Slide	Purpose of Slide	Additional Information
Slide 1	Course Title	Welcome to the recording of this event: Edexcel GCSE (9-1) Mathematics 1MA1 Foundation Feedback on June 2017. My name is Karen and I am one of the senior examiners for Pearson Edexcel.
Slide 2	Aims and Objectives	This event is designed to provide you with feedback on our Pearson Edexcel GCSE (9-1) Mathematics specification Foundation Tier. By the end, you will have; • received feedback on national performance of candidates in the June 2017 examination series • considered the variation of candidates' performance on different questions and possible reasons why • discussed the Examiners' Reports • addressed common issues and frequently asked questions. I'm going to go through an overview of generic comments and then go through responses of selected questions from the GCSE examination. We will then finish with going through the support and resources from Pearson Edexcel which will support yourselves in this specification.
Slide 3	Assessment Objectives	A reminder of the assessment objectives, of which there are three. Each of these have strands and elements. These are all detailed in the specification. Every strand and element must be assessed in every examination series. Assessment objective 1 is using and applying standard techniques, of which 50% of the content is for this tier. Assessment objective 2, reasoning, interpreting and communicating mathematically, of which 25% is on this tier. And finally assessment objective 3, solving problems with a much greater focus on solving non-routine problems in mathematical and non-mathematical contexts.
Slide 4	Grade Boundaries	Here we have a summary of the grade boundaries for June 2017. A reminder each of the papers is out of 80 marks. Here we have an overall table for Foundation tier, and again the mark is out of 240. And finally this table here gives you cumulative percentage by grade at each tier.
Slide 5	Paper 1F Non-calculator	We're going to start with Paper 1F, the non-calculator paper.
Slide 6	Mark Distributions	Here is the mark distributions for this examination series. We notice that the mean mark was 34.8, with a modal mark of 41.

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Slide 7	General comments	Here is some feedback from the Principal Examiner's report on the first third of the paper.
		It was pleasing to see a good level of success from students of all abilities with the early problem solving questions, particularly those problems using money as a context.
		It is clear from the first question that a significant proportion (30%) of students that didn't understand the index notation fully and failed to score any marks.
		Only 46% of students were able to gain a mark for rounding indicating that a large number of students do not understand what rounding to decimal places means.
		48% were able to score the mark for algebraic simplification, however this highlighted a number of misconceptions and the lack of recall of their times tables.
		57% were able to correctly multiply fractions.
		We're going to now look at a few questions from this paper and then summarise some further learning points.
		We will start with Question 9.
Slide 8	Introduce Q9 from Paper 1F	This question assesses the ability to work with rates of pay, and being able to retrieve the relevant information from the question.
		It requires students to be able to work with fractions without a calculator, which many students struggled with.
		Mistakes occurred more often than not in the working with overtime and students' understanding of what 1 ¼ as an overtime rate actually meant.
		At the bottom of this slide you'll be able to see some statistics. The maximum mark for this question is 4 and the mean score was 2.10, with
		15% scoring 0 marks
		29% 1 mark
		19% 2 marks
		7% scored 3 marks and 30% gaining full marks
Slide 9	Explanation of Marking of Q9 1F	If we now look at the mark scheme. This is a problem involving 3 process steps. The first 2 marks focus on the 2 main elements of the problem and could be awarded completely independently of each other.
		The first process mark is awarded when students show some evidence of working with time, e.g. the use of 8 hours with 12 to get the basic pay, or finding the number of hours of overtime.
		The second process mark is awarded when students show some evidence of working with overtime, which really involves doing some correct working with a quarter or one and a quarter.
		The third process mark is for tying the whole problem together.

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Slide 10	Example of a fully correct first response	Here is a response. The answer is fully correct, so full marks is given. The working is very clearly presented and easy to read.
Slide 11	Explanation of marks awarded for second response	Have a look at the next response. You may wish to pause the recording whilst you see how many marks may be awarded and resume the recording when you're ready. This candidate gains a total of 3 marks. It is a good attempt by the student, with most of the steps of the problem understood. However, despite finding the correct overtime rate the student has added on an extra 12, which has made the answer incorrect. The first process mark is for working with time [for example 12×8 (= £96)]. The next process mark is for working with overtime [1 overtime = $12 + 3$. Note the method to find a quarter (= 3) is sufficient for this mark]. The next process mark is for a complete process $2 \times$ overtime rate $+ 12 \times 8$ [so we have $96 + 51$]. Unfortunately the answer is incorrect, so no further marks can be awarded.
Slide 12	Explanation of marks awarded for third response	Have a look at the next response, and again you may wish to pause the recording whilst you see how many marks may be awarded and resume the recording when you are ready. This response gains 1 mark. This is a rare way of scoring a single mark. The student has correctly dealt with the fraction to find the overtime rate, but has failed to deal correctly with the time. Commonly, if one mark was scored it was usually for 8×12 For the first process mark was zero, no dealing with time. The second process mark was for working with overtime, which is the first line of working here. The third process mark was zero, and the answer is obviously incorrect.

Slide	Purpose of Slide	Additional Information
Slide 13	Introduce Q10 1F and provide explanation of Marking.	Now moving on to the next question, we're going to look at question 10. Here, the student has to firstly find the total number of eggs and then read the question carefully to understand which two values should go together in the ratio. The student is then required to simplify the ratio. Students commonly made two basic mistakes. Firstly, students put together the wrong two values, typically 120 and 20. The second mistake was with students struggling to fully simplify the ratio, often finishing at 3 : 30 Looking at the mark scheme we can see only two marks are available, the first for establishing a correct ratio. Students were able to make an arithmetic error in calculating the "120" as long as "6 × 20" was seen. The second mark was for the correct answer only. Again, at the bottom of the slide we can see that the mean score for this question was 0.67, and 55% of students gained no marks on this question, and only 22% gaining full marks.
Slide 14	Explanation of fully correct response	Here is an example of a fully correct response. This shows that the student has correctly worked out the total number of eggs and set up the correct ratio, before simplifying it. 2 marks awarded. Students have to read this question carefully.
Slide 15	Explanation of marks awarded for Response 2	Here we have a response that may wish to pause the recording whilst you see how many marks may be awarded, and resume the recording when you are ready. For this response a mark of 1 was awarded. This student has started with the correct ratio but failed to fully simplify. So M1 was awarded for for 12 : 120 Accuracy mark zero marks because they only simplified as 3 : 30
Slide 16	Explanation of marks awarded for Response 3	Another response for you to look at. You again may wish to pause the recording whilst you see how many marks may be awarded, and resume when you are ready. Here the total mark is 0 The student has correctly found the total number of eggs, but then divides this value by 10 before putting it into a ratio. No method marks. 2 : 12 is an incorrect ratio. And accuracy mark zero.

Slide	Purpose of Slide	Additional Information
Slide 17	Introduce Q15 1F	And moving onto the next question, Question 15. This question tests the understanding of basic area in a variety of ways. Students have to find the area of a triangle, and then work with the area of a rectangle to find the width. It also requires students to work out a division by 16.
		As usual when the area of a triangle is involved a good number of students forget to halve. The other main problem for students was the arithmetic for the final step.
		However, many were awarded the third mark for their clear intention to divide by 16, even if they were unable to do so accurately.
		The mean score for this question was 1.63, with 32% of candidates gaining no marks, 15% 1 mark, 21% 2 marks, 21% 3 marks and 11% gaining full 4 marks.
Slide 18	Provide explanation of mark scheme for Q15.	Looking at the mark scheme, we can see that the first mark is for the first step in the problem – to find the area of a triangle. Unfortunately many students still forget to halve when doing so and therefore lost this mark.
		The next two marks are for the next two steps of the problem: multiplying by 6 to get the area of the rectangle; and then using the area formula backwards to find the width.
		For both of these marks the student had to clearly show that they're working with area rather than perimeter.
		Many students are able to score well on this problem, with a large number able to score both the second and the third marks. However, many lost the first mark, and quite a few students did not have sufficient arithmetic skills to divide by 16.
Slide 19	Example of fully correct response	This is an excellent response from this student not only showing all the desired steps of working, but also clearly annotated.
		4 marks are awarded.
Slide 20	Explanation of marks awarded for Second Response	You may wish to pause this slide.
		A total of 1 mark can be awarded here.
		The student has started this problem correctly, but has then not used their value for the weight of one tin to find the weight of the packets.
		This question carries dependency from one method mark to the next, so when students are not awarded the second process mark, they cannot be awarded anything subsequent.
		This student has calculated $3 \times$ the weight of one tin and $2 \times$ the weight of one packet for their values, but cannot be awarded the third mark without the second mark.
		First mark is for the method to find the weight of one tin.
		Second method mark is the student trying to find the weight of one packet by dividing 1490 by 5 again.
		And method mark and accuracy mark, no further method marks can be awarded and the answer is incorrect.

Slide	Purpose of Slide	Additional Information
Slide 21	Explanation of marks awarded for Third Response	You may wish to pause while you work through this response. Total marks: 3 This is a very good attempt at the question, only let down by this student being unable to divide by 16. The first process mark is for process to find area of a triangle [$(9 \times 8 (= 72)) \div 2$ $(= 36)$] The second process mark is for calculating 6 lots of the (area) [$36 \times 6 (= 216)$] The fourth process mark for process shown of dividing their area by 16 And answer incorrect.
Slide 22	Introduce Q17 1F and provide explanation of Marking.	The next question is Question 17. This question requires students to have a good understanding of proportion and to be able to work in a logical manner. It also requires good arithmetic skills if all 4 marks are to be awarded. Students often try to annotate their working, which makes the marking of such questions significantly easier as it allows the examiner to clearly see the students' intentions. Unfortunately, quite a number of students try to use simultaneous equations to solve this problem. Although it is an acceptable method almost all students quickly got confused and normally gained no marks at all. Looking at the mark scheme this is very much a stepped marking scheme and each mark is dependent on the previous one. This means that as soon as there is an error in the method no further marks can be awarded. The first mark allows for most students to score if they show a method to find the cost of a single tin (although this value was often wrong). The second mark is awarded when students show they can use this value correctly to find the cost of a single packet, and the third mark is for correctly using the values to find the cost of 3 tins and two packets. It is worth noting that the only place accuracy is credited in this question is the final mark, so if a student shows the correct method, they can score all 3 method marks despite making arithmetic errors. We can see the mean score for this question was 2.09, with 31% scoring no marks, 14% 1 mark, 9% 2 marks, 9% 3 marks and 37% for all marks.
Slide 23	Example of a fully correct answer	Here, this is was a great solution following through in a logical manner, with all steps and calculations clearly shown. This was awarded full 4 marks.

Slide	Purpose of Slide	Additional Information
Slide 24	Explanation of marks awarded for second Response	Another response, which you may wish to pause. This response gained 1 mark. The student has started this problem correctly, but has then not used their value for the weight of one tin to find the weight of the packets. This question carries dependency from one method mark to the next, so when students are not awarded the second method mark, they cannot be awarded anything subsequent. This student has calculated $3 \times$ the weight of one tin and $2 \times$ the weight of one packet for their values, but cannot be awarded the third mark without the second. The first method mark is for the weight of one tin [$1750 \div 5$, seen] The second method mark, the student has tried to find the weight of one packet by dividing 1490 by 5 again. No further method marks can be awarded.
Slide 25	Explanation of marks awarded for Third Response	The final response for this question, again you may wish to pause the recording. A total of 3 mark were awarded here. This is a response where the student is let down by a small arithmetic error in the latter stages of their answer. The first method mark is for $1750 \div 5$ (= 350) The next method mark is to find the weight of 3 packets [350×4, and $1490 - 1400$ (= 90)] The third method mark is to find the weight of 3 tins and 2 packets. Note: even though there is an arithmetic error here, as all the steps are clearly shown the method is still awarded. A0 incorrect answer.
Slide 26	Summary	So now, just to summarise, based on the performance on this paper, students should: • Continue to work to master the basic skills of arithmetic especially with fractions and decimals • They should remember to show each stage of their working especially percentages • Work further on strategies for attempting problem solving skills • And spend greater time on the topics that are new to the foundation tier in this specification

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Slide 27	Summary	Some further summary points include: • Learn the conversions within the metric system e.g. 1m = 100cm • Learn the formulae such as those for the area of a triangle, area and circumference of a circle • And finally, develop understanding of algebra especially simplifying algebraic expressions and being able to substitute correctly into algebraic expressions.
Slide 28	Paper 2F Calculator	We're now going to move on to the first of the calculator papers – paper 2F.
Slide 29	Mark Distributions	Here is a graph to show you the mark distributions for this examination series. We can see that the mean mark is 34.7 and a modal mark of 37
Slide 30	General Comments	Here is some feedback from the Principal Examiner's report on the first third of the paper. We can see that 70% of students were able to collect like terms correctly but only 13% could simplify an expression involving indices. Only 15% were able to round a decimal number to one significant figure. 90% and 74% of responses were able to express one thing wrong with the tally chart and pictogram respectively. 48% were able to score the mark for algebraic simplification, however this highlighted a number of misconceptions and the lack of recall of their times tables. And just over half of the population, 54% were able to calculate probability
Slide 31	Introduce Q6 2F	We're now going to go through a few of the questions from paper 2F. So we'll start with question 6. This question assesses the application of the four operations to integers and simple fractions with the understanding and use of place value in the context of standard units of money. The question is multi-stage and is in the form of problem solving; translating a non-mathematical context into a series of mathematical processes. Students should show the process of how to find $\frac{1}{3}$ of 495, (495 ÷ 3 or equivalent), how to find the total value of the 50p coins (i.e. 124×50 or equivalent) and how to find the number of 20p coins by showing a subtraction of 165 and 124 from 495. They should then show their addition for finding the total value of all coins. Common misconceptions include using $\times 0.30$, $\times 0.33$ rather than dividing by 3 to find a third which leads to a non-integer number of £1 coins. We can see from the screen that 2.24 was the mean score for this question, and 19% of candidates scored no marks. 23% scored 1 mark, 13% 2 marks, 5% 3 marks, and 40% of candidates gained all 4 marks.

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Slide 32	Provide explanation of mark scheme for Qu 6 2F.	The process marks on the mark scheme can be follow through marks but any values followed through must come from a correct process to find them. So, for example $495 \div 3$ is 145 and $495 - 124 - 145$ would earn the first two process marks but 145 alone and then $495 - 124 - 145$ would not. Any answer equivalent to 268.2 would gain all 4 marks, i.e. the 0 in 268.20 is not required for the accuracy mark.
Slide 33	Example of a fully correct response	This response shows all the processes clearly and is carried out with accuracy throughout.
Slide 34	Explanation of marks awarded for second response	You may wish to pause the recording. Total mark here is 1. The student makes a good start but then progresses no further. The first process mark is for the award of $1/3 \times 495$.
Slide 35	Explanation of marks awarded for third response	Next response, again you may wish to pause. This response is fully correct.
Slide 36	Introduce Q9 2F and provide explanation of Marking.	Moving on to the next question. This question assesses the properties of angles at a point adding to 360, the translation of a situation into an equation, a method for solving it and the interpretation of its solution. Students have to show that they understand the need to use angles around a point to form an equation, then how to solve this equation to find the value of x. Alternatively, a more informal numerical approach using the division of 270 by 5 may be used. Common misconceptions include using angles around a point add to 180, and being able to measure the angles with a protractor. The instructions on the front of the examination paper clearly state that "Diagrams are NOT accurately drawn, unless otherwise indicated." The method marks on the mark scheme rely on the use of the correct result that angles around a point add up to 360° and the formulation of a correct equation or a correct numerical method. As such there are no follow through marks. The first mark is for the formulation of a correct equation without any simplification, e.g. $90 + 2x + 3x = 360$ or the subtraction of 90° from 360°. Sight of 270° is evidence of the latter. The second mark is for the correct equation with terms in x isolated on one side of the equation or for the division of 270 by 5. Note: Examiners always look at any annotated diagrams to see if there is evidence for the award of marks. The third mark is given for the correct answer of 54 The mean score for this question was 1.31, with 45% of candidates gaining no marks at all, and 38% of candidates gaining all marks.

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Slide 37	Example of a fully correct response	This response involves the formulation and solution of an equation. It clearly shows how the equation is set up and then how the value of x is found. So can be awarded the full 3 marks.
Slide 38	Explanation of marks awarded for Second Response	You may wish to pause here. The total marks for this response is 2 This response appears to give two approaches with neither being crossed out. However, the answer can be tracked back to the working out on the right hand side, so the examiner would mark this. The first method mark is awarded for $360 - 90$ or 270. The second method mark is for $3x + 2x + 90 = 360$ And the third method mark is for $3x + 2x = 270$ The candidate then "simplifies" $270 - 2x$ as 268 An incorrect answer loses the final mark.
Slide 39	Explanation of marks awarded for third Response	The final response for this question, again you may wish to pause. The total mark here is 1. This student has started off correctly by subtracting 90 from 360 but then has apparently measured the angles and used this to set up 2 equations $2x = 120$ and $3x = 150$ Students need to be clear that diagrams are not drawn accurately unless stated otherwise. Again this warning appears on the front page of the question paper.
Slide 40	Introduce Qu 10 2F	Moving onto the next question, Question 10. This question assesses the use of standard units of money in a cost per unit/best buy context. The problem is to compare value for money in two different shops and requires the student to interpret the results of their calculations in the context of a problem (i.e. which shop provides the best value). Students should show the processes needed clearly to compare the costs in each shop, for example by finding the number of packs they need in "Letters2send" ($150 \div 25$) and the total cost of these packs (($150 \div 25$) then multiplied by 3.49), then, taking into account the "Buy 2 packs get 1 pack free" offer in "Stationery World" the process to find the cost of 150 envelopes in that shop. Students found taking the special offer into account to be the most challenging aspect of this problem. Some weaker students ignored the offer. The vast majority of students took the approach indicated by the first of the two mark schemes. Students adopting a different approach (e.g. comparing the cost per envelope, 0.1396p and 14p) were less often successful, sometimes because of rounding issues. The mean score for this question was 2.72. 10% of candidates scored no marks, 3% 1 mark, 37% 2 marks, 5% 3 marks, and 45% gained all 4 marks.

Slide	Purpose of Slide	Additional Information
Slide 41	Qu 10 2F provide explanation of mark scheme	Looking at the mark scheme, we can see that the second process mark on the first mark scheme can be follow through and it must come from a correct process to find them. So, for example $150 \div 25 = 5$ and 5×3.49 would earn the first 2 Process marks. In the second mark scheme, the first mark is for any process that could lead to a valid comparison of costs. For students using a unit cost method (covered by the second mark scheme), they will need to appreciate the need for accuracy and not round 0.1396p to 14p in order to obtain a correct conclusion. For the final mark a written statement is required not just the underlining or circling of Letters2send.
Slide 42	Example of fully correct answer	This is an example of a fully correct answer. This response is detailed and clear, and it shows all the processes clearly and the calculations are accurately carried out. A total of 4 marks can be awarded.
Slide 43	Explanation of marks awarded for second response	You may wish to pause the recording. This response was awarded 3 marks. It shows all the correct processes but the cost at Stationery World is not evaluated accurately so the final mark cannot be awarded. The first process mark is for 150/25 The second process mark is for £3.49 $\times$ 6 And the final process mark is for 2.10×10 (this process is correct) Although the student has made a correct conclusion from their values, the correct values are needed for the award of this mark, so C0 was awarded.
Slide 44	Explanation of marks awarded for third response	Again, you may wish to pause the recording. 1 mark was awarded here. The second mark scheme is used as the student attempts to compare the cost per envelope at each shop. They succeed for Letters2send but have not shown a correct way of taking into account the special offer and the process to work out the unit cost at Stationery World is incorrect. The first process mark is for 3.49 /25

Slide	Purpose of Slide	Additional Information
Slide 45	Introduce Qu 25 2F	For the next question, question 25. Part (a) of this question assesses the use of a simple arithmetic progression to find an expression for the nth term of a sequence. In this case the correct expression is $5n - 2$. Classic mistakes made usually arise because students have not got accurate recall of the algorithm for finding the expression and do not check the expression they write down by substituting values of n. Incorrect expressions commonly seen for this sequence include $5n + 2$ and $2n - 5$ Part (b) assesses whether a student can find a particular term of a sequence given an expression for its nth term. In this case with the expression, $3n^2$, many students confuse $3n^2$ with $(3n)^2$ We can see here the percentages for each part, so for part a the mean score out of 2 was 0.84, with 53% of candidates scoring no marks, 10% 1 mark, and 37% all 2 marks. Part b was a mean score of 0.16, with 84% scoring no marks, and only 16% scoring 1 mark.
Slide 46	Qu 25 2F explanation of Marking	In the mark scheme Part (a), the B mark (which is unconditional accuracy) are dependent on correct components of the expression $5n - 2$. One mark is awarded for an expression including the 5n with the second mark for a completely correct expression. Part (b) There is only 1 mark available for answers to this part of the question. The award of the mark is dependent on a clear statement equivalent to "no, Nathan is not right" together with supporting evidence. This evidence normally consists of showing that the value of $3n^2$ is 48, not 144 when $n = 4$ Alternatively, students may show that the equation $3n^2 = 48$ does not have the solution $n = 4$
Slide 47	Example of fully correct response	Here we have a response which is fully correct, so full marks can be awarded. 2 marks for part 1, and 1 mark for part b. The response in part (a) shows an acceptable form for the award of 2 marks. Here we condone the use of "nth =", "nth term =" but not "$n = $" for the award of the 2 marks. The student gets the value 48 in part (b) and makes the correct conclusion. So Part (b) one mark is scored.
Slide 48	Explanation of marks awarded for second response	You may wish to pause. Here we can award one mark for part a, and no marks for part b. The student has correctly found the "$5n$" to score 1 mark but has written "+2" instead of "–2" so cannot be awarded the second mark for a fully correct expression. In part (b) the working is correct but the conclusion is not so the mark cannot be awarded.

Slide	Purpose of Slide	Additional Information
Slide 49	Explanation of marks awarded for third response	You may wish to pause the recording while we look at the third response. Here this mark is 0, 0 The difference between successive terms in the sequence has been found but not used correctly to form an algebraic expression so no marks can be scored in part (a). In part (b) the student has made the common error of multiplying 4 by 3 before squaring and so obtains 144 as the value of $3n^2$ and states that Nathan is right.
Slide 50	Summary	So to summarise, based on the performance on this paper, students should: • Remember that diagrams are not accurately drawn unless otherwise stated • They need to learn standard techniques such as writing a number in standard form and solving a quadratic question by factorisation • They also need to practise solving problems which require a chain of steps to find their solution
Slide 51	Summary	Furthermore students they need to • Carry out common sense check on the answers to calculations • They need to use a calculator where possible • They need to ensure students know the difference between simple interest and compound interest • And finally they need to ensure their handwriting is legible and clear
Slide 52	Paper 3F Calculator	So now we're going to move on to the second calculator paper, paper 3F.
Slide 53	Mark Distributions	So if we look at the mark distributions for this paper we note that there is a mean mark is 35.9 and the modal mark for this paper is 44.
Slide 54	General Comments	So here are some general comments from the Principal Examiner's report on this paper. It was pleasing that students showed clear working out for most questions In some questions students had to select the processes needed to solve a problem in context and performance on these questions was encouraging. Generally substituting into a formula on this paper was done well. Marks however were lost through not reading the question with sufficient care. Some questions required a decision to be made and marks were lost unnecessarily because students failed to state a conclusion. Just under half of the population, 49%, were able to calculate correctly a fraction of an amount. We're now going to have a look through some of these questions.

Slide	Purpose of Slide	Additional Information
Slide 55	Introduce Q2 3F and provide explanation of Marking.	Question 2. This question assesses whether students can translate a simple situation into an algebraic expression.
		Students are expected to write a correct expression, e.g. $12p + 18b$, for the total number of cups.
		A very common mistake is to use only p and b and give $p + b$ as the answer.
		Students should realise that a correct expression must contain p, b, 12 and 18.
		In this type of question students often attempt to simplify an expression that is already in its simplest form.
		Expressions equivalent to $12p$ and $18b$ are accepted,
		So e.g. $12 \times p$, $p \times 12$ and $p12$ are accepted for $12p$;
		Similarly $18 \times b$, $b \times 18$ and $b18$ are accepted for $18b$.
		Equating the expression to a different variable is condoned, e.g. $T = 12p + 18b$ would be awarded 2 marks.
		If $12p + 18b$ is followed by further incorrect algebra then only one mark is awarded.
		Here we can see that the maximum mark for this part was 2 and the mean score was 0.96
		With 37% scoring 0 marks
		30% scoring 1 mark
		And 33% gaining all 2 marks
Slide 56	Example of a fully correct response	This is an example of a fully correct response. Correct expression for the total number of cups: 2 marks.
Slide 57	Explanation of marks awarded for second response	You may wish to pause.
		A total of 1 mark was awarded here.
		The student has written separate expressions for the number of cups in packs and the number of cups in boxes but has not combined them to find the total number of cups. So either $12p$ or $18b$ gets the method mark.
		It was common to see both $12p$ and $18b$ in an answer but not combined correctly,
		e.g. $12p \times 18b$ or $12p$, $18b$.
		You may wish to pause at the next slide.

Slide	Purpose of Slide	Additional Information
Slide 58	Explanation of marks awarded for third response	Here a total of 1 mark is awarded.
		If this student had stopped after writing $12p + 18b$ then 2 marks would have been awarded.
		Further incorrect algebra means that only one mark is awarded.
		Quite why the student has written $12p$ on the answer line is a mystery but that alone would get one mark.
		It was very common to see responses such as $12p + 18b = 30pb$ and $12p + 18b = 30$, both of which would only be awarded one mark.
Slide 59	Introduce Qu 9 3F	Moving onto the next question.
		In this question students need to devise a suitable strategy to solve a problem that is set in a context and use standard units of time.
		Students are expected to identify the processes that are necessary to solve the problem and to carry them out.
		Mistakes were often made when adding on times, e.g. 2.55 pm + 75 minutes = 3.10 pm, and the use of unconventional time notation, e.g. writing 1 hour 40 minutes as 1.40, led to many errors.
		The question asks whether Davos will finish cleaning by 4 pm. A common error was for students to make no decision.
		This question had a maximum of 3 marks and the mean score was 1.98, with 9% of candidates scoring no marks, 26 scoring 1 mark, 24% 2 marks and 41% all marks.
Slide 60	Explanation of Mark scheme Q9 3F	Looking at the mark scheme, the first mark is for a correct start to the process.
		To get the second mark students must be in a position to make a decision. They could, for example, have started at 9 am and added on all five times to find a finishing time or they might have worked out both the length of the day and the total of the five times.
		Note that the first two marks are process marks. They are not dependent on accuracy.
		For the final mark the student must show a correct decision supported by correct values.
Slide 61	Example of fully correct response	Here we have an example of a fully correct response.
		This is a well presented solution. The student starts at 9 am and adds on all five times to find that Davos will finish cleaning at 4.10 pm. And a correct decision is made.

Slide	Purpose of Slide	Additional Information
Slide 62	Explanation of marks awarded for second response	You may wish to pause for the second response.
		2 marks were awarded here.
		The student gets the first mark for the process to work out the total of the five times. This total of 430 minutes is divided by 60 to give 7.16.
		At this stage the student is not in a position to make a decision.
		Adding the total time to 9 am to find the finishing time puts the student in a position to make a decision and the second mark is then awarded.
		Unfortunately, 7.16 is interpreted as 7 hours and 16 minutes which results in an incorrect finishing time.
		A correct decision is made but the final mark cannot be awarded as this mark is dependent on correct values.
Slide 63	Explanation of marks awarded for third response	The final response for this question, you may wish to pause.
		A total mark of 1 can be awarded here.
		The student gets the first mark for the process to work out the total of the four room times. The next part of the working is incorrect because the 75 minutes for breaks has been subtracted from 430, not added to it, and no more marks can be awarded.
		Even if 75 minutes had been added to 5 hours and 55 minutes it is unlikely that that this student would have gained any more marks as it is not clear how the total time is being used to inform a decision.
		And although "6 hours" is written just above the conclusion there is nothing to indicate that this comes from an attempt to work out the length of the day. So this candidate gained 1 mark.
Slide 64	Introduce Qu12 3F	Moving onto the next question, Question 12a. This question assesses whether students can calculate the volumes of shapes made from cubes and their ability to present an argument.
		Students are expected to show that the volume of a solid made from 6 cubes is 48 cm^3 and then state that Vera is correct.
		The question asks whether Vera is correct. And a common error was for a student to make no decision.
		Students need to read Vera's statement with sufficient care. It was common to see them state that she is incorrect because the volume of the cube is 8 cm^3, not 48 cm^3.
		It is common in questions of this type for students to confuse surface area and volume.
		The mean score for this question was 1, with 45% of students gaining no marks, and only 44% gaining full marks.

Slide	Purpose of Slide	Additional Information
Slide 65	MS	From the mark scheme we can see that the first mark is awarded for $2 \times 2 \times 2$ (even if it is evaluated incorrectly) or for drawing a solid that can be made with 6 cubes.
		For the second mark we must see the correct decision, "Yes", supported by correct evidence.
Slide 66	Example of fully correct response	Here is an example of a fully correct response.
		A well-presented argument. The student finds the volume of one cube, multiplies this by 6 to get 48 cm^3, and makes the correct decision.
Slide 67	Explanation of marks awarded for second response	You may wish to pause.
		Unfortunately this gains no marks.
		The student started well by working out $4 \times 2 = 8$ but did not recognise this as the volume of the cube. Instead it was followed by further multiplying by 2 to eventually give the value equivalent of 2^6.
Slide 68	Explanation of marks awarded for third response	Final response, you may wish to pause.
		A total of 1 mark was awarded here.
		The student works out the volume of one cube as 8 cm^3 and multiplies it by 6 to get 48 cm^3. However, no decision is made as to whether or not Vera is correct so only the method mark can be awarded.
Slide 69	Introduce Common Qu 15 3F and Q1 3H	Moving on to the next question. This was a common question, so this is question 15 on paper 3F which was also question 1 on paper 3H.
		In part (a) the students are expected to use the information given to complete the Venn diagram.
		Students should not forget to label the circles and they should check that each number in the universal set appears just once in their completed Venn diagram.
		Many students placed seven numbers correctly inside the circles and most mistakes were made completing the region outside the circles.
		It was very common to see either no numbers at all in this region or duplicates of the numbers that had already been placed inside the circles.
		In part (b) students are expected to understand the notation for the union of two sets and work out a probability from their Venn diagram.
		A very common mistake was to confuse the union and the intersection symbols.
		We can see from the total of this question the mean score was 1.30. 16% scored no marks, 13% 1 mark, 14% 2 marks, 26% 3 marks, 19% 4 marks, 9% was 5 marks and only 3% gained all 6 marks.

Slide	Purpose of Slide	Additional Information
Slide 70	Introduce Mark scheme for Common Qu 15 3F and Q1 3H	In the mark scheme for Part (a) The labels on the diagram are likely to be '"*A*" and "*B*" but "multiples of 3" and "multiples of 5" were acceptable.
		If two 15s were written in the intersection then the first method mark can still be awarded (but not the final communication mark).
		Part (b) When marking the probability it is necessary to check for possible follow through from the Venn diagram. Many students will gain the first mark for a denominator that is correct for their diagram even though their numerator might be incorrect.
Slide 71	Example of a fully correct response	Here is an example of a fully correct response
		Set A and set B have been labelled and all the numbers have been correctly placed in the Venn diagram. 4 marks
		Part (b) The probability is fully correct. 2 marks
Slide 72	Explanation of marks awarded for second response	You may wish to pause for this example.
		This candidate would be awarded 1, 1.
		For Part (a) One mark is awarded for just placing the 15 in the intersection – which is a good start. However, none of the other three regions have been completed correctly and there are no labels.
		Part (b) Following through from the diagram, 9/24 is a correct answer and would get 2 marks. However, incorrect notation has been used here for probability, so this loses the accuracy mark but an implied method mark is awarded (you can see the General marking guidance for further information).
Slide 73	Explanation of marks awarded for third response	Final response, you may again wish to pause.
		This candidate was awarded 3, 1
		Part (a) All 15 numbers have been placed in the Venn diagram but set A and set B have not been labelled.
		For Part (b) The probability is incorrect, however 1 mark is awarded for the correct denominator.
		This student has made a common mistake, giving the probability that the number is in the intersection, not the probability that it is in the union.
Slide 74	Introduce Common Qu 17 3F and Q3 3H	And finally, moving onto our last question. This question requires students to assess the validity of an argument. We're are going to look at part b. This was a common question. Question 17b on 3F and question 3b on 3H.
		Students are expected to recognise that Zoe is wrong because some of the women could have both a shoe size of 7 and a dress size of 14.
		A common error is for students to focus only on fraction calculation. Many students, for example, think that Zoe is correct because the addition of fractions has been carried out correctly.
		We can see that for this 1 mark the mean score was 0.03, with 97% of candidates gaining no marks, and only 3% gaining 1 mark.

Slide	Purpose of Slide	Additional Information
Slide 75	Introduce Mark scheme for Common Qu 17 3F and Q3 3H	To award the mark we need to see the correct decision, "No", supported by a correct reason.
Slide 76	Example of fully correct response	Here is an example of a fully correct response. A correct decision is supported by a correct reason.
Slide 77	Explanation of marks awarded for second response	Next response, you may wish to pause. No marks were given here. A correct decision is made. Although the statement does refer to both shoe size and dress size it is not correct. All three of the women with shoe size 7 do not have to have dress sizes 14. There is also a slip with size 3 mentioned instead of size 7.
Slide 78	Explanation of marks awarded for third response	And the final response, again you may wish to pause. Zero marks. The correct decision has been made but the reason is incorrect. The majority of those who said that Zoe is not correct gave explanations that focused on the fraction calculation rather than on the context, i.e. shoe sizes and dress sizes.
Slide 79	Summary	So to summarise, from this paper, further points for your centres, they need to • Practise writing algebraic expressions and formulae • They need to practise setting up algebraic equations to solve a problem • They'd be advised to use a calculator to check calculations that are carried out manually • Also to practise completing Venn diagrams and learn the necessary set notation • And finally, to read the information given in each question very carefully
Slide 80	Content Support	Now I'm just going to spend a few minutes going through the support and resources that are available to yourself. So regarding with the content support, you will find the content guidance, teaching guidance, exemplification documents, and exemplar student answers with examiner comments. A reminder that all of our resources are available on the emporium and on the Pearson website.
Slide 81	New Content Support	Furthermore, special support for new content. There are sample questions for new topics, there is new content resource and these are worked examples with guidance and comments, and exercises with answers, and in some cases extension material for content new to the specification or new to foundation tier. And there is new content delivery, recorded sessions for different areas of content new to the specification, and this is delivered by a practicing teacher.

Slide	Purpose of Slide	Additional Information
Slide 82	Problem Solving Support	Resources for problem solving and reasoning. There are problem solving practice papers, gold, silver and bronze, which are sets of assessment objective 3 questions with varying degrees of scaffolding. There are two sets of foundation higher tier newly written questions, problem solving papers. There is also exemplification of the new assessment objective 2 strands and exam wizard tests for reasoning, from the trial support and also further materials from the problem solving trial support, with more questions, posters, model answers and again assessment.
Slide 83	Tiering Support	There's finally support to do with tiering. There's a document to do with tiering guidance, there are also common question papers, and these are papers that have been put together by extracting questions that appear on both tiers, ideally grade four and grade five. There are also sample assessment materials, specimen paper sets 1 and 2, practice test sets 1 to 4, and some themed papers.
Slide 84	Mock Service	The mock service. We know how important it is for your students to be able to sit mock exam papers that they haven't previously seen in preparation for the GCSE 9-1 maths. That's why last academic year we've provided two sets of mock papers in autumn 2016 and spring 2017. We will release another set of mock papers in autumn 2017, and a final one in autumn 2018.
Slide 85	Mock Marking Training	Last year mock marking training events, we ran some mock marking training events in autumn 2016 to help you apply the new marks schemes, so you can be confident you're getting a clear picture of your students' achievements. Videos from the foundation and higher tier events and the training documents are available to download from our website.
Slide 86	Useful Links	Here are some other useful links, grade boundaries, examination results statistics, access to scripts and results plus.
Slide 87	Networks	There are mathematics collaborative networks promoting best practice and innovation with local support. These schools and colleges become recognised as hub centres and lead a collaborative network in their region.
Slide 88	Maths Emporium	Finally we have the maths emporium, and this you will find all our resources in here, either access via their website and you can get email updates on the maths emporium from pearson.com
Slide 89	Subject advisor	Our subject adviser Graham Cumming is always at hand to offer advice, this is the number and he has a Twitter feed and this is the email address as required.
Slide 90		