

Mathematics survey visits

Generic grade descriptors and supplementary subject-specific guidance for inspectors on making judgements during visits to schools

Inspectors visit 150 schools each year to inform Ofsted's subject surveys in English, mathematics and science. Survey visits for other subjects are less frequent but continue to take place from time to time.

Where applicable, subject feedback letters, which are sent following survey visits, normally contain separate judgements on:

- the overall effectiveness of the subject
- the achievement of pupils in the subject
- the quality of teaching in the subject
- the quality of the subject curriculum
- the quality of leadership in, and management of the subject.

In reaching these judgements, inspectors draw on the criteria and grade descriptors from the September 2013 *School inspection handbook* as they can be applied to individual subjects. Key elements of these descriptors are set out in the guidance below. Alongside them are supplementary, subject-specific descriptors to provide additional guidance for schools and inspectors. This includes guidance on the quality of the curriculum in the subject.

It is important to note that this guidance is intended only to inform the judgements made by specialist inspectors carrying out subject survey visits. It is not intended for use on section 5 whole-school inspections.

Grade descriptors – the overall effectiveness of mathematics education provided in the school

Note: These descriptors should not be used as a checklist. They must be applied adopting a 'best fit' approach, which relies on the professional judgement of the inspection team. The exception is that teaching in mathematics must be outstanding for overall effectiveness to be outstanding.

Outstanding (1)

- Mathematics teaching is outstanding and, together with a rich and relevant mathematics curriculum, contributes to outstanding learning and achievement. Exceptionally, achievement in mathematics may be good and rapidly improving.
- Pupils, and particular groups of pupils, have excellent educational experiences in mathematics and these ensure that they are very well equipped for the next stage of their education, training or employment.
- Pupils' high levels of literacy, appropriate to their age, contribute to their outstanding learning and achievement.
- Practice in the subject consistently reflects the highest expectations of staff and the highest aspirations for pupils, including disabled pupils and those with special educational needs.
- Good practice is spread effectively in a drive for continuous improvement.
- The subject makes an outstanding contribution to pupils' spiritual, moral, social and cultural development.

Good (2)

- Pupils benefit from mathematics teaching that is at least good and some that is outstanding. This promotes very positive attitudes to learning and ensures that pupils' achievement in mathematics is at least good.
- Pupils and particular groups of pupils have highly positive educational experiences in mathematics that ensure that they are well prepared for the next stage in their education, training or employment.
- Pupils' progress is not held back by an inability to read accurately and fluently.
- The school takes effective action to enable most pupils, including disabled pupils and those with special educational needs, to reach their potential in mathematics.
- The subject makes a good contribution to pupils' spiritual, moral, social and cultural development.

Requires improvement (3)

Mathematics in the school requires improvement because one or more of the key judgements for achievement; behaviour and safety (in mathematics); the quality of teaching; the curriculum; and the quality of leadership and management of mathematics requires improvement (grade 3).

Inadequate (4)

Mathematics in the school is likely to be inadequate if inspectors judge any of the following to be inadequate:

- the achievement of pupils in mathematics
- the behaviour and safety of pupils in mathematics
- the quality of teaching in mathematics
- the quality of the curriculum in mathematics
- the quality of the leadership in, and management of, mathematics.

Grade descriptors – achievement of pupils in mathematics

Note: These descriptors should not be used as a checklist. They must be applied adopting a 'best fit' approach which relies on the professional judgement of the inspector.

Generic ¹	Supplementary subject-specific guidance			
 Outstanding (1) Taking account of their different starting points, the proportions of pupils making and exceeding expected progress are high compared with national figures.² Pupils make rapid and sustained progress throughout year groups and learn exceptionally well. They are exceptionally well prepared for the next stage in their education, training or employment. Pupils, including those in the sixth form and those in the Early Years Foundation Stage, acquire knowledge quickly and develop their understanding rapidly. The learning, quality of work and progress of groups of pupils, particularly disabled pupils, those with special educational needs, and those for whom the Pupil Premium provides support, show that they achieve exceptionally well. The standards of attainment of almost all groups of pupils are likely to be at least in line with national averages with many pupils attaining above this. In exceptional circumstances, an outstanding grade can be awarded where standards of attainment of any 	 Supplementary subject-specific guidance Outstanding (1) Pupils understand important concepts and make connections within mathematics. Pupils develop a broad range of skills in using and applying mathematics. They show exceptional independence and take the initiative in solving problems in a wide range of contexts, including the new or unusual. Pupils think for themselves and are prepared to persevere when faced with challenges, showing a confidence that they will succeed. Pupils embrace the value of learning from mistakes and false starts. When investigating mathematically, pupils reason, generalise and make sense of solutions. Pupils show high levels of fluency in performing written and mental calculations and mathematical techniques. Mathematical language and symbols are used accurately in pupils' work and in discussions. 			
group of pupils are below those of all pupils nationally, but the gap is closing rapidly, as shown by trends in a range of attainment indicators.	the subject.			
 Taking account of their different starting points, the proportions of pupils making and exceeding expected progress compare favourably with national figures. Where the proportion making expected progress overall is lower than that found nationally, it is improving over a sustained period. Progress across year groups is consistently strong and evidence in pupils' work indicates that they achieve well. Pupils read widely and often. Pupils acquire knowledge and develop understanding quickly and securely. They develop and apply a wide range of skills in reading, writing, communication and mathematics. This ensures that they are well prepared for the next stage in their education, training or employment. The learning and progress of groups of pupils, particularly disabled pupils, those with special 	 Pupils understand some important concepts and make some connections within mathematics. Pupils develop a range of skills in using and applying mathematics. They are able to work independently, and sometimes take the initiative in solving problems in various contexts. Many pupils show a developing ability to think for themselves, and are willing to try when faced with challenges. Pupils are willing to learn from mistakes and false starts. When investigating mathematically, most pupils are able to reason, generalise, and make sense of solutions. Pupils are generally fluent in performing written and mental calculations and mathematical techniques. The use of mathematical language and symbols is 			
educational needs, and those for whom the Pupil Premium provides support, are good.	mostly accurate in the presentation of pupils' work and in discussions.			

¹ The descriptors are set out in full in the *School inspection handbook*.

² Expected progress is defined by the government as two National Curriculum levels of progress between Key Stages 1 and 2 and three National Curriculum levels of progress between Key Stages 2 and 4.

Progress from age-related expectations at the beginning of Nursery, to age-related expectations at the beginning of Reception, on to the end of Reception where they can be compared with the Early Years Foundation Stage Profile national figures is likely to represent expected progress during the Early Years Foundation Stage.

Expected progress for pupils attaining below Level 1 of the National Curriculum at the end of Key Stages 1 or 2 is explained in subsidiary guidance.

Generic ¹		Supplementary subject-specific guidance			
	Where attainment, including attainment in reading in primary schools, is low overall, it is improving at a faster rate than nationally, over a sustained period.		Pupils enjoy the subject and can explain its value.		
Requires improvement (3)		Requires improvement (3)			
	Pupils' achievement requires improvement as it is not good.	Pupils use techniques correctly, often through emulating the teacher's methods, but their understanding of the underpinning concepts is insecure.			
		•	Pupils develop some skills in using and applying mathematics. They are able to solve routine problems set in various contexts.		
		•	Pupils are generally dependent on procedural prompts from examples, resources or staff and tend to seek help rather than persevere when faced with challenges.		
			Many pupils lack confidence and like to avoid making mistakes.		
			When investigating mathematically, pupils sometimes reason and make simple generalisations.		
		•	Pupils are reasonably accurate in performing written and mental calculations and mathematical techniques, though sometimes slowed by hazy recall of number facts or over reliance on calculators.		
			Pupils use mathematical language and symbols imprecisely.		
			Most pupils are ambivalent about the subject although they recognise its value.		
Ina	adequate (4)	Inadequate (4)			
Acł foll	nievement is likely to be inadequate if any of the owing apply.	Achievement is likely to be inadequate if any of the following apply.			
	Pupils overall, or particular groups of pupils, are		Pupils' lack of understanding impedes progress.		
	given their starting points.		Although they can carry out taught techniques, pupils' learning is fragmented and, over time, lacks adequate		
	including the sixth form or the Early Years Foundation Stage, indicate they are underachieving.		Pupils develop insufficient skills in using and applying mathematics. They have difficulty in solving problems		
	Disabled pupils, those with special educational needs and those for whom the Pupil Premium provides support, are underachieving.		other than the most routine. The accuracy of mental and written work is affected by weak knowledge of number facts and incorrect use		
	Pupils' communication skills (including reading and/or writing) or proficiency in mathematics are not sufficiently strong for them to succeed in the next stage of education, training or employment	•	 Pupils give up too readily, or wait for others to provide answers. 		
	Attainment is consistently below floor standards or is in decline and shows little, fragile or inconsistent improvement. ³	•	A lack interest in the subject is reflected in the low quality and limited quantity of pupils' work.		
	There are wide gaps in the attainment and/or the learning and progress of different groups.				

³ Floor standards refer to the expected levels of performance set by the government in relation to standards of attainment at Key Stages 2 and 4 and the proportion of pupils exceeding the threshold for the number of National Curriculum levels of progress made in English and mathematics between Key Stages 1 and 2 or between Key Stages 2 and 4. December 2013

Grade descriptors⁴ – quality of teaching in mathematics

Note: These descriptors should not be used as a checklist. They must be applied adopting a 'best fit' approach which relies on the professional judgement of the inspector.

⁴ These grade descriptors describe the quality of teaching in the subject as a whole, taking account of evidence over time. While they include some characteristics of individual lessons, they are not designed to be used to judge individual lessons. December 2013

Generic	Supplementary subject-specific guidance		
 interested and engaged. Teachers assess pupils' learning and progress regularly and accurately. They ensure that pupils know how well they have done and what they need to do to improve. Effective teaching strategies, including setting appropriate homework, and appropriately targeted support and intervention are matched well to most pupils' individual needs, including those most and least able, so that pupils learn well in lessons. 	 Teachers have a clear understanding of the value of their subject which they communicate effectively to pupils, often with enthusiasm. Some links are made between mathematics and other subjects and with mathematics beyond the classroom. Marking identifies errors and misunderstanding and helps pupils to overcome difficulties. 		
Requires improvement (3)	Requires improvement (3)		
Teaching requires improvement as it is not good.	 Teaching focuses primarily on developing pupils' skills in mastering techniques and answering routine questions rather than understanding the underlying concepts. Teachers' explanations are accurate but give a piecemeal approach to learning a topic so that pupils are not helped to see the 'big picture'. 		
	 Opportunities for problem solving are generally restricted to routine cases or are uneven, for example problems occur at the end of exercises so that not all pupils meet them. Pupils have some opportunities to investigate and discuss. 		
	 Questioning tends to be closed rather than probing. Come harrises to be end with a set of the s		
	Some barriers to learning and misconceptions are identified and tackled.		
	Teachers have adequate subject expertise which they use in their planning and teaching. As a result, they use a range of resources and teaching strategies, though one approach may dominate, for example, exposition by the teacher and practice by the pupils, rather than selecting resources and teaching strategies to enable different groups of pupils to learn effectively.		
	Teachers understand the value of their subject which they communicate to pupils.		
	 Teaching occasionally makes links between mathematics and other subjects and with mathematics beyond the classroom. 		
	 Marking is generally accurate and sometimes helps pupils to overcome difficulties. 		
Inadequate (4)	Inadequate (4)		
Teaching is likely to be inadequate where any of the following apply.	Teaching is likely to be inadequate where any of the following apply.		
As a result of weak teaching over time, pupils or particular groups of pupils including disabled pupils and those with special educational needs, and those for whom the Pupil Premium provides cuppert, are making inadequate progress.	Teaching focuses on pupils replicating techniques, and presents mathematics as a disparate set of skills and knowledge, resulting in a lack of adequate breadth and depth of learning over time.		
 Support, are making madequate progress. Teachers do not have sufficiently high 	Teaching gives too few opportunities for problem solving, investigation or discussion.		
expectations and teaching over time fails to engage or interest particular groups of pupils, including disabled pupils and those with special	 Teachers are not able to engage pupils' interest in the subject and do not monitor their progress adequately. 		
educational needs. Learning activities are not sufficiently well matched to the needs of pupils.	weaknesses and gaps in the teacher's knowledge of mathematics or how pupils learn the subject hamper lesson planning, the choice of resources, or the quality of teachers' explanations so that pupils make too little progress.		
	 Teaching provides too narrow a view of the subject, 		

Generic	Supplementary subject-specific guidance		
	isolating it from other subjects and the outside world.		
	 Marking is too irregular, inaccurate or unhelpful to pupils. 		

Grade descriptors – quality of the curriculum in mathematics

Note: These descriptors should not be used as a checklist. They must be applied adopting a 'best fit' approach which relies on the professional judgement of the inspector.

Outstanding (1)

- The imaginative, stimulating mathematics curriculum is skilfully designed to match to the full range of pupils' needs and interests and to ensure highly effective continuity and progression in their learning and in the qualification pathways they follow, including into further study.
- Problem solving and investigative approaches are central to learning for all pupils.
- Clear guidance for teachers on activities and approaches that promote conceptual understanding, including the use of ICT, ensures all pupils benefit and experience breadth and depth in learning across the mathematics curriculum.
- Intervention and support are focused and finely tuned to pupils' individual needs so that they make rapid progress.
- Excellent links are forged with other agencies and the wider community to provide a wide range of enhancement and enrichment activities to promote pupils' learning and engagement with the subject.
- Links with other subjects in the school are highly productive in strengthening pupils' learning in mathematics.
- Rigorous curriculum planning ensures that mathematics makes an outstanding contribution to pupils' spiritual, moral, social and cultural development.

Good (2)

- The curriculum is broad, balanced and well informed by current initiatives in the subject. It is designed to match to a range of pupils' needs and interests, and ensure effective continuity and progression in their learning in the subject and in the qualification pathways they follow, including into further study.
- All pupils have opportunities to solve problems and investigate although the extent to which these are integral to their learning may vary.
- Guidance for teachers on activities and approaches that promote conceptual understanding, including the use of ICT, supports pupils' experiences across the breadth and depth of the mathematics curriculum.
- Intervention and support are focused on pupils' individual needs so that they make good progress.
- Good links are forged with other agencies and the wider community to provide a range of enhancement and enrichment activities to promote pupils' learning and their engagement with the subject.
- Links with other subjects in the school strengthen pupils' learning in mathematics.
- Opportunities to promote pupils' spiritual, moral, social and cultural development are planned and delivered systematically.

Requires improvement (3)

- The curriculum provides adequate coverage of the mathematical content but pays less or uneven attention to the development of investigative and problem-solving skills. It provides for a range of pupils' needs and interests and ensures adequate progression in their learning. Pupils acquire mathematical qualifications, but the choice and timing of these may not suit their individual needs or promote progression into further study.
- All pupils have some opportunities to solve problems and investigate.
- Guidance for teachers on activities and approaches that promote conceptual understanding, including the use of ICT, is limited or not implemented consistently so that the quality of experiences of pupils in different classes varies widely.
- Intervention and support lead to some improvements in progress or confidence in answering test or examination questions.
- Some links are forged with other agencies and the wider community, although the range of activity provided to enhance and enrich pupils' interest and learning may be quite modest.
- Links with other subjects contribute to pupils' learning in mathematics.
- The curriculum ensures that mathematics contributes to pupils' spiritual, moral, social and cultural development.

Inadequate (4)

The curriculum in mathematics is likely to be inadequate if **any** of the following apply.

- The curriculum does not ensure pupils' entitlement to the subject, for instance in using and applying mathematics, and does not secure progression in their learning. Too many pupils do not attain a relevant mathematical qualification or follow pathways that adversely affect their future opportunities, for example stopping studying mathematics after passing GCSE early at grade C, rather than going on to reach their potential.
- A lack of guidance for teachers on activities and approaches that promote conceptual understanding, including the

use of ICT, results in unacceptably wide variation in the quality of experiences of pupils in different classes or consistently weak provision.

- Opportunities to promote pupils' spiritual, moral, social and cultural development in mathematics are missed.
- There are no links between mathematics and other subjects in the school.
- Enrichment activities have minimal impact in promoting enjoyment and achievement in mathematics.

Grade descriptors – quality of leadership in, and management of, mathematics

Note: These descriptors should not be used as a checklist. They must be applied adopting a 'best fit' approach which relies on the professional judgement of the inspector.

Generic		Supplementary subject-specific guidance		
Ou	tstanding (1)	Ou	Outstanding (1)	
	 tstanding (1) The pursuit of excellence is demonstrated by an uncompromising and highly successful drive to strongly improve, or maintain, the highest levels of achievement and personal development for all pupils over a sustained period of time. All leaders and managers, including those responsible for governance, are highly ambitious for the pupils and lead by example. They base their actions on a deep and accurate understanding of the school's performance, and of staff and pupils' skills and attributes. Excellent policies ensure that pupils have high levels of literacy, or that pupils are making excellent progress in literacy. Leaders focus relentlessly on improving teaching and learning and provide focused professional development for all staff, especially those that are newly qualified and at an early stage of their careers. This is underpinned by highly robust performance management which encourages, challenges and supports teachers' improvement. As a result, teaching is outstanding, or at least consistently good and improving. The school's curriculum provides highly positive experiences and rich opportunities for high-quality learning. It has a very positive impact on all pupils' behaviour and safety, and contributes very well to pupils' academic achievement and their spiritual, moral, social and cultural development. Staff model professional standards in all of their work and demonstrate high levels of respect and courtesy for pupils and others. Through highly effective, rigorous planning and controls, governors ensure financial stability, including the effective and efficient management of financial resources such as the Pupil Premium funding. This leads to the excellent deployment of staff and resources to the benefit of all 		 Itstanding (1) Leadership is informed by a high level of subject knowledge, subject-specific pedagogy and vision for mathematics in the school. The track record of innovation is strong, insightful and carefully evaluated. Subject reviews, self-evaluation and improvement planning are well informed by current good practice in mathematics education. Subject leaders inspire confidence and whole-hearted commitment from pupils and colleagues. Strategies to share good practice and secure high-quality professional development in the subject are very effective. Outstanding support and guidance on teaching and the curriculum is provided for the teachers, including any non-specialists and the less experienced. The subject is at the cutting edge of initiatives within the school and makes an excellent contribution to whole-school priorities, including consistent application of literacy and numeracy policies. 	
-	groups of pupils.			
Go	od (2)	Go	load (2)	
	governance, consistently communicate high expectations and ambition.		are well informed by current developments in mathematics education.	
	Teaching is good and/or improving strongly as a result of accurate monitoring, effective performance management and professional development, which are closely matched to the needs of the school and staff.		Subject reviews, self-evaluation and improvement planning are clearly focused on raising attainment and improving provision in mathematics.	
	Self-evaluation is robust and the school's actions are carefully planned, concerted and effective.		A sense of common purpose is shared among those involved in teaching mathematics.	
	The well-thought-out policies ensure that pupils make at least good progress in literacy.	_	subject training are good.	
	The quality of teaching and pupils' achievement have improved, or previous good performance in these areas has been consolidated.		Appropriate support and guidance on teaching and the curriculum is provided for the teachers. The subject engages with wider whole-school	

Ge	neric	Su	pplementary subject-specific guidance
	The school's curriculum provides well-organised and effective opportunities for learning for all groups of pupils, including disabled pupils and those with special educational needs. It promotes positive behaviour and a good understanding of safety matters and provides a broad range of experiences that contribute well to pupils' achievement and to their spiritual, moral, social and cultural development. Governors ensure the efficient management of financial resources. This leads to the effective deployment of staff		priorities effectively including literacy and numeracy policies.
	and resources.	-	
Re ■	quires improvement (3) Leadership and/or management require improvement because they are not good, but are demonstrating the capacity to secure improvement in the school.		 quires improvement (3) Leaders have adequate subject expertise and show awareness of current developments in mathematics education. Subject reviews, self-evaluation and improvement planning reflect a sound understanding of the strengths and priorities for improvement. Some good practice is shared. Access to subject-specific professional development is modest. Support and guidance on teaching and the curriculum is provided informally or on request rather than aiming to develop systematically the practice of all teachers. The subject contributes to whole-school priorities, including literacy and numeracy policies.
Ina	adequate (4)	Ina	adequate (4)
Lea of t	Indership and management are likely to be inadequate if any the following apply. Capacity for securing further improvement is limited because current leaders and managers have been ineffective in securing essential improvements. Improvements which have been made are fragile, too slow or are dependent on external support. Self-evaluation lacks rigour and is inaccurate in its conclusions so that leaders and managers do not have a	•	Leaders have significant weaknesses in subject expertise and are not well enough informed about current developments in mathematics education. Key statutory requirements for the subject are not met. Self-evaluation is weak so that leaders do not have an accurate view of the quality of provision and outcomes. Opportunities for professional development in mathematics are limited and, as a result, some staff lack the confidence and expertise to teach it effectively. The subject makes a minimal contribution to whole-school priorities, including literacy and numeracy policies.
•	realistic view of outcomes or provision. Leaders and managers are not taking sufficiently effective steps towards securing good teaching for all groups of pupils, including disabled pupils and those with special educational needs.	■ C n s e T w n	
•	Leaders and managers are not taking sufficiently effective steps towards securing good behaviour from all pupils and a consistent approach to the management of challenging behaviour.		
	The curriculum fails to meet the needs of pupils or particular groups of pupils, or pupils are entered for public examinations inappropriately early, and pupils' achievement and enjoyment of learning are significantly impaired.		
	A lack of attention to literacy is impeding pupils' progress.		
	Governors are not sufficiently robust in holding the school to account for pupils' achievement, the quality of teaching and the effective and efficient deployment of resources.		