Mathematics

OCR GCSE Mathematics (9-1) – J560

The when, the what and the how

(Not necessarily in that order)

The when – Exam Dates

Friday 19th May 2023 - 1F/4H (Calculator permitted)

Wednesday 7th June 2023 - 2F/5H (Calculator **not** permitted)

Wednesday 14th June 2023 - 3F/6H(Calculator permitted)

The how - Assessment Overview

Foundation tier, grades 5 to 1 • Paper 1 (Foundation tier) J560/01	Written paper 100 marks 1 hour 30 minutes Calculator permitted	**Higher tier**, grades 9 to 4 • Paper 4 (Higher tier) J560/04	Written paper 100 marks 1 hour 30 minutes Calculator permitted
• Paper 2 (Foundation tier) J560/02	Written paper 100 marks 1 hour 30 minutes Calculator **not** permitted	• Paper 5 (Higher tier) J560/05	Written paper 100 marks 1 hour 30 minutes Calculator **not** permitted
• Paper 3 (Foundation tier) J560/03	Written paper 100 marks 1 hour 30 minutes Calculator permitted	• Paper 6 (Higher tier) J560/06	Written paper 100 marks 1 hour 30 minutes Calculator permitted

Demand through the papers

- Starts with lower demand questions - helps students to build confidence.
- Same approach for multi-part questions.

The what - Content Weightings

- At the Foundation tier the largest sections are Number and Ratio, proportion and rates of change, accounting for 50% of the marks on each paper between them.
- At the Higher tier Algebra is the largest section

	Foundation Tier	Higher Tier
Number	25%	15%
Algebra	20%	30%
Ratio, proportion and rates of change	25%	20%
Geometry and measures	15%	20%
Statistics	15%	15%
Probability		

Assessment Objectives

Mathematics - Three assessment objectives

- A01 Use and apply standard techniques
- A02 Reason, interpret and communicate mathematically
- A03 Solve problems within mathematics and in other contexts

A01

Use and apply standard techniques

A01 Use and apply standard techniques

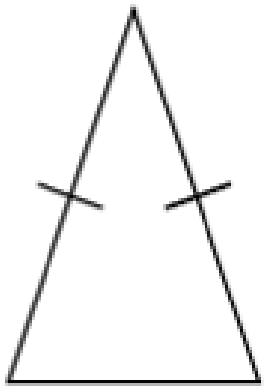
	Assessment Objectives	Weighting	
		Higher	Foundation
AO1	**Use and apply standard techniques** Learners should be able to: • accurately recall facts, terminology and definitions • use and interpret notation correctly • accurately carry out routine procedures or set tasks requiring multi-step solutions.	40%	50%

What does it look like - AO1

Foundation tier (calculator)

This is the first question of a paper. It is a low demand AO1 (recall) question providing a straightforward start, easing students into the paper and helping to boost their confidence. This helps students demonstrate their full potential.

1 (a) Write down the mathematical name of this triangle.
Choose from the list in the box.



This question uses the command phrase 'Write down', which tells the students that no justification or working is required.

isosceles	equilateral	right-angled	scalene

(a) .....triangle **[1]**

Providing answers in a box for students to choose from helps make this question accessible to all levels.

In the mark scheme, spelling is noted as not important and also that students are allowed to indicate their answer in the box, for instance circling it.

Question			Answer	Marks	Part marks and guidance	
1	(a)		isosceles	1		Condone poor spelling Accept any clear indication EG ringed in list

A02

Reason, interpret and communicate mathematically

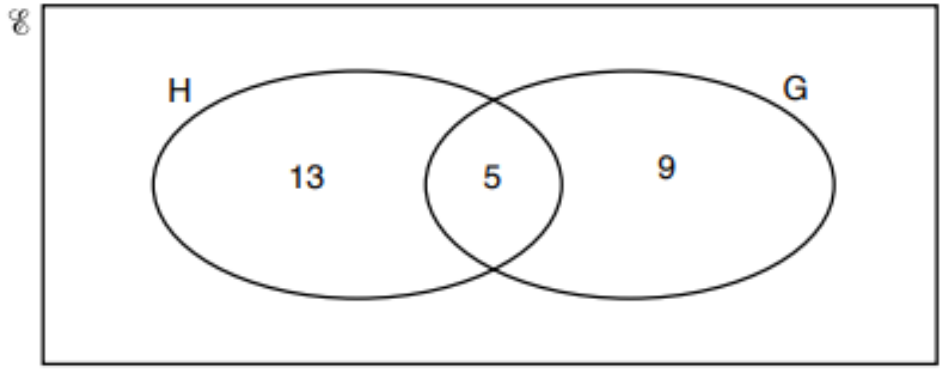
A02 Reason, interpret and communicate mathematically

		Weighting	
		Higher	Foundation
AO2	**Reason, interpret and communicate mathematically** Learners should be able to: • make deductions, inferences and draw conclusions from mathematical information • construct chains of reasoning to achieve a given result • interpret and communicate information accurately • present arguments and proofs • assess the validity of an argument and critically evaluate a given way of presenting information. Where problems require learners to 'use and apply standard techniques' or to independently 'solve problems' a proportion of those marks should be attributed to the corresponding Assessment objective.	30%	25%

What does it look like - A02

Foundation tier (non-calculator)

This question assesses AO2, requiring students to interpret the diagram.



There are 29 students in the tutor group.

(i) How many students in the tutor group do not study History or Geography?

(a)(i) ..... **[2]**

(ii) How many students in the tutor group study History?

(ii) ..... **[1]**

(iii) One of the 29 students is selected at random.

What is the probability that they study Geography but do not study History?

(iii) ..... **[1]**

A03

Solve problems within mathematics and in other contexts

A03 Solve problems within Mathematics and other contexts

		Weighting	
		Higher	Foundation
AO3	**Solve problems within mathematics and in other contexts** Learners should be able to: • translate problems in mathematical or non-mathematical contexts into a process or a series of mathematical processes • make and use connections between different parts of mathematics • interpret results in the context of the given problem • evaluate methods used and results obtained • evaluate solutions to identify how they may have been affected by assumptions made. Where problems require learners to 'use and apply standard techniques' or to 'reason, interpret and communicate mathematically' a proportion of those marks should be attributed to the corresponding Assessment objective.	30%	25%

What does it look like - A03

Foundation tier (calculator)

This question assesses multiple Assessment Objectives. It has some AO3 marks for translating a real life problem into a series of mathematical processes, some AO1 marks for mathematical working and some AO2 marks for presenting an argument.

11 A recipe for flapjacks uses only oats, butter and syrup, in the ratio 3 : 2 : 1.

(a) Pirin makes 1.5 kg of flapjacks.
He uses 600 g of butter.

Has Pirin followed this recipe?
Show how you decide.

'Show how you decide' indicates that students must include some justification for their answer.

The Mark Scheme

A mystery no more...

M1, A1, B1, oe, soi????...Decoding the mark scheme

Question			Answer	Marks	Part marks and guidance	
10	a	i	2	2	**M1** for 29 – (13 + 5 + 9) oe	
		ii	18	1		
		iii	$\frac{9}{29}$	1		Do not accept a ratio Do not accept eg 9 in 29

Always show working when you can

Generally... 1 or 2 marks - answer only and correct full marks .

3 marks or more - partial marks possible if a correct suitable method used.

Rough guide – if question is worth 4 marks, three will be related to the method being used, final answer worth 1 mark.

M1, A1, B1, oe, soi????...Decoding the mark scheme

7	(a)		$x < 4$	3	Mark final answer **M1** for $4x - 12 < x$ or $x - 3 < \frac{x}{4}$ **M1** for correct step[s] to $ax < b$ FT *their* first step	For method marks, condone incorrect inequality sign or 'equals' sign e.g. Answer $x = 4$, $x > 4$ implies M1M1
7	(b)		Correct representation of *their* (a) on number line	2	**Strict FT** *their* (a) dep on an inequality in (a) **B1FT** for *their* correct hollow or solid circle **B1FT** for *their* correct arrow direction	If e.g. 3 on answer line and $x < 3$ in working then allow FT from $x < 3$ If answer 4 in (a) then allow $x < 4$ here Both B1's must be with *their* value from part (a) If no arrow then *their* line must stretch to end of line

Marks via Follow Through (FT).

(FT) on mark scheme

- Marks can be awarded if correct method used following an incorrect previous answer.
- Figures or expressions that are being followed through are sometimes encompassed by single quotation marks after the word '*their*' for clarity

M1, A1, B1, oe, soi????...Decoding the mark scheme

Question			Answer	Marks	Part marks and guidance	
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		iii	$\frac{9}{29}$	1		Do not accept a ratio Do not accept eg 9 in 29

You will find some abbreviations being used.

Common in Mathematics:

- **oe** means or equivalent.
- **soi** means seen or implied
- **dep** means that the marks are dependent on the marks indicated. You must check that all the criteria specified for the mark to be awarded have been met.
- **nfww** means not from wrong working.

These, along with others, can also be found at the beginning of a mark scheme.

Literacy and Mathematics

Because we are more than just numbers...

Decoding the Question –

Command words (general usage)

Calculate, Find, Solve, Work out	Working may be necessary to answer the question, but no working needs to be shown unless otherwise specified.
Write down, Write	Neither working nor justification is required.
Complete, Insert	Add words, numbers, labels or plots to complete a sentence, statement, table, diagram or graph.
Use	The answer must use or refer to the information given in the question.
Choose, Circle, Select	Make a selection from the information provided.
Label, Mark, Identify	Indicate the specified location or response.

Decoding the Question

Command words (general usage)

Prove	Provide a formal mathematical argument that demonstrates the validity of the given statement.
Draw	Draw to an accuracy appropriate to the question.
Plot	Mark or draw a plot on squared or graph paper for a given range of values.
Sketch	Draw freehand the most important features of a curve or line. It does not have to be drawn to scale.
Show that	Provide structured evidence that leads to a given result. It is not sufficient to use the given value(s) to verify the result. The explanation must cover the argument with no omissions or incorrect work shown.

Decoding the Question

Command words (specific mathematical meaning)

Estimate	Check, without a calculator, the result of a calculation by using suitable approximations. OR Give a reasonable numeric value that can be justified by the information in the question.
Construct	Use mathematical instruments to draw accurately. Geometric instruments may be specified in the question. When constructing with compasses and a straight edge, show all of the arcs and lines that you use to make the construction.
Shade	Indicate, on a graph or a drawing, a region according to given conditions.
Enlarge, Rotate, Reflect, Translate	Carry out the requested transformation.
Expand, Multiply out	Multiply to remove brackets from a given expression to obtain an equivalent.
Factorise	Simplify a given expression by writing it as a product of two or more factors.

Decoding the Question

Command words (specific mathematical meaning)

Rearrange	Used with formulae, when students are requested to change the subject of a formula.
Round	Write values correct to the specific accuracy required.
Simplify	Make a given algebraic expression/fraction/ratio as simple as possible.
Solve by	Use the method specified in the question to solve an equation or inequality.
Write... in the form...	Manipulate a given algebraic expression/fraction/ratio into the specified form or provide an answer in a particular way e.g. when giving an exact answer as a surd.

How can we help?

Positive mindset, positive talk, we are in this together.

How can we help? – The Power of Positivity

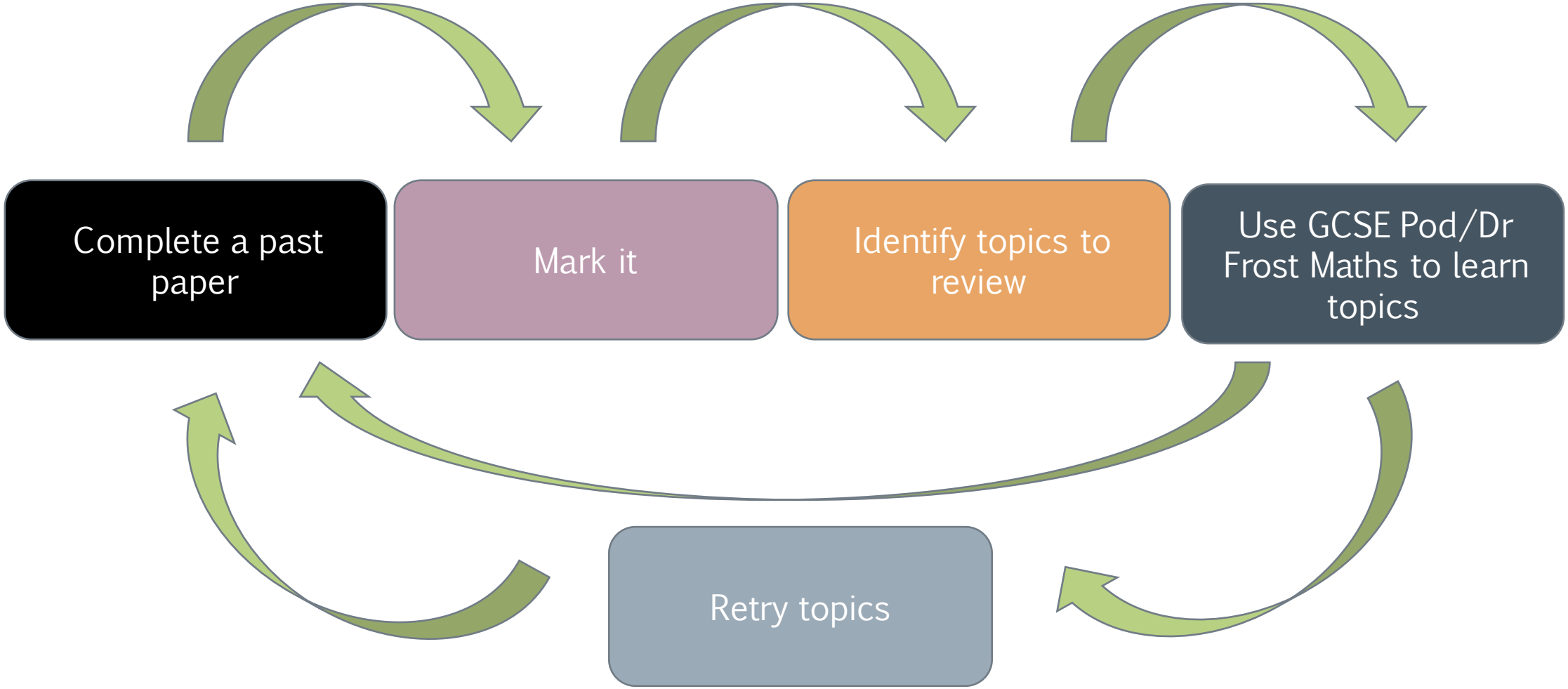
Reframe and Rephrase

I can't do it - I can't do it.....yet!

No mistake is silly - Avoid the avoidables

I'm not very good at Maths - I'm a mathematical improver

How can we help? – The 5 P's



How can we help? – Tackling the papers

Underlining key parts in the question

Solve things in small steps

Would a visual representation of the problem help

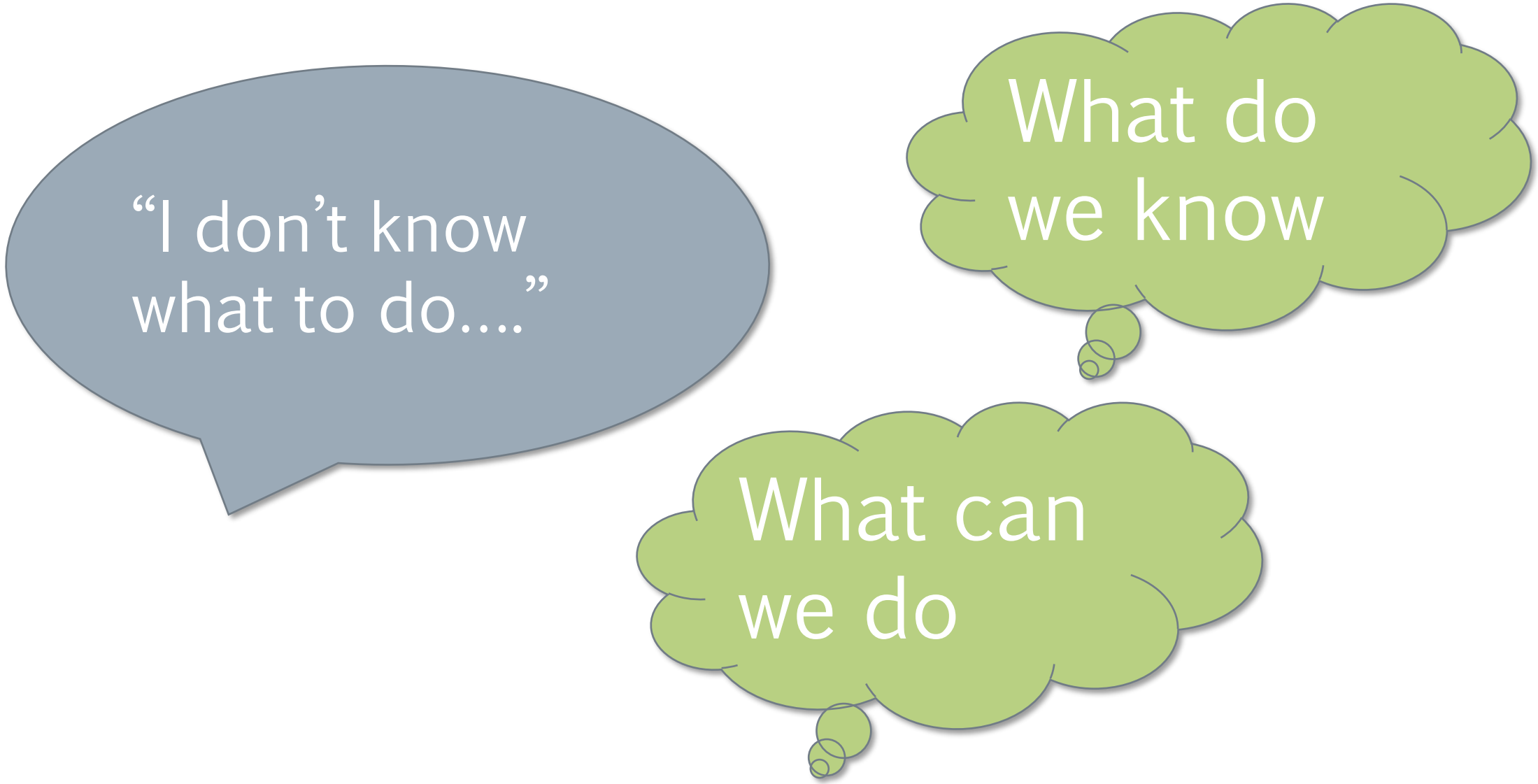
How can we help? – Tackling the papers

Break the main diagram into a series of mini problems

Working – Clear and logical structure

Has the question been answered

How can we help? – The Last Resort…



How can we help? – WDWK WCWD in action

12 Frankie goes on holiday.
They change £375 into euros (€) at a rate of £1 = €1.15.
They spend €217.49 of this money.
After the holiday, Frankie changes the remaining euros back into pounds at a rate of £1 = €1.28.

Work out how many pounds Frankie gets back.

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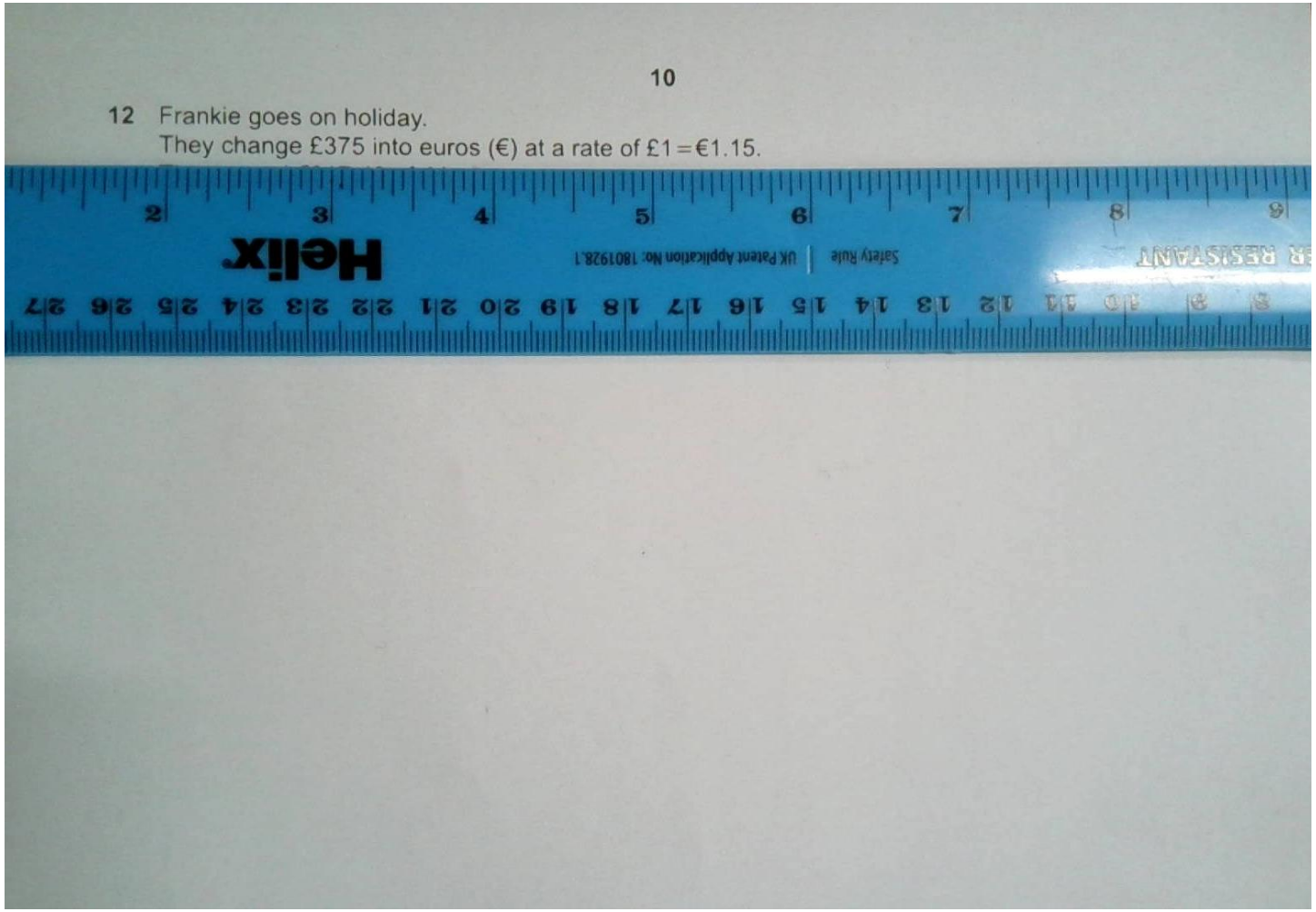

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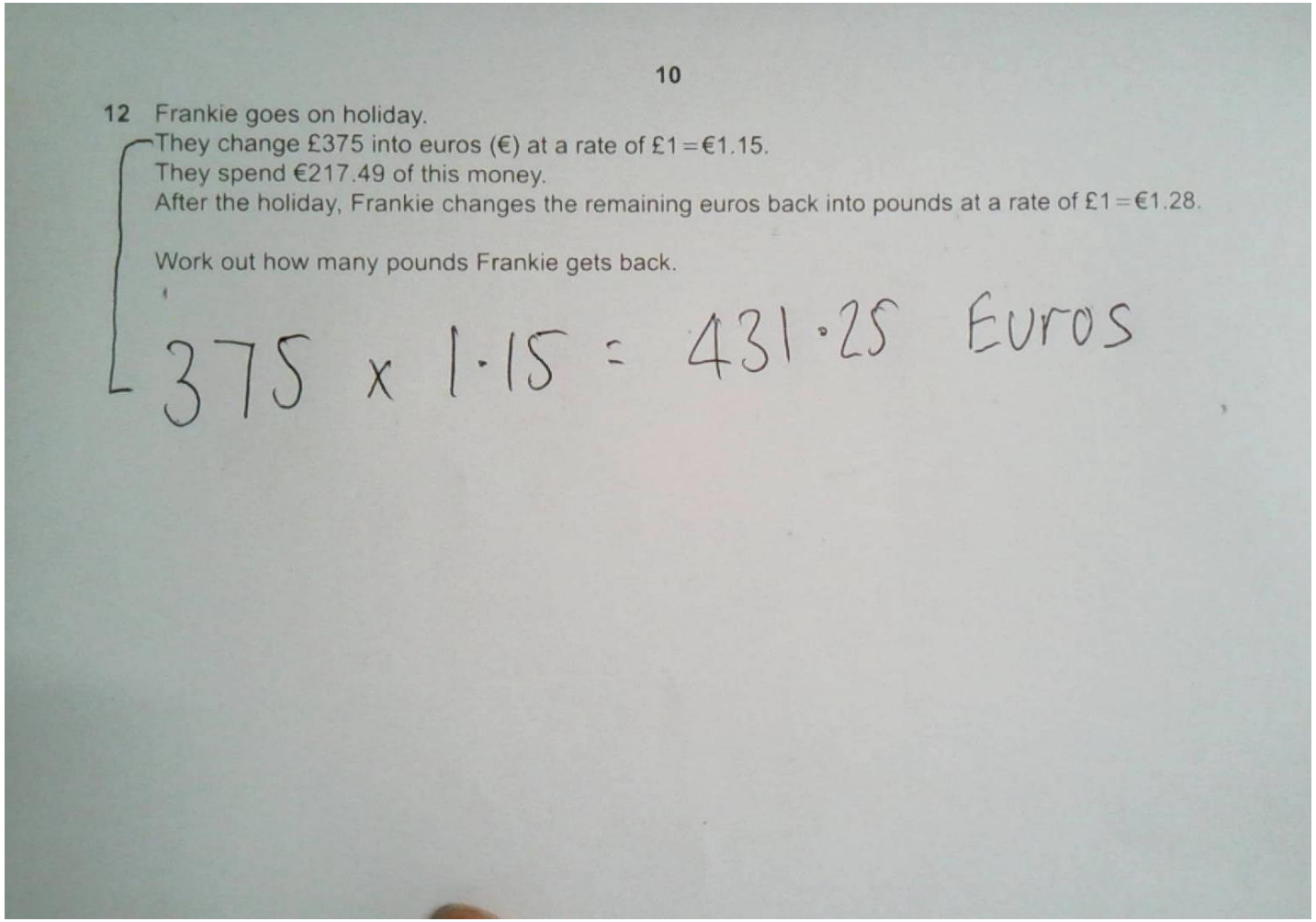

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375 x 1·15 = 431·25 Euros

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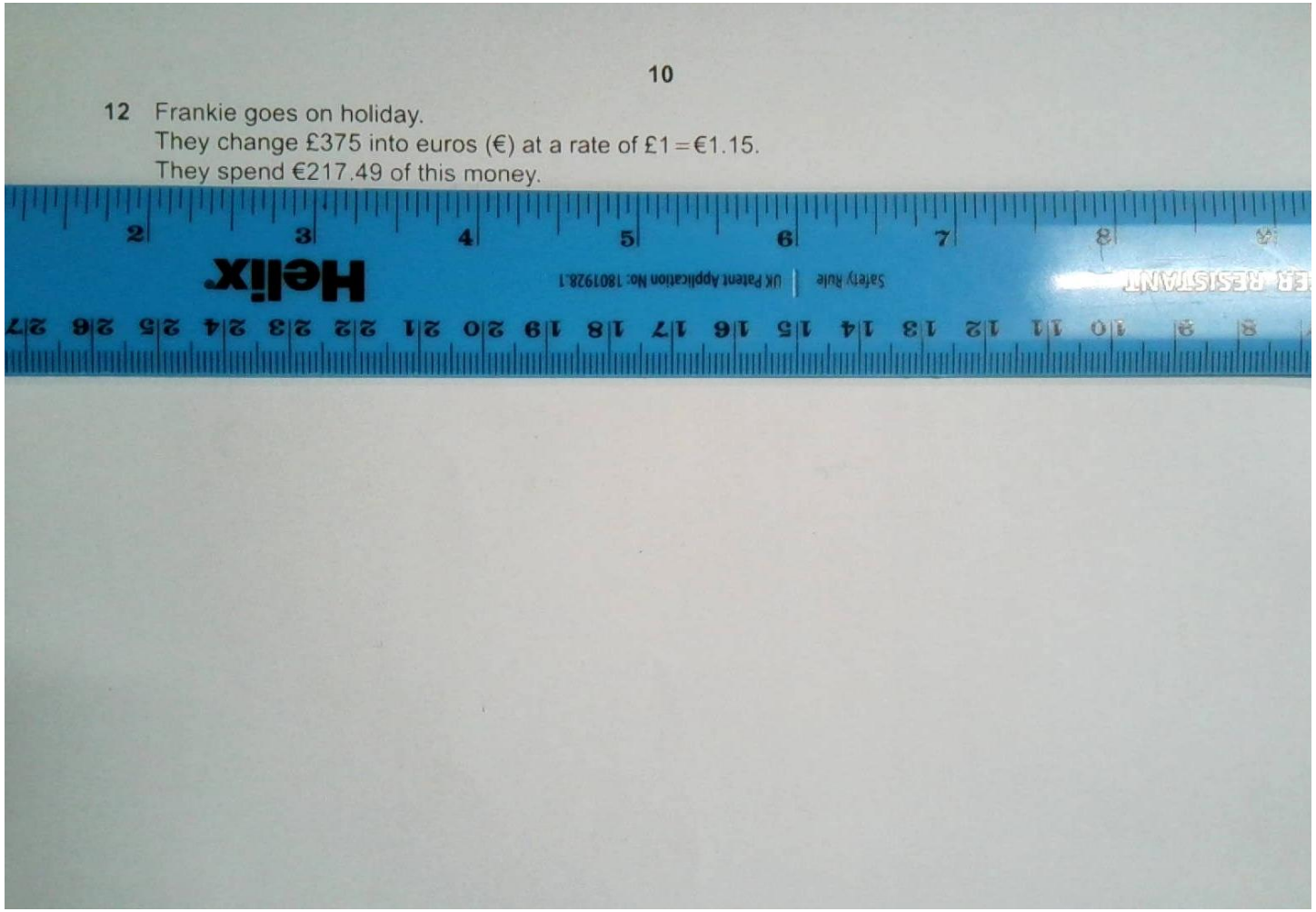

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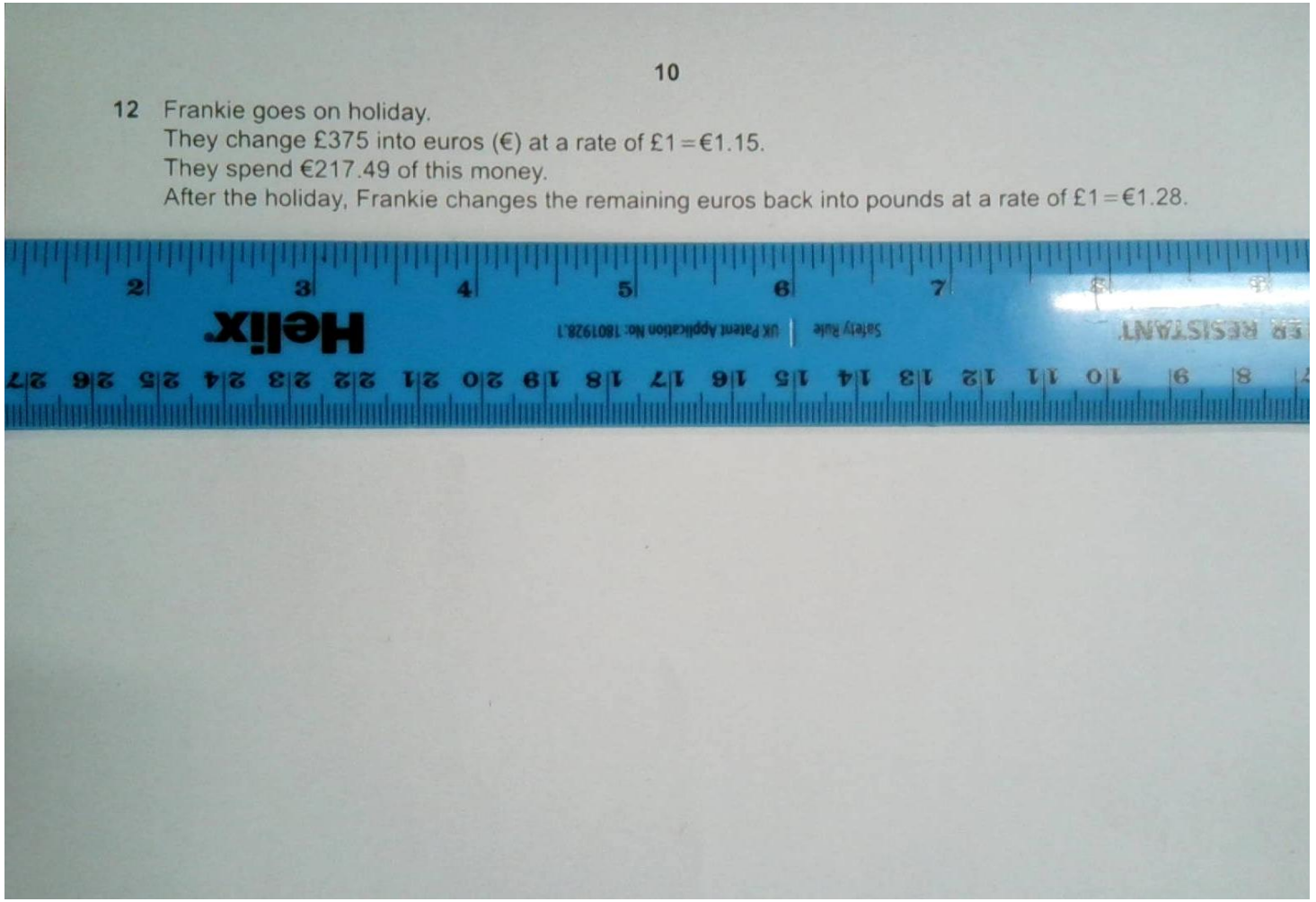

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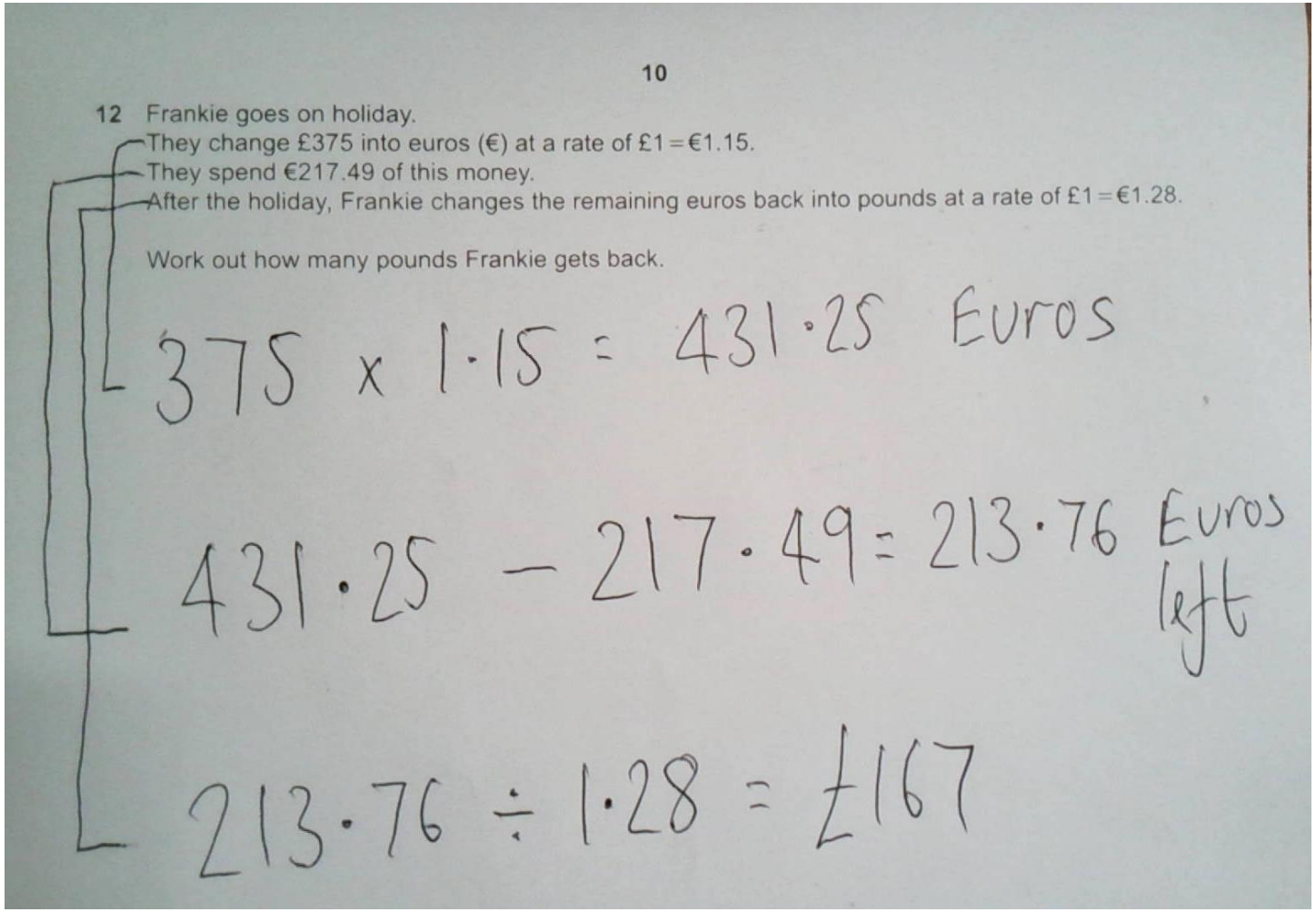

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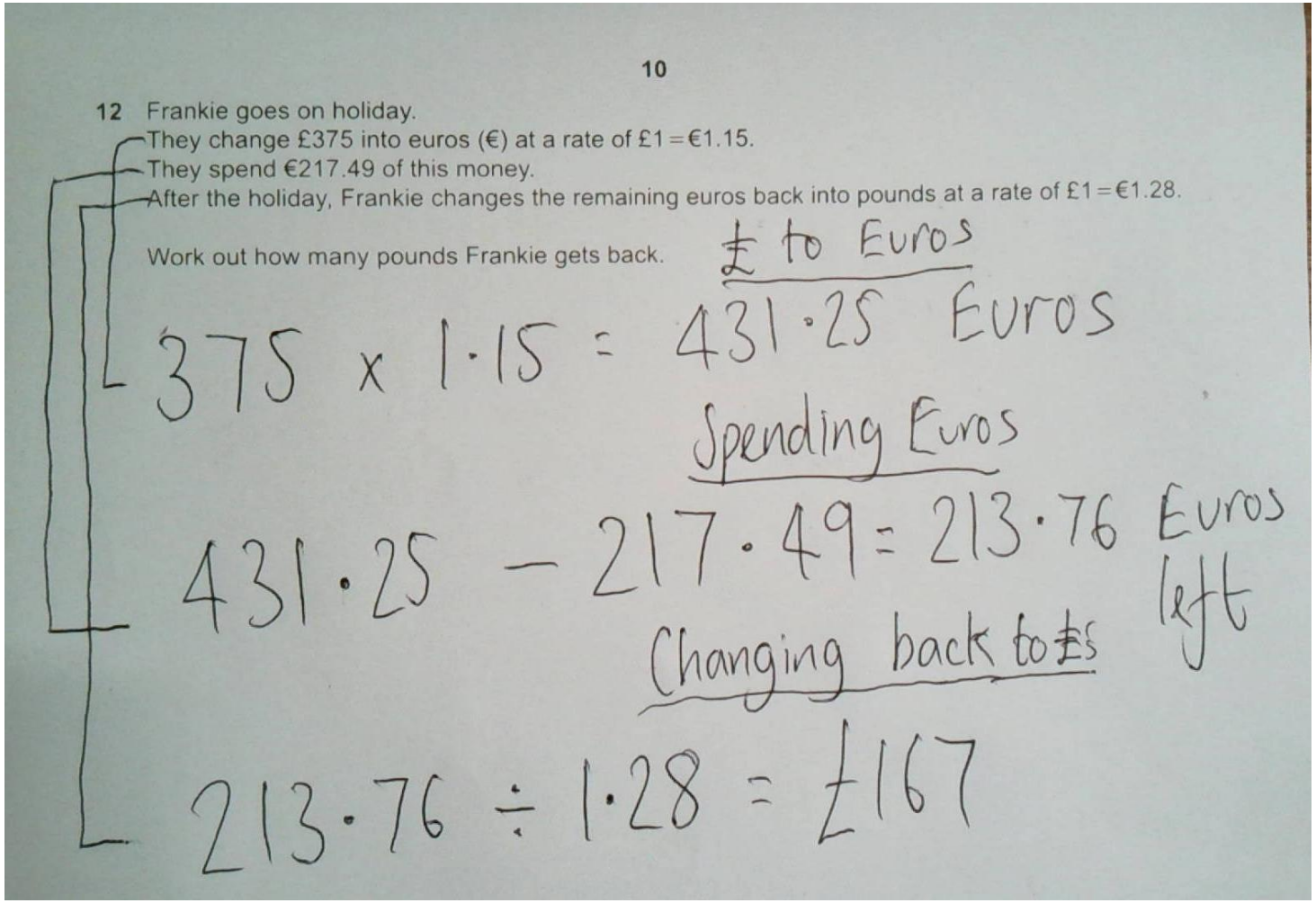
375 x 1·15 = 431·25 Euros

431·25 − 217·49 = 213·76 Euros left

213·76 ÷ 1·28 = £167

How can we help? – WDWK WCWD in action



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£ to Euros

375 x 1·15 = 431·25 Euros

Spending Euros

431·25 − 217·49 = 213·76 Euros left

Changing back to £s

213·76 ÷ 1·28 = £167

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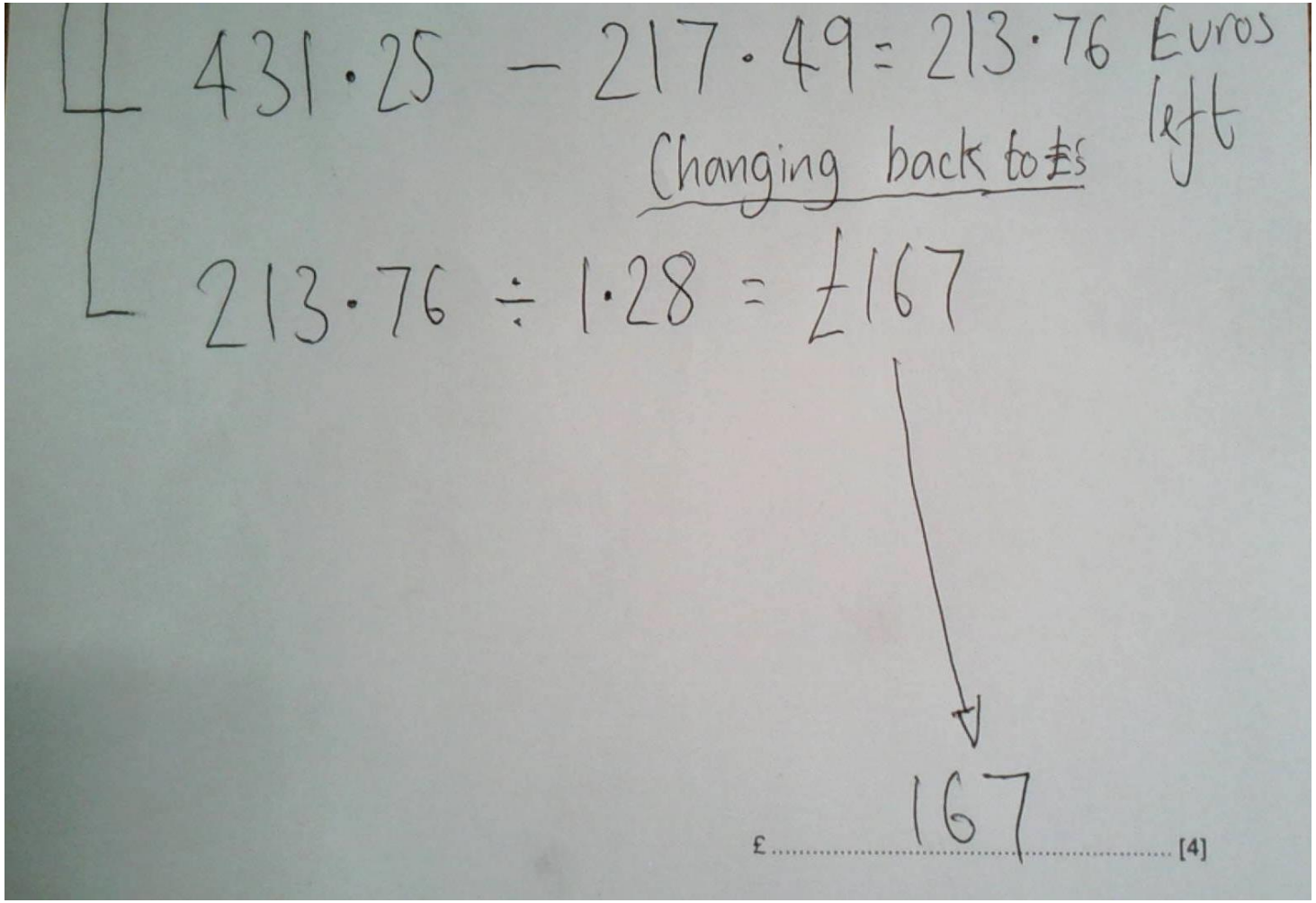

How can we help…..in between papers

- ‘Predicted’ paper (CorbettMaths)
- Positive mindset reinforcement

How can we help - Maths Matters at Diss

- Working on key areas from mock analysis
- Providing paper copies past papers
- Decoding
- Walk Talk Mark
- Dedicated Tuesday lunchtime support
- Past papers through Dr Frost (auto marked)

Useful Resources

Dr Frost Maths

- Digital curriculum model.
- Skills broken down into smaller sections.
- Topics recommended based on results.
- Additional resources - PowerPoints and worked example clips.
- Past Papers online.

DrFrostMaths.

Maths Genie

GCSE Revision section

- Topics by grade
- Video Tutorials
- Exam style questions and answers

GCSE Papers Section
- Edexcel/**OCR**/AQA

Resources section
- 45 min papers
- Mini tests
- Predicted Papers (During exams)

Maths Genie

Corbettmaths

Videos & Worksheets

- Does exactly what it says on the tin

GCSE Revision

- Ultimate Revision – Complete coverage with accompanying video, question booklet and answers
- Revision Checklists

Practice Papers

- 12 additional papers and model solutions

Corbettmaths

And of course…

GCSE POD !