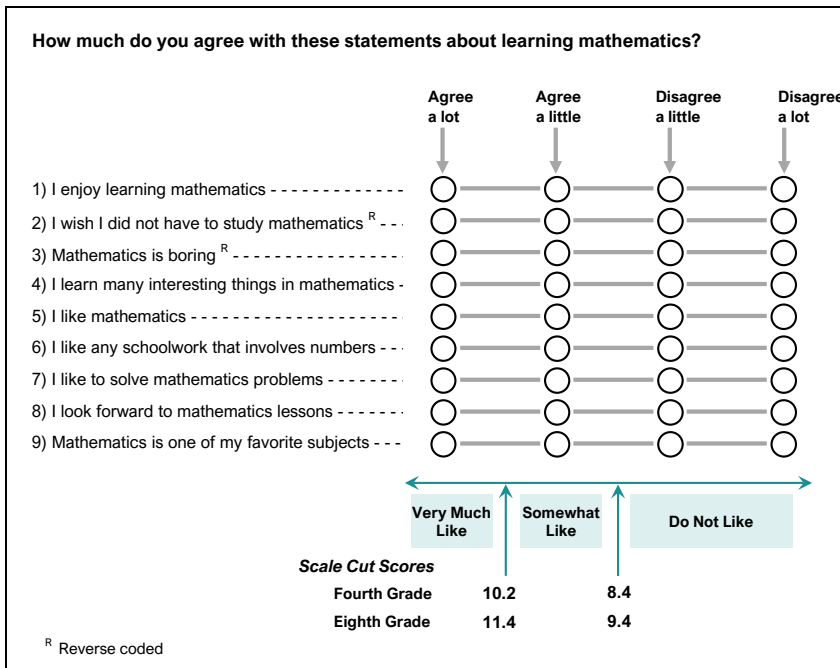


Exhibit 11.1: Students Like Learning Mathematics

Students' Reports

About the Scale

Students were scored according to their responses to nine statements on the *Students Like Learning Mathematics* scale. Cut scores divide the scale into three categories. Students who **Very Much Like Learning Mathematics** had a score at or above the cut score corresponding to “agreeing a lot” with five of the nine statements and “agreeing a little” with the other four, on average. Students who **Do Not Like Learning Mathematics** had a score at or below the cut score corresponding to “disagreeing a little” with five of the nine statements and “agreeing a little” with the other four, on average. All other students **Somewhat Like Learning Mathematics**.



SOURCE: IEA's Trends in International Mathematics and Science Study - TIMSS 2019
Downloaded from <http://timss2019.org/download>

Exhibit 11.2: Students Like Learning Mathematics

Students' Reports

Country	Very Much Like Learning Mathematics		Somewhat Like Learning Mathematics		Do Not Like Learning Mathematics		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Albania	83 (1.2)	504 (3.2)	15 (1.0)	455 (7.6)	2 (0.4)	~ ~	11.8 (0.05)
Kosovo	78 (0.9)	459 (2.7)	20 (0.8)	404 (4.7)	2 (0.3)	~ ~	11.4 (0.04)
Georgia	74 (1.5)	489 (3.7)	22 (1.1)	459 (6.6)	4 (0.6)	446 (11.3)	11.4 (0.06)
Armenia	72 (1.1)	511 (2.6)	23 (1.0)	481 (4.0)	5 (0.4)	465 (5.6)	11.4 (0.05)
Morocco	70 (1.2)	402 (4.1)	25 (1.1)	344 (6.4)	5 (0.4)	326 (10.2)	11.3 (0.05)
Azerbaijan	68 (1.2)	536 (2.3)	27 (1.1)	495 (3.6)	5 (0.4)	477 (7.5)	10.9 (0.05)
Kazakhstan	68 (1.0)	518 (2.6)	28 (1.0)	504 (3.6)	5 (0.5)	494 (6.3)	11.1 (0.05)
Turkey (5)	66 (1.2)	540 (4.1)	25 (0.9)	491 (6.1)	9 (0.6)	495 (7.0)	10.9 (0.05)
North Macedonia	66 (1.3)	495 (5.3)	29 (1.1)	436 (6.8)	5 (0.6)	448 (12.0)	11.0 (0.06)
Montenegro	64 (1.0)	467 (1.9)	25 (0.8)	433 (3.5)	10 (0.6)	427 (5.0)	10.9 (0.04)
Oman	59 (1.2)	455 (4.5)	34 (1.1)	401 (4.7)	7 (0.5)	394 (5.7)	10.8 (0.05)
Iran, Islamic Rep. of	59 (1.4)	457 (3.6)	30 (0.9)	421 (5.2)	11 (0.7)	437 (7.3)	10.8 (0.06)
Saudi Arabia	59 (1.2)	424 (3.6)	30 (1.0)	371 (4.1)	11 (0.8)	370 (8.7)	10.8 (0.05)
Cyprus	56 (1.5)	547 (2.8)	28 (0.9)	522 (3.9)	16 (1.1)	497 (4.9)	10.5 (0.07)
Bahrain	56 (1.4)	494 (2.6)	31 (0.9)	465 (3.2)	13 (0.8)	458 (4.4)	10.6 (0.07)
Bulgaria	54 (1.5)	526 (3.9)	30 (1.1)	508 (5.4)	17 (1.3)	496 (10.1)	10.4 (0.08)
United Arab Emirates	54 (0.7)	503 (1.8)	33 (0.5)	461 (2.3)	13 (0.4)	455 (2.8)	10.5 (0.03)
Portugal	49 (1.3)	542 (2.9)	36 (1.0)	513 (3.1)	15 (0.9)	499 (4.4)	10.3 (0.05)
France	49 (1.0)	499 (3.6)	36 (0.9)	479 (3.9)	15 (0.8)	454 (4.8)	10.2 (0.04)
Bosnia and Herzegovina	49 (1.0)	466 (2.8)	32 (0.6)	443 (3.3)	20 (1.0)	437 (3.4)	10.1 (0.06)
Malta	48 (0.7)	522 (1.7)	34 (0.7)	502 (2.2)	18 (0.7)	488 (3.2)	10.1 (0.03)
Lithuania	47 (1.3)	553 (3.2)	39 (0.9)	538 (3.3)	14 (0.9)	521 (5.7)	10.1 (0.05)
Kuwait	46 (1.6)	416 (6.0)	37 (1.1)	372 (5.5)	17 (1.1)	352 (5.4)	10.2 (0.08)
South Africa (5)	46 (1.5)	415 (3.3)	43 (1.1)	345 (3.7)	12 (0.6)	334 (5.4)	10.3 (0.05)
Italy	45 (1.3)	525 (2.9)	34 (1.1)	511 (3.2)	20 (1.1)	502 (3.5)	10.0 (0.06)
England	44 (1.6)	576 (4.4)	34 (1.1)	549 (4.4)	23 (1.1)	530 (3.8)	9.9 (0.07)
Qatar	43 (1.4)	474 (3.8)	38 (0.9)	434 (4.8)	20 (0.9)	436 (4.9)	10.0 (0.07)
Chile	43 (1.2)	458 (3.2)	39 (0.9)	437 (3.4)	19 (1.0)	418 (4.1)	10.0 (0.05)
Russian Federation	42 (1.1)	579 (4.0)	41 (0.8)	563 (3.5)	17 (0.9)	547 (4.3)	10.0 (0.05)
Austria	40 (1.0)	552 (2.5)	34 (0.8)	538 (2.7)	25 (0.9)	522 (2.9)	9.8 (0.05)
New Zealand	40 (0.9)	503 (3.2)	35 (0.8)	485 (3.6)	25 (0.9)	469 (3.3)	9.8 (0.04)
Australia	40 (1.0)	536 (3.6)	34 (0.9)	516 (3.4)	26 (1.2)	487 (3.6)	9.7 (0.05)
Hungary	38 (1.2)	543 (3.3)	37 (0.9)	517 (3.4)	25 (1.3)	504 (3.4)	9.7 (0.06)
United States	38 (0.9)	559 (2.8)	35 (0.7)	530 (3.7)	27 (0.8)	515 (3.1)	9.7 (0.04)
Canada	38 (0.9)	531 (2.9)	38 (0.8)	508 (2.1)	25 (0.6)	485 (2.5)	9.7 (0.04)
Spain	37 (1.0)	519 (3.5)	39 (0.9)	500 (2.9)	23 (1.1)	484 (2.9)	9.7 (0.04)
Singapore	37 (0.9)	654 (3.5)	40 (0.7)	618 (4.4)	23 (0.8)	594 (4.1)	9.7 (0.04)
Slovak Republic	37 (1.5)	520 (4.4)	39 (1.1)	506 (4.5)	24 (1.0)	500 (3.8)	9.7 (0.06)
Ireland	35 (1.1)	566 (2.9)	37 (1.0)	549 (3.2)	28 (1.1)	529 (3.3)	9.5 (0.05)
Pakistan	35 (3.6)	354 (14.7)	52 (3.2)	318 (11.5)	13 (1.3)	307 (11.5)	9.9 (0.09)
Serbia	35 (1.3)	526 (4.4)	40 (1.1)	505 (3.3)	26 (1.4)	490 (5.1)	9.6 (0.07)
Sweden	34 (1.6)	530 (4.5)	37 (1.1)	523 (3.3)	29 (1.6)	511 (3.2)	9.5 (0.08)
Germany	33 (1.0)	544 (3.1)	38 (1.0)	522 (2.8)	29 (1.2)	503 (3.1)	9.5 (0.05)
Belgium (Flemish)	33 (1.0)	547 (2.8)	39 (0.9)	531 (2.3)	28 (1.0)	518 (2.8)	9.4 (0.04)
Czech Republic	32 (1.2)	553 (3.6)	39 (1.1)	532 (3.2)	28 (1.2)	514 (3.2)	9.4 (0.05)
Latvia	32 (1.2)	565 (3.5)	40 (1.1)	549 (2.7)	28 (1.3)	521 (3.7)	9.5 (0.05)
Norway (5)	32 (1.4)	558 (3.4)	39 (1.1)	541 (3.4)	29 (1.3)	533 (3.4)	9.4 (0.07)
Philippines	32 (1.8)	362 (6.7)	53 (1.3)	278 (6.0)	16 (0.9)	242 (6.8)	9.8 (0.07)
Northern Ireland	31 (1.2)	589 (4.0)	39 (1.1)	572 (3.6)	30 (1.2)	535 (3.8)	9.4 (0.05)
Hong Kong SAR	30 (1.3)	626 (4.9)	38 (1.2)	596 (3.9)	32 (1.4)	585 (3.9)	9.3 (0.06)
Netherlands	30 (1.3)	553 (2.9)	39 (0.8)	538 (2.6)	32 (1.2)	524 (3.2)	9.3 (0.06)
Poland	28 (1.0)	544 (3.4)	41 (0.8)	517 (3.1)	31 (1.2)	505 (3.4)	9.2 (0.05)
Japan	28 (1.0)	622 (2.4)	45 (0.9)	591 (2.2)	27 (1.2)	568 (2.8)	9.4 (0.05)
Denmark	28 (1.2)	543 (3.3)	41 (1.1)	525 (2.9)	31 (1.1)	510 (3.0)	9.2 (0.05)
Finland	28 (0.9)	546 (3.8)	41 (0.7)	535 (2.8)	31 (0.9)	518 (3.2)	9.2 (0.04)
Croatia	25 (1.6)	534 (2.9)	40 (1.4)	506 (3.1)	35 (1.5)	497 (3.1)	9.1 (0.07)
Korea, Rep. of	22 (0.9)	631 (3.2)	38 (1.1)	607 (3.0)	40 (1.1)	576 (2.9)	8.9 (0.04)
Chinese Taipei	22 (0.9)	624 (3.4)	38 (0.9)	603 (2.8)	41 (1.1)	582 (2.2)	8.9 (0.05)
International Average	45 (0.2)	520 (0.5)	35 (0.1)	491 (0.6)	20 (0.1)	479 (0.7)	
Benchmarking Participants							
Dubai, UAE	61 (0.7)	553 (1.8)	27 (0.5)	533 (2.5)	11 (0.5)	526 (4.1)	10.7 (0.04)
Abu Dhabi, UAE	44 (1.1)	462 (2.8)	38 (0.8)	427 (3.1)	18 (0.7)	423 (3.7)	10.1 (0.05)
Quebec, Canada	43 (1.3)	548 (3.1)	37 (1.1)	527 (3.3)	20 (1.0)	502 (3.8)	9.9 (0.05)
Moscow City, Russian Fed.	41 (1.1)	610 (2.6)	39 (0.9)	586 (2.8)	20 (0.9)	572 (3.0)	9.9 (0.04)
Madrid, Spain	37 (1.3)	531 (3.1)	42 (0.9)	516 (2.8)	22 (1.0)	503 (3.2)	9.7 (0.05)
Ontario, Canada	36 (1.6)	532 (5.5)	39 (1.4)	511 (3.4)	25 (1.1)	488 (4.4)	9.6 (0.06)

This TIMSS context questionnaire scale was established in 2011 based on the combined response distribution of all countries that participated in TIMSS 2011. To provide a point of reference for country comparisons, the scale centerpoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

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

A tilde (~) indicates insufficient data to report achievement.

Exhibit 11.3: Students Like Learning Mathematics

Students' Reports

Country	Very Much Like Learning Mathematics		Somewhat Like Learning Mathematics		Do Not Like Learning Mathematics		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Egypt	42 (1.3)	437 (5.4)	41 (0.9)	396 (5.6)	17 (0.9)	405 (6.4)	11.1 (0.06)
Morocco	38 (1.1)	409 (3.0)	40 (0.7)	380 (2.9)	22 (0.9)	368 (2.7)	10.8 (0.05)
Jordan	37 (1.3)	441 (4.2)	39 (0.8)	413 (4.8)	24 (1.0)	408 (5.6)	10.8 (0.06)
South Africa (9)	36 (0.7)	403 (2.5)	44 (0.5)	382 (2.6)	19 (0.5)	385 (3.0)	10.8 (0.03)
Iran, Islamic Rep. of	34 (0.9)	478 (5.1)	39 (0.8)	438 (4.6)	27 (1.1)	418 (4.5)	10.6 (0.05)
Oman	31 (0.9)	455 (3.4)	46 (0.7)	396 (3.0)	23 (1.0)	390 (4.1)	10.6 (0.04)
Turkey	29 (1.0)	539 (5.8)	41 (0.8)	485 (4.9)	30 (1.1)	470 (4.8)	10.3 (0.05)
Lebanon	28 (1.3)	456 (3.6)	44 (1.1)	425 (3.9)	28 (1.1)	413 (3.7)	10.4 (0.06)
Saudi Arabia	27 (1.1)	413 (4.0)	36 (0.7)	391 (3.2)	37 (1.0)	386 (3.0)	10.1 (0.05)
Kazakhstan	26 (1.2)	509 (4.9)	54 (1.1)	484 (4.0)	20 (1.1)	472 (5.0)	10.6 (0.05)
United Arab Emirates	26 (0.6)	512 (3.0)	41 (0.6)	471 (2.4)	33 (0.6)	451 (1.9)	10.2 (0.03)
Georgia	25 (1.4)	493 (6.1)	43 (1.1)	461 (4.9)	32 (1.3)	438 (5.3)	10.2 (0.06)
Bahrain	24 (0.8)	510 (3.4)	36 (0.8)	483 (2.4)	40 (1.2)	462 (2.9)	9.9 (0.06)
Singapore	22 (0.7)	653 (4.0)	43 (0.7)	624 (3.9)	35 (0.8)	582 (5.0)	10.1 (0.03)
Malaysia	20 (0.8)	498 (5.2)	57 (0.8)	455 (3.3)	23 (1.0)	442 (4.2)	10.3 (0.04)
Kuwait	20 (0.9)	429 (7.0)	34 (1.0)	406 (6.3)	45 (1.3)	392 (4.4)	9.7 (0.05)
Israel	19 (1.0)	544 (6.3)	36 (1.0)	527 (5.3)	45 (1.4)	505 (4.1)	9.6 (0.06)
Cyprus	19 (0.8)	549 (3.8)	35 (0.8)	513 (2.8)	46 (1.0)	473 (2.4)	9.6 (0.04)
Portugal	19 (0.9)	548 (4.7)	34 (1.0)	508 (3.9)	48 (1.3)	477 (3.3)	9.6 (0.06)
Russian Federation	17 (0.7)	583 (6.3)	46 (0.9)	549 (4.7)	37 (1.1)	519 (5.0)	9.9 (0.04)
United States	17 (0.8)	561 (6.2)	37 (0.6)	528 (5.0)	45 (1.0)	493 (4.7)	9.6 (0.05)
Italy	16 (0.9)	537 (4.3)	34 (1.1)	513 (3.3)	49 (1.3)	474 (2.9)	9.4 (0.06)
Romania	16 (1.0)	537 (6.0)	39 (1.1)	486 (5.6)	44 (1.6)	454 (4.8)	9.7 (0.06)
Qatar	16 (0.8)	486 (5.6)	39 (1.1)	449 (5.9)	45 (1.4)	424 (3.5)	9.6 (0.06)
Ireland	14 (0.7)	567 (4.4)	35 (1.1)	537 (3.1)	50 (1.3)	504 (2.7)	9.4 (0.05)
Chile	14 (0.7)	468 (5.7)	40 (1.2)	449 (3.4)	46 (1.5)	426 (2.9)	9.6 (0.05)
New Zealand	14 (0.6)	528 (5.4)	39 (1.1)	495 (4.1)	47 (1.2)	460 (3.6)	9.5 (0.04)
Australia	13 (0.7)	576 (5.1)	37 (0.8)	536 (4.5)	50 (1.2)	489 (3.4)	9.4 (0.05)
Hong Kong SAR	13 (0.7)	622 (5.8)	39 (1.0)	595 (4.9)	48 (1.4)	554 (4.4)	9.4 (0.05)
Sweden	13 (0.7)	545 (4.7)	34 (0.9)	522 (3.4)	53 (1.2)	482 (2.5)	9.3 (0.05)
England	12 (0.8)	552 (8.5)	38 (1.1)	530 (6.6)	50 (1.2)	500 (5.0)	9.4 (0.04)
Norway (9)	12 (0.8)	558 (4.8)	34 (0.9)	524 (2.5)	54 (1.1)	479 (2.7)	9.2 (0.04)
Lithuania	12 (0.8)	563 (6.3)	43 (1.2)	531 (3.7)	44 (1.3)	500 (3.0)	9.6 (0.04)
Chinese Taipei	12 (0.6)	685 (5.2)	33 (0.7)	643 (3.0)	56 (0.9)	579 (2.7)	9.2 (0.04)
France	11 (0.7)	524 (4.8)	43 (1.2)	498 (3.1)	46 (1.3)	459 (2.5)	9.5 (0.04)
Hungary	11 (0.6)	590 (7.0)	32 (0.9)	538 (4.2)	57 (1.1)	491 (2.9)	9.2 (0.04)
Japan	10 (0.6)	658 (5.3)	34 (0.9)	618 (3.2)	56 (1.1)	569 (2.8)	9.3 (0.04)
Finland	9 (0.6)	572 (4.3)	34 (1.0)	533 (3.3)	57 (1.2)	485 (2.3)	9.1 (0.05)
Korea, Rep. of	8 (0.5)	685 (5.3)	32 (0.9)	638 (3.8)	61 (0.9)	581 (2.8)	9.0 (0.03)
International Average	20 (0.1)	530 (0.8)	39 (0.1)	496 (0.7)	41 (0.2)	468 (0.6)	
Benchmarking Participants							
Gauteng, RSA (9)	33 (1.1)	432 (4.1)	44 (0.7)	415 (3.4)	23 (0.9)	417 (4.0)	10.6 (0.05)
Dubai, UAE	28 (1.1)	569 (4.1)	42 (1.3)	537 (2.6)	29 (0.8)	505 (2.7)	10.4 (0.04)
Western Cape, RSA (9)	27 (1.0)	457 (4.7)	44 (0.8)	434 (5.2)	29 (1.0)	440 (4.8)	10.3 (0.04)
Ontario, Canada	24 (1.1)	569 (3.9)	39 (1.0)	540 (4.8)	37 (1.0)	495 (4.8)	10.0 (0.05)
Abu Dhabi, UAE	21 (0.9)	489 (4.2)	43 (0.9)	425 (3.5)	36 (0.9)	422 (3.5)	10.0 (0.05)
Moscow City, Russian Fed.	19 (0.9)	625 (5.3)	44 (1.1)	586 (4.7)	37 (1.4)	538 (3.8)	9.9 (0.05)
Quebec, Canada	13 (1.0)	586 (4.9)	38 (1.0)	556 (3.3)	48 (1.6)	522 (4.5)	9.5 (0.07)

This TIMSS context questionnaire scale was established in 2011 based on the combined response distribution of all countries that participated in TIMSS 2011. To provide a point of reference for country comparisons, the scale centerpoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

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

