



Science
LEARNING NETWORK

A level STEM results 2015

Analysis of UK trends

A level STEM results 2015

Analysis of trends – UK (England, Wales and Northern Ireland)

Overall trends in numbers taking GCE A level STEM examinations across UK

- Overall there is a decrease in the numbers taking biology(63275), chemistry(52644) and physics 36287)but an increase in the numbers taking mathematics (92711)
- There continues to be considerably larger percentage of students sitting biology (7.4%) than chemistry (6.2%) and physics (4.3%) but much larger percentage taking mathematics (10.9%)
- There are gender variations in the decrease in each subject. i.e.
 - The 0.3% decrease in biology is higher for boys (0.4%) than for girls (0.1%)
 - The 0.2% decrease in chemistry is caused by a decrease in boys attainment
 - The 0.1% decrease in physics is larger for boys (0.2%) than girls (0.1%)
- There is an slight increase in the numbers taking mathematics (0.1%) with a slight increase (0.2%) for boys but the number of girls is static
- More girls take biology than boys but more boys take chemistry, physics and mathematics

Overall trends in attainment for GCE A level STEM examinations across UK

- The highest attainment for A*-C grades is highest in mathematics 79.8%, with chemistry (78.2%) biology (71.9%) and physics (71.5%)
- There has been a slight increase in A*-C results for chemistry (0.ppts) but decreases in physics (0.ppts), mathematics (0.ppts) and biology (0.1ppts)
- For A* grades there are slight changes in each subject with increases in mathematics (0.4ppts) and chemistry (0.3ppts) but decrease in biology (0.3ppts) and physics(0.3ppts)
- For A*-A grades there are decreases in all subjects biology (0.4ppts), mathematics (0.4ppts) chemistry (0.2ppts) and physics (0.2ppts)
- For A*-B grades there are decreases for all subjects biology (0.4ppts) chemistry (0.3ppts) physics (0.8ppts) and mathematics (1ppts)
- Gender differences continue with girls outperforming boys in A*-C in all subjects. Girls also outperform boys in A* grades in biology, chemistry and physics but boys outperform them in mathematics

Biology

Numbers sitting biology across UK

The actual number of students sitting biology A level (63275) decreased by 795 (0.3%) in 2015 to a level similar to 2012. There has been a decrease in the number of boys sitting biology 1391 (0.4%), but an increase in actual no of girls 596, though a slight decrease in percentage (0.1%) due to the overall decrease in numbers.

Attainment in biology across UK

In biology 71.9 % (72% in 2014) of students gain A*-C with girls (72.8%) continuing to outperform boys (70.5%) in all grades.

For A*-C grades, there is a very slight overall decrease (0.1ppts) with the decrease being mainly in boys (0.4ppts) and only 0.1ppts) for girls

For A* grades, girls (9.5%) continue to outperforming boys (8.5%). However, there is a decrease (0.3ppts) in A* grades mainly due to a considerable decrease in boys (0.7ppts) after an increase of 2ppts the previous year.

For A*-A grades, girls (27.7%) continue to outperform boys (26%)although overall there is a continuing trend of a decrease in A*-A grades (0.4ppts) with girls(0.6ppts) and boys (0.5ppts)

For A*- B grades, girls (51.5%) continue to outperform boys (49.3%). For A*-B grades, there is a decrease of 0.4ppts with the decrease being larger for girls (0.6ppts) compared with boys (0.2ppts).

Chemistry

Numbers sitting chemistry across UK

The actual number of students sitting chemistry A level (52644) shows a decrease (0.2%) in the number of students (869) taking chemistry, after two years of increases. The decrease is virtually all for boys (866)

Attainment in chemistry across UK

In chemistry 78.2% of students (78% in 2014) attain A*-C grades with girls (78.3%) continuing to slightly outperform boys (78%). This is a slight increase of 0.2ppts compared with 2014 but with a decrease for girls (0.8ppts) which is a continuing trend for the last four years. Boys have increased to 78% after a fall of 1.4ppts the previous year.

For A* grades, there is an increase (0.3ppts) to 9.4% with boys (10.6%) outperforming girls (8.1%) although boys had a larger increase (0.8ppts) compared with girls who had a decrease of (0.2ppts).

For A*-A grades, there is a continuing decrease of 0.2ppts points to 32.4%. However boys have increased 0.7ppts to (33.5%) outperforming girls (31.2%) which is a decrease of 0.8ppts. The decrease in girls A*-A grades is a continuing trend for the last four years.

For A*-B grades (58.7% overall), there is a decrease of 0.3ppts with a larger decrease for girls (1.3ppts) compared with boys where there is an increase of 0.7ppts. This decrease for girls is a continuing trend for four years whereas boys' results fluctuate more year on year.

Physics in UK

Numbers sitting physics across UK

The actual number of students sitting physics A level (36287) is a slight decrease of 414 (0.1%) taking the examination. There are substantially more boys (7.4%) of boys taking physics compared with girls (1.7%) although there has been a slight decrease in boys (0.2%) sitting the examination than for girls (0.1%).

Attainment in physics across UK

In physics 71.5% of students (72.2% in 2014) attain A*-C grades. There is an overall decrease of 0.7ppts compared with 2014 with a larger decrease for girls (1.5ppts) compared with boys (0.5ppts). However, girls (74.9%) continuing to outperform boys (70.6%).

For A* grades, there is a decrease (0.3ppts) to 9.7 with girls having a higher decrease (0.6ppts) than boys (0.2ppts). However, overall with girls (10.6%) continue to outperforming boys (9.5%).

For A*-A grades, there is an overall decrease of 0.2ppts to 30.4% with girls having a decrease of 0.8ppts while boys mainly static. However, overall girls (33.9%) outperforming boys (29.5%)

For A*-B grades (52.6% overall), there is a decrease of 0.8ppts with a larger decrease for girls (1.3ppts) compared with boys (0.7ppts). This is a continuing trend.

Other sciences across UK

The actual number of students sitting other science GCE level qualifications remains fairly constant at 3481 but there are substantially more boys (2640) of boys sitting these examinations compared with girls 841. Overall 77.6% of these students attain A*-C grades with girls (79.5%) continuing to outperform boys (76.9%)

Mathematics across UK

Numbers sitting mathematics across UK

The actual number of students sitting mathematics A level (92711) is an increase of 3895 (0.2%) taking the examination. There are substantially more boys (14.8%) taking mathematics compared with girls (7.7%). There has been a slight increase for both boys (0.5%) and girls (0.1%) sitting the examination

Attainment in mathematics across UK

In mathematics 79.8% of students gain A*-C with girls (80.4%) continuing to outperform boys (79.4%) in all grades. This is a very slight overall decrease of 0.6ppts (80.5% in 2014) with the decrease for girls (0.8ppts) being larger than for boys (0.4ppts)

For A* grades, boys (19.2%) continue to outperforming girls (15.4%). There is an increase (0.4ppts) in A* grades mainly due to a considerable decrease in boys (0.8ppts) but a decrease for girls (0.3ppts)

For A*-A grades, boys (42.4%) continue to outperform girls (40.7%) although overall there is a decrease in A*-A grades (0.4ppts) with girls having substantial decrease (1.1ppts) compared with boys (0.2ppts)

For A*-B grades, girls (63.9%) continue to outperform boys (63.5%). For A*-B grades, there is a decrease of 1ppts with the decrease being larger for girls (1.8ppts) compared with boys (0.3ppts).

Analysis of trends –England only

Overall trends in numbers taking GCE A level STEM examinations for ENGLAND only

- Overall there is a decrease in the numbers taking biology(57384), chemistry(48467) and physics (33207)but an increase in the numbers taking mathematics (83648)
- There continues to be considerably larger percentage of students sitting biology (7.3%) than chemistry (6.2%) and physics (4.2%) but much larger percentage taking mathematics (10.9)
- There are gender variations in the decrease in each subject. i.e.
 - In biology, there is an overall decrease (0.3%), with a decrease (0.4%) of boys but an increase in girls (0.1%)
 - In chemistry, there is an overall decrease of 0.2%, with the decrease for girls (0.2%) and slightly higher decrease for boys (0.3%)
 - In physics, there is a decrease of 0.1% with larger decrease for boys (0.2%) than girls (0.1%)
- There is a slight increase in the numbers taking mathematics (0.2%) with an increase (0.5%) of boys but the numbers are static for girls
- More girls take biology than boys but more boys take chemistry, physics and mathematics

Overall trends in attainment for GCE A level STEM examinations across UK

- The highest attainment for A*-C grades is highest in mathematics 79.4%, with chemistry (78%) biology (71.6%) and physics (71.3%)
- There has been a slight increase in A*-C results for chemistry (0.3ppts) but decreases in physics (0.6ppts), mathematics (0.9ppts) but biology has stayed the same.
- For A* grades there a slight changes in each subject with increases in mathematics (0.4ppts) and chemistry (0.3ppts) but decrease in biology (0.6ppts) and physics (0.4)
- For A*-A grades there are decreases in all subjects biology (0.4ppts), mathematics (0.4ppts) chemistry (0.3ppts) and physics (0.2ppts)
- For A*-B grades there are decreases for all subjects biology (0.4ppts) chemistry (0.2ppts) physics (0.7ppts) and mathematics (1.1ppts)
- Gender differences continue with girls outperforming boys in A* grades in biology, chemistry and physics but boys outperform them in mathematics
- Girls also outperform boys in A*-C in biology, physics and mathematics. In chemistry, girls and boys perform equally in 2015 for the first time in some years. This is a difference in results for England when compared with UK overall where girls continue to outperform boys in chemistry as well.
- Another difference between England and the whole of the UK is in the A*-C grades for biology; In England girls have slightly increased their grades whereas the whole of the UK there has been a decrease.

Biology

Numbers Sitting biology in England

The actual number of students sitting biology A level (57384) decreased by 727 (0.3%). There has been a decrease in the number of boys sitting biology 1183 (0.4%), but there is

an increase in the number of girls sitting it (456), though a slight decrease in percentage (0.1%) due to the overall decrease in numbers.

Attainment in England

In biology 71.6 % (same as in 2014) of students gain A*-C with girls (72.5%) continuing to outperform boys (70.2%) in all grades. There was a decrease in boys' attainment (0.4ppts) but an increase for girls of 1.1ppts. This is in contrast to across the UK, where there was a decrease for girls

For A* grades, girls (9.5%) continue to outperforming boys (8.5%). However, there is a decrease (0.6ppts) in A* grades mainly due to a considerable decrease in boys (0.9ppts) but less for girls (0.4ppts). However across the UK there was an increase for girls

For A*-A grades, girls (27.6%) continue to outperform boys (25.9%) although overall there is a continuing trend of a decrease in A*-A grades (0.4ppts). In England there is similar crease for genders but there is more variation for the whole of the UK.

For A*- B grades, girls (51.1%) continue to outperform boys (48.9%). For A*-B grades, there is a decrease of 0.4ppts with the decrease being larger for girls (0.5ppts) compared with boys (0.3ppts).

Chemistry in England

Numbers sitting chemistry in England

The actual number of students siting chemistry A level (52644) shows a decrease (0.2%) in the number of students (869) taking chemistry, after two years of increases. The decrease is virtually all for boys (866)

Attainment in England

In chemistry 78% of students (78% in 2014) attain A*-C grades with girls (78%) continuing to slightly outperform boys (78%).

For A*-C grades (78%) overall which is a slight increase of 0.2ppts compared with 2014. Boys have increased to 78% from 76.8% but there has been another decrease for girls (0.7ppts) which is a continuing trend for the last four years.

For A* grades, there is an increase (0.3ppts) to 9.3% with boys (10.5%) outperforming girls (8.0%) although boys had a larger increase (0.7ppts) compared with girls who had a decrease of (0.2ppts).

For A*-A grades, there is a decrease of 0.3ppts points to 32.1% mainly caused by a 1.2 ppts decrease for girls. However, boys have increased 0.6ppts to (33.3%) outperforming girls (30.8. The decrease in girls A*-A grades is a continuing trend for the last four years.

For A*-B grades (58.4% overall), there is a decrease of 0.2ppts with a larger decrease for girls (1.3ppts) compared with boys where there is an increase of 0.8ppts. This decrease for girls is a continuing trend for four years whereas boys' results fluctuate more year on year.

Physics in England

Numbers sitting physics in England

The actual number of students sitting physics A level (33207) is a slight decrease of 392 (0.2%) taking the examination. There are substantially more boys (7.4%) of boys taking physics compared with girls (1.6%) although there has been a slight decrease in boys (0.2%) sitting the examination than for girls (0.1%).

Attainment in England

In physics 71.3% of students (72.2% in 2014) attain A*-C grades. There is an overall decrease of 0.6ppts compared with 2014 with a larger decrease for girls (1.3ppts) compared with boys (0.5ppts). However, girls (74.6%) continue to outperform boys (70.4%).

For A* grades, there is a decrease (0.3ppts) to 9.9% with girls having a higher decrease (0.6ppts) than boys (0.4ppts). However, overall with girls (10.9%) continue to outperforming boys (9.6%).

For A*-A grades, there is an overall decrease of 0.2ppts to 30.4% with girls having a decrease of 0.8ppts while boys mainly static. However, overall girls (34%) outperforming boys (29.5%)

For A*-B grades (52.5% overall), there is a decrease of 0.7ppts with a larger decrease for girls (1.0ppts) compared with boys (0.6ppts). This is a continuing trend

Other sciences in England

The actual number of students sitting other science GCE level qualifications remains fairly constant at 3085 but there are substantially more boys (2330) of boys sitting these examinations compared with girls 755. Overall 78% of these students attain A*-C grades with girls (79.9%) continuing to outperform boys (77.6%)

Mathematics in England

Numbers sitting mathematics in England

The actual number of students sitting mathematics A level (85648) is an increase of 3624 (0.2ppts) taking the examination. There are substantially more boys (14.9%) of boys taking mathematics compared with girls (7.7%). There has been a slight increase for both boys (0.5ppts) and girls (0.1ppts) sitting the examination

Attainment in England

In mathematics 79.4% (80.3% in 2014) of students gain A*-C with girls (80.0%) continuing to outperform boys (79.1%) in all grades.

For A*-C grades, there is a very slight overall decrease (0.9ppts) with the decrease for girls (1.3ppts) being larger than for boys (0.6ppts)

For A* grades, boys (19.3%) continue to outperforming girls (15.4%). There is an increase (0.4ppts) in A* grades mainly due to a considerable increase for boys (0.8ppts) but a decrease for girls (0.3ppts)

For A*-A grades, boys (42.3%) continue to outperform girls (40.4%)although overall there is a decrease in A*-A grades (0.4ppts) with girls having substantial decrease(1.1ppts) compared with boys (0.1ppts)

For A*- B grades, girls (63.3%) continue to outperform boys (63.2%). There is a decrease of 0.9 ppts with the decrease being larger for girls (1.3ppts) compared with boys (0.6ppts).