 (4.1)	69 (3.0)	540 (4.5)	70 (3.0)
New Zealand	494 (5.3)	78 (3.6)	495 (4.8)	75 (3.5)	493 (7.0)	82 (4.2)
Norway	461 (2.5)	71 (1.3)	463 (2.7)	69 (2.0)	460 (3.0)	72 (1.5)
Palestinian Nat'l Auth.	390 (3.1)	92 (1.5)	394 (3.9)	91 (1.9)	386 (4.7)	92 (1.9)
Philippines	378 (5.2)	87 (2.6)	383 (5.2)	86 (2.5)	370 (5.8)	89 (3.3)
Romania	475 (4.8)	90 (1.7)	477 (5.1)	88 (1.7)	473 (5.0)	92 (2.5)
Russian Federation	508 (3.7)	77 (1.4)	510 (3.5)	74 (1.4)	507 (4.4)	79 (2.1)
Saudi Arabia	332 (4.6)	78 (2.6)	326 (7.9)	75 (4.6)	336 (5.5)	81 (2.7)
Scotland	498 (3.7)	75 (2.3)	500 (4.3)	72 (2.7)	495 (3.8)	77 (2.4)
Serbia	477 (2.6)	89 (1.4)	480 (2.9)	86 (1.9)	473 (2.9)	92 (1.8)
Singapore	605 (3.6)	80 (2.4)	611 (3.3)	75 (2.6)	601 (4.3)	84 (2.6)
Slovak Republic	508 (3.3)	82 (1.7)	508 (3.4)	79 (1.9)	508 (4.0)	85 (2.2)
Slovenia	493 (2.2)	71 (1.5)	495 (2.6)	68 (1.6)	491 (2.6)	74 (1.9)
South Africa	264 (5.5)	107 (5.1)	262 (6.2)	105 (6.0)	264 (6.4)	110 (5.8)
Sweden	499 (2.6)	71 (1.7)	499 (3.0)	70 (1.9)	499 (2.7)	72 (2.0)
Tunisia	410 (2.2)	60 (1.3)	399 (2.6)	60 (1.6)	423 (2.2)	58 (1.4)
United States	504 (3.3)	80 (1.8)	502 (3.4)	78 (1.9)	507 (3.5)	82 (2.0)
Benchmarking Participants						
Basque Country, Spain	487 (2.7)	64 (1.3)	490 (2.5)	60 (1.4)	484 (3.7)	68 (2.0)
Indiana State, US	508 (5.2)	70 (3.0)	502 (5.1)	68 (3.2)	514 (5.8)	72 (3.1)
Ontario Province, Can.	521 (3.1)	66 (1.1)	520 (3.4)	65 (1.5)	522 (3.4)	67 (1.4)
Quebec Province, Can.	543 (3.0)	58 (1.8)	540 (3.7)	57 (2.1)	546 (3.3)	59 (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 Mathematics

Countries	Overall		Girls		Boys	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Armenia	456(3.5)	87(1.9)	462(3.7)	84(2.2)	450(3.8)	89(1.9)
Australia	499(3.9)	81(2.1)	497(4.5)	79(2.5)	500(4.3)	83(2.6)
Belgium (Flemish)	551(1.8)	59(1.1)	549(1.8)	57(1.1)	552(2.5)	60(1.7)
Chinese Taipei	564(1.8)	63(1.1)	564(1.7)	59(1.2)	564(2.1)	66(1.5)
Cyprus	510(2.4)	85(1.3)	505(2.7)	82(1.9)	514(2.9)	88(1.5)
England	531(3.7)	87(1.9)	530(3.9)	85(2.1)	532(4.5)	90(2.4)
Hong Kong, SAR	575(3.2)	63(1.5)	575(3.4)	60(1.7)	575(3.4)	66(1.7)
Hungary	529(3.1)	77(2.0)	527(3.8)	77(2.6)	530(3.3)	78(2.0)
Iran, Islamic Rep. of	389(4.2)	86(2.1)	394(6.5)	83(2.9)	386(5.5)	87(2.6)
Italy	503(3.7)	82(2.2)	498(4.1)	80(2.9)	507(3.7)	83(2.0)
Japan	565(1.6)	74(1.0)	563(1.8)	69(1.3)	566(2.1)	78(1.4)
Latvia	536(2.8)	73(1.5)	536(2.9)	69(1.9)	536(3.5)	75(2.1)
Lithuania	534(2.8)	74(1.7)	535(3.5)	73(2.3)	536(3.2)	76(1.9)
Moldova, Rep. of	504(4.9)	87(3.2)	510(5.2)	87(3.9)	499(5.1)	87(3.5)
Morocco	347(5.1)	90(1.9)	344(6.1)	91(2.1)	350(5.1)	89(2.5)
Netherlands	540(2.1)	55(1.5)	537(2.7)	55(2.2)	543(2.2)	54(1.6)
New Zealand	493(2.2)	84(1.8)	493(2.7)	82(2.3)	494(2.4)	86(1.8)
Norway	451(2.3)	80(1.6)	449(2.7)	78(1.8)	454(2.7)	82(1.9)
Philippines	358(7.9)	110(5.9)	364(9.2)	111(6.6)	352(7.0)	108(5.3)
Russian Federation	532(4.7)	78(2.0)	530(5.4)	78(2.3)	534(4.7)	78(2.4)
Scotland	490(3.3)	78(1.8)	485(3.2)	74(1.9)	496(4.4)	80(2.8)
Singapore	594(5.6)	84(3.2)	599(5.5)	80(3.0)	590(6.2)	88(3.7)
Slovenia	479(2.6)	78(1.3)	477(3.0)	75(1.8)	481(3.5)	81(1.9)
Tunisia	339(4.7)	100(2.5)	342(5.0)	98(2.7)	337(4.9)	101(2.6)
United States	518(2.4)	76(1.0)	514(2.4)	74(1.2)	522(2.7)	78(1.3)
Benchmarking Participants						
Indiana State, US	533(2.8)	65(2.1)	532(3.1)	62(2.1)	534(3.4)	69(2.5)
Ontario Province, Can.	511(3.8)	71(2.0)	505(3.6)	69(1.7)	517(4.7)	72(2.6)
Quebec Province, Can.	506(2.4)	65(1.2)	502(2.7)	64(1.5)	509(2.8)	66(1.4)

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

() Standard errors appear in parentheses.