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Dear Mr Alderman

Ofsted 2014–15 subject survey inspection programme: mathematics

Thank you for your hospitality and cooperation, and that of your staff and students, during my visit with Amanda Carter-Fraser HMI on 9 and 10 March 2015 to look at work in mathematics. The visit provided valuable information which will contribute to our national evaluation and reporting. Published reports are likely to list the names of the contributing institutions but individual institutions will not be identified in the main text without their consent.

The evidence used to inform the judgements included: interviews with staff and students; scrutiny of relevant documentation; analysis of students' work; and observation of 11 lessons, one jointly with the subject leader and one with a senior leader, and brief visits to seven lessons, three jointly with the subject leader. Brief visits were also made to two intervention sessions taught by the mathematics teaching assistant.

The overall effectiveness of mathematics requires improvement.

Leadership and management of mathematics are good.

- The period of instability in staffing and leadership of the department is coming to an end. The department will be fully staffed with permanent teachers from September 2015. The new subject leader, appointed following promotion from a temporary leadership role in the department, had been in post for one week at the time of the visit. Prior to this, from September 2014, the subject leader for English had temporarily led the department.
- The new subject leader has identified accurately where there are weaknesses in mathematics provision and has taken steps to improve teaching. Although it is too early to see the impact of this work on achievement, the direction of travel is right. The subject leader has a clear vision for improving mathematics provision in the school, responding quickly to the need to change the curriculum.

- The subject leader demonstrates a good understanding of the new national curriculum and is engaging actively with the local authority's working party to improve mathematics provision and to develop an approach to assessment without national curriculum levels, known as 'Liverpool levels'.
- During joint observations of teaching, the subject leader identified accurately, and with an appropriate emphasis on important mathematical features, the strengths and weaknesses in students' learning. Aware of the improvements required across the department, leaders are encouraging teachers to share their good practice more than in the past. Teachers now have time to plan lessons together.
- Leaders' monitoring of the department's work in mathematics has been generic rather than focused on the subject-specific features. The subject leader has implemented a more rigorous approach to checking on the quality of teaching, including looking at work in students' books. In response to this, she has provided guidance to support common approaches to teaching topics. Some refinement to this work is still required to ensure all the suggested methods support progression well.
- Systems used to monitor students' progress produce detailed information at each point of data collection. The analysis of the progress of each cohort and groups of students is based on an average level, which does not take into account students' different starting points. This impedes leaders' ability to compare, for example, the progress made by disadvantaged students or those who are disabled or have special educational needs with the progress made by all students nationally from the same starting points.

The curriculum in mathematics is good.

- The subject leader has reviewed the curriculum in mathematics to make sure that students are well prepared to start the new GCSE course. Weaknesses in students' ability to solve problems have been identified and resources are being developed to support teachers in teaching these skills.
- Teachers use assessments to identify gaps in learning and to plan work for students to fill these gaps. Although the focus is mainly on Year 11, this strategy of early intervention is being used for students from other year groups as soon as their progress slows. The numeracy catch-up programme is used effectively for the lowest attaining students in Years 7 and 8 who receive targeted support from a teaching assistant who works exclusively within mathematics.
- A departmental guide, 'How best to teach', outlines preferred methods of introducing some topics within mathematics. This new guide is not yet used consistently by all teachers and teaching approaches reflected in students' work do not all support proficiency alongside understanding, or promote progression in the topic. For example, some Year 8 students solve equations using 'moving across', a rule involving changing the sign of a term, but without understanding why the method works. Lower-attaining students use 'function machines', which enable them to solve simple equations, but this method does not extend into the types of equations they will need to solve later at GCSE.

- Enrichment opportunities are being developed by the subject leader to further encourage a love of mathematics and to understand how it is used in everyday life. During the visit, the Olympic gymnast Beth Tweddle delivered an activity on using mathematics in sports-related nutrition.

Teaching in mathematics requires improvement.

- Inconsistencies in the way in which teachers use assessment information to plan work for students result in some lower-attaining students not being sufficiently challenged in lessons.
- Students make better progress when teachers direct them to particular tasks, rather than leaving the choice to them. Where students lack confidence in their own ability and are given free choice, some choose the easier work. Year 11 students working on past examination papers do not always need to start with the easier questions at the beginning of the paper, rehearsing work they can already do. They might instead benefit from tackling the more difficult questions during lessons, when they can discuss them with their peers and teacher, and teaching points can be made in a timely way when common errors and misconceptions arise.
- Teachers are aware of the need to improve students' skills in solving problems and reasoning mathematically. Through their questions, some teachers routinely challenge students to explain their answers, and this encourages them to think more deeply.
- The subject leader has very recently introduced an improved approach to marking and feedback given to students. Teachers set a 'challenge question' for students to attempt at the end of a topic which is encouraging them to review their work before moving on.

Achievement in mathematics requires improvement.

- Students join the school having attained average results in their Key Stage 2 assessments from primary school. By the end of Key Stage 4, attainment in mathematics is broadly average and students make similar progress overall to other students nationally.
- Achievement varies between different groups of students. Lower-attaining and disadvantaged students make slower progress and attain less well than other students nationally from the same starting points.
- Disabled students and those with special educational needs have achieved less well in the past than others in the school from the same starting points. Progress for these students is improving due to effective support from teaching assistants who challenge students to think harder about their work in lessons and in small-group interventions.
- In 2014, students known to be eligible for support through pupil premium funding attained, on average, about one and a third GCSE grades lower than their peers. This group improved their attainment by almost a third of a grade in their second attempt at GCSE. The school's data for eligible students currently in Year 11 shows students' attainment to be broadly

similar to 2014. Gaps in attainment compared with other students nationally are not yet narrowing quickly enough. The gaps are smaller at Key Stage 3.

- Achievement in the sixth form is improving. Students are making better progress than in previous years. For example, the very small group of Year 13 A-level mathematics students were well supported in their understanding of exponential growth and decay through the opportunity to apply their learning to a forensics investigation.
- The school's own data show that students at Key Stage 3 are starting to benefit from better teaching. Year 7 students are making more rapid progress than those in Years 8 or 9. For example, in a Year 7 lesson, students were very well motivated and willingly asked questions to find out more about indices in their work on algebraic substitution.

Areas for improvement, which we discussed, include:

- improving the progress of all students, particularly lower-attaining and disadvantaged students, by:
 - embedding the use of assessment for all year groups to identify gaps in learning, planning work that fills these gaps at the first sign of progress slowing, and avoiding unnecessary repetition of work
 - refining analysis of data on students' attainment and progress to take account of their different starting points
- removing inconsistencies in teaching by:
 - improving further the schemes of work so that teachers have the support they need to help them to introduce opportunities to solve problems and to reason mathematically
 - ensuring that teaching approaches promote progression and support students' fluency and reasoning skills.

I hope that these observations are useful as you continue to develop mathematics in the school. As explained previously, this letter will be published on the Ofsted website. It may be used to inform decisions about any future inspection. A copy of this letter is also being sent to your local authority.

Yours sincerely

Denah Jones
Her Majesty's Inspector