

# INVESTIGATION PROCESS

## CAN WE TRUST MAPS?

*All materials adapted from Inquiry: A Source-based Approach to Modern History, by Brian Hoeppe*

Despite their varied uses in everyday life, maps can be affected by a range of perspectives. This means at times we need to consider their representation carefully.

### SOURCE A

**The Mercator Map Projection: 1569 by the Flemish cartographer Gerardus Mercator**



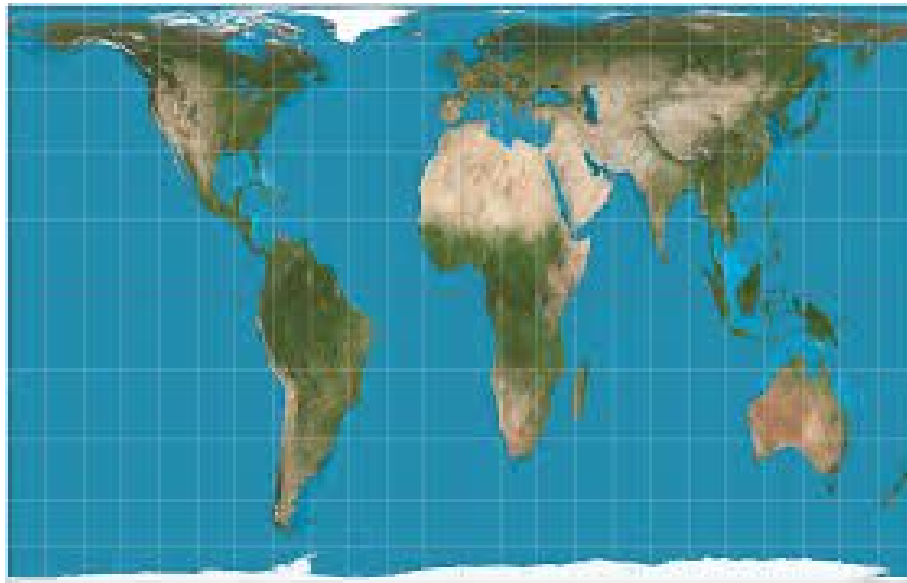
Based on **Source A**, discuss the advantages and disadvantages of the Mercator projection:

The Mercator projection is a surpassing map for navigation and has the accurate shapes for most countries, however, it distorts the size of imperial powers to make them seem larger than they actually are. The Mercator map projection was created in the year, 1569 to help explorers or people, in general, to be able to travel in the new world. An advantage the Mercator's projection provides is that when "were mostly focused on producing world maps that were descriptive, rather than functional." Mercator was different. This means that his projection was more relatable and functional -showing directions-, unlike other's which are more descriptive. (Wired). Another advantage is that Mercator's projection has the correct configurations for most countries. This shows that the shape of Africa, South America, radically all the continents is correct. However, Mercator has some downsides too. One disadvantage is that the projection has put an excessive amount of gap between the latitudes north of the 60° latitude and latitudes south of the 40° latitude causing the land present in those areas being enlarged. And the countries present between the latitudes 40° and 35° are compressed to a smaller size. This implies, the sizes of many countries -essentially the one present near the equator- are supposed to be bigger. For instance, South America is supposed to be twice the size of Europe. (Business Insider) Another disadvantage is that having only increased the size of imperial powers such as North America and

Europe, makes the projection seem a little racist. This proves Mercator's projection is certainly not a descriptive as it can give the wrong idea. To sum it all, the Mercator's projection is not exactly perfect, even though it is very suitable for navigators and shows accurate shapes it does not show the correct sizes and is a little racist.

## SOURCE B

### The Gall-Peters projection, 1974



Based on **Source B**, discuss the advantages and disadvantages of the Gall-Peters projection:

The Gall-Peters projection is an outstanding map for it shows accurate sizes of countries, nevertheless displays incorrect shapes of the countries. The Gall-Peters map projection was created in 1569 for showing how the Earth looks in a 2-dimensional form. One advantage the Peters projection has is that it "immediately cuts US, Britain and Europe down to size". (The Indian Express) In other words, the Peters projection shows the accurate sizes of all continents. Another advantage is that the position regarding most continents is deemed to be correct. This proves, that the Peters map is capable of showing the Earth in an accurate 2-dimensional form. However, even Peter's projection is not completely precise. One disadvantage is that "The Gall-Peters map shows the correct sizes of countries, but it also distorts them." (Business Insider) The aforementioned means that in order to get the correct size of each country, Dr Arno Peters enlarged and stretched the African and South American continent from only certain angles causing it to seem immense and narrower than it is in reality. Another disadvantage is that the distance between each latitude is quite a lot, causing the shapes of all countries to seem almost fictional. Therefore, it is clear that the Gall-Peters projection is outstanding in showing accurate sizes however even it fails to be perfect, as it distorts the shapes of all countries.

### Key question: Can we trust maps?

Even though it's only four words long, this question is not as simple as it may seem. There are different things we need to consider when looking at a map.

- The **Origin** of the map. Who produced it? Where was it produced? When was it produced?
- The **Purpose** of the map. Why was it created? Who was it created for?
- The **Value** of map. What can we learn about the person/group that created the Map? How does the map help us understand the perspective of the map maker?
- The **Limitation** of the map. What is omitted (left out) of the map? Is it possible to know if the information accurately represented on the map?

So what should we do to start this process. Perhaps the best step is to do some initial research, which might give us some ideas to direct our inquiry.

## KEEPING A RECORD OF RESEARCH

One way to create a record of your research is to use small tables like the ones below.. This is the sort of thing that fits very well into an Action Plan for Criterion B. Notice the use of the words 'sources' and 'evidence'. In historical inquiry, they don't mean the same thing. A source is an item that is somehow related to the historical event under investigation, and evidence is what we can 'find' in the source to help answer our research question.

Two sources have been provided. You need to find one more appropriate source.

**SOI** - Primary and secondary sources (text, images, maps, etc) provide insights into time, place and space and show how the world has changed over time, but they can be affected by different perspectives.

**Your Inquiry Question:** Can we trust maps?

**Sub-question:** What are the advantages and disadvantages of the Mercator and Gall-Peters projections?

### Source 1 Citation:

<http://uk.businessinsider.com/boston-school-gall-peters-map-also-wrong-mercator-2017-3>

**MLA Format here:** Lindsay Dodgson. "Boston schools have introduced a new world map — but it's just as wrong as the one you're familiar with." *Business Insider*. 20 Mar. 2017. Web. 9 Oct. 2018.

<<http://uk.businessinsider.com/boston-school-gall-peters-map-also-wrong-mercator-2017-3>>

### Evidence

#### Advantages and Disadvantages of Mercator

Based on this website, the advantages of Mercator's map are:

1. The configuration of many continents is reduced from all angles, not only some specific points.
2. Beneficial for navigation

Based on this website, the disadvantages of Mercator's map are:

1. The latitudes north of the 60° latitude and latitudes south of the 40° latitude are excessively extended causing the land present in those areas being enlarged.
2. The countries present between the latitudes 40° and 35° are compressed to a smaller size. For instance, South America is supposed to be twice the size of Europe.
3. Emphasizes the sizes of imperial powers such as Europe and North America.
4. The measurement of many countries is wrong.

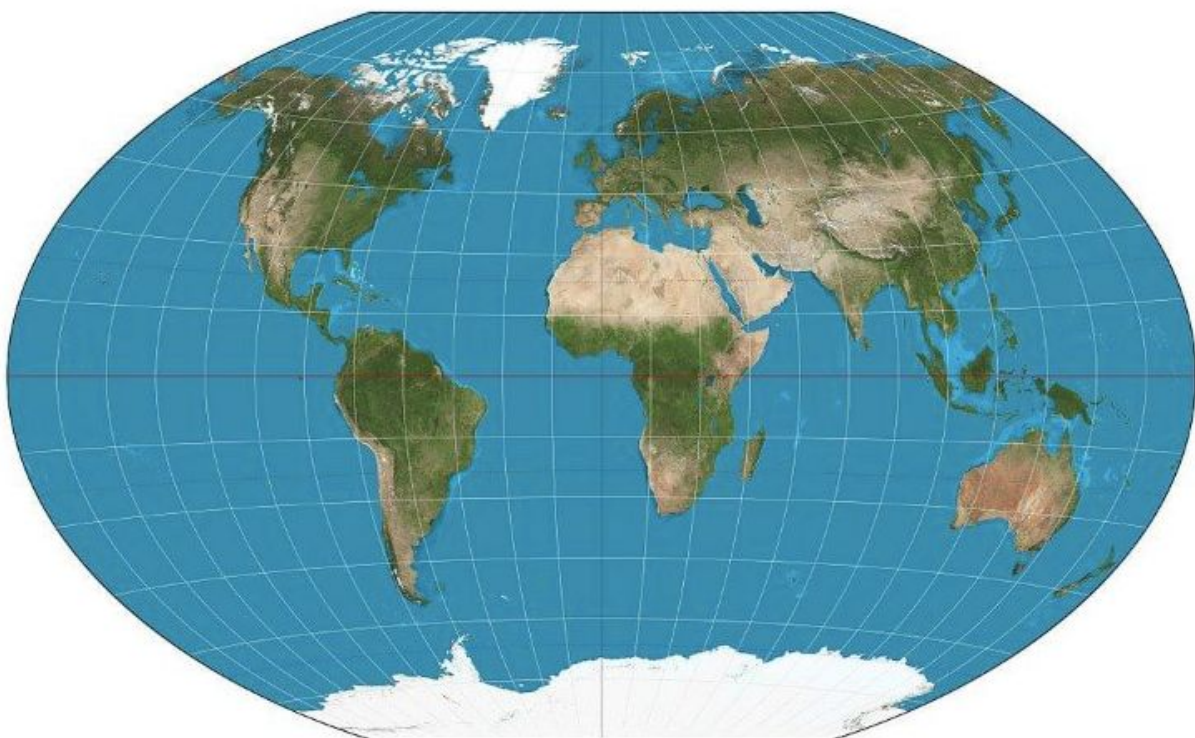
|  |   |
|--|---|
| Evidence   | <p>Advantages and Disadvantages of Gall-Peters</p> <p>Based on this website, the advantages of the Gall-Peters map are:</p> <ol style="list-style-type: none"> <li>1. The size of the continents is quite accurate.</li> </ol> <p>Based on this website, the disadvantages of the Gall-Peters map are:</p> <ol style="list-style-type: none"> <li>1. The map distorts the shape of many continents by elongating them.</li> <li>2. The distance between each latitude is quite a lot, causing the shapes to be unrealistic</li> </ol>   |
| <p><b>Source 2 Citation:</b> <a href="https://www.wired.com/2013/07/projection-mercator/">https://www.wired.com/2013/07/projection-mercator/</a></p> <p><b>MLA Format here:</b> WIRED. "Get to Know a Projection: Mercator." <i>WIRED</i>. 29 Jul. 2013. Web. 10 Oct. 2018.<br/>&lt;<a href="https://www.wired.com/2013/07/projection-mercator/">https://www.wired.com/2013/07/projection-mercator/</a>&gt;</p>  |   |
| Evidence   | <p>Advantages and Disadvantages of Mercator</p> <p>Based on this website, the advantages of Mercator's map are:</p> <ol style="list-style-type: none"> <li>1. The Mercator map was invented to be more functional than descriptive, unlike others. Therefore, the map was more to be related to and to show directions, than to be able to show the Earth.</li> </ol> <p>Based on this website, the disadvantages of Mercator's map are:</p> <ol style="list-style-type: none"> <li>1. The configurations of some continents are not authentic as they are enlarged. For instance, Antarctica is shown enormous, something which it isn't.</li> </ol>   |
| Evidence   | <p>Advantages and Disadvantages of Gall-Peters</p> <p>N/A</p>   |
| <p><b>Source 3 Citation:</b><br/><a href="https://indianexpress.com/article/opinion/web-edits/from-mercators-to-gall-peters-how-the-world-map-cartography-is-changing-for-the-good-4580641/">https://indianexpress.com/article/opinion/web-edits/from-mercators-to-gall-peters-how-the-world-map-cartography-is-changing-for-the-good-4580641/</a></p> <p><b>MLA Format here:</b> Nandini Rathi. "From Mercator's to Gall-Peters projections, how the world maps vary and change." <i>The Indian Express</i>. 22 Mar. 2017. Web. 10 Oct. 2018.<br/>&lt;<a href="http://indianexpress.com/article/opinion/web-edits/from-mercators-to-gall-peters-how-the-world-map-cartography-is-changing-for-the-good-4580641/">http://indianexpress.com/article/opinion/web-edits/from-mercators-to-gall-peters-how-the-world-map-cartography-is-changing-for-the-good-4580641/</a>&gt;</p> |   |
| Evidence   | <p>Advantages and Disadvantages of Mercator</p> <p>Based on this website, the advantages of Mercator's map are:</p> <ol style="list-style-type: none"> <li>1. Mercator has purposely provided straight lines on the map as it helps relate and somewhat follow them. Thus the explorer, sailor or simply anyone will be able to arrive at their destination successfully.</li> <li>2. The projection was originally created to give directions rather than helping imagine the earth.</li> </ol> <p>Based on this website, the disadvantages of Mercator's map are:</p> <ol style="list-style-type: none"> <li>1. The African continent is pulverized causing it to seem as if Greenland has an equivalent area as Africa. However, in reality, Africa can fit 14 Greenland islands.</li> <li>2. Mercator has given the impression that South America has an identical measurement as Europe. whereas in truth it is twice as large.</li> </ol> |

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|          |  |
| Evidence | <p>Advantages and Disadvantages of Gall-Peters</p> <p>Based on this website, the advantages of the Gall-Peters map are:</p> <ol style="list-style-type: none"> <li>1. The position regarding most continents is deemed to be accurate.</li> <li>2. The size of all continents is correct.</li> <li>3. All east-west latitudes are parallel and intersect the north-south longitudes at axes forming precise right angles. Aforementioned sentence explains, the latitudes and longitudes being straight and not oblique or curved -radically accurate.</li> </ol> <p>Based on this website, the disadvantages of the Gall-Peters map are:</p> <ol style="list-style-type: none"> <li>1. The African Continent is enlarged excessively and stretched from only certain angles causing it to seem immense and narrower than it is in actuality.</li> <li>2. Another disadvantage Peter's Projection has is that it expands and extends the South American Continent so much more than it appears fictional.</li> <li>4.</li> </ol> |

## ALTERNATIVE PROJECTIONS

Research other projections that have been created over the years. Are there any they think do a better job at showcasing our world? Choose copy and paste a picture of the projection in the space below.

### Winkel tripel



You are now going to answer the following question in paragraph form.

**What the advantages and disadvantages of the Winkel Tripel projection and is it superior to the Mercator and Gall-Peters projection?**

This paragraph should:

- Be written in full sentences and use proper grammar.
- Include at least three in text citations in MLA format.
- Contain a topic sentence, evidence and an explanation.
- Be approximately 200 to 300 words long.

The Winkel Tripel is an exceptional projection in terms of mostly accurate shapes and sizes, although it compresses any land present near the northern pole. And it is superior to the Mercator and Peters projection. The Winkel Tripel map projection was created in 1921 to be able to curtail the three expectations Oswald Winkel had for it: area, direction, and distance -causing the map to be called Winkel Tripel; as tripel means triple in German. One advantage the Winkel III has is that it "... the Winkel tripel fares well against several other projections analyzed against their measures of distortion, producing small distance errors, small combinations of Tissot indicatrix ellipticity and area errors, and the smallest skewness of any of the projections." (Brilliant Maps) This is to say, that the Winkel Tripel has very few shapes and size errors, compared to other maps. Another advantage is that it shows Greenland to be the size of Argentina, instead of the whole of South America. Proving that it is well enough of a description of the earth reaching the expectations Oswald had in mind. Nevertheless, even Winkel Tripel has failed to be the perfect map. One disadvantage it has is that "Land masses closer to the poles still enlarged". (Geo Awesomeness) This implies that any land present north of 60° latitude and south of the 80° latitude is compressed. Another disadvantage is that the projection has slightly curved and non-parallel latitudes. To sum it up Winkel Tripel is superior to the Mercator and Gall-Peters because the projection has shown mostly accurate shapes and sizes of all countries, while the Mercator only showed the correct shape and Gall-Peters only showed the correct size.

## USING SOURCES CRITICALLY

Your investigation depends on your critical use of sources. Let's take a look at the following sources

### Critical use of sources

This is where **OPVL** comes in. In the tables below, you can record you thoughts on the following map sources

Map: The Countries That Feel the Most Love in the World

**Source (MLA)** Uri Friedman. "Map: The Countries That Feel the Most Love in the World." *The Atlantic*. 14 Feb. 2014. Web. 18 Oct. 2018.

<<https://www.theatlantic.com/international/archive/2014/02/map-the-countries-that-feel-the-most-love-in-the-world/283839/>>

| Summary of the source   | Evidence   |
|---|--|
| This article is from <i>The Atlantic</i> and is written about the most loving countries in the world. It is rated 10/10 in terms of credibility, which is no surprise as it is an official news company with capability of holding interviews and surveys. However it is not the best, as it is 4 years old, which means the information could have changed by now. | <p>Origin</p> <ul style="list-style-type: none"><li>• This article was written on the 14th of February 2014 by Uri Friedman on the website <i>The Atlantic</i>.</li><li>• The title of this article is "Map: The countries that feel the most love."</li></ul> <p>Purpose</p> <ul style="list-style-type: none"><li>• It presents that the Philippines is the most loving country.</li><li>• It shows the state of others countries in terms of love.</li></ul> <p>Value (of the origin and purpose)</p> |



|  |  |
|--|--|
|  | <ul style="list-style-type: none"> <li>• It is written by an official News Company that means it has access to some governmental information.</li> <li>• It has some quotes due to the interviews the company is able to hold.</li> <li>• A useful extension, Apogee, rates the website -in terms of reliability- 10/10. In other words, the information on the website is accurate.</li> <li>• It shares basic information such as the name of the author and publishing date.</li> </ul> <p>Limitations (of the origin and purpose)</p> <ul style="list-style-type: none"> <li>• This article is not recent. This implies the information could have changed by now, even if it was correct in 2014.</li> <li>• It does not have access to some countries or every person, meaning the is based on limited information.</li> </ul> |
|--|--|

### Israeli Palestinian Conflict Map of Shrinking Palestinian Territory

**Source (MLA)** N.a. "Interactive: Mapping the Israeli-Palestinian conflict." *America.aljazeera.com*. n.d. Web. 17 Oct. 2018. <<http://america.aljazeera.com/articles/multimedia/interactive-mappingtheisraelipalestinianconflict.html>>

| Summary of the source   | Evidence  |
|---|---|
| <p>This article is from the website <i>Aljazeera</i> and is about the Israeli-Palestinian conflict. The news company is followed worldwide and has access to governmental sources. However, it is rated 3/10 in terms of credibility, because it is not so easy to understand and is written 5 years ago and is not quite detailed.</p> | <p>Origin</p> <ul style="list-style-type: none"> <li>• This article was written on the 12th of September, 2013 by Tony Karon and Lam Thuy Vo on the website Aljazeera.</li> <li>• The name of this article is "Mapping the Israeli-Palestinian conflict"</li> </ul> <p>Purpose</p> <ul style="list-style-type: none"> <li>• The purpose if this website is to inform people about the Israeli-Palestinian conflict.</li> <li>• It shows, who owns how much of land.</li> </ul> <p>Value (of the origin and purpose)</p> <ul style="list-style-type: none"> <li>• This article's information is from a governmental source; Office for the Coordination of Humanitarian Affairs in the occupied Palestinian territory/United Nations.</li> <li>• It is a worldwide, governmental source.</li> </ul> <p>Limitations (of the origin and purpose)</p> <ul style="list-style-type: none"> <li>• This article is not a well-known news website, meaning it is not as reliable as those who are well known -"The Guardian" and "BBC".</li> <li>• The article was written in 2013 -not recent. In other words, chances are the information could have changed so the article is not valid.</li> <li>• A reliable extension, Apogee, has rated the website -in terms of credibility- 3/10. In other words, the website is not safe or accurate.</li> <li>• This website is not so easy to understand, as it is too long and squeezed into one line, causing the words to mix up a little.</li> <li>• It is not very detailed, so it could have missed some specific events.</li> </ul> |

## YOUR WORKS CITED

In your own investigation, you would, of course, need to create a works cited list that goes at the end of your research paper or project. The works cited list should be the last page, it should be on its own page, and it should not have a page number on it. The title should be **WORKS CITED**, centered at the top of the page. Your references should be listed (but not bulleted), in alphabetical order by the author's last name. The second line (and any subsequent lines) of a reference should employ a hanging indent - you can see what one is here. You can use Easybib or Bibme etc., but the most accurate one I've found so far is still **Apogee 2** - if you haven't tried it yet, give it a try!.

In the box below, create a works cited list for the sources included here, that follows the advice above.

Dodgson Lindsay. "Boston schools have introduced a new world map — but it's just as wrong as the one you're familiar with." Business Insider. 20 Mar. 2017. Web. 14 Oct. 2018.  
<<http://uk.businessinsider.com/boston-school-gall-peters-map-also-wrong-mercator-2017-3>>

Friedman Uri. "Map: The Countries That Feel the Most Love in the World." The Atlantic. 14 Feb. 2014. Web. 14 Oct. 2018.  
<<https://www.theatlantic.com/international/archive/2014/02/map-the-countries-that-feel-the-most-love-in-the-world/283839/>>

N.A. "Map Projections & What They Say About You." Brilliant Maps. 18 Jun. 2015. Web. 14 Oct. 2018.  
<<https://brilliantmaps.com/xkcd/>>

Rathi Nandini. "From Mercator's to Gall-Peters projections, how the world maps vary and change." The Indian Express. 22 Mar. 2017. Web. 14 Oct. 2018.  
<<http://indianexpress.com/article/opinion/web-edits/from-mercators-to-gall-peters-how-the-world-map-cartography-is-changing-for-the-good-4580641/>>

Sterbenz Christina. "The Most Popular Map Of The World Is Highly Misleading." Business Insider. 12 Dec. 2013. Web. 14 Oct. 2018.  
<<https://www.businessinsider.com/mercator-projection-v-gall-peters-projection-2013-12>>

N.A. "Which is the best map projection?" Geoawesomeness. 25 Apr. 2017. Web. 14 Oct. 2018.  
<<http://geoawesomeness.com/best-map-projection/>>

N.A. "World Map with latitude/longitude grid." TES Resources. n.d. Web. 14 Oct. 2018.  
<<https://www.tes.com/teaching-resource/world-map-with-latitude-longitude-grid-11460542>>



## Criterion B: Investigating

| Level      | Achievement level descriptor  | Demonstrated when   |
|------------|---|---|
| <b>0</b>   | The student does not reach a standard described by any of the descriptors below.                                  | <ul style="list-style-type: none"> <li>Your research doesn't reach a standard described by any of the descriptors below.</li> </ul>   |
| <b>1–2</b> | The student:<br>iii. <b>collects</b> and <b>records limited</b> or <b>sometimes irrelevant</b> information        | <ul style="list-style-type: none"> <li>Much of your information is <b>limited</b> or <b>irrelevant</b> and you haven't used a <b>research log</b> to record your information.</li> </ul>            |
| <b>3–4</b> | The student:<br>iii. <b>uses</b> a method(s) to collect and record <b>some relevant</b> information               | <ul style="list-style-type: none"> <li>Although you use a research log to collect and record <b>information</b>, some if it is not detailed or relevant</li> </ul>                                  |
| <b>5–6</b> | The student:<br>iii. uses methods to collect and record <b>appropriate relevant</b> information                   | <ul style="list-style-type: none"> <li>Your research log is mostly complete to collect and record <b>relevant</b> information</li> </ul>  |
| <b>7–8</b> | The student:<br>iii. uses methods to collect and record <b>appropriate</b> and <b>varied relevant</b> information | <ul style="list-style-type: none"> <li>Your <b>research log</b> is completed and has varied information from appropriate sources</li> <li>Your works cited page is in correct MLA format</li> </ul> |

## Criterion D: Thinking critically

| Level      | Achievement level descriptor   | Demonstrated when  |
|------------|--|--|
| <b>0</b>   | The student does not reach a standard described by any of the descriptors below.   | <ul style="list-style-type: none"> <li>You do student do not successfully reach a standard described by any of the descriptors below</li> </ul>  |
| <b>1–2</b> | The student: <ul style="list-style-type: none"> <li>ii. <b>begins to identify</b> connections between information to make simple arguments</li> <li>iii. <b>recognizes</b> the origin and purpose of <b>few</b> sources/data as well as <b>few</b> values and limitations of sources/data</li> </ul>                 | <ul style="list-style-type: none"> <li>You attempt to link content to make simple arguments but it is not clear.</li> <li>You attempt to use sources presented to identify</li> <li>You attempt to recognise the origin and purpose of the source to identify a value and limitation. These terms are not effectively used (signposted) in your analysis</li> </ul>  |
| <b>3–4</b> | The student: <ul style="list-style-type: none"> <li>ii. <b>summarizes</b> information to make <b>some adequate</b> arguments</li> <li>iii. <b>analyses</b> sources /data in terms of origin and purpose, recognizing some values and limitations</li> </ul>  | <ul style="list-style-type: none"> <li>You attempt explain using some content, the perspective of the source being summarized to support your arguments but it is not clear.</li> <li>You attempt to identify perspectives from sources presented.</li> <li>You attempt to use the origin and purpose of the source to identify some value and limitation. These terms are not consistently used (signposted) in your analysis.</li> </ul>                         |
| <b>5–6</b> | The student: <ul style="list-style-type: none"> <li>ii. <b>summarizes</b> information in order to make usually valid arguments</li> <li>iii. <b>analyses</b> sources /data in terms of origin and purpose, <b>usually</b> recognizing values and limitations</li> </ul>  | <ul style="list-style-type: none"> <li>You explain, providing some terminology and deta from the content, the perspective of the source being summarized to support your arguments.</li> <li>You identify perspectives from sources presented.</li> <li>You attempt to use the origin and purpose of the source to identify its value and limitation. These terms are mostly used (signposted) in your analysis.</li> </ul>  |
| <b>7–8</b> | The student: <ul style="list-style-type: none"> <li>ii. <b>summarizes</b> information to make <b>consistent, well-supported</b> arguments</li> <li>iii. <b>effectively analyses</b> a <b>range</b> of sources/data in terms of origin and purpose, <b>consistently</b> recognizing values and limitations</li> </ul> | <ul style="list-style-type: none"> <li>You clearly explain, providing specific terminology and deta from the content, the perspective of the source being summarized to support your arguments.</li> <li>You clearly identify contrasting perspectives from a varied range of sources presented.</li> <li>You use the origin and purpose of the source to identify its value and limitation. These terms explicitly used (signposted) in your analysis.</li> </ul> |