Young Enterprise: Mathematics in Context, a two-armed cluster randomised trial

Technical Notes to accompany the Evaluation Report

September 2022

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The Education Endowment Foundation (EEF) is an independent grant-making charity dedicated to breaking the link between family income and educational achievement, ensuring that children from all backgrounds can fulfil their potential and make the most of their talents.

The EEF aims to raise the attainment of children facing disadvantage by:

- identifying promising educational innovations that address the needs of disadvantaged children in primary and secondary schools in England;
- evaluating these innovations to extend and secure the evidence on what works and can be made to work at scale; and
- encouraging schools, government, charities, and others to apply evidence and adopt innovations found to be effective.

The EEF was established in 2011 by the Sutton Trust as lead charity in partnership with Impetus Trust (now part of Impetus - Private Equity Foundation) and received a founding £125m grant from the Department for Education.

Together, the EEF and Sutton Trust are the government-designated What Works Centre for improving education outcomes for school-aged children.

For more information about the EEF or this report please contact:

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Appendix 1 – Memorandum of Understanding

EEF Maths in Context

Memorandum of Understanding

Name of School _____

Date _____

This document sets out the relationship between Young Enterprise and schools participating in the EEF Maths in Context project planned to take place between September 2017 and September 2019. All schools taking part in the project are asked to confirm their agreement to this relationship and to the project by signing their copy of this document.

Of the 130 schools recruited and selected to take part in the project, 65 will be randomly selected to be active schools and the remaining 65 schools will be control schools as outlined in the project information document.

The University of Nottingham has been appointed by the EEF to carry out the evaluation of the Maths in Context intervention programme. The research team will:

- Conduct random allocation of schools to intervention and control groups in June 2017. Schools will be informed of the outcomes of this allocation in that month.
- Provide schools with results from the assessments at the end of the intervention
- Conduct the process evaluation. This will include observation visits to schools, and interviews with staff and pupils. Prior to this they will manage the process of obtaining consent from participants including teachers, students and parents.
- Collate data collected as part of the project with data obtained from the National Pupil Database (NPD) and transfer school and pupil level data to the Education Endowment Foundation's (EEF) long term data archive for future research purposes.
- Analyse all data from the project in order to produce impact estimates.
- Produce an end of project evaluation report and share this with all participating schools (both intervention and control groups).

All schools agree to:

At sign up
• Identify a member of staff within the maths department to take on the role of Lead Teacher for the duration of the Maths in context project.
• Securely provide University of Nottingham and Young Enterprise with required information about the school.
• Identify four classes of Yr10 students and their mathematics teachers by June 1st 2017 to participate in the Maths in Context intervention from September 2017.
• By 1st June 2017 provide pupil level data prior to randomisation (which will take place in June 2017).
• Provide University of Nottingham with updates to student and teacher information (if any students or teachers have joined the school or changed classes).
• Send out opt-out consent letters to parents/caregivers of all Year 10 students involved and inform University of Nottingham of the names of any students that wish to opt out.
• Engage in pre- (September 2017) and post- (April 2019) student and teacher surveys and tests.
• Provide GCSE data at item level for all students whether in intervention or control groups in September 2019.
• Liaise with University of Nottingham to allow researchers to visit the school to observe maths lesson practice and to talk with staff and pupils about maths teaching in the school if requested. This will include circulating information and consent forms for pupils and students provided by University of Nottingham.

If allocated to the Maths in Context treatment group, schools agree to:

September 2017 to December 2017
• The Lead Teacher will attend a whole day regional project briefing and take on responsibility for delivering the agreed work.
• The lead teacher will deliver between 3 and 5 pre-prepared, and fully resourced lesson plans to a class of Yr10 students, supported by an educational consultant
• The lead teacher will identify a minimum of 3 other teachers to take part in the project
January 2018 to July 2018
• The lead teacher will deliver the remainder of the 8 - 12 lesson plans.
• The 3 other teachers will each deliver between 8 and 12 pre-prepared, and fully resourced lesson plans to a class of Yr10 students (4 classes of Yr10 students in total~~).~~
• Work with a Young Enterprise education consultant who will deliver up to three days mentoring support to the Lead Teacher between September 2017 and July 2019, supporting them to: o develop knowledge of financial context mathematics, and integrate financial contexts into the delivery of the maths curriculum o plan and deliver between 8 and 12 specified financial context maths lessons to a cohort of Year 10 students from September 2017 o disseminate the learning from lesson delivery to the whole maths department within the school from January 2018 o assist departmental colleagues to deliver the lessons to the remaining year 10 students between January and July 2018 o collect the evaluation data as required for the University of Nottingham
• Raise any concerns about activity at the earliest opportunity. If concerns arise, the resolution of such will be based upon the principle of mutual respect and a desire to find a solution speedily and informally. Where a concern cannot be resolved between a Lead Teacher and their allocated consultant, the next step will be a discussion between the Project Manager at Young Enterprise and the member of staff responsible for the project at the school.
Young Enterprise agrees to;
• Provide up to three days of mentoring support to the Lead Teacher between September 2017 and July 2019 to aid with the delivery of the project and provide the support required to complete the activities mentioned above • Provide the lesson plans and accompanying resources for the lead and additional teachers.

University of Nottingham agrees to;
• Ensure that the whole project is run to strict ethical guidelines (this will involve the research team gaining ethical approval according to University of Nottingham guidelines). The team will provide schools with consent letters for all involved with the school responsible for

informing the team where consent has been declined by any member of staff, student or parent.
• Obtain consent from schools and parents for participation in the research, and for data matching so that National Pupil Database (NPD) data can be collated with project data to examine longer-term impacts of the programme.
• Store all data safely and securely.
• Inform schools of the results of the random allocation.
• Collate school and pupil level data provided by schools.
• Provide the school with a final project report and additionally provide school level data based on outcomes

If allocated to the Maths in Context control group:

Control schools will;
• Provide pupil level data as required by the University of Nottingham, up until September 2019
• Receive £1,000 and all lesson plans, and resources at the end of the intervention period on submission of the final set of data required for the evaluation.

Young Enterprise agrees to;
• Pay control group Schools £1,000 for completion of responsibilities detailed above up to end of September 2019.
• Provide the support required to complete the activities mentioned above.

University of Nottingham agrees to;
• Ensure that the whole project is run to strict ethical guidelines (this will involve the research team gaining ethical approval according to University of Nottingham guidelines). The team will provide schools with consent letters for all involved with the school responsible for informing the team where consent has been declined by any member of staff, student or parent.
• Obtain consent from schools and parents for participation in the research, and for data matching so that National Pupil Database (NPD) data can be collated with project data to examine longer-term impacts of the programme.
• Store all data safely and securely.
• Inform schools of the results of the random allocation.

• Collate school and pupil level data provided by schools.
• Provide the school with a final project report and additionally provide school level data based on outcomes

Appendix 2 – Agreement to Participate and Withdrawal of Participation

AGREEMENT TO PARTICIPATE AND WITHDRAWAL OF PARTICIPATION

Participation in the project by your school is voluntary.

By completing, signing and returning this form you confirm your understanding of the project and agree to all aspects of taking part in it. Please make sure to ask any questions you have about the project before signing.

If your school or an individual from your school would like to withdraw from the project they can do so at any point until the final data is collected from the school in September 2019 by contacting the project coordinator in the first instance (details below):

Mathilde Fell
Young Enterprise
Sekforde Street
London
EC1R 0HF
mathilde.fell@y-e.org.uk
020 7078 0738

Signatures

School Senior Leader (with authority to commit human resources)	Name: Position in school: Signed: Date:
Lead Teacher	Name: Position in Maths Department: Contact e-mail: Telephone number:
Young Enterprise	Name: Signed: Date:

Appendix 3 – Student Information Letter

Student Information Letter: Young Enterprise Mathematics in Context Evaluation

Dear Student,

A research project will be taking place in your school over the next academic year. The project is being run by the organisation Young Enterprise and independently evaluated by the University of Nottingham. Your maths teacher may have already told you about it as will involve Year 10 students next year.

The programme involves looking at ways to improve the maths skills and financial literacy of young people. You will be asked to fill out two financial capability assessments, a survey and to provide your GCSE Mathematics result. The responses will be collected by your teacher and accessed by the University of Nottingham. For the purpose of research, the responses will be linked with information about you from the National Pupil Database (held by the Department for Education), other official records, and shared with Young Enterprise, the Department for Education, EEF, EEF's data contractor FFT Education and in an anonymised form to the UK Data Archive.

Your data will be treated with the strictest confidence. We will not use your name or the name of the school in any report arising from the research.

We expect that you will enjoy doing the tests and being part of the programme. You may withdraw at any time. If you prefer to NOT to take part, please inform your teacher. Choosing not to take part will not disadvantage you in any way. If you would like more information, please contact Kanchana Minson on 0115 951 4438, or email: Kanchana.Minson@nottingham.ac.uk

Yours faithfully,

Geoff Wake
Principal Investigator: Young Enterprise Mathematics in Context
Professor of Mathematics Education
University of Nottingham
geoffrey.wake@nottingham.ac.uk

Appendix 4 – Opt-out Form for Students

Opt-out Form for students

Young Enterprise Mathematics in Context Evaluation

ETHICS REFERENCE: 2017/56

This form should be used if at any stage you wish to opt out of the Young Enterprise Mathematics in Context Evaluation. You can stop participating at any time without saying why. This will not disadvantage you in any way. You can remove any information about yourself from the study until 31st July 2019.

If you wish to opt-out of the evaluation, please only complete this form after you have read the *Student Information Letter* and listened to an explanation of the research by your teacher.

You should know that participating in the project involves the following:

- Reading the *Student Information Letter* about the research project.
- Your maths teacher telling you why the research is happening and what it involves.
- Completing two financial capability assessments, a survey and allowing your GCSE Mathematics result to be accessed.
- Understanding that any results of the financial capability assessments and survey being kept confidential.
- No student being named or identified in any reports from the project.
- Agreeing to any information about you be linked with the National Pupil Database (held by the Department for Education), other official records, and shared with the project team, the Department for Education, Education Endowment Foundation (EEF), EEF's data contractor FFT Education and in an anonymised form to the UK Data Archive.

If you believe the study has harmed you in any way or if you wish to make a complaint about the study you can contact the Research Ethics Coordinator of the School of Education, University of Nottingham: educationresearchethics@nottingham.ac.uk

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If you wish to opt out of the research, please complete the following and return it to your mathematics teacher:

_____	_____	_____
Your Name	**Date**	**Your signature**

Appendix 5 – Information Sheet for Parents

Young Enterprise: Mathematics in Context Evaluation

Dear Parent/Carer,

A national research project will be taking place in your child's school this year. The project is being run by the organisation Young Enterprise and independently evaluated by the University of Nottingham. Both the project and evaluation are being funded by the Education Endowment Foundation (EEF) and the Money Advice Service.

The programme involves bringing the real-world context of personal finances into mathematics lessons. In doing so the aim is to improve their financial capability and the relevance of mathematics to them. Your child will be asked to fill out two financial capability assessments, a survey and to provide access to their GCSE Mathematics result. The responses will be collected by your child's teacher and accessed by the University of Nottingham. For the purpose of research, the responses will be linked with information about your child from the National Pupil Database (held by the Department for Education), other official records, and shared with Young Enterprise, the Department for Education, EEF, EEF's data contractor FFT Education and in an anonymised form to the UK Data Archive.

Your child's data will be treated with the strictest confidence. We will not use their name or the name of the school in any report arising from the research.

We expect that your child will enjoy doing the tests and being part of the programme. They may withdraw from the project at any time. If you prefer your child NOT to take part, please inform their teacher by returning the opt-out slip below. Choosing not to take part will not disadvantage your child in any way. If you would like more information, please contact Kanchana Minson on 0115 951 4438, or email: Kanchana.Minson@nottingham.ac.uk

Yours faithfully,

Geoff Wake
Principal Investigator: Young Enterprise: Mathematics in Context Evaluation
Professor of Mathematics Education
University of Nottingham
geoffrey.wake@nottingham.ac.uk

If for any reason you wish your child to opt out of the research, please return this slip to your child's mathematics teacher:

_____ _____ _____

Name of Child **Date** **Signature of Parent/Carer**

Appendix 6 – Information Sheet for Teachers

Young Enterprise Mathematics in Context Evaluation

We would like to invite you to participate in a research project concerned with improving students' financial capability. Financial capability is an important life-skill and is likely to make a significant difference to young people's life chances, particularly those from the most disadvantaged groups. Indeed, results from the latest UK Financial Capability Survey (Money Advice Service, 2015) indicate that disadvantaged groups tend to face the greatest challenges relating to managing money and making financial decisions.

"Young Enterprise: Maths in Context" is a project that seeks to improve students' financial capability, and specifically their financial knowledge and understanding, applied numeracy and problem solving skills. It consists of a series of 10-12 lessons, each focused on a specific area of mathematics in the context of financial capability. The lessons have been designed to be taught to Year 10 students. Teachers in schools selected for the intervention will attend a one-day external training session, use these lessons with Year 10 classes and a Young Enterprise consultant mentor will provide on-going in-school support. The project intervention will take place over the school year 2017-18.

The project is a randomised control trial, where participating schools will be split into 'treatment' and 'control' groups. Prior to randomisation, all students will sit a financial capabilities assessment and survey.

Following randomisation, we will also we will work with a small number of case study schools. This will involve observing some *Financial Capability* lessons being taught. A small sample of these teachers will be interviewed about the students, the use of financial and real world contexts in mathematics education, the curriculum followed, and teaching approaches used. The interviews and lessons observations may be audio-recorded and transcribed. The recordings and transcripts will be shared amongst the researchers who will write reports about the research for conferences, teachers and other researchers. All data will be anonymised. It will not be possible to identify schools, teachers or students from these research reports. The GCSE results of 2019 will also be collected.

The project will be independently evaluated by the University of Nottingham.

We would be very grateful if you would take part in this project and help us to collect the student financial capability and survey data. (Your school has already allowed us access to centrally held data). We would also be grateful if at this stage you are happy to perhaps be contacted in the future to allow us access if your school is selected as a case study. You may opt to not take part and that would not disadvantage you in any way. You may withdraw your data from the project up to one month after it has been collected.

If you would like more information or if you have any concerns, please ask one of the researchers or contact: Mrs Kanchana Minson on 0115 951 4438, or email: Kanchana.Minson@nottingham.ac.uk

If you consider that this study has harmed you in any way or if you wish to make a complaint about the conduct of the evaluation you can contact the Research Ethics Coordinator of the School of Education, University of Nottingham: educationresearchethics@nottingham.ac.uk

Thank you for reading this information sheet and for considering taking part in this research.

Geoff Wake
Principal Investigator: Young Enterprise: Mathematics in Context Evaluation
Professor of Mathematics Education, University of Nottingham
geoffrey.wake@nottingham.ac.uk

Appendix 7 – Notification Letters

University of Nottingham
UK | CHINA | MALAYSIA

School of Education

University of Nottingham
Jubilee Campus
Nottingham
NG8 1BB
t: +44 (0) 115 951 4125

22/09/2022

Dear Maths in Context Lead Teacher,

I'm contacting you regarding your school's involvement in the Young Enterprise: Mathematics in Context, which is funded by the Education Endowment Foundation. The research team appointed to evaluate the project is based at the University of Nottingham.

As outlined in the Memorandum of Understanding between your school and the Young Enterprise, your school agreed to provide GCSE data at item level of students taking part in the project in September 2019.

We would like to take this opportunity to reaffirm the legal basis for collecting personal pupil data as part of this study. Under Article 6(1e) of the General Data Protection Regulation (GDPR), we are able to process data that is deemed necessary for the performance of a task carried out in the public interest. In this case, for research purposes and under this measure, **explicit consent from parents/carers is not required**. Parents/carers, however, may ask for their child to be withdrawn from the study by the 1st September 2019. Choosing not to take part will not disadvantage the pupil in any way.

Enclosed is a copy of a letter that we asked your school to send to parents in June 2018. The letter includes a privacy information sheet, outlining the lawful basis for processing personal data and associated questions.

If you, or any parents or students, have any further questions about the study or wish to withdraw from the research, please contact Alex Phillips on 0115 951 43 96, or email alex.phillips@nottingham.ac.uk

Yours faithfully,

Geoff Wake

Principal Investigator: Young Enterprise Mathematics in Context
Professor of Mathematics Education
University of Nottingham
geoffrey.wake@nottingham.ac.uk

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University of Nottingham
UK | CHINA | MALAYSIA

05/06/2018

Dear Parent/Carer,

You may remember that you or your child is taking part in a major research project, the Young Enterprise: Mathematics in Context, which is funded by the Education Endowment Foundation. The research team appointed to evaluate the project is based at the University of Nottingham.

Recently, you will probably be aware that Data Protection rules have changed due to the new General Data Protection Regulation (GDPR), which came into force on 25th May 2018. For this reason, we have re-evaluated issues relating to the project and have been advised to contact you to clarify the position in relation to your / your child's participation in the project.

In general, the position is unchanged as you have always been able to withdraw your contribution of data to the project. This remains the case. On the reverse of this letter, there is a statement that gives further details of the legal position that underpins data privacy issues in relation to the project.

The Head/Principal of your school has given permission for the school to take part. I would be very grateful if you will continue to agree to participate in this important project that aims to help improve mathematics teaching by allowing us to collect the data. However, you should only participate if you want to. Choosing not to take part will not disadvantage you in any way. You, or your child, can choose to withdraw your data until 1st September 2019.

If you have any questions about the study or wish to withdraw your / your child's participation, please contact Kanchana Minson on 0115 951 4438, or email Kanchana.Minson@nottingham.ac.uk

Yours faithfully,

Geoff Wake

Principal Investigator: Young Enterprise Mathematics in Context
Professor of Mathematics Education
University of Nottingham
geoffrey.wake@nottingham.ac.uk

Appendix 8 – Privacy Notice

University of Nottingham
UK | CHINA | MALAYSIA

Privacy information for Research Participants
in the Young Enterprise: Mathematics in Context Project

This information is supplied by the Young Enterprise: Mathematics in Context evaluation team based at the University of Nottingham.

For information about the University's obligations with respect to your data, who you can get in touch with and your rights as a data subject, please visit: https://www.nottingham.ac.uk/utilities/privacy.aspx.

Why we collect your personal data

We collect personal data under the terms of the University's Royal Charter in our capacity as a teaching and research body to advance education and learning. Specific purposes for data collection on this occasion are to evaluate the effectiveness of the Young Enterprise: Mathematics in Context lessons in raising mathematics attainment at GCSE.

Legal basis for processing your personal data under GDPR

The legal basis for processing personal data on this occasion is Article 6(1e) processing is necessary for the performance of a task carried out in the public interest.

Where the University receives your personal data from one or more of

- Questionnaires you complete

How we process your data

Your data will be subject to automated processing or profiling, which operates according to the following logic. Responses to GCSE questions and questionnaires will be processed to understand how the Mathematics in Context approach affects student learning. The significance of this automated processing or profiling is that it enables the identification of how learning maths in the context of financial literacy improves student outcomes at GCSE and their financial literacy.

How long we keep your data

The University may store your data for up to 25 years and for a period of no less than 7 years after the research project finishes. The researchers who gathered or processed the data may also store the data indefinitely and reuse it in future research. Measures to safeguard your stored data include that any transfer of data will be encrypted and password protected. Data will then be stored on a secured partition on the University of Nottingham's research network drive, access to which will be limited to the evaluation team and administrative support. Data matching requires that only at the stage of reporting results will the data be anonymised. No participant will be identifiable in any work that is reported publicly.

Who we share your data with

For the purposes of research, the responses from the maths assessment and questionnaires will be linked to background information about pupils held by the National Pupil Database (NPD, held by the Department for Education, part of the UK Government) or provided by the school. Pseudoanonymised data (information that does not contain a name but which enables identification by use of an identification number) will be shared with the Department for Education, the Education Endowment Foundation (EEF, who funded the trial), EEF's data processors Fischer Family Trust, Durham University and, in an anonymised form, with other research teams and potentially the UK Data Archive. Further matching to NPD data may take place during subsequent research.

Your choices

You may withdraw at any time until 1st September 2019. If you would prefer NOT to take part in the research, or their data not to be processed as above, or have any questions about this research, please inform Kanchana Minson on 0115 951 4438, or email Kanchana.Minson@nottingham.ac.uk.

Appendix 9 – Financial Capability Questionnaire

Financial Capability
Multiple Choice Questionnaire

Please use clear block capitals:

First Name:

Surname:

DOB:

Day Month Year

School: _____ Today's date: _____

Male or Female: _____ Class: _____

Teacher's Surname _____

Mark as shown: ☐☒☐☐☐ Please use a ball-point pen or a thin felt tip. This form will be processed automatically.

Correction: ☐■☐☒☐ Please follow the examples shown on the left hand side to help optimize the reading results.

Instructions for students:

-Please note that your responses to the Financial Capability Questionnaire will be kept strictly confidential
-Read each question carefully
-In Section 1, you can select more than one response you think is correct.
-In Sections 2, 3, 4 5 & 6, just select one response you think is the best.

It is important that the questionnaire reflects what you know, so if you do not know the answer, leave it out rather than guess.

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Section 1: For each question, select the options you think best. You can select more than one option

1. Where do you get your money from?

- ☐ I do not get any money from my parents or other people
- ☐ Pocket money or allowance from my parents or carers
- ☐ From my parents or carers as a reward for doing something
- ☐ Pocket money from other members of my family
- ☐ Birthdays, Christmas or special occasions
- ☐ From work or a part-time job such as delivering papers
- ☐ Through selling things online or somewhere else
- ☐ Other

2. People save for different reasons.
Which of these statements best describes why you would save?

- ☐ I don't save
- ☐ I save because my parents or carers say it's a good idea
- ☐ I save up for a specific thing I want to buy
- ☐ I save because I want to but not towards anything in particular
- ☐ I save because my parents or carers make me

3. Do you talk about money with any of the following people?

- ☐ I never talk about money
- ☐ Friends
- ☐ Parents or carers
- ☐ Teachers
- ☐ My brothers and sisters
- ☐ Grandparents or other family

4. Do you use any of the following?

- ☐ Bank account
- ☐ Debit card
- ☐ Internet banking
- ☐ Mobile phone banking
- ☐ PayPal Account
- ☐ PIN Number
- ☐ None

5. Which of these features should you think about when choosing a bank?

- ☐ Having a cash card or debit card
- ☐ Ease of getting to the bank
- ☐ Whether my friends use the same bank
- ☐ Whether my parents use the same bank
- ☐ Whether you can bank online or through an app
- ☐ Whether you can access your money straightaway
- ☐ How much money you can take out per day
- ☐ Overdraft facility and how much it is
- ☐ Introductory offers (e.g. free tickets/travel card)
- ☐ Monthly fee and how much it is
- ☐ Special features (e.g. mobile phone insurance)
- ☐ None

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Section 2: For each statement, choose only one option

	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
My teacher sets work that uses maths to solve problems involving money	☐	☐	☐	☐	☐
The maths I use when dealing with money in everyday life helps me in maths lessons.	☐	☐	☐	☐	☐
Maths in school is not just useful to pass exams, it can also help people deal with money in everyday life.	☐	☐	☐	☐	☐
My maths teacher shows us how maths can be used to help with practical situations involving money.	☐	☐	☐	☐	☐
My maths teacher shows us different solutions to questions involving money.	☐	☐	☐	☐	☐
I can see how money problems in maths lessons can help people deal with money.	☐	☐	☐	☐	☐
My maths teacher uses lots of examples of using money from the world outside school.	☐	☐	☐	☐	☐
In maths classes, we talk about different ways of answering financial questions.	☐	☐	☐	☐	☐
My maths teacher uses lots of financial examples when explaining difficult maths.	☐	☐	☐	☐	☐
In maths lessons, my teacher explains how maths can be used to solve everyday problems involving money.	☐	☐	☐	☐	☐
The maths I learn in school will help me make better financial decisions in my future.	☐	☐	☐	☐	☐
I can see how the maths we learn in lessons will help people make decisions involving money.	☐	☐	☐	☐	☐
When I use maths to make financial decisions outside school, this also helps me in maths lessons.	☐	☐	☐	☐	☐
The homework I do involves financial questions from the world outside school.	☐	☐	☐	☐	☐

Section 3: For each alternative, select the option you think best

Thinking back over the last term, my maths classes have included the following contexts:

	Never	Once	Monthly	Weekly
Bills	☐	☐	☐	☐
Money	☐	☐	☐	☐
Budgeting	☐	☐	☐	☐
Pay and employment	☐	☐	☐	☐
Savings	☐	☐	☐	☐
Loans and credit	☐	☐	☐	☐
Shopping and leisure	☐	☐	☐	☐
Tax	☐	☐	☐	☐
Government spending	☐	☐	☐	☐
Travel and currency	☐	☐	☐	☐

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Section 4: For each question, select the answer you think is the best

When you have money, who usually decides whether you save any of it?

☐ I never have money ☐ My parents or carers decide ☐ I decide
☐ I decide with my parents/carers ☐ Don't know

Below are some things people your age have said about borrowing money. Which one best describes how you feel about borrowing money?

☐ I'd rather not borrow money ☐ Borrowing money is OK but only if I can pay it back ☐ Borrowing money does not bother me at all even if I can't afford to pay it back
☐ I don't know

Do you ever make a plan on how you will spend and save your money?

☐ Never ☐ Rarely ☐ Sometimes
☐ Often ☐ Don't Know

When you want to buy something for yourself, how often do you look in different places or stores to compare prices?

☐ I don't buy anything for myself ☐ Never ☐ Rarely
☐ Sometimes ☐ Often ☐ Don't know

When you get money, how often do you save at least some of it (say by putting it in a cash box or into your bank account)?

☐ I never get money ☐ Most times I get money ☐ Sometimes
☐ Never ☐ Don't know

Section 5: For each question, choose only one option

Here are some things that people your age have said about money:

	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
Borrowing money is OK as long as you pay bits back regularly.	☐	☐	☐	☐	☐
Borrowing money from banks for a long time means you may have to pay back a lot more than you borrowed.	☐	☐	☐	☐	☐
Getting into debt means it is harder to get loans, credit cards and mobile phone contracts in the future.	☐	☐	☐	☐	☐
It's important to earn your own money when you are grown up.	☐	☐	☐	☐	☐
Nothing I do will make much difference to my money situation.	☐	☐	☐	☐	☐

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Section 6: For each question, select the answer you think is best

Income Tax

Essential Facts
The first £11,000 of a person's yearly income is not taxed.
Earnings over £11, 000 are taxed at a rate of 20%.
An income of £15,000 will be taxed on £4,000.

1. Milena earns £15,000 a year. How much tax will be deducted from her income in the year?

☐ £800 ☐ £4,000 ☐ £2,200 ☐ £3,000

2. Milena receives a £1,000 pay rise. How much extra will she receive after tax has been taken off?

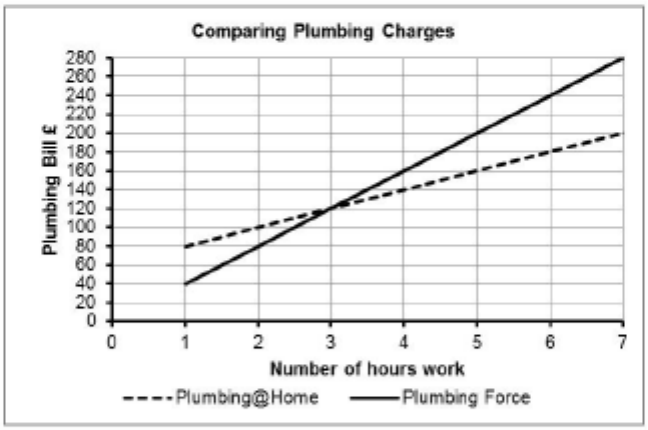
☐ £1,000 ☐ £200 ☐ £5,500 ☐ £800

Plumbing Works

3. Jacob plans to start up his own plumbing service.
He knows there are two other plumbers in the area that offer a similar service.

- *Plumbing Force* does not charge a 'call out' fee. They charge an hourly rate of £40.
- *Plumbing@Home* does charge a call out fee.

Jacob has drawn a chart to show the hourly costs of the two companies:



Which one of the following statements is correct about Plumbing@Home:

☐ *Plumbing@Home* charges a call out fee of £80 and then an hourly rate of £40

☐ *Plumbing@Home* charges a call out fee of £80 and then an hourly rate of £20

☐ *Plumbing@Home* charges a call out fee of £60 and then an hourly rate of £20

☐ *Plumbing@Home* charges a call out fee of £40 and then an hourly rate of £40

F7887U223488688P5PL0V1

On-line Shopping

4. Jabir wants to shop more on-line. He knows there are risks. Your account can be hacked into and your bank details stolen. He reads the following about data security:

In the last year 2 in 7,000 people shopping at 'Bargain Clothes' website had their bank details stolen.

35,000 people shopped at 'Bargain Clothes' last year. Which one of the following statements is true:

- ☐ Approximately 50 people had their bank details stolen from the website last year
- ☐ Approximately 10 people had their bank details stolen from the website last year
- ☐ Approximately 1 person had their bank details stolen from the website last year
- ☐ Approximately 5 people had their bank details stolen from the website last year

Buying Pizzas

5. Over a month a supermarket keeps the standard price of one pizza at the same amount. For two weeks the supermarket has a special offer on buying two pizzas

Luke buys 2 pizzas in Week 1 and 2 pizzas in Week 2.

- ☐ Luke will pay the same amount of money each week
- ☐ Luke will pay more in Week 2
- ☐ More information is needed in order to decide which week will be the cheapest
- ☐ Luke will pay more in Week 1

Travel Costs

6. Alicia travels to college by bus every weekday except at half term.
Bus ticket pricing:

- Monthly Pass £34 (for complete calendar month)
- Weekly Pass £8 (for complete week)
- Day Return £2

March						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Half term holidays are shaded grey.

In March Alicia spends £42 on fares. She bought:

- ☐ A monthly pass
- ☐ A mix of weekly passes and day passes
- ☐ Day passes
- ☐ Four weekly passes

Is it worth paying more?

Essential Fact - Battery life is how long the battery will last when used in a torch or small toy.

7. A pack of ten *PowerCell* batteries cost £10.00
Each *PowerCell* has a battery life of 10 hours

Select the statement about average costs that is correct:

- ☐ Each battery costs 10p per hour to use
- ☐ Batteries become less efficient as they age.The average cost per hour of the battery cannot be worked out
- ☐ For every pound spent, a battery gives 1 hour of power
- ☐ Each battery costs £1 per hour of use

8. A pack of ten *LongerLife* batteries costs £8.00
Each *LongerLife* has a battery life of 8 hours

Select the statement about average costs that is correct:

- ☐ *PowerCell* gives the most battery life per pound
- ☐ *LongerLife* gives the most battery life per pound
- ☐ *PowerCell* and *LongerLife* give the same battery life per pound
- ☐ For every hour of use, *PowerCell* costs the least

Best Buys on phone contracts

9. Liam has a sim-only deal for his mobile. Below are details of his 12 month contract:

QuickPhones: £5 per month
Included: Calls: Up to 200 minutes Texts: Up to 4,000 Excess: Calls cost: 25p per minute Texts cost: 10p per text

In one month Liam used 240 minutes for calls and sent 2,500 texts. In total Liam pays for the month:

☐ £5 ☐ £60 ☐ £10 ☐ £15

10. Sarah is looking for a sim-only deal. She knows about Liam's contract, and she also knows of the contract below:

M3 Phones: £12.50 per month
Included: Calls: Up to 250 minutes Texts: Up to 5,000 texts Excess: Calls cost: 20p per minute Texts cost: 10p per text

Sarah's average monthly use is 180 minutes for calls and 4,050 texts. Which of the two contracts cover Sarah's average monthly text use?

☐ Only M3 Phones ☐ Only QuickPhones ☐ Both M3 Phones and QuickPhones ☐ Neither

Appendix 10 – GCSE Exam Questionnaires

AQA (2019) GCSE Mathematics: Foundation Tier Paper 1 Non-Calculator, Tuesday 21st May 2019 Morning. Available at: https://filestore.aqa.org.uk/sample-papers-and-mark-schemes/2019/june/AQA-83001F-QP-JUN19.PDF (date accessed: 2nd September 2022)

AQA (2019) GCSE Mathematics: Foundation Tier Paper 2 Calculator, Thursday 6th June 2019 Morning. Available at: https://filestore.aqa.org.uk/sample-papers-and-mark-schemes/2019/june/AQA-83002F-QP-JUN19.PDF (date accessed: 2nd September 2022)

AQA (2019) GCSE Mathematics: Foundation Tier Paper 3 Calculator, Tuesday 11th June 2019 Morning. Available at: https://filestore.aqa.org.uk/sample-papers-and-mark-schemes/2019/june/AQA-83003F-QP-JUN19.PDF (date accessed: 2nd September 2022)

AQA (2019) GCSE Mathematics 8300/1F Foundation Paper 1 Non-Calculator Mark Scheme June 2019 Version 1.0 Final. Available at: https://filestore.aqa.org.uk/sample-papers-and-mark-schemes/2019/june/AQA-83001F-W-MS-JUN19.PDF(date accessed: 2nd September 2022)

AQA (2019) GCSE Mathematics 8300/2F Foundation Paper 2 Calculator Mark Scheme June 2019 Version 1.0 Final. Available at: https://filestore.aqa.org.uk/sample-papers-and-mark-schemes/2019/june/AQA-83002F-W-MS-JUN19.PDF(date accessed: 2nd September 2022)

AQA (2019) GCSE Mathematics 8300/3F Foundation Paper 3 Calculator Mark Scheme June 2019 Version 1.0 Final. Available at: https://filestore.aqa.org.uk/sample-papers-and-mark-schemes/2019/june/AQA-83003F-W-MS-JUN19.PDF(date accessed: 2nd September 2022)

AQA (2019) GCSE Mathematics: Higher Tier Paper 1 Non-Calculator, Tuesday 21st May 2019 Morning. Available at: https://filestore.aqa.org.uk/sample-papers-and-mark-schemes/2019/june/AQA-83001H-QP-JUN19.PDF(date accessed: 2nd September 2022)

AQA (2019) GCSE Mathematics: Higher Tier Paper 2 Calculator, Thursday 6th June 2019 Morning. Available at: https://filestore.aqa.org.uk/sample-papers-and-mark-schemes/2019/june/AQA-83002H-QP-JUN19.PDF(date accessed: 2nd September 2022)

AQA (2019) GCSE Mathematics: Higher Tier Paper 3 Calculator, Tuesday 11th June 2019 Morning. Available at: https://filestore.aqa.org.uk/sample-papers-and-mark-schemes/2019/june/AQA-83003H-QP-JUN19.PDF(date accessed: 2nd September 2022)

AQA (2019) GCSE Mathematics 8300/1H Higher Paper 1 Non-Calculator Mark Scheme June 2019 Version 1.0 Final. Available at: https://filestore.aqa.org.uk/sample-papers-and-mark-schemes/2019/june/AQA-83001H-W-MS-JUN19.PDF(date accessed: 2nd September 2022)

AQA (2019) GCSE Mathematics 8300/2H Higher Paper 2 Calculator Mark Scheme June 2019 Version 1.0 Final. Available at: https://filestore.aqa.org.uk/sample-papers-and-mark-schemes/2019/june/AQA-83002H-W-MS-JUN19.PDF(date accessed: 2nd September 2022)

AQA (2019) GCSE Mathematics 8300/3H Higher Paper 3 Calculator Mark Scheme June 2019 Version 1.0 Final. Available at: https://filestore.aqa.org.uk/sample-papers-and-mark-schemes/2019/june/AQA-83003H-W-MS-JUN19.PDF(date accessed: 2nd September 2022)

Pearson Edexcel Level 1/Level 2 GCSE (9–1) Tuesday 21st May 2019 Morning Mathematics 1MA1/1F Paper 1 (Non-Calculator) Foundation Tier. Available at: https://qualifications.pearson.com/content/dam/pdf/GCSE/mathematics/2015/exam-materials/1MA1_1F_que_20190522.pdf(date accessed: 2nd September 2022)

Pearson Edexcel Level 1/Level 2 GCSE (9–1) Thursday 6th June 2019 Morning Mathematics 1MA1/2F Paper 2 (Calculator) Foundation Tier. Available at: https://qualifications.pearson.com/content/dam/pdf/GCSE/mathematics/2015/exam-materials/1MA1_2F_que_20190607.pdf(date accessed: 2nd September 2022)

Pearson Edexcel Level 1/Level 2 GCSE (9–1) Tuesday 11th June 2019 Morning Mathematics 1MA1/3F Paper 3 (Calculator) Foundation Tier. Available at:

https://qualifications.pearson.com/content/dam/pdf/GCSE/mathematics/2015/exam-materials/1MA1_3F_que_20190612.pdf(date accessed: 2nd September 2022)

Pearson Edexcel (2019) Mark Scheme (Results) Summer 2019 Pearson Edexcel GCSE (9-1) in Mathematics (1MA1) Foundation (Non-Calculator) Paper 1F. Available at: https://qualifications.pearson.com/content/dam/pdf/GCSE/mathematics/2015/exam-materials/1MA1_1F_rms_20190822.pdf(date accessed: 2nd September 2022)

Pearson Edexcel (2019) Mark Scheme (Results) Summer 2019 Pearson Edexcel GCSE (9-1) in Mathematics (1MA1) Foundation (Calculator) Paper 2F. Available at: https://qualifications.pearson.com/content/dam/pdf/GCSE/mathematics/2015/exam-materials/1MA1_2F_rms_20190822.pdf(date accessed: 2nd September 2022)

Pearson Edexcel (2019) Mark Scheme (Results) Summer 2019 Pearson Edexcel GCSE (9-1) in Mathematics (1MA1) Foundation (Calculator) Paper 3F. Available at: https://qualifications.pearson.com/content/dam/pdf/GCSE/mathematics/2015/exam-materials/1MA1_3F_rms_20190822.pdf(date accessed: 2nd September 2022)

Pearson Edexcel Level 1/Level 2 GCSE (9–1) Tuesday 21st May 2019 Morning Mathematics 1MA1/1H Paper 1 (Non-Calculator) Higher Tier. Available at: https://qualifications.pearson.com/content/dam/pdf/GCSE/mathematics/2015/exam-materials/1MA1_1H_que_20190522.pdf(date accessed: 2nd September 2022)

Pearson Edexcel Level 1/Level 2 GCSE (9–1) Thursday 6th June 2019 Morning Mathematics 1MA1/2H Paper 2 (Calculator) Higher Tier. Available at: https://qualifications.pearson.com/content/dam/pdf/GCSE/mathematics/2015/exam-materials/1MA1_2H_que_20190607.pdf(date accessed: 2nd September 2022)

Pearson Edexcel Level 1/Level 2 GCSE (9–1) Tuesday 11th June 2019 Morning Mathematics 1MA1/3H Paper 3 (Calculator) Higher Tier: https://qualifications.pearson.com/content/dam/pdf/GCSE/mathematics/2015/exam-materials/1MA1_3H_que_20190612.pdf(date accessed: 2nd September 2022)

Pearson Edexcel (2019) Mark Scheme (Results) Summer 2019 Pearson Edexcel GCSE (9-1) in Mathematics (1MA1) Higher (Non-Calculator) Paper 1H. Available at: https://qualifications.pearson.com/content/dam/pdf/GCSE/mathematics/2015/exam-materials/1MA1_1H_rms_20190822.pdf(date accessed: 2nd September 2022)

Pearson Edexcel (2019) Mark Scheme (Results) Summer 2019 Pearson Edexcel GCSE (9-1) in Mathematics (1MA1) Higher (Calculator) Paper 2H. Available at: https://qualifications.pearson.com/content/dam/pdf/GCSE/mathematics/2015/exam-materials/1MA1_2H_rms_20190822.pdf(date accessed: 2nd September 2022)

Pearson Edexcel (2019) Mark Scheme (Results) Summer 2019 Pearson Edexcel GCSE (9-1) in Mathematics (1MA1) Higher (Calculator) Paper 3H. Available at: https://qualifications.pearson.com/content/dam/pdf/GCSE/mathematics/2015/exam-materials/1MA1_3H_rms_20190822.pdf(date accessed: 2nd September 2022)

OCR Tuesday 21 May 2019 – Morning GCSE (9–1) Mathematics J560/01 Paper 1 (Foundation Tier) URL: https://ocr.org.uk/Images/620504-question-paper-paper-1.pdf(date accessed: 2nd September 2022)

OCR Thursday 6 June 2019 – Morning GCSE (9–1) Mathematics J560/02 Paper 2 (Foundation Tier). Available at: https://ocr.org.uk/Images/620505-question-paper-paper-2.pdf(date accessed: 2nd September 2022)

OCR Tuesday 11 June 2019 – Morning GCSE (9–1) Mathematics J560/03 Paper 3 (Foundation Tier). Available at: https://ocr.org.uk/Images/620506-question-paper-paper-3.pdf(date accessed: 2nd September 2022)

OCR (2019) GCSE (9-1) Mathematics J560/01: Paper 1 (Foundation tier), General Certificate of Secondary Education: Mark Scheme for June 2019. Available at: https://ocr.org.uk/Images/620516-mark-scheme-paper-1.pdf(date accessed: 2nd September 2022)

OCR (2019) GCSE (9-1) Mathematics J560/01: Paper 2 (Foundation tier), General Certificate of Secondary Education: Mark Scheme for June 2019. Available at: https://ocr.org.uk/Images/620517-mark-scheme-paper-2.pdf(date accessed: 2nd September 2022)

OCR (2019) GCSE (9-1) Mathematics J560/01: Paper 3 (Foundation tier), General Certificate of Secondary Education: Mark Scheme for June 2019. Available at: https://ocr.org.uk/Images/620518-mark-scheme-paper-3.pdf(date accessed: 2nd September 2022)

OCR Tuesday 21 May 2019 – Morning GCSE (9–1) Mathematics J560/04 Paper 4 (Higher Tier). Available at: https://ocr.org.uk/Images/620507-question-paper-paper-4.pdf (date accessed: 2nd September 2022)

OCR Thursday 6 June 2019 – Morning GCSE (9–1) Mathematics J560/05 Paper 5 (Higher Tier). Available at: https://ocr.org.uk/Images/620508-question-paper-paper-5.pdf (date accessed: 2nd September 2022)

OCR Tuesday 11 June 2019 – Morning GCSE (9–1) Mathematics J560/06 Paper 6 (Higher Tier). Available at: https://ocr.org.uk/Images/620509-question-paper-paper-6.pdf (date accessed: 2nd September 2022)

OCR (2019) GCSE (9-1) Mathematics J560/01: Paper 4 (Higher tier), General Certificate of Secondary Education: Mark Scheme for June 2019. Available at: https://ocr.org.uk/Images/620519-mark-scheme-paper-4.pdf (date accessed: 2nd September 2022)

OCR (2019) GCSE (9-1) Mathematics J560/01: Paper 5 (Higher tier), General Certificate of Secondary Education: Mark Scheme for June 2019. Available at: https://ocr.org.uk/Images/620520-mark-scheme-paper-5.pdf (date accessed: 2nd September 2022)

OCR (2019) GCSE (9-1) Mathematics J560/01: Paper 6 (Higher tier), General Certificate of Secondary Education: Mark Scheme for June 2019. Available at: https://ocr.org.uk/Images/620521-mark-scheme-paper-6.pdf (date accessed: 2nd September 2022)

Appendix 11 – Randomisation Code

Randomisation Code (1):

```
FSM1 <-subset(Schools, Schools$Quantile=="0-25")
FSM2 <-subset(Schools, Schools$Quantile=="25-50")
FSM3 <-subset(Schools, Schools$Quantile=="50-75")
FSM4 <-subset(Schools, Schools$Quantile=="75-100")


splitdffsm1 <- function(dataframe, seed=NULL) {
  if (!is.null(seed)) set.seed(seed)
  is.odd <-function(x) !x %% 2 == 0
  index <- 1:nrow(dataframe)
  odd <- is.odd(length(index))
  noise <-rnorm((nrow(dataframe)),0,1)
  if (odd==TRUE) {size <- round(trunc(length(index)/2) + noise[1])} else { size <- trunc(length(index)/2)}
  interventionindex <- sample(index, 16)
  Intervention <- dataframe[interventionindex, ]
  Control <- dataframe[-interventionindex, ]
  list(Intervention=Intervention,Control=Control)
}

splitdffsm2 <- function(dataframe, seed=NULL) {
  if (!is.null(seed)) set.seed(seed)
  is.odd <-function(x) !x %% 2 == 0
  index <- 1:nrow(dataframe)
  odd <- is.odd(length(index))
  noise <-rnorm((nrow(dataframe)),0,1)
  if (odd==TRUE) {size <- round(trunc(length(index)/2) + noise[1])} else { size <- trunc(length(index)/2)}
  interventionindex <- sample(index, 15)
  Intervention <- dataframe[interventionindex, ]
  Control <- dataframe[-interventionindex, ]
  list(Intervention=Intervention,Control=Control)
}

splitdffsm3 <- function(dataframe, seed=NULL) {
  if (!is.null(seed)) set.seed(seed)
  is.odd <-function(x) !x %% 2 == 0
  index <- 1:nrow(dataframe)
  odd <- is.odd(length(index))
  noise <-rnorm((nrow(dataframe)),0,1)
  if (odd==TRUE) {size <- round(trunc(length(index)/2) + noise[1])} else { size <- trunc(length(index)/2)}
  interventionindex <- sample(index, 15)
  Intervention <- dataframe[interventionindex, ]
  Control <- dataframe[-interventionindex, ]
  list(Intervention=Intervention,Control=Control)
}

splitdffsm4 <- function(dataframe, seed=NULL) {
  if (!is.null(seed)) set.seed(seed)
  is.odd <-function(x) !x %% 2 == 0
  index <- 1:nrow(dataframe)
  odd <- is.odd(length(index))
  noise <-rnorm((nrow(dataframe)),0,1)
  if (odd==TRUE) {size <- round(trunc(length(index)/2) + noise[1])} else { size <- trunc(length(index)/2)}
  interventionindex <- sample(index, 15)
  Intervention <- dataframe[interventionindex, ]
  Control <- dataframe[-interventionindex, ]
  list(Intervention=Intervention,Control=Control)
}
```

```
splits_1 <- splitdffsm1(FSM1)
splits_2 <- splitdffsm2(FSM2)
splits_3 <- splitdffsm3(FSM3)
splits_4 <- splitdffsm4(FSM4)

Intervention <- as.data.frame(splits_1$Intervention)
Intervention <- rbind(Intervention, splits_2$Intervention)
Intervention <- rbind(Intervention, splits_3$Intervention)
Intervention <- rbind(Intervention, splits_4$Intervention)
Control <- as.data.frame(splits_1$Control)
Control <- rbind(Control, splits_2$Control)
Control <- rbind(Control, splits_3$Control)
Control <- rbind(Control, splits_4$Control)
```

Randomisation Code (2):

```
splitdf <- function(dataframe, seed=NULL) {
  if (!is.null(seed)) set.seed(seed)
  is.odd <-function(x) !x %% 2 == 0
  index <- 1:nrow(dataframe)
  odd <- is.odd(length(index))
  noise <-rnorm((nrow(dataframe)),0,1)
  if (odd==TRUE) {size <- round(trunc(length(index)/2) + noise[1])} else { size <- trunc(length(index)/2)}
  interventionindex <- sample(index, 2)
  Intervention <- dataframe[interventionindex, ]
  Control <- dataframe[-interventionindex, ]
  list(Intervention=Intervention,Control=Control)
}
```

Appendix 12 – Additional Analytical Output

Table 1: Unadjusted means, standard deviations of subgroup analyses by treatment group. Hedges g treatment effect size of raw means.

	Unadjusted Means of Analytical Sample (n=9915)				Effect size of Unadjusted Means		
	Intervention group		Control group				
Outcome	n observed (missing)	Mean (SD)	n observed (missing, total n)	Mean (SD)	Total n (missing)	Hedges g (95% CI)	Region of Practical Equivalence (-0.1, 0.1 ES)
GCSE Mathematics Standardised Raw Score (Z-Score by board and tier) – Male Subset	2390 (0)	0.06 (1.00)	2550 (0)	-0.02 (1.04)	4940 (0)	0.02 (-0.11, 0.16)	87.48 %
GCSE Mathematics Standardised Raw Score (Z-Score by board and tier) – Female Subset	2508 (0)	-0.01 (0.95)	2467 (0)	-0.02 (1.01)	4975 (0)	0.00 (-0.12, 0.12)	93.44 %
GCSE Mathematics Standardised Raw Score (Z-Score by board and tier) – FSM Subset	1108 (6)	-0.26 (0.97)	1141 (5)	-0.33 (1.03)	2260 (11)	0.03 (-0.11, 0.18)	81.72 %
GCSE Raw Score – Z score Tier Foundation	2200 (0)	0.04 (0.98)	2320 (0)	-0.02 (1.02)	4520 (0)	0.05 (-0.8, 0.19)	76.75 %
GCSE Raw Score – Z score Tier Higher Subset	2698 (0)	0.01 (0.97)	2697 (0)	-0.02 (1.03)	5395 (0)	0.01 (-0.13, 0.16)	85.86 %
GCSE Raw Score – Z score Lead Teacher Subset	1317 (0)	0.11 (0.97)	1297 (0)	-0.06 (1.04)	2614 (0)	0.11 (-0.10, 0.32)	48.38 %
GCSE Raw Score – Z score Cascade Teacher Subset	3581 (0)	-0.01 (0.98)	3720 (0)	-0.01 (1.01)	7301 (0)	-0.02 (-0.14, 0.11)	91.21 %

Table 2: Instrumental Variables Regression Maximum Likelihood Estimates for GCSE Standardised Raw Score

	GCSE Raw Score (Z-Score)			
Predictors	*Estimates*	*CI*		*p*
(Intercept)	-0.02	-0.06 – 0.01		0.152
Treatment	-0.02	-0.08 – 0.03		0.420
KS2 Mathematics Fine Point score	1.70	1.01 – 2.38		**<0.001**
$N_{Student}$	9915			
Diagnostics	df1	df2	Statistic	*p*
Weak instruments	1	9912	20.95	**<0.001**
Wu-Hausman	1	9911	17.32	**<0.001**

Table 3: Model of missingness (Probability of outcome or pre-test being missing)

	Probability of missingness	
Predictors	*Estimates*	*(SE)*
(Intercept)	-2.13	0.25
Treatment	-0.15	0.26
KS4 GCSE Mathematics	-0.14	0.02
FSMever	0.24	0.08
School Percentage FSM Centred	0.00	0.01
South	0.52	0.27
Random Effects		
σ^2_{Class}	0.4825	
σ^2_{School}	1.7720	
ICC	0.41	
N_{School}	122	
N_{Class}	457	
$N_{Student}$	11241	

Table 4: Multilevel Regression Maximum Likelihood Estimates for GCSE Standardised Raw Score

	GCSE Raw Score (Z-Score)			**GCSE Raw Score (Z-Score)**		
Predictors	*Estimates*	*CI*	*p*	*Estimates*	*CI*	*p*
(Intercept)	-0.07	-0.15 – 0.00	0.053	-0.03	-0.12 – 0.05	0.468
Treatment				0.02	-0.09 – 0.12	0.767
KS2 Mathematics Fine Point score				0.50	0.47 – 0.53	**<0.001**
School % of FSMEver				-0.01	-0.01 – -0.01	**<0.001**
South				-0.01	-0.12 – 0.09	0.804
Random Effects						
σ^2		0.64			0.59	
σ^2_{Class}		0.35			0.16	
σ^2_{School}		0.06			0.03	
ICC		0.39			0.25	
N_{Class}		444			444	
N_{School}		118			118	
$N_{Student}$		9915			9915	
Marginal R^2 / Conditional R^2		0.000 / 0.389			0.188 / 0.387	

Table 5: Multilevel Regression Maximum Likelihood Estimates for GCSE Standardised Raw Score with the FSM subgroup

	GCSE Raw Score (Z-Score)			**GCSE Raw Score (Z-Score)**		
Predictors	*Estimates*	*CI*	*p*	*Estimates*	*CI*	*p*
(Intercept)	-0.24	-0.32 – -0.16	**<0.001**	-0.14	-0.25 – -0.04	**0.009**
Treatment				0.03	-0.10 – 0.16	0.652
KS2 Mathematics Fine Point score				0.56	0.51 – 0.62	**<0.001**
School % of FSMEver				-0.01	-0.01 – -0.00	**0.001**
South				0.00	-0.13 – 0.13	0.984
Random Effects						
σ^2	0.66			0.63		
σ^2_{Class}	0.33			0.11		
σ^2_{School}	0.05			0.05		
ICC	0.36			0.21		
N_{Class}	422			422		
N_{School}	116			116		
$N_{Student}$	2249			2249		
Marginal R^2 / Conditional R^2	0.000 / 0.363			0.181 / 0.353		

Table 6: Multilevel Regression Maximum Likelihood Estimates for GCSE Standardised Raw Score with the Lead teacher subgroup

	GCSE Raw Score (Z-Score)			***GCSE Raw Score (Z-Score)***		
Predictors	*Estimates*	*CI*	*p*	*Estimates*	*CI*	*p*
(Intercept)	*-0.06*	*-0.19 – 0.07*	*0.370*	*-0.08*	*-0.23 – 0.07*	*0.278*
Treatment				*0.10*	*-0.08 – 0.28*	*0.294*
KS2 Mathematics Fine Point score				*0.49*	*0.44 – 0.55*	***<0.001***
School % of FSMEver				*-0.01*	*-0.01 – -0.00*	***0.023***
South				*0.02*	*-0.17 – 0.20*	*0.869*
Random Effects						
σ^2		*0.66*			*0.61*	
σ2Class		*0.16*			*0.08*	
σ^2_{School}		*0.27*			*0.12*	
ICC		*0.39*			*0.24*	
$N_{Teacher}$		*109*			*109*	
N_{School}		*109*			*109*	
$N_{Student}$		*2614*			*2614*	
Marginal R^2 / Conditional R^2		*0.000 / 0.391*			*0.170 / 0.372*	

Table 7: Multilevel Regression Maximum Likelihood Estimates for GCSE Standardised Raw Score with the Cascade teacher subgroup

	GCSE Raw Score (Z-Score)			***GCSE Raw Score (Z-Score)***		
Predictors	*Estimates*	*CI*	*p*	*Estimates*	*CI*	*p*
(Intercept)	*-0.08*	*-0.16 – -0.00*	***0.049***	*-0.02*	*-0.11 – 0.08*	*0.724*
Treatment				*-0.01*	*-0.13 – 0.10*	*0.797*
KS2 Mathematics Fine Point score				*0.50*	*0.47 – 0.54*	***<0.001***
School % of FSMEver				*-0.01*	*-0.01 – -0.01*	***<0.001***
South				*-0.02*	*-0.13 – 0.10*	*0.744*
Random Effects						
σ^2		*0.63*			*0.59*	
σ^2_{Class}		*0.34*			*0.16*	
σ^2_{School}		*0.07*			*0.03*	
ICC		*0.39*			*0.24*	
$N_{Teacher}$		*335*			*335*	
N_{School}		*117*			*117*	
$N_{Student}$		*7301*			*7301*	
Marginal R^2 / Conditional R^2		*0.000 / 0.389*			*0.196 / 0.392*	

Table 8: Multilevel Regression Maximum Likelihood Estimates for GCSE Standardised Raw Score with the Male only subgroup

	GCSE Raw Score (Z-Score)			**GCSE Raw Score (Z-Score)**		
Predictors	*Estimates*	*CI*	*p*	*Estimates*	*CI*	*p*
(Intercept)	-0.05	-0.13 – 0.03	0.228	-0.06	-0.15 – 0.04	0.248
Treatment				0.02	-0.09 – 0.14	0.703
KS2 Mathematics Fine Point score				0.52	0.48 – 0.56	**<0.001**
School % of FSMEver				-0.01	-0.01 – -0.01	**<0.001**
South				0.02	-0.10 – 0.14	0.790
Random Effects						
σ^2		0.67			0.62	
σ2Class		0.32			0.15	
σ^2_{School}		0.07			0.04	
ICC		0.37			0.23	
$N_{Teacher}$		419			419	
N_{School}		112			112	
$N_{Student}$		4940			4940	
Marginal R^2 / Conditional R^2		0.000 / 0.371			0.197 / 0.384	

Table 9: Multilevel Regression Maximum Likelihood Estimates for GCSE Standardised Raw Score with the Female only subgroup

	GCSE Raw Score (Z-Score)			**GCSE Raw Score (Z-Score)**		
Predictors	*Estimates*	*CI*	*p*	*Estimates*	*CI*	*p*
(Intercept)	-0.08	-0.15 – -0.01	**0.030**	0.01	-0.07 – 0.10	0.742
Treatment				-0.00	-0.11 – 0.11	0.996
KS2 Mathematics Fine Point score				0.54	0.50 – 0.58	**<0.001**
School % of FSMEver				-0.01	-0.01 – -0.01	**<0.001**
South				-0.04	-0.15 – 0.07	0.456
Random Effects						
σ^2		0.60			0.56	
σ2Class		0.36			0.17	
σ^2_{School}		0.04			0.02	
ICC		0.40			0.26	
$N_{Teacher}$		431			431	
N_{School}		116			116	
$N_{Student}$		4975			4975	
Marginal R^2 / Conditional R^2		0.000 / 0.401			0.203 / 0.409	

Table 10: Multilevel Regression Maximum Likelihood Estimates for GCSE Grade Score

	GCSE Grade			**GCSE Grade**		
Predictors	*Estimates*	*CI*	*p*	*Estimates*	*CI*	*p*
(Intercept)	4.56	4.40 – 4.73	**<0.001**	4.63	4.46 – 4.80	**<0.001**
Treatment				0.03	-0.17 – 0.24	0.753
KS2 Mathematics Fine Point score				1.09	1.05 – 1.14	**<0.001**
School % of FSMEver				-0.02	-0.02 – -0.01	**<0.001**
South				0.04	-0.17 – 0.25	0.709
Random Effects						
σ^2		1.29			1.08	
σ2Class		2.23			0.75	
σ^2_{School}		0.24			0.11	
ICC		0.66			0.44	
$N_{Teacher}$		444			444	
N_{School}		118			118	
$N_{Student}$		9915			9915	
Marginal R^2 / Conditional R^2		0.000 / 0.657			0.289 / 0.603	

Table 11: Multilevel Regression Maximum Likelihood Estimates for GCSE A03 Subscale Score

		A03			**A03**	
Predictors	*Estimates*	*CI*	*p*	*Estimates*	*CI*	*p*
(Intercept)	-0.06	-0.13 – 0.02	0.122	-0.04	-0.13 – 0.05	0.376
Treatment				0.04	-0.07 – 0.15	0.474
KS2 Mathematics Fine Point score				0.49	0.46 – 0.52	**<0.001**
School % of FSMEver				-0.01	-0.01 – -0.01	**<0.001**
South				0.00	-0.10 – 0.11	0.929
Random Effects						
σ^2		0.63			0.59	
σ2Class		0.31			0.15	
σ^2_{School}		0.08			0.04	
ICC		0.38			0.24	
$N_{Teacher}$		444			444	
N_{School}		118			118	
$N_{Student}$		9915			9915	
Marginal R^2 / Conditional R^2		0.000 / 0.382			0.184 / 0.382	

Table 12: Multilevel Regression Maximum Likelihood Estimates for GCSE Context Subscale Score

		Context			**Context**	
Predictors	*Estimates*	*CI*	*p*	*Estimates*	*CI*	*p*
(Intercept)	-0.05	-0.13 – 0.03	0.206	-0.03	-0.13 – 0.07	0.591
Treatment				0.05	-0.07 – 0.17	0.386
KS2 Mathematics Fine Point score				0.48	0.45 – 0.51	**<0.001**
School % of FSMEver				-0.01	-0.02 – -0.01	**<0.001**
South				-0.03	-0.15 – 0.09	0.649
Random Effects						
σ^2		0.60			0.56	
σ2Class		0.32			0.15	
σ^2_{School}		0.11			0.06	
ICC		0.41			0.28	
$N_{Teacher}$		444			444	
N_{School}		118			118	
$N_{Student}$		9915			9915	
Marginal R^2 / Conditional R^2		0.000 / 0.414			0.189 / 0.412	

Table 13: Multilevel Regression Maximum Likelihood Estimates for GCSE Money Subscale Score

		Money			**Money**	
Predictors	*Estimates*	*CI*	*p*	*Estimates*	*CI*	*p*
(Intercept)	-0.03	-0.09 – 0.04	0.432	0.00	-0.09 – 0.09	0.999
Treatment				0.03	-0.08 – 0.14	0.591
KS2 Mathematics Fine Point score				0.41	0.38 – 0.44	**<0.001**
School % of FSMEver				-0.01	-0.01 – -0.00	**<0.001**
South				-0.03	-0.14 – 0.08	0.627
Random Effects						
σ^2		0.71			0.68	
σ2Class		0.21			0.10	
σ^2_{School}		0.07			0.05	
ICC		0.28			0.18	
$N_{Teacher}$		444			444	
N_{School}		118			118	
$N_{Student}$		9915			9915	
Marginal R^2 / Conditional R^2		0.000 / 0.284			0.129 / 0.288	

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