

2016 VCE Geography examination report

General comments

Students were able to use knowledge and skills learnt during the year to respond to questions in the 2016 Geography examination. Most students were able to answer questions using appropriate geographic language and within the allocated time, and most students attempted the whole paper. Many students showed a very good understanding of the study and were able to respond in depth to questions.

- Students are encouraged to read each question thoroughly, identifying and highlighting or noting key terms and directions in the questions.
- Students should avoid generalised statements, such as 'all plants and animals are dying and/or becoming extinct' and 'millions of refugees are moving to Germany from Syria', and focus on evidence-based discussion, utilising case studies learnt in class over Units 3 and 4.
- Students are encouraged to integrate relevant cross-study specifications in their responses; for example, demonstrating understanding of key geographical concepts.
- Students with a good knowledge of geographical skills showed a great depth of understanding in their responses.

Areas of strength

- evidence of a good understanding of the study and the ability to respond to each question in an appropriate way
- the ability to respond to questions with appropriate examples, case studies and evidence
- the ability to analyse data provided and utilise evidence from the data book
- the ability of the majority of students to answer most questions
- the confidence displayed by most students when using geographic language or geographic data

Areas of weakness

- A number of students did not provide evidence to support generalised statements, such as specific case studies or examples and specific data appropriate to the statement made.
- Some students were unclear how the cross-study specifications of key geographical concepts, geographical skills and fieldwork could be incorporated into a response. Students who were able to use the specifications successfully provided responses that had greater depth and showed a greater understanding of the question.
- Many students missed key directive words such as 'either', 'or' and 'compare'. They should be encouraged to highlight or underline these prior to responding to a question.
- There was some confusion with the distinction between a natural characteristic and a human characteristic.
- Students often did not provide the detail required to respond fully to a question and provided large list-type responses that were over-generalised.
- Students must have appropriate map-drawing equipment, such as coloured pencils for shading and fineliners for writing titles on the map. Many maps were not neat or accurate and thus were difficult to interpret.



Specific information

Note: Student responses reproduced in this report have not been corrected for grammar, spelling or factual information.

This report provides sample answers or an indication of what answers may have included. Unless otherwise stated, these are not intended to be exemplary or complete responses.

The statistics in this report may be subject to rounding resulting in a total more or less than 100 per cent.

Question 1a.

Marks	0	1	Average
%	28	72	0.7

The correct response was 828827.

Many students were able to correctly interpret the map to identify grid reference 828827 as the correct change in land use location and showed very good geographical skills. Students need to ensure that the cross-study specifications, such as using coordinate systems, are revised thoroughly.

Question 1b.

Marks	0	1	2	Average
%	28	34	38	1.1

In order to obtain full marks students needed to both clearly indicate an appropriate natural characteristic restricting land use change and use map evidence to show this. For example, a natural characteristic that restricted a change in land use in grid square 8383 was the mountain Tourelle du Tamarin. Map evidence needed to be indicated, such as the closeness of contours showing the land is too steep for most building and access.

The following are examples of high-scoring responses.

The natural characteristic of steep topography appears to have restricted land use change at Grid reference 8383. This is because the 10m contour lines are very close together, showing that it is $\frac{1}{2}$ way up a hill, with the elevation of 320m, thus making it difficult to build or develop.

The land use change has been restricted due to the steep mountain, this is evident from the contour lines being very close together on the topographic map.

Marks	0	1	2	3	4	Average
%	2	13	35	31	18	2.5

Students needed to describe one way in which the information from an example of spatial technology could assist in managing land use change. The spatial technology may have been satellite imaging but other types of spatial technology were acceptable.

Students needed to show an understanding of the spatial technology selected and then elaborate on the applications that assist in managing land use change. These may have included the impact over time, direction of change, scale of change, restrictions that could be made to changes,

Question 2

incursions on fragile environments, avoidance of land use conflicts and planning of infrastructure developments.

Students completed this question well and were able to explain how information is gained from spatial technology and how it could then be applied in the use of land management. Some students did not say what type of spatial technology they were talking about or how it could assist in managing land use; others gave very detailed accounts of how it could assist. The most common weakness was discussing only the applications of satellite imagery and not including discussion that showed that the student understood what satellite imagery was.

The following is an example of a high-scoring response.

Another spatial technology that can assist with management of land is the global position system which helps to locate position, hold, store and map information – this could assist by recognising which areas are the most likely to be susceptible to change in the future by its locating and analysing of land trends and information

Question 3

Students identified the location of their fieldwork. While no marks were awarded for this, setting a clear location that showed a clear and specific land use change allowed students to provide higher-scoring responses within questions. High-scoring responses identified a location that was specific and avoided larger regions that may have then been included when discussing interconnections.

Question 3a.

Marks	0	1	Average
%	19	81	0.8

Students needed to make a clear statement of the land use change that was investigated. Usually this included a from-to' succinct statement. No marks were awarded for an invalid land use change.

Most students were able to identify a land use change. High-scoring examples included the use of Phillip Island Nature Parks penguin parade and the change of the Summerlands housing estate to a penguin sanctuary, and changing land use from rural environments to urban developments.

In some cases the land use change was not clear. For example, stating a change in land use from a state park to a national park was not a clear statement of land use change. Students using such examples found it difficult to clearly describe the nuances of the land use change, which in the case of the change in name from a state park to a national park involves a change in land use from a park where forest resources are harvested to a park where resources are conserved and the primary land use is recreation and tourism. The focus of the student response needed to be on the change in land use and not simply a change in name.

Students did not need to identify specific land use classes; however, the inclusion of land use categorisation did help some students to structure their responses. For example, students could state a land use change from commercial to mixed-use, but equally appropriate was a stated change of mechanics or petrol station to apartments with restaurants.

The following are examples of high-scoring responses.

The land use change was from a residential development to a conservation zone.

Housing estate of 180 houses restored to a natural environment between 1985 and 2010.

Land use change from agricultural to residential, commercial and recreational.

Question 3b.

Marks	0	1	2	3	Average
%	24	15	29	32	1.7

Students needed to clearly outline a natural characteristic that influenced or is likely to influence future land use change.

A clear understanding of the influence of the natural characteristic on land use change was evident in higher-scoring responses. Some students incorrectly identified a human characteristic, such as population, as a natural characteristic.

Some correct responses focused on natural characteristics that were observed while on fieldwork and students were able to draw on their learnt knowledge to respond well. The connection between the natural characteristic outlined and the influence on land use change was not always clear, but responses that were able to refer directly to observations made during fieldwork generally showed a greater depth of understanding.

At times, students confused longer-term land use changes with the specific land use change that was being investigated for the outcome. While knowledge of change is important, a clear distinction between background history and the specific land use change being investigated must be clear.

The following is an example of a high-scoring response.

The natural characteristic of the penguin population influenced the land use change from a residential housing estate to a conservation region. In 1984 Peter Dann predicted that by 2000 there would not be any penguin population left in the region, greatly affecting tourism on the Island. This prompted the Cain government to announce a buyback scheme of houses in the estate to ensure that the little penguin population could be maintained in the future.

Question 3c.

Marks	0	1	2	3	4	Average
%	15	16	27	24	18	2.2

Students needed to identify an impact of the land use change on the surrounding region, provide a clear assessment of that impact (for example, 'This is a positive impact because ...') and elaborate on their statement to clearly assess the impact of the land use change on the surrounding region. Elaborations could include quantifications, justified value judgments and clear statements of evidence from the fieldwork.

Students were required to discuss only one impact of land use change and most students were able to identify one. Students found the assessment of this land use change more challenging. Responses needed to be in relation to the surrounding region, and not the fieldwork area itself.

Responses needed to clearly identify the impact on the surrounding region, as the distinction was not always evident. When the location of the fieldwork was a larger region, some students found it difficult to both identify and assess the impact of land use change and they often provided more generalised responses that could apply to any fieldwork of a similar nature. For example, students who used a larger region gave responses such as, 'The roads were more busy over time due to the residential development'; however, students who used a specific fieldwork area were able to

identify the impact of greater traffic congestion by reference to movement from and to the fieldwork site and often referred to fieldwork observations in doing so.

Higher-scoring responses were clear and concise, and they included quantification and classified the impact as positive or negative. Lower-scoring responses tended to discuss the surrounding region through a description of the impact and did not move toward assessing that impact.

The following is an example of a high-scoring response.

One impact of land use change at Summerland's that impacted surrounding regions was an increase in the tourism industry. With construction of places such as the Nobbie's observation Centre and penguin parade, more tourists are drawn to the area and spend a lot more money, contribution to 5,000 new jobs in the area and 12.4% of GDP of Phillip Island created by tourism.

Question 4a.

Marks	0	1	2	3	Average
%	7	12	21	59	2.3

Responses needed to correctly name and map the selected location, as well as correctly use geographic conventions (BOLTSS), as stipulated in the cross-study specifications.

Most students were able to use geographic conventions well to identify a location where deforestation or desertification occurred; however, many responses were missing a key component, for example, the correct location or a title that indicated the process being mapped.

Some students provided a map of the global distribution of the process (desertification or deforestation). They used valuable time to complete this, when it was not required, indicating the need for students to clearly read the question and make better use of reading time, in order to have a clear understanding of the requirements of a question.

Many students completed their map using thick markers and highlighters, rather than more appropriate pencils and fineliners. Students are expected to be prepared to utilise the geographical skill of map creation in a Geography examination, but many were not prepared. Use of coloured pencils would have helped some responses to show the selected location clearly.

Some responses displayed a lack of mapping skills, evident through poorly shaded maps and unclear legends. Students should be encouraged to use a range of colours to identify a clear legend and should also ensure all maps have a title. Some students confused their location, particularly when attempting to identify a country or larger region in Africa, indicating poor preparation of a map that could be applied to specific questions.

Question 4b.

Marks	0	1	2	3	4	5	6	7	8	9	10	11	12	Average
%	4	4	7	11	12	12	13	10	8	7	5	3	3	5.6

This question required students to describe one impact on each of the environment, economic activity and social conditions of their selected process at the specific location mapped.

Knowledge of the underlying process was important, as was an understanding of humans influencing the rate and distributions of the process. Some students identified only the process and not the impact of this process on the selected location; for example, providing a detailed description of the process of desertification and not detailing the impact of desertification at the

location. Students needed to take time to clearly identify key components of the question, highlighting what was required, rather than simply responding with all that they know about the process.

Discussion of only one impact at the location was required. The response needed to provide an elaboration of the impact, such as the use of data in providing evidence. Higher-scoring responses showed a thoroughness of understanding of the specific impact in each category. Student responses varied from over-generalised to very specific descriptions of the impact, indicating sound knowledge of the case studies. Higher-scoring responses were supported by quantification and/or discussion of interconnections.

Many students were able to state or provide a list of a range of impacts but were not able to elaborate with the use of evidence of **one** impact at the specific location mapped. For example, for the loss of biodiversity in Borneo, students needed to elaborate on just one impact (such as the economic gain from the use of palm oil in Borneo) at the location, rather than providing a range of impacts.

Other students were able to provide general and/or globalised statements about the impact of the process, such as a loss of biodiversity, loss of soil fertility or increased population pressure, which could apply to either of the processes, but then could not provide evidence of this at the specific location mapped.

While there was some interconnection between each component of the environment, economic activity, and social conditions, some students attempted to use the same generalised examples for each, not clearly identifying the impact in relation to the specific component.

Environment

The following is an example of a high-scoring response.

As deforestation removed habitat of local species such as the orangutan and therefore it is negatively impacting the environment. Deforestation in Borneo, sees 50 orangutans die each week as a direct result of deforestation ... The world wildlife fund (WWF) predicts, that at this rate, the last 50,000 orangutans in the wild, will be extinct in the next 20 year. Therefore, deforestation is removing natural habitats of this endangered species and is negatively impacting on the environment.

Economic activity

The following is an example of a high-scoring response.

Russian forestry industry contributes \$9.2 billion USD to the Russian economy each year. It provides over 500,000 jobs to the Russian people and is a major source of employment for the country.

Social conditions

The following is an example of a high-scoring response.

Numerous women work in palm oil plantations (those typically located on deforested land) without adequate protective gear. As these women are exposed to harmful chemicals, they are at risk of severe health risks, due to the lack of protective gear. These health risks are both short and long term and range from headaches and nose-bleeds to heart attacks in the more severe and rare causes. Therefore socially, there are negative impacts for the people of Borneo to deforestation.

Question 5

Marks	0	1	2	3	4	5	6	7	8	9	10	Average
%	15	7	9	14	15	14	10	8	4	1	1	3.8

This question required students to state an appropriate criterion that could be used to evaluate the effectiveness of a global response to the process of melting glaciers and melting ice sheets.

Responses required a clear outline of what the criterion was and how it was appropriate. Students could use a wide range of criteria, including whether targets for specific programs and/or objectives were met, utilising the United Nations' Three Pillars of Sustainability, and considering whether melting had been curbed. Students needed to use only one criterion.

Answers required an outline of what the global response was, other than simply stating a name of a global response. Global responses may have included, but were not limited to, any of IPCC reports, the Marrakesh Accord, World Global Glacial Monitoring Service, the Paris Convention 2015, UNEP and public awareness campaigns. Detailed responses provided an elaboration of the statement of what the response was and what was agreed on, not just a mention of a report or meeting or campaign.

Students then needed to evaluate the effectiveness of the response in line with the criterion outlined and show a thoroughness of understanding of just how effective the response was. This could have been done through elaborations including evidence, examples, data and/or case studies.

While many students struggled with the depth required for this question, students were generally able to describe a global response to the process very well, utilising a range of elaborations (data, evidence, examples, case studies) to do this.

Many responses provided a wealth of detail about the **process** of melting glaciers and melting ice sheets, which was not required in the discussion. Again, this highlights the need for students to respond directly to the question posed.

Higher-scoring responses addressed all the requirements by looking at a global response, used criterion to evaluate it, and then linked that evaluation back to the effect on melting polar ice caps; however, many responses failed to identify a clear criterion by which to evaluate the effectiveness, and some students provided a simplified discussion stating that the response was not effective as glaciers and ice sheets were still melting, without providing specific evidence or elaborations.

The following is an extract from a high-scoring response.

A global response to the melting of glaciers and ice sheets is the Kyoto protocol. In order to evaluate this protocol, it should be seen how many countries reached their emission targets and if the melting has been curbed.

The overall aim was to achieve a reduction in the emission of green house gases, thereby helping to slow or reduce the effects of climate change. One of the main causes of melting glaciers and ice-sheets is the rising temperatures associated with climate change, therefore achieving the aims of this protocol would help in reducing the levels of melting.

In 2011, some parts of were on track to realise their goals. One such area was the countries a part of the European Union. However, big polluters such as China and the US were falling behind and did not look like they were going to meet targets.

In the future though this may change. These new targets may help in ensuring that greenhouse gas emissions are continually reduced into the future.

Overall, the Kyoto protocol has not been completely effective with large polluters failing to meet targets and continued unprecedented melting of glaciers and ice sheets.

Question 6

Marks	0	1	2	3	4	5	Average
%	6	10	11	20	22	30	3.3

There were a range of approaches to appropriately responding to this question, and many students were able to describe the changes in crude birth and death rates very well.

One approach was to describe the overall change (that both rates have lowered), then describe and quantify both the crude birth and crude death rates in 1986, followed with changes that have occurred in 2016. Another approach was to identify the change of a downward shift in both rates from 1986 to 2016 and provide quantification for this. Description of spreads and clusters could then be stated, too. Elaborations on the data, not explanations, needed to be included. Exceptions to general trends, with accompanying specific reference to the graph, could be included in responses.

Most students were able to describe the data to some extent, with many providing great detail for at least one date. The question required students to focus on change – that is, the change in both crude birth rate and crude death rate from 1986 to 2016 with specific reference to data on the graph – and some students did not provide specific evidence or they explained why the changes occurred. Explanations were not asked for and did not receive any marks.

The following is an example of a high-scoring response.

Between 1986 and 2016, crude death and birth rates have decreased. In 1986 the highest crude death rate was approx. 27 per 1000 people per year in 35 selected countries. In 2016 the highest death rate had dramatically decreased to 14. The same pattern occurred for crude birth rates, with in 1986 the highest being 57, and the highest rate decreasing to 45 in 2016. In 2016 the lowest death rate was 10, which was equal with the 1986 rate of 10. In 2016 the lowest birth rates was 8, being lower than the 1986 rate of 10. However overall crude and birth rates have decreased between the time period.

Question 7

Responses to this question varied according to the specific country chosen – for example, Japan, with an ageing population.

Question 7a.

Marks	0	1	2	3	4	5	6	Average
%	4	8	17	23	23	14	12	3.5

The question required students to consider the significance of an issue and challenge being faced by the population within the country identified. Students needed to describe the nature of the issue faced by the country by stating the issue, elaborating on the nature of the issue, and providing evidence, data or examples to support the discussion. The challenge to the population needed to be addressed with a statement of what the challenge was and an elaboration on the nature of the challenge in relation to the specific country chosen. Elaborations could have included specific examples, case studies, data and other pertinent evidence that highlighted the population challenge.

Many students were able to talk in general terms about the nature of an issue and challenge but did not provide elaborations directly related to the issue and challenge.

The following is an example of a high-scoring response.

Kenya – Youthful

Due to this youthful population holding a high total fertility (approximately 4.3 in 2010) there is a high dependency ratio for the youth. Life expectancy (64 years of age, with a smaller proportion of elder people combined with this youth has resulted in pressures being placed on the government to provide education as well as child health care and hospitals to minimise maternal mortalities – which are already high. As a result of this high dependency ratio, Kenya's economic activity and GDP is at a low, with many too young to work and support, striking poverty into this population. With this, the country has had little development, with crime, civil disrupt and poor sanitation being prevalent. With little economic activity and contributions from workers, the government's limited finance has seen little improvement. Also, associated with this greater youth and poverty comes high illiteracy rates.

Question 7b.

Marks	0	1	2	3	4	5	Average
%	46	16	15	13	7	4	1.3

This question required students to consider the world regional context of the issue and challenge outlined in Question 7a. There were several approaches to outlining the world regional context of the population usage and challenge; for example, describing similarities and differences.

Many students were unable to respond to this question and outline the world regional context of the issue described in Question 7a. This emphasises a need for greater depth of understanding on this component of the study. World regional context could be interpreted in a broad sense, allowing for a range of regional descriptions.

Question 7c.

Marks	0	1	2	3	4	5	6	Average
%	3	4	13	14	28	18	19	3.9

This question required students to outline two strategies developed within the country chosen that directly addressed the population issue and challenge discussed in previous parts of Question 7. Students were required to provide a supporting explanation of each strategy via elaborations such as specific detail about how the strategy addresses the population issue and/or data related to the strategy.

While many students were able to name a specific strategy, a few students could not provide more detail via an explanation of the strategy. Some students outlined a strategy that did not directly relate to the population issue and challenge discussed. For example, using the impact of a disease such as HIV/AIDS on a population when discussing issues and challenges related to a growing population was not directly relevant and students found it difficult to address the question explicitly. Lower-scoring students wrote generalised statements regarding a strategy, with no supporting evidence, elaborations or explanation.

Some students attempted an evaluation of the strategies, which was not required. This meant that students used valuable time re-stating the evaluative component in the next question and for some students it meant that their responses did not provide enough supporting elaboration on the strategy to obtain full marks. Making good use of reading time, followed by highlighting or underlining key components of a question, is essential.

The following is an example of a high-scoring response.

"Agenda 2010" is a policy established in 2003 by the German Government to reduce detrimental economic impacts of the ageing population through planning to increase retirement age to 67 by 2030 and changing employment legislation to make it easier for companies to hire and fire employees. "Family friendly measures" is a policy established in 2011 by the German government to increase birth and total fertility rates, through various economic incentives as paying "Kindergatengeld", 'child money', to support parents with children up to 18 years old, or up to 24 years if they are studying at universities.

Question 7d.

Marks	0	1	2	3	4	5	6	Average
%	6	7	14	19	22	16	15	3.5

This question required students to compare the effectiveness of each strategy developed in response to the population issue and challenge outlined in Question 7a.–7c. Students were required to provide a statement of effectiveness for both strategies, with some elaboration, make comparative statements about the strategies, and provide some use of data to support the discussion. The response required some justification of the position taken, including elaborations as to why one strategy has been more effective than another, with use of data to support discussion.

Many students moved towards evaluative statements in their response but many were not able to provide elaboration or data related to the effectiveness of either strategy. This made comparison difficult for these students.

Some students spoke in generalisations of strategies being effective or not without any corroborating evidence to support their statement. Effectiveness of a strategy can be ascertained through the identification of goals and objectives and whether or not these are being met and/or whether there was an impact on the population issue and challenge (for example, birth rates increasing or decreasing).

Some students discussed strategies that were very new and hence had very little evidence to support the effectiveness of the strategy. In this case students found it difficult to make comparative statements.

The following is an example of a high-scoring response.

The New Angel Plan can be observed to be relatively ineffective as due to a lack of funding, the goal of 60,000 childcare centers was not reached, as well as this, 25,000 children are still on child care waiting lists and for those who are in child care, average cost are between \$1000 and \$1500 monthly. Konkatsu can also be seen as relatively ineffective as since 2007, the fertility rate has remained unchanged at 1.3 and the population is continuing to be predicted to halve from 126 million to 88 million by 2060. Although both strategies can be seen as ineffective, it can be concluded that had Konkastsu been funded for more than 12 months, it may have been more effective of the two programs. As it addressed the prominent factor that many singles are

unable to meet people due to long work hours and many remaining living with their parents past the age of 30.

Question 8a.

Marks	0	1	2	3	4	5	6	Average
%	2	6	19	31	26	10	6	3.3

This question required students to provide a general statement of the reason why large numbers of people have moved across international boundaries. Students then needed to address the movement in terms of specific origins and destinations in explaining one reason why the movement had occurred. Only one reason was required, with a focus on the associated push factor at the origin for the movement and then the associated pull factor.

Many students were able to describe a range of generalised push and pull factors for the movement in a list-type format, with the war in Syria being the most prominent in responses; however, in explaining the movement, students struggled to expand their explanation with specific reference to origins and destinations. Students could refer to a range of either origins or destinations but needed to provide detailed discussion based on core studies on one reason why the movement had occurred. For example, the unprecedented movement of refugees from Syria involved the push factor of war/conflict at the origin to locations of safety (both in terms of politics and economics), such as countries within the EU (for example, Germany, Italy, Hungary and Romania), with refugees making dangerous movement through a range of countries and/or crossing the Mediterranean Sea via countries in Northern Africa. The complexity of the movement was required to be discussed and many students did not show a detailed understanding of a case study in their discussion; for example, focusing on the movement of migrants from Syria to Germany in a simplistic discussion rather than a detailed explanation.

Some students described internal migration movement, which was incorrect. Highlighting the key directive terms of a question may help to avoid misreading a question.

The following is an example of a high-scoring response.

In the first six months of 2015 almost 900,000 people travelled across the Mediterranean Sea from the Middle East and Africa to Europe. Almost all of these people were partaking in forced migration, where they were fleeing from conflict into safer countries. Escalating conflicts in Syria, Afghanistan, and Iraq have left thousands without homes and without the prospect of living a fulfilling life. With destroyed environments and lacking economic opportunity they decided to flee, thus becoming refugees, to better countries. They choose to take the dangerous journey through the Mediterranean Sea where many boats capsized and hundreds drowned, in order to reach their perceived safe havens with many pull factors like stable governments, lack of conflict, and greater employment and economic opportunity. Such countries included Greece, who had troubles of it's own, and had to find a place for 100,000 refugees. The reason for the move was almost always because of conflict in the origin country.

Question 8b.

Marks	0	1	2	3	4	5	6	Average
%	10	15	24	23	16	6	5	2.6

Students could respond to this question by using the case study covered in Question 8a. but this was not a requirement. The movement discussion could have focused on internal or international

movement or a combination of both. Students were required to discuss the significance of the population movement at either the origin or the destination.

Higher-scoring responses were based on specific case studies or examples of movement. While the approach to the response could be varied, students needed to discuss the movement, i.e. from where to where, and then discuss the significance of the movement through elaborations such as major and/or minor impacts, positives and negatives, benefits and drawbacks, advantages and disadvantages, supporting data and evidence.

While some students provided excellent case study-based responses, a number found it difficult to go beyond a simplified discussion or were very general in their approach and their response lacked supporting evidence.

Some students attempted to discuss the significance of the movement at both the origin and destination, highlighting the need to identify the key directive term within the question.

The following is an example of a high-scoring response.

Large numbers of migrants leaving a national generally causes a gap or hole in the population dynamics which may in turn lead to a sooner ageing population or even an increase in dependency ratio, especially if it is the working population that wish to migrate. These issues then faced by an increased dependency ratio must be resolved by the government. Hence extra pressure is placed on the government to fund the elderly and provide sufficient financial support. In turn the national economy is also affected as more money is devoted to support pensions meaning economic growth decreases.