COUNTRY NOTE

PROGRAMME FOR INTERNATIONAL STUDENT ASSESSMENT (PISA)
RESULTS FROM PISA 2012

JAPAN

Key findings

- Students in Japan remain higher performers in mathematics, reading, and science. They even improved significantly in reading between 2009 and 2012. Among OECD countries, Japan is now ranked second in mathematics performance and first in both reading and science performance. But, because results are based on a sample of students, its relative position could be between 2 and 3 in mathematics, between 1 and 2 in reading, and between 1 and 3 in science.

- While the Japanese school system ensures equity in education opportunities (i.e. the relationship between students' socio-economic status and performance is weaker than the OECD average), performance differences between advantaged and disadvantaged schools have widened since 2003.

- Students in Japan generally feel less confident about their ability to solve a set of pure and applied mathematics problems than the average student across OECD countries, but have shown improvement over time.

- Japanese students reported less pleasure and interest in learning mathematics, less open to problem solving, and more anxiety in learning mathematics than the OECD average, but since 2003, their pleasure and interest in learning mathematics has increased.

- Classrooms in Japan were more conducive to learning than those in many other countries and economies in 2003, and became even more so by 2012.

- Japan allocates human and educational resources equitably between socio-economically advantaged and disadvantaged schools; however, some differences in physical infrastructure and learning time are observed between advantaged and disadvantaged schools.

Student performance in mathematics, reading and science

Japan is one of the highest-performing OECD countries. Among 34 OECD countries, Japan is ranked second in mathematics performance and first in both reading and science performance. But, because results are based on a sample of students, its relative position could be between 2 and 3 in mathematics, between 1 and 2 in reading, and between 1 and 3 in science. Among the 65 countries and economies that participated in the 2012 PISA assessment of 15-year-olds, Japan is ranked seventh in mathematics, and fourth in both reading and science, with its range of ranks between 6

and 9 in mathematics, between 2 and 5 in reading and between 3 and 6 in science (see Figures I.2.14, I.4.2 and I.5.2 in OECD, 2013a).

Mean mathematics

- Students in Japan score 536 points in mathematics, on average – above the OECD average (494 points) and comparable with Liechtenstein, Macao-China and Switzerland. Shanghai-China, Singapore, Hong Kong-China, Chinese Taipei and Korea score higher in mathematics than Japan.
- Japan's mean performance has not changed significantly since 2003, when it was 534 points (an annualised change of 0.4 points). Since 2006, Japan improved its mathematics performance from 523 to 536 score points.

Share of low- and top-performing students in mathematics

The changes in a country's or economy's average performance can result from changes at different levels of the performance distribution, among low performers (below the baseline Level 2) or/and among top performers (Level 5 or 6).

- Some 11% of students in Japan do not reach the PISA baseline Level 2 of mathematics proficiency. At best, these students can extract relevant information from a single source and can use basic algorithms, formulae, procedures or conventions to solve problems involving whole numbers. This proportion is below the OECD average (23%) and has not changed over time.
- Some 24% of students in Japan reach the highest levels of mathematics proficiency (Level 5 or 6). At these levels, students can develop and work with models for complex situations, and work strategically using broad, well-developed thinking and reasoning skills. This proportion is above the OECD average (13%) and has not changed over time. Over 55% of students in Shanghai-China reach these highest levels of mathematics proficiency, and between 30% and 40% of students in Hong Kong-China, Korea, Singapore and Chinese Taipei reach these highest levels.

Gender differences in mathematics performance

- Boys in Japan outperform girls in mathematics by an average of 18 points, above the OECD average (11 points), even though in 2003, a significant gender difference was not observed.

Performance in specific process and content areas of mathematics

- Students in Japan show relative strength in formulating *situations mathematically*. In this area of mathematics, Japanese students score 18 points higher than Japan's overall mean score in mathematics. In two other areas, *employing mathematical concepts, facts, procedures, and reasoning* and *interpreting, applying and evaluating mathematical outcomes*, Japanese students perform lower than the country's overall mathematics score (by 6 and 5 points, respectively).
- Japanese students show relative strength in handling tasks related to *space and shape* and, to a lesser extent, *change and relationships*. In *space and shape*, Japanese students score 21 points higher than Japan's mean mathematics performance; and in *change and relationships* they score 6 points higher. By contrast, in the content categories *quantity* and *uncertainty and data*, Japanese students score below the country's mean mathematics score (by 18 and 8 score points, respectively).

Opportunity to learn mathematics

Strong mathematics performance in PISA is related to opportunities to learn formal mathematics, such as solving a quadratic equation, using complex numbers, or calculating the volume of a box, but also to opportunities to learn applied mathematics (using mathematics in a real-world context).

- In Japan, students are more frequently exposed to formal mathematics than the OECD average, while they are less exposed to applied mathematics than the OECD average. Similarly, students in the high-performing East Asian countries and economies of Hong Kong-China, Korea, Macao-China, Shanghai-China, Singapore and Chinese Taipei are more frequently exposed to formal mathematics than the OECD average, while of these countries/economies, only in Singapore are students exposed to applied mathematics more frequently than the OECD average.

Reading

Mean reading performance

- Students in Japan score 538 points in reading, on average – above the OECD average (496 points) and comparable with Hong Kong-China, Korea and Singapore. Shanghai-China scores higher than Japan in reading.
- Japan's mean reading performance improved since 2009, when the country's mean performance was 520 points.

Share of low- and top-performing students in reading

The changes in a country's or economy's average performance can result from changes at different levels of the performance distribution, among low performers (below the baseline Level 2) or/and among top performers (Level 5 or 6).

- Some 10% of students in Japan do not reach the PISA baseline Level 2 in reading proficiency. At this level, students can, at best, recognise the main theme or author's purpose in a text about a familiar topic and make a simple connection between information in the text and everyday knowledge. This proportion is below OECD average (18%) and has not changed over time.
- Some 18% of students in Japan reach the highest levels of reading proficiency (Level 5 or above). At these levels, students can handle texts that are unfamiliar in either form or content and can conduct fine-grained analyses of texts. This proportion is above OECD average (9%) and grew by 9 percentage points since 2000 (see Table I.4.1b in OECD, 2013a)

Gender differences in reading performance

- In Japan, girls outperform boys in reading by an average of 24 points, which is below the OECD average (38 points). On average across OECD countries, the gender gap in favour of girls increased since 2000 (from 32 to 38 points); Japan's gender gap in reading performance did not widen during that period.

Science

Mean science performance

- Students in Japan score 547 points in science, on average – above the OECD average (501 points) and comparable with Estonia, Finland, Hong Kong-China, Korea and Singapore. Shanghai-China had a higher score in science than Japan.
- Japan's mean performance in science improved at an annual rate of 2.6 points since 2006, when it was 531 points.

Share of low- and top-performing students in science

The changes in a country's or economy's average performance can result from changes at different levels of the performance distribution, among low performers (below the baseline level 2) or/and among top performers (Level 5 or 6).

- Some 8% of students in Japan do not reach the baseline proficiency Level 2 in science. At this level, students can, at best, present scientific explanations that are obvious and follow explicitly from given evidence. This proportion is below OECD average (18%) and decreased by 4 percentage points since 2006.
- Some 18% of students in Japan reach the highest levels of reading proficiency (Level 5 or 6). At these levels, students can identify, explain and apply scientific knowledge and knowledge about science in a variety of complex life situations. This proportion is above the OECD average (8%). While 15% of students in 2006 reached these highest levels, the change since then is not statistically significant. (see Table I.5.1b in OECD, 2013a)

Gender differences in science performance

- In Japan, boys outperform girls in science by an average of 11 points, which is above the OECD average (1 point), while in 2006 a significant gender difference was not observed.

Giving every student the chance to succeed

Equity in performance

- Japan does better than average in providing equitable learning opportunities to its students, regardless of their socio-economic status: 9.8% of the variation in student performance in mathematics is attributed to differences in Japanese students' socio-economic status (the OECD average is 15%).
- However, Japan is about average in the magnitude of performance differences between advantaged and disadvantaged students: advantaged students score 41 points higher in mathematics than disadvantaged students in Japan, while the OECD average difference between the two groups is 39 points. (see Figure II.2.2 in OECD, 2013b)
- While the strength of the relationship between students' socio-economic status and mathematics performance has not changed since 2003, the association, at the school level, between schools' socio-economic profile and performance strengthened over the period, from a difference between advantaged and disadvantaged schools of 121 score points to 150 score points.

Resilient students

- Some 11.4% of Japanese students are resilient, meaning that they beat the socio-economic odds against them and exceed expectations (the OECD average is 6.5%). This proportion has not changed since 2003.

Students' engagement, drive and self-beliefs

Students' engagement with and at school, the belief that they can achieve at high levels, and their ability and willingness to do what it takes to reach their goals not only play a central role shaping students' ability to master academic subjects, they are also valuable attributes that will enable students to lead full lives, meeting challenges and making the most of available opportunities along the way. In other words, much more is required of students – and adults – than just cognitive proficiency.

Student truancy

Lack of punctuality and truancy are negatively associated with student performance.

- In Japan only 9% of students reported that they had arrived late for school in the two weeks prior to the PISA test, far below the OECD average of 35%. In addition, 3% of students in Japan reported that they had skipped at least one class and 2% reported that they had skipped a day of school or more over the same period. These proportions are comparatively low, as across OECD countries 18% of students reported that they had skipped at least one class and 15% reported that they had skipped an entire day of school or more in the two weeks before the PISA test. (see Tables III.2.1a, III.2.2a and III.2.2b in OECD, 2013c)
- In Japan, students who reported that they had arrived late for school show a performance disadvantaged of 35 score points (the OECD average is 27 score points) and those who reported that they had skipped classes or days of school show a performance disadvantage of 88 score points (the OECD average is 37 score points). The greater performance disadvantage observed in Japan may be the result of the fact that the students who arrive late for school or who skip classes or days of school are often also more disadvantaged students, who tend to score lower in mathematics.
- Between 2003 and 2012, the proportion of students who arrive late for school decreased by 7 percentage points (compared with the OECD average decrease of 1.9 percentage points), signalling that Japanese students' engagement with and at school improved during the period.

Sense of belonging at school

- While students in Japan reported a sense of belonging at school around the OECD average (84% of students reported that they feel like they belong at school, compared with the OECD average of 81%; 92% of students do not feel like an outsider or feel left out of things, compared with the OECD average of 89%; and 85% of students feel happy at school, compared with the OECD average of 80%), their feelings about their schools are less positive. Some 68% are satisfied with school, compared with the OECD average of 78%, and only 31% believe that conditions are ideal in their school, compared with the OECD average of 61%.

- Still, Japanese students have shown one of the greatest improvements in students' sense of belonging at school among countries and economies that participated in PISA 2003 and 2012 – even as in many countries, students' sense of belonging at school deteriorated somewhat since 2003.

Openness to problem solving

- Students who are more open to problem solving generally perform at higher levels in mathematics. In Japan, the difference in performance that is associated with students being open to problem solving is 28 score points, which is around the same as the OECED average

- Japanese students are below average in their openness to problem solving: some 35% of students reported that they are quick to understand things (the OECD average is 57%), 32% seek explanations for things (the OECD average is 61%), 26% can handle a lot of information (the OECD average is 53%), 26% can easily link facts together (the OECD average is 57%) and only 19% like to solve complex problems (the OECD average is 33%). In other high-performing Asian countries and economies, such as Hong Kong-China, Korea, Macao-China, Shanghai-China, Singapore and Chinese Taipei the percentage of students who agreed with these statements was below the OECD average, but still higher than the percentages reported by Japanese students (see Table III.3.2a in OECD, 2013c).

Intrinsic motivation to learn mathematics

Motivation can be regarded as the driving force behind learning. Intrinsic motivation refers to the drive to perform an activity because of the pleasure and interest in the activity itself.

- Japanese students tended to report less pleasure and interest in mathematics than the OECD average: while 53% of students in OECD countries agreed or strongly agreed that they are interested in the things they learn in mathematics, only 38% of Japanese students responded so. Among other high-performing Asian countries and economies, Korea showed below-average intrinsic motivation to learn mathematics – about the same level as reported by Japanese students. By contrast, , students in Chinese Taipei showed around the OECD average level of intrinsic motivation; students in Hong Kong-China, Macao-China and Shanghai-China showed above-OECD-average intrinsic motivation; and students in Singapore showed considerably more interest in learning mathematics than the OECD average. For example, 77% of students in Singapore agreed or strongly agreed that they are interested in the things they learn in mathematics.
- However, there has been some improvement in Japanese students' intrinsic motivation to learn mathematics since 2003. The percentage of students who are interested in the things they learn in mathematics increased by 5 percentage points (the OECD average increase is 0 percentage point), and the percentage of students who look forward to their mathematics lessons increased by 8 percentage points (the OECD average increase is 4 percentage points) during the period. (see Table III.3.4f in OECD, 2013c)

Mathematics anxiety

- Japanese students reported more anxiety towards mathematics than the average student across OECD countries. Some 35% of students in Japan reported that they feel helpless when doing mathematics problems and 56% students reported that they get very tense when they have to do mathematic homework (the OECD averages are 30% and 33%, respectively). This high level of mathematics anxiety among Japanese students was also observed in 2003 and has not changed over time. Among other high-performing East Asian countries and economies, students in Korea and Chinese Taipei reported levels of anxiety towards mathematics that are similar to those observed among Japanese students; students in Hong Kong-China, Macao-China and Singapore showed above-average anxiety, but less than observed in Japan; and students in Shanghai-China reported levels of anxiety towards mathematics around the OECD average.
- The association between mathematics anxiety and mathematics performance is weaker in Japan than across OECD countries, on average: in Japan, higher mathematics anxiety is associated with a 19-point lower score in mathematics, while across OECD countries, it is associated with a 34-point lower score.

Self-efficacy

- Students in Japan generally feel less confident about their ability to solve a set of pure and applied mathematics problems than the average student across OECD countries, but have shown improvement over time. For example, in 2003, 77% of students responded that they are confident or very confident about having to do the mathematics task such as " Solving an equation like 2(x+3)=(x+3)(x-3)", while 83% responded so in 2012. Among other high-performing East Asian countries and economies, students in Korea reported low confidence – similar to that reported by Japanese students – about their ability to solve mathematics problems; students in Hong Kong-China, Macao-China and Singapore reported average levels of confidence; and students in Shanghai-China reported well above-average levels of confidence.
- The association between students' self-efficacy and mathematics performance is stronger in Japan than across OECD countries: on average across OECD countries, mathematics self-efficacy is associated with a difference of 49 score points while in Japan, the difference is 53 score points.

Socio-economic disparities in engagement and motivation

Across most countries and economies, socio-economically disadvantaged students not only score lower in mathematics, they also have lower levels of engagement, drive, motivation and self-beliefs.

- In Japan, 82% of disadvantaged students reported that they feel like they belong at school, while 85% of advantaged students responded so (the OECD average is 78% and 85%, respectively). Similarly, in Japan, socio-economic disparities in the proportion of students who had skipped a day of school in the two weeks prior to the PISA test are notably narrower than in other countries: 1% of advantaged and 3% of disadvantaged students reported that they had skipped a day of school during that period, compared with the OECD averages of 12% and 18%, respectively.

- In Japan, the difference between socio-economically advantaged students and disadvantaged students in their intrinsic motivation to learn mathematics is much greater than the difference observed on average across OECD countries. For example, 44% of advantaged students in Japan reported that they are interested in the things they learn in mathematics, while 30% of disadvantaged students responded so (the corresponding OECD averages are 58% and 51%).

What makes schools successful?

Learning environments

PISA shows that high-performing school systems tend to ensure that the learning environment is conducive to learning for all.

- Most students in OECD countries, particularly those in Japan, enjoy orderly classrooms. Japanese students reported the best disciplinary climate in their mathematics classes among students in all other OECD countries. For example, 91% of Japanese students reported that students never or only in some classes don't listen to what the teacher says (OECD average is 68%); and 93% of Japanese students reported that their teacher never or only in some lessons has to wait a long time before students settle down (the OECD average is 72%).

- The disciplinary climate in Japanese classrooms improved since 2003. In 2003, 81% of Japanese students reported that students never or only in some classes don't listen to what the teacher says (a 10 percentage-point increase between 2003 and 2012); and 86% of Japanese students reported that their teacher never or only in some lessons has to wait a long time before students settle down (a 7 percentage-point increase between 2003 and 2012). (see Table IV.5.18 in OECD, 2013d)

Resource allocation

Higher-performing countries tend to distribute schools' educational resources more equitably between socio-economically advantaged and disadvantaged schools (see Figure IV.1.11 in OECD, 2013d).

- OECD countries allocate at least an equal, if not a larger, number of teachers per student to socio-economically disadvantaged schools as to advantaged schools; but disadvantaged schools tend to have great difficulty in attracting qualified teachers. By contrast, in Japan, the student-teacher ratio is 10 in disadvantaged schools and 13 in advantaged schools, meaning that there are more teachers per student in disadvantaged schools. In addition, the proportion of teachers with university-level qualifications does not substantially differ between advantaged and disadvantaged schools in Japan (it is 100% in advantaged schools and 99.8% in disadvantaged schools), and principals in disadvantaged schools reported the same extent of teacher shortage as principals in advantaged schools.

- In Japan, there is no statistically significant difference between advantaged and disadvantaged schools in the amount of educational resources allocated, according to principals' reports. However, advantaged schools tend to have better infrastructure and offer students more learning time than disadvantaged schools, as observed in most participating countries and economies.

Learning time

- Japanese students reported that they spend 235 minutes per week in regular mathematics classes in school, while the OECD average is 218 minutes per week. By contrast, Japanese students reported less time than the OECD average in language-of-instruction and science classes: 205 minutes and 165 minutes per week, respectively (the OECD averages are 215 minutes and 200 minutes per week).
- The proportion of Japanese students who attend after-school lessons at school, at home or at another venue is much larger than the OECD average: 70% compared to the OECD average of 38%. More than 70% of students in Colombia, Kazakhstan, Korea, Malaysia, Peru, the Russian Federation, Shanghai-China, Singapore, Tunisia and Viet Nam also attend after-school lessons.

Pre-primary education

Pre-primary education is another educational resource. Students who had attended pre-primary education tend to perform better at the age of 15 than those who had not. At the system level, across all PISA participating countries and economies, there is also a relationship between the proportion of students who had attended pre-primary education for more than one year and systems' overall performance in mathematics.

- Some 99% of students in Japan reported that they had attended pre-primary education (the OECD average is 93%), and 97% reported that they had attended for more than one year (the OECD average is 74%). The proportions in Japan have not changed since 2003.

- On average across OECD countries, the difference in socio-economic status and the difference in mathematics performance between those who had attended pre-primary education and those who hadn't widen between 2003 and 2012, but in Japan no change was observed.

School governance

PISA shows that school systems that grant more autonomy to schools to define and elaborate their curricula and assessments tend to perform better than systems that don't grant such autonomy, even after accounting for countries' national income.

- Schools in Japan are given more discretion in establishing curricula and assessments than schools in most participating countries and economies. In Japan, 98% of students are in schools whose principals reported that only "principals and/or teachers", have considerable responsibility for establishing student assessment polices (the OECD average is 47%); 90% are in schools that have the authority to decide which courses are offered (the OECD average is 36%); and 89% are in schools that have responsibility for choosing which textbooks are used or for determining course content (the OECD averages are 65% and 40%, respectively).

PISA also shows that schools with more autonomy tend to perform better than schools with less autonomy in systems with more accountability and/or collaboration among principals and teachers.

- In Japan, no significant performance difference is observed between schools with more autonomy in resource allocation and those with less autonomy, and between schools with more autonomy in curriculum and assessment and less autonomy, after accounting for the socio-economic and demographic profile of students and schools and various other school factors.
- Some 6% of students in Japan are in schools where achievement data are posted publicly (the OECD average is 45%); and 38% of students are in schools that implement a standardised policy for teaching mathematics (the OECD average is 62%). In addition, there is less collaboration among school principals and teachers in school management than the OECD average.

Sorting and grouping students

PISA results show that grade repetition tends to be negatively related to equity and is a costly policy.

- No Japanese student reported that he or she had repeated a grade in primary, lower secondary or secondary school (the OECD average is 12%).

The impact of the socio-economic status of students and/or schools on performance is stronger in school systems that sort students into different tracks, where students are grouped into these tracks at an early age, where more students attend vocational programmes, where more students attend academically selective schools, and where more students attend schools that transfer low-performing students or students with behaviour problems to another school. In addition, across participating countries and economies, a strong negative relationship is observed between the levels of students' motivation and the degree to which systems sort and group students into different schools and/or programmes. In the systems that separate students into different schools more, students tend to report less instrumental motivation to learn mathematics.

- Japanese 15-year-old students are generally not scattered in a wide range of grade levels; and in Japan the extent of the practice of grouping students into different programmes or schools is about the OECD average.

Accountability arrangements

PISA shows that high-performing and equitable school systems tend to engage students in school evaluations and teacher appraisals to improve teaching and learning. The degree to which systems seek feedback from students regarding lessons, teachers or resources tends to be related to the school systems' level of equity. Systems where more students attend schools with such practices tend to show a weaker impact of students' socio-economic status on performance.

- In Japan, 75% of students are in schools that seek written feedback from students regarding lessons, teachers or resources (the OECD average is 61%).

Snapshot of performance in mathematics, reading and science

Countries/economies with a mean performance/share of top-performers above the OECD average Countries/economies with a share of low-achievers below the OECD average
Countries/economies with a mean performance/share of low-achievers/share of top-performers not statistically significantly different from the OECD average
Countries/economies with a mean performance/share of top-performers below the OECD average Countries/economies with a share of low-achievers above the OECD average
Countries/economies in which the annualised change in performance is statistically significant are marked in **bold**.

	Mathematics				Reading		Science	
	Mean score in PISA 2012	Share of low-achievers (Below Level 2)	Share of top-performers in mathematics (Level 5 or 6)	Annualised change	Mean score in PISA 2012	Annualised change	Mean score in PISA 2012	Annualised change
OECD average	494	23.1	12.6	**-0.3**	496	**0.3**	501	**0.5**
Shanghai-China	613	3.8	55.4	**4.2**	570	**4.6**	580	1.8
Singapore	573	8.3	40.0	**3.8**	542	**5.4**	551	**3.3**
Hong Kong-China	561	8.5	33.7	**1.3**	545	**2.3**	555	**2.1**
Chinese Taipei	560	12.8	37.2	1.7	523	**4.5**	523	-1.5
Korea	554	9.1	30.9	1.1	536	**0.9**	538	**2.6**
Macao-China	538	10.8	24.3	**1.0**	509	**0.8**	521	**1.6**
Japan	536	11.1	23.7	0.4	538	**1.5**	547	**2.6**
Liechtenstein	535	14.1	24.8	0.3	516	**1.3**	525	0.4
Switzerland	531	12.4	21.4	0.6	509	**1.0**	515	0.6
Netherlands	523	14.8	19.3	**-1.6**	511	-0.1	522	-0.5
Estonia	521	10.5	14.6	0.9	516	**2.4**	541	1.5
Finland	519	12.3	15.3	**-2.8**	524	**-1.7**	545	**-3.0**
Canada	518	13.8	16.4	**-1.4**	523	**-0.9**	525	**-1.5**
Poland	518	14.4	16.7	**2.6**	518	**2.8**	526	**4.6**
Belgium	515	18.9	19.4	**-1.6**	509	0.1	505	-0.8
Germany	514	17.7	17.5	**1.4**	508	**1.8**	524	1.4
Viet Nam	511	14.2	13.3	m	508	m	528	m
Austria	506	18.7	14.3	0.0	490	-0.2	506	-0.8
Australia	504	19.7	14.8	**-2.2**	512	**-1.4**	521	-0.9
Ireland	501	16.9	10.7	-0.6	523	**-0.9**	522	**2.3**
Slovenia	501	20.1	13.7	**-0.6**	481	**-2.2**	514	-0.8
Denmark	500	16.8	10.0	**-1.8**	496	0.1	498	0.4
New Zealand	500	22.6	15.0	**-2.5**	512	**-1.1**	516	**-2.5**
Czech Republic	499	21.0	12.9	**-2.5**	493	-0.5	508	-1.0
France	495	22.4	12.9	**-1.5**	505	0.0	499	0.6
United Kingdom	494	21.8	11.8	-0.3	499	0.7	514	-0.1
Iceland	493	21.5	11.2	**-2.2**	483	**-1.3**	478	**-2.0**
Latvia	491	19.9	8.0	0.5	489	**1.9**	502	**2.0**
Luxembourg	490	24.3	11.2	**-0.3**	488	**0.7**	491	0.9
Norway	489	22.3	9.4	-0.3	504	0.1	495	1.3
Portugal	487	24.9	10.6	**2.8**	488	**1.6**	489	**2.5**
Italy	485	24.7	9.9	**2.7**	490	0.5	494	**3.0**
Spain	484	23.6	8.0	0.1	488	-0.3	496	1.3
Russian Federation	482	24.0	7.8	1.1	475	**1.1**	486	1.0
Slovak Republic	482	27.5	11.0	**-1.4**	463	-0.1	471	**-2.7**
United States	481	25.8	8.8	0.3	498	-0.3	497	1.4
Lithuania	479	26.0	8.1	-1.4	477	1.1	496	1.3
Sweden	478	27.1	8.0	**-3.3**	483	**-2.8**	485	**-3.1**
Hungary	477	28.1	9.3	**-1.3**	488	**1.0**	494	-1.6
Croatia	471	29.9	7.0	0.6	485	1.2	491	-0.3
Israel	466	33.5	9.4	**4.2**	486	**3.7**	470	**2.8**
Greece	453	35.7	3.9	**1.1**	477	0.5	467	-1.1
Serbia	449	38.9	4.6	**2.2**	446	**7.6**	445	1.5
Turkey	448	42.0	5.9	**3.2**	475	**4.1**	463	**6.4**
Romania	445	40.8	3.2	**4.9**	438	1.1	439	**3.4**
Cyprus[1,2]	440	42.0	3.7	m	449	m	438	m
Bulgaria	439	43.8	4.1	**4.2**	436	0.4	446	2.0
United Arab Emirates	434	46.3	3.5	m	442	m	448	m
Kazakhstan	432	45.2	0.9	**9.0**	393	0.8	425	**8.1**
Thailand	427	49.7	2.6	**1.0**	441	**1.1**	444	**3.9**
Chile	423	51.5	1.6	**1.9**	441	**3.1**	445	1.1
Malaysia	421	51.8	1.3	**8.1**	398	**-7.8**	420	-1.4
Mexico	413	54.7	0.6	**3.1**	424	**1.1**	415	0.9
Montenegro	410	56.6	1.0	**1.7**	422	**5.0**	410	-0.3
Uruguay	409	55.8	1.4	**-1.4**	411	**-1.8**	416	**-2.1**
Costa Rica	407	59.9	0.6	-1.2	441	-1.0	429	-0.6
Albania	394	60.7	0.8	**5.6**	394	**4.1**	397	2.2
Brazil	391	67.1	0.8	**4.1**	410	**1.2**	405	**2.3**
Argentina	388	66.5	0.3	1.2	396	-1.6	406	2.4
Tunisia	388	67.7	0.8	**3.1**	404	**3.8**	398	**2.2**
Jordan	386	68.6	0.6	0.2	399	-0.3	409	**-2.1**
Colombia	376	73.8	0.3	1.1	403	**3.0**	399	1.8
Qatar	376	69.6	2.0	**9.2**	388	**12.0**	384	**5.4**
Indonesia	375	75.7	0.3	0.7	396	**2.3**	382	-1.9
Peru	368	74.6	0.6	1.0	384	**5.2**	373	1.3

Countries and economies are ranked in descending order of the mathematics mean score in PISA 2012.
Source: OECD PISA 2012 database, Tables I.2.1a, I.2.1b, I.2.3a, I.2.3b, I.4.3a, I.4.3b, I.5.3a and I.5.3b.

1. Footnote by Turkey: The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".
2. Footnote by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

What is PISA?

The Programme for International Student Assessment (PISA) is an ongoing triennial survey that assesses the extent to which 15-year-olds students near the end of compulsory education have acquired key knowledge and skills that are essential for full participation in modern societies. The assessment does not just ascertain whether students can reproduce knowledge; it also examines how well students can extrapolate from what they have learned and apply that knowledge in unfamiliar settings, both in and outside of school. This approach reflects the fact that modern economies reward individuals not for what they know, but for what they can do with what they know.

PISA offers insights for education policy and practice, and helps monitor trends in students' acquisition of knowledge and skills across countries and in different demographic subgroups within each country. The findings allow policy makers around the world to gauge the knowledge and skills of students in their own countries in comparison with those in other countries, set policy targets against measurable goals achieved by other education systems, and learn from policies and practices applied elsewhere.

Key features of PISA 2012

The content

- The PISA 2012 survey focused on mathematics, with reading, science and problem-solving minor areas of assessment. For the first time, PISA 2012 also included an assessment of the financial literacy of young people, which was optional for countries.

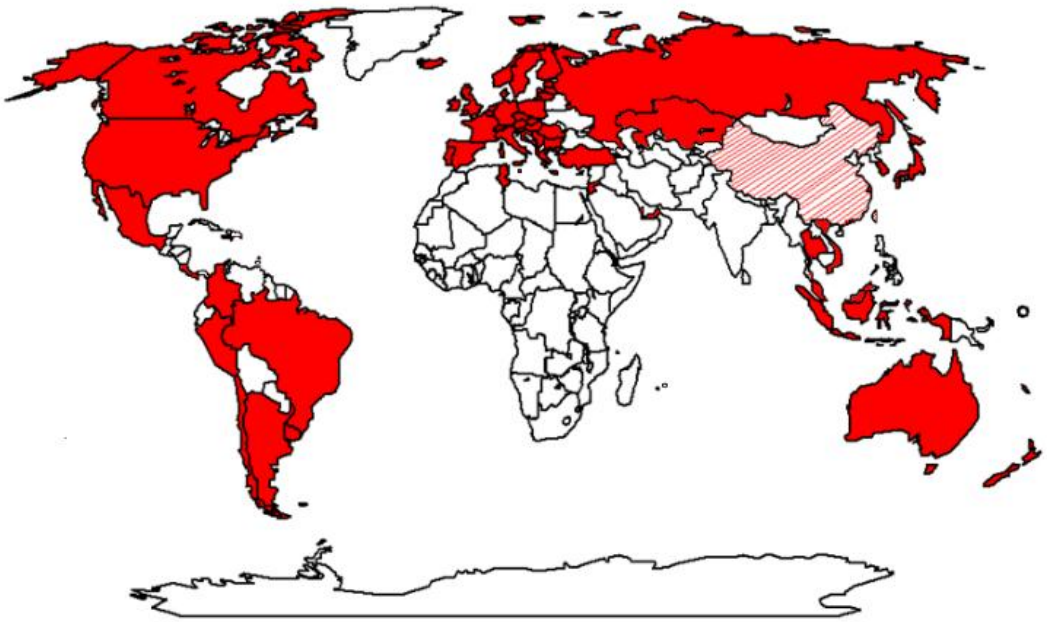
The students

- Around 510 000 students completed the assessment in 2012, representing about 28 million 15-year-olds in the schools of the 65 participating countries and economies.
- In Japan, 6 351 15-year-old students in 191 responding schools participated in PISA 2012. The participation rate is 96%, which is above the OECD average (89%).

The assessment

- Paper-based tests were used, with assessments lasting a total of two hours for each student. In a range of countries and economies, an additional 40 minutes were devoted to the computer-based assessment of mathematics, reading and problem solving.
- Test items were a mixture of multiple-choice items and questions requiring students to construct their own responses. The items were organised in groups based on a passage setting out a real-life situation. A total of about 390 minutes of test items were covered, with different students taking different combinations of test items.
- Students answered a background questionnaire, which took 30 minutes to complete, that sought information about themselves, their homes and their school and learning experiences. School principals were given a questionnaire, to complete in 30 minutes, that covered the school system and the learning environment. In some countries and economies, optional questionnaires were distributed to parents, who were asked to provide information on their perceptions of and involvement in their child's school, their support for learning in the home, and their child's career expectations, particularly in mathematics. Countries could choose two other optional questionnaires for students: one asked students about their familiarity with and use of information and communication technologies, and the second sought information about their education to date, including any interruptions in their schooling and whether and how they are preparing for a future career.

Map of PISA 2012 countries and economies



OECD countries		**Partner countries and economies in PISA 2012**	
Australia	Japan	Albania	Malaysia
Austria	Korea	Argentina	Montenegro
Belgium	Luxembourg	Brazil	Peru
Canada	Mexico	Bulgaria	Qatar
Chile	Netherlands	Colombia	Romania
Czech Republic	New Zealand	Costa Rica	Russian Federation
Denmark	Norway	Croatia	Serbia
Estonia	Poland	Cyprus[1,2]	Shanghai-China
Finland	Portugal	Hong Kong-China	Singapore
France	Slovak Republic	Indonesia	Chinese Taipei
Germany	Slovenia	Jordan	Thailand
Greece	Spain	Kazakhstan	Tunisia
Hungary	Sweden	Latvia	United Arab Emirates
Iceland	Switzerland	Liechtenstein	Uruguay
Ireland	Turkey	Lithuania	Vietnam
Israel	United Kingdom	Macao-China	
Italy	United States		

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Contacts:
Andreas Schleicher
Advisor to the Secretary-General on Education Policy,
Deputy Director for Education and Skills
Email: Andreas.SCHLEICHER@oecd.org
Telephone: +33 6 07 38 54 64

Miyako Ikeda
Analyst
Directorate for Education and Skills
Email: Miyako.IKEDA@oecd.org
Telephone: +33 1 45 24 15 35

Tadakazu Miki
Analyst
Directorate for Education and Skills
Email: Tadakazu.MIKI@oecd.org
Telephone: +33 1 45 24 95 51

For more information on
the Programme for International Student Assessment
and to access the full set of PISA 2012 results, visit:

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