CAMBRIDGE
International Education

Cambridge International AS & A Level

PSYCHOLOGY **9990/22**

Paper 2 Research methods **May/June 2025**

MARK SCHEME

Maximum Mark: 60

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the May/June 2025 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

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Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptions for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

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GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

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Social Science-Specific Marking Principles
(for point-based marking)

1 Components using point-based marking:

- Point marking is often used to reward knowledge, understanding and application of skills. We give credit where the candidate's answer shows relevant knowledge, understanding and application of skills in answering the question. We do not give credit where the answer shows confusion.

From this it follows that we:

a DO credit answers which are worded differently from the mark scheme if they clearly convey the same meaning (unless the mark scheme requires a specific term)
b DO credit alternative answers/examples which are not written in the mark scheme if they are correct
c DO credit answers where candidates give more than one correct answer in one prompt/numbered/scaffolded space where extended writing is required rather than list-type answers. For example, questions that require *n* reasons (e.g. State two reasons …).
d DO NOT credit answers simply for using a 'key term' unless that is all that is required. (Check for evidence it is understood and not used wrongly.)
e DO NOT credit answers which are obviously self-contradicting or trying to cover all possibilities
f DO NOT give further credit for what is effectively repetition of a correct point already credited unless the language itself is being tested. This applies equally to 'mirror statements' (i.e. polluted/not polluted).
g DO NOT require spellings to be correct, unless this is part of the test. However spellings of syllabus terms must allow for clear and unambiguous separation from other syllabus terms with which they may be confused (e.g. Corrasion/Corrosion)

2 Presentation of mark scheme:

- Slashes (/) or the word 'or' separate alternative ways of making the same point.
- Semi colons (;) bullet points (•) or figures in brackets (1) separate different points.
- Content in the answer column in brackets is for examiner information/context to clarify the marking but is not required to earn the mark (except Accounting syllabuses where they indicate negative numbers).

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3 Calculation questions:

- The mark scheme will show the steps in the most likely correct method(s), the mark for each step, the correct answer(s) and the mark for each answer
- If working/explanation is considered essential for full credit, this will be indicated in the question paper and in the mark scheme. In all other instances, the correct answer to a calculation should be given full credit, even if no supporting working is shown.
- Where the candidate uses a valid method which is not covered by the mark scheme, award equivalent marks for reaching equivalent stages.
- Where an answer makes use of a candidate's own incorrect figure from previous working, the 'own figure rule' applies: full marks will be given if a correct and complete method is used. Further guidance will be included in the mark scheme where necessary and any exceptions to this general principle will be noted.

4 Annotation:

- For point marking, ticks can be used to indicate correct answers and crosses can be used to indicate wrong answers. There is no direct relationship between ticks and marks. Ticks have no defined meaning for levels of response marking.
- For levels of response marking, the level awarded should be annotated on the script.
- Other annotations will be used by examiners as agreed during standardisation, and the meaning will be understood by all examiners who marked that paper.

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Annotations guidance for centres

Examiners use a system of annotations as a shorthand for communicating their marking decisions to one another. Examiners are trained during the standardisation process on how and when to use annotations. The purpose of annotations is to inform the standardisation and monitoring processes and guide the supervising examiners when they are checking the work of examiners within their team. The meaning of annotations and how they are used is specific to each component and is understood by all examiners who mark the component.

We publish annotations in our mark schemes to help centres understand the annotations they may see on copies of scripts. Note that there may not be a direct correlation between the number of annotations on a script and the mark awarded. Similarly, the use of an annotation may not be an indication of the quality of the response.

The annotations listed below were available to examiners marking this component in this series.

Annotations

Annotation	Meaning
	Correct point
	Incorrect point
BOD	Benefit of doubt
REP	Repetition (of stem or within response)
	Unclear point
GM	Generic mark
L1 L2 L3 L4 L5	Used to show Level 1, 2, 3, 4, or 5 in the 10-mark planning Q
NAQ	Not answering question

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Annotation	Meaning
SEEN	Acknowledge blank pages
^	Something is missing
a b c d	Used for each point of description of a required feature in the 10-mark planning Q

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Question	Answer	Marks	Guidance
1	**Explain how the independent variable (IV) was operationalised in the study by Andrade (doodling).** IV = 1 Detail = 1 Doodling or no doodling: (IV) [doodling **or not** = minimum] Whether Ps had paper and pen to doodle on/had paper with doodling shapes on (or not); (detail)	**2**	doodling and control = 0

Question	Answer	Marks	Guidance
2(a)	**In the study by Hassett et al. (monkey toy preferences), some of the data was displayed on graphs. This included a comparison of time spent playing with different types of toys by males and females.** **Name the type of graph used to display this data.** Name = 1 Bar chart/graph [DEFINITIVE]	**1**	

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Question	Answer	Marks	Guidance
2(b)	**Explain why this graph was a suitable way to display this data.** Explanation = 1 Detail or second explanation = 1 • Because male and female are discrete categories • So, you can compare males and females/plush and wheeled toys/data. • Because the vertical/x axis would be males and females/ plush and wheeled toys (explanation); and the horizontal axis/y axis would be the time taken (detail) = 2	**2**	

Question	Answer	Marks	Guidance
3(a)(i)	**In the study by Milgram, two types of data were collected to demonstrate obedience. One example of each type was:** • **voltage reached when the participant refused to continue** • **comments from the participants.** **For the example of 'voltage reached when the participant refused to continue':** **Identify this type of data**. Quantitative/objective data = 1 (DEFINITIVE)	**1**	

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Question	Answer	Marks	Guidance
3(a)(ii)	**State the highest voltage at which all participants obeyed.** 300 (v) = 1 [DEFINITIVE] Voltage level of **300** / e.g. obedient was 'stopping after **300** V'	**1**	
3(b)(i)	**For the example of 'comments from the participants'** **Identify this type of data.** Qualitative/subjective data = 1 (definitive)	**1**	

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Question	Answer	Marks	Guidance
3(b)(ii)	**Outline <u>one</u> of the comments made by a participant in this study.** [0124] I think he's trying to communicate, he's knocking. … Well it's not fair to shock the guy … these are terrific volts. I don't think this is very humane. … Oh, I can't go on with this; no, this isn't right. It's a hell of an experiment. The guy is suffering in there. No, I don't want to go on. This is crazy. [Subject refused to administer more shocks.] [0123] He's banging in there. I'm gonna chicken out. I'd like to continue, but I can't do that to a man. … I'm sorry I can't do that to a man. I'll hurt his heart. You take your check. … No really, I couldn't do it. behavior. In the post-experimental interviews subjects took pains to point out that they were not sadistic types, and that the laughter did not mean they enjoyed shocking the victim. Example of data from comments = 1 [does **not** have to be verbatim] • Participants asked if the victim was okay etc; • I think he's trying to communicate; • Well, it's not fair to shock the guy; • Oh, I can't go on with this; • The guy is suffering in there; • No, I don't want to go on; • I'm sorry I cannot do that to a man; • It'll hurt his heart;	**1**	Repetition of bullet point from question = 0 [**REP**] Accept as BOD "I don't want to continue anymore' as a variant of ai 'don't want to go on'. The teacher refused to give more shocks = 0 [**REP**]

Question	Answer	Marks	Guidance
3(c)	**Suggest <u>one</u> strength for each type of data in this study.** Strength of qualitative/quantitative data = 1 **<u>Link to the study</u>** for qualitative quantitative data = 1 **<u>Qualitative</u>** • Qualitative data gives a lot of detail / more informative/shows the thoughts/feelings behind their actions; (strength) • Participants showed their emotions in their comments; (link) **<u>Quantitative</u>** • Quantitative data can be compared/analysed easily/statistically; (strength) • It was easy to see that most Ps stopped at 300 V; (link) • The mode for disobedience was 300 V; (link) • This quantitative data was objective; (strength) • Participants with higher voltages were clearly more obedient; (link)	**4**	

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Question	Answer	Marks	Guidance
4	**In a study of learning, animals are taught to drop a small object into a hole.** **Suggest how 'learning' could be operationalised in this study.** 1 mark for operational definition. Accept full definitions of learning i.e. the process of acquiring of new skills /knowledge/behaviours through experience/being taught. = 1 • Their accuracy of getting the small object in the hole increases; • How many small objects go into the hole on each trial; • How fast they can get (10) small objects into the hole; • How many minutes it takes *before* they get small objects into the hole;	**1**	

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Question	Answer	Marks	Guidance
5	**In some studies, scientific equipment is used to measure variables, such as brain activity or eye movements.** **Suggest <u>two</u> weaknesses of using scientific equipment to measure variables.** Weakness = 1 (×2) Detail = 1 (×2) • Validity/distress/harm; (weakness) • People may be scared by the machines/being in an enclosed space/the noises that the machines make (weakness/detail) • So their behaviour may not represent what they would do in real life (detail) • Machine could be faulty without the researcher knowing; (weakness) • This could lower validity if it is not measuring the correct variable; (detail) • this could lower reliability if it is measuring inconsistently; (detail)	**4**	An example alone is not detail. The detail must explain the weakness. No mark for **just** term /validity/reliability/demand characteristics

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Question	Answer	Marks	Guidance
6	**Describe order effects, using any example(s).** 1 mark for each definition/point of detail, up to a maximum of 2 for either order, fatigue or practice effects. 1 mark for each example, max 2 for either fatigue or practice. Examples can include examples from any studies (core studies, other studies, candidate's own studies). Max 4 if no examples or if only about either fatigue or practice. Only 1 example needed to access 6 marks. ***Order effects:*** • are consequences of doing tests/tasks **more than once**/repeating tasks; (definition) • performance is affected by the **sequence** in which a task is presented (definition) • this will happen in a **repeated measures** design; (detail) or in a **longitudina**l study; (detail) an be controlled through **counterbalancing** (detail) ***Fatigue effects:*** • Performance on a task get worse with repetition; (detail) • Often due to boredom; (detail or embedded example) • It maybe that the participants are tired; (detail or could be an example if embedded) • ***practice effects****:* • Performance improves when repeating a task; (detail) • such as remembering the correct **answers to a test**; (example) • such as getting more **skilled** on a physical task; (example)	**6**	

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Question	Answer	Marks	Guidance
6	**Study examples** • **Dement & Kleitman**: **randomisation** of REM and nREM wakings for participant WD *so **less** risk of 'practise'* effects (example) • **Andrade** (independent measures but) **counterbalancing** used to avoid order effects between the names and places tests; (example) • **Perry**: rep measures repetitions in Expt 1/ Expt 2 (choosing rooms: distance between chairs etc) (example); • **Hölzel**: Rep measures - before and after eight-week MBSR intervention – **risk** of order effects on FFMQ; (example) • **Pozzulo:** randomized the position of the target in photos between participants so reduced order effects/order of video clips varied to reduce order effects (counterbalancing)		

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Question	Answer	Marks	Guidance
7(a)(i)	**Inma is observing one student at a time in the playground, to investigate how often each individual talks to other students. Inma is concerned about two uncontrolled variables:** • **a student being observed when few other students are present** • **a student with a headache may talk less**. **Explain which <u>one</u> of these is a participant variable.** 1 mark for **explanation** (no mark for identification) ***<u>(Having a headache might make students talk less)</u>*** • **because** a headache is **internal** / each **individual** is different / **individual** differences / their **body state** matters; (explanation)	**1**	Because having a headache might make them appear less friendly = 0 [**NAQ**]

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Question	Answer	Marks	Guidance
7(a)(ii)	**Suggest how Inma could limit the effect of the participant variable.** 1 mark for suggestion (can be solved by mitigation or elimination) 1 mark for detail Accept 2 brief ways for 2 marks (but must both be for the same variable) ***Participant variable: headache*** • Do more than one observation of each person; (suggestion) To make sure the data is representative of each student; (detail) • Ask students about their health **before/after the observation**; (suggestion) and remove them from the sample if they were unwell; (detail) • Observe them after they've had treatment for their headache (suggestion) To ensure that the results obtained are representative of their true behaviour (detail)	**2**	
7(b)(i)	Explain which **one** of these is a situational variable. 1 mark for explanation **(no mark for identification)** *(**Being observed when there are few students around**)* • **because** this is something **external** / in the **environment** (explanation)	**1**	

Question	Answer	Marks	Guidance
7(b)(ii)	**Suggest how Inma could limit the effect of the situational variable.** 1 mark for suggestion (can be solved by mitigation or elimination) 1 mark for detail Accept 2 brief ways for 2 marks (but must both be for the same variable) ***Situational variable: few students around*** • Limit the effect by collecting data when lots of students; (suggestion) e.g. when there are more than 50 students in the room; (detail) e.g. by using the end of lunchtime when the students have eaten so are in the common room; (detail) • Record in the corridor or playground; (suggestion) Because they are always crowded; (detail)	**2**	

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Question	Answer	Marks	Guidance
7(c)(i)	**Inma is also concerned about the effect of social desirability on her results.** **Suggest <u>one</u> way that social desirability could affect Inma's results.** 1 mark for identification of a possible source of social desirability in this study (generic or linked) 1 mark for effect on results (linked) **<u>Identification</u>** • The participants might become **aware of the aim**; (generic identification) • The participants might become **aware of the aim from Inma** only recording when the person talks; (linked identification) • The participants may want to **look good**/have a positive reaction and so change their behaviour (generic identification) **<u>Linked effect on results</u>** • This could lead them to **talk** more / less; (linked effect on results) • They might want to exaggerate the amount they **talk**; (linked effect on results)	**2**	

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Question	Answer	Marks	Guidance
7(c)(ii)	**Suggest how Inma might reduce the effect of social desirability on her results.** 1 mark for identification of a way to reduce social desirability (generic) 1 mark for detailed link Accept 2 brief ways for 2 marks (still need to be linked in some way • **Hide the aim** of the study; (generic) E.g. say they were observing studying; (linked detail) So, it is not obvious that it is a study about talking; (linked detail) • Making herself a **covert observer;** (generic) E.g. by pretending to be a new student / a cleaner; (linked detail)	**2**	

Question	Answer	Marks	Guidance
8(a)(i)	**Kong is interviewing people about friendliness. He tells his participants his study is about how they spend their free time. Kong uses two measures of friendliness:** • **timing the duration of eye contact between himself and each participant** • **asking the question 'Are you excited or scared at parties?'.** **State which measure of central tendency Kong should use to analyse his data from timing the duration of eye contact.** 1 mark for stating **mean** (definitive)	**1**	

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Question	Answer	Marks	Guidance
8(a)(ii)	**State which measure of central tendency Kong should use to analyse his data from asking participants 'Are you excited or scared at parties?'.** 1 mark for stating **mode** (definitive)	**1**	
8(b)(i)	**Kong's friend says that both of his measures of friendliness could be unethical, but for different reasons.** **Explain <u>one</u> reason why timing the duration of eye contact could break <u>one</u> ethical guideline.** 1 mark for identifying a reason, e.g. guideline 1 mark for linked detail related to the guideline. • **Consent**; (guideline) Kong said it was a study on free time and it isn't; (link) • **Consent/deception** (guideline) The participants would be aware that they were answering questions but would be unaware that they were being timed; (link) • **Protection from harm (guideline)** The experimenter *making* eye contact and seeing how long it is maintained may make the participant feel uncomfortable (link)	**2**	Accept any other reasonable applications

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Question	Answer	Marks	Guidance
8(b)(ii)	**Explain <u>one</u> reason why asking participants 'Are you excited or scared at parties?' could break <u>one</u> ethical guideline.** **You <u>must</u> use a different ethical guideline from your answer to part <u>(b)(i)</u>.** 1 mark for identifying **a different reason from b(i**), e.g. guideline but okay to explain the issue not state it 1 mark for **<u>linked detail related to the guideline.</u>** • **Protection from harm; (guideline)** Shy participants might find the question of whether they are scared embarrassing; (link) • **Privacy; (guideline)** They might believe their partying habits were too personal; (link) • **Consent/deception; (guideline)** Kong said it was a study on free time, and it isn't; (link)	**2**	Accept any other reasonable applications
8(c)	**Kong will use opportunity sampling.** **Outline what is meant by 'opportunity sampling', using Kong's study as an example.** 1 mark for outline of opportunity sampling 1 mark for linked example (naming Kong is enough) **<u>Outline</u>** • Opportunity sampling is finding participants who are available; (outline) • Gathering nearby participants / by convenience; (outline) **<u>Linked example</u>** • Kong could approach people in the street / at his school/at a park; (linked example)	**2**	

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Question	Answer	Marks	Guidance
9(a)	**Dr Shaw is planning a questionnaire about early childhood memories.** **There are <u>two</u> techniques for presenting a questionnaire to participants.** **Identify the <u>two</u> techniques.** 1 mark for identifying ×**2** (definitive) • Paper and pencil (accept 'written') • Online (accept 'by computer')	**2**	
9(b)	**For <u>one</u> of the questionnaire techniques that you identified in part <u>(a)</u>:** **Suggest <u>one</u> reason why this would be appropriate for Dr Shaw to use.** 1 mark for reason suggested 1 mark for detail <u>(linked)</u> ***Paper & pencil:*** • May feel more private; (reason) • Some **childhood memories** may be unpleasant; (linked detail) ***Online:*** • Participants don't have to bother to send it back/can sent it out to a wider sample of people; (reason) • So would get a more representative set of results about **childhood memories**; (linked detail)	**2**	

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>10(a)</td><td>

Dr Brent works in a busy hospital. There are noises from equipment and people on the wards. He thinks there might be a link between two variables:
- **how noisy wards are**
- **the quality of patients' sleep.**

Describe how Dr Brent could conduct a study to investigate whether there is a correlation between how noisy wards are and the quality of patients' sleep.

Do <u>not</u> describe sample/sampling technique or ethical issues/guidelines in your answer.

To mark Q10a, create four 'imaginary columns' down one margin, using one column for each of the four required features. Tick each feature (**tick-a, tick-b, tick-c, tick-d**) when it appears, then underline the letter (✓a) for **detail**.

Use L1, L2, L3, L4, L5 at the end of the response to indicate the **level**.
Use the table opposite to mark candidate responses to this question.

The four required features for this **correlational study** are:
(a) two co-variables (**quality of sleep** & level of **noise** on wards).
(b) measure of **variable 1** (sleep quality – **how measured i.e. questionnaire (scale)/EEG (time or stages)/interview (rating)**
(c) measure of **variable 2** (noise on wards – how **recorded i.e. decibel counter/questionnaire/rating scale**).
(d) nature of relationship (positive/negative, strong/weak linked to variables) and how could be presented (scattergraph)

Other appropriate responses should also be credited

</td><td>**10**</td><td>

Level	The response:
Level 5 9-10 marks	• has **all** the required features, **all** with <u>detail</u>, with mostly appropriate terminology. AND • *clearly applies* knowledge of methodology involved in planning this investigation.
Level 4 7–8 marks	• has **all** the required features, but only **some** of these with <u>detail</u>, with some appropriate terminology. AND • *applies* knowledge of methodology involved in planning this investigation.
Level 3 5–6 marks	• has **some** of the required features with <u>detail</u> / **all** of the required features with **<u>no</u>** <u>detail</u>, and some appropriate terminology. AND • *applies a basic* knowledge of methodology involved in planning this investigation**.**
Level 2 3–4 marks	• has at least **two** of the required features, with little appropriate terminology. AND • *attempts* to use knowledge of methodology involved in planning this investigation.

</td></tr>
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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>10(a)</td><td></td><td></td><td>
<table>
<tr><th>Level</th><th>The response:</th></tr>
<tr><td>Level 1
1–2 marks</td><td>• has one of the required features and uses little appropriate terminology.
AND
• makes a limited attempt to use knowledge of methodology involved in planning this investigation, e.g. may not use the method required by the question.</td></tr>
<tr><td>0
marks</td><td>No creditable response.</td></tr>
</table>
</td></tr>
<tr><td>10(b)</td><td>For <u>one</u> of the variables you have described in part <u>(a)</u>:

Explain <u>one</u> practical strength and <u>one</u> practical limitation in relation to this variable.

Identification of strength = 1
explanation (generic or linked) = 1
Part of procedure may relate to:
• operationalisation
• situational / participant variables
Accept other practical strengths

Identification of limitation = 1
explanation (generic or linked) = 1
Part of procedure may relate to:
• operationalisation
• situational / participant variables
Accept other practical limitations</td><td>4</td><td>If strength and limitation are about different variables, only one gains credit. Mark both and credit the best.</td></tr>
</table>

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