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3

91429



914290



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Level 3 Geography 2020

91429 Demonstrate understanding of a given environment(s) through selection and application of geographic concepts and skills

9.30 a.m. Wednesday 2 December 2020
Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of a given environment(s) through selection and application of geographic concepts and skills.	Demonstrate in-depth understanding of a given environment(s) through selection and application of geographic concepts and skills.	Demonstrate comprehensive understanding of a given environment(s) through selection and application of geographic concepts and skills.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should attempt ALL the questions in this booklet.

Pull out Resource Booklet 91429R from the centre of this booklet.

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–8 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

Merit

TOTAL

05

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INSTRUCTIONS

Refer to the resource booklet about air pollution in Mongolia. You should demonstrate your understanding of a range of geographic skills and concepts when answering the question.

QUESTION: Air pollution in Mongolia

- (a) Using **Resources A to I** on pages 3–10 of the resource booklet, comprehensively analyse how the environment (natural and cultural) contributes to Ulaanbaatar's air pollution.

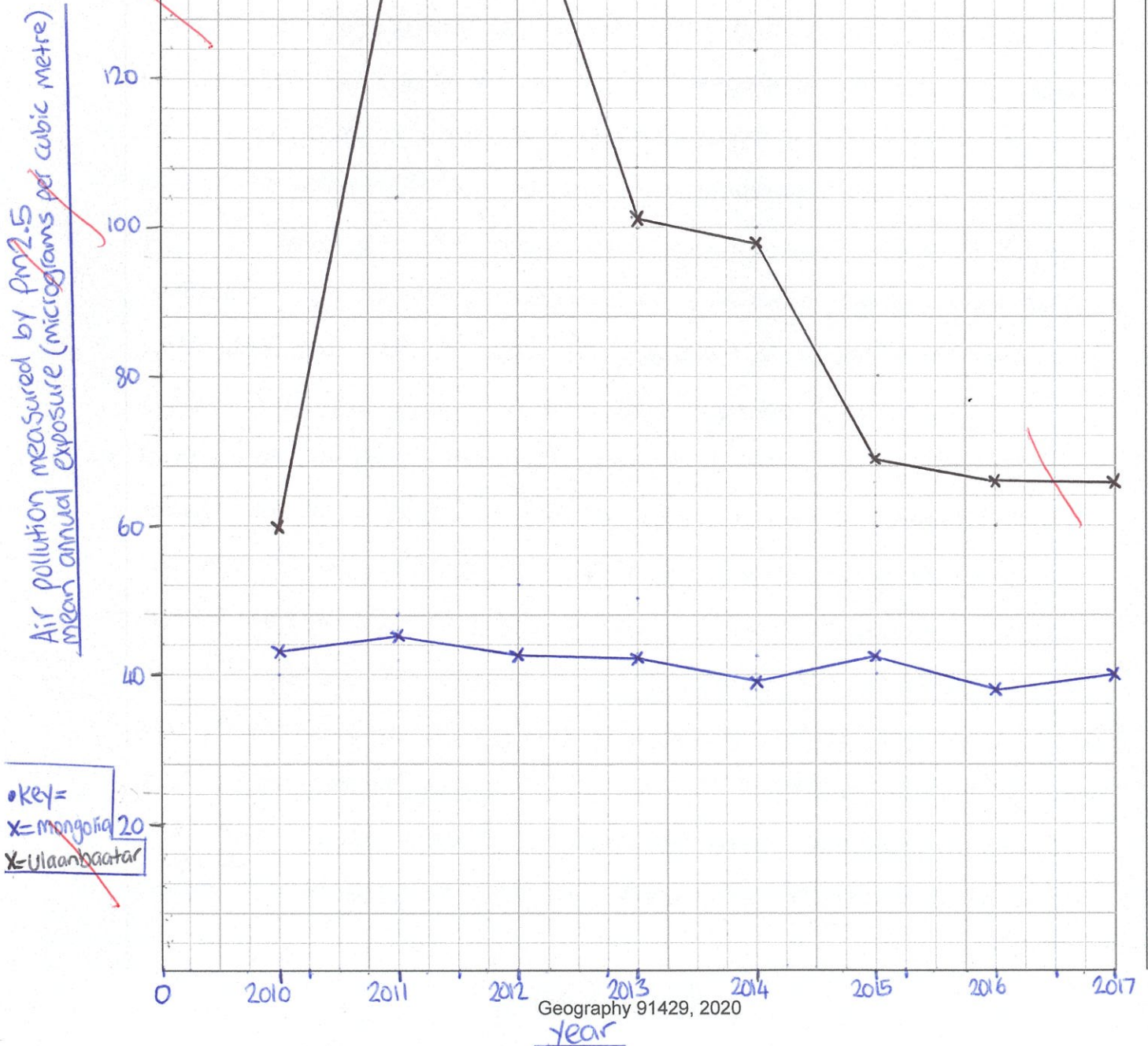
Ulaanbaatar is the capital city of Mongolia located in East Asia and has a population of 1.5 million people. Ulaanbaatar is Mongolia's heaviest populated city with 45% of Mongolia's population residing there. ~~For several years Mongolia~~ Ulaanbaatar is located in the north central area of Mongolia and lies approximately 1300 metres above sea level. Due to the altitude of ~~Ulaanbaatar~~ Ulaanbaatar, the climate is long, bitterly cold winters and brief, warm summers. Ulaanbaatar has some of the worst air pollution across the globe with high levels of fine soot particles, which is the most deadly type of air pollution. The air pollution in Ulaanbaatar can rise to more than 20 times ~~of~~ the World Health Organization safe limit. ~~The~~ increase of air pollution is caused by increasing population or birth rates over the last 30 years. The population of Ulaanbaatar has almost tripled since 1990 due to rural-urban migration. Because of the rural-urban migration, there has been an increase of settlements known as ger districts. The freezing, cold climate in Ulaanbaatar has meant coal is used for heating and cooking. During the winter months, ~~over~~ over 600,000 tonnes of coal is used in around 200,000 gers. The use of coal equates to approximately 80% of Ulaanbaatar's ~~air~~ air pollution. Due to the increasing population density, more coal is used which impacts the air quality. The coal is not washed or processed which also produces higher amounts of particulate matter, sulfur dioxide, carbon monoxide ~~dioxide~~ and nitrogen oxide when it is burned. The natural environment also

causes a higher rate of air pollution^{in winter} as cold, polluted air is trapped near the ground by an inversion or layer of warm air which prevents the dispersion of air pollutants. ~~The~~ Ulaanbaatar is located in a valley surrounded by mountains which causes a lack of air movement, trapping polluted air in Ulaanbaatar. Overall there are several natural and cultural causes which have resulted in an increase of air pollution in Ulaanbaatar over the past 30 years.

- (b) Use the most appropriate graphing method and graphing conventions, and the data in **Resource I** on page 10 of the resource booklet, to show how air pollution for BOTH the city of Ulaanbaatar and Mongolia as a country changed between 2010 and 2017.

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Title: Air pollution measured by PM2.5 mean annual exposure in Ulaanbaatar and Mongolia from 2010-2017



- (c) Critically evaluate possible solutions to air pollution in Ulaanbaatar, and come to a justified conclusion as to which solution will best solve the problem.

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In your answer, you should:

- integrate specific information from **Resources J to M** on pages 11–13 of the resource booklet
- apply relevant geographic concepts (see page 2 of the resource booklet).

Ulaanbaatar, located in the country of Mongolia ~~is~~ has ~~witnessed~~ seen ^{an} ~~the~~ increase of air pollution in their city over the past 30 years. With 45% of Mongolia's population living in Ulaanbaatar and, the population ~~contin~~ continues to increase, change is required to prevent air pollution becoming a devastating issue. Processes such as the increasing population, the burning of coal and polluted air being trapped in by the surrounding mountains have resulted in an increase of air pollution. Air pollution causes more than 4000 deaths per year in Mongolia and new ~~re~~ methods to reduce air pollution ~~are~~ are desperately required. There are several possible solutions to introduce to the housing systems in Ulaanbaatar which is likely to drastically reduce air pollution. In 2017, Mongolia's government chose to ban the migration of people into Ulaanbaatar. The first solution to reduce air pollution is limiting the amount of people living in Ulaanbaatar. The reduced population will result in less coal being used in major cities which is the greatest issue causing air pollution. An increase of people living in rural areas will improve rural towns and increase employment opportunities. By developing rural areas, people are encouraged to ~~re~~ leave areas such as Ulaanbaatar and therefore ~~the~~ air pollution is reduced. ~~Officials~~ In GurvanSaikhan which is a small, rural town, officials of the city, provincial and national level are encouraging citizens to migrate from Ulaanbaatar. By increasing the population of rural towns, more jobs are available which is likely to encourage more citizens from Ulaanbaatar. The unemployment rate in rural areas will decrease and industries such as agriculture and horticulture will benefit. The second solution to air

Pollution is improving ^{or changing} the housing policies in Ulaanbaatar. ~~There~~ ^{is} ~~are~~ currently less than 5% of the ger district that rely on electricity for heating. Coal is currently the preferred option by the citizens of Ulaanbaatar which increases the air pollution. Almost 45% of the ger district citizens have incomes below the poverty line. A change to affordable housing policies is required in order to prevent any further damage from air pollution. A housing policy which allows ger residents to live in multi-unit buildings with clean heating. An initiative for ger residents to move into better insulated and less-polluting apartments has been introduced. The amount of coal used in Ulaanbaatar will dramatically reduce and citizens are able to live in higher quality apartments. The government has ~~set~~ ^{paid} up a fund for people living in ger's, the first 30% of their mortgage ^{since} in order to purchase a new apartment. ~~In~~ ^{Since} February 2019, 86 families have relocated into newly built apartments. In order to reduce air pollution and the use of coal in Ulaanbaatar, 200,000 more families living in ger's are required to transfer into the sustainable apartments. The ~~third~~ ^{introducing alternative heating methods} solution to prevent air pollution is ~~increasing the use of electricity in~~ ^{increasing the use of electricity in} households. An alternative, more sustainable method of heating is required in order to prevent air pollution. In 2016, 200 ger households took part in a home insulation programme where energy specialists visited house's and recommended improvements. Introducing heating methods such as insulation is likely to dramatically reduce the use of coal used by each household per year. The use of insulation will also benefit the citizens of Ulaanbaatar as less money is spent on purchasing coal. Home insulation and clean stoves are both safer, cheaper, sustainable and more reliable heating methods to use in households. The government should be required to introduce regulations and enforcements meaning people have to switch to alternative heating methods. A recent survey, showed more than half of the ger

population still use traditional and highly polluting coal stoves and low pressure boilers as a method of heating. By switching to alternative methods, less coal is used which prevents further damage from air pollution. This is the solution which is most likely to solve the issue of air pollution. Both the natural and cultural environment are considered by introducing new methods of heating. If the entire population of Ulaanbaatar converted to sustainable heating methods such as home insulation and clean stoves the amount of coal used will drastically reduce. As coal is the cause of 80% of the air pollution, there will be a massive decrease of air pollution. New ~~the~~ heating methods are cheaper and more sustainable which benefit both the natural and cultural environment. Families will be warmer and spend money on other essential needs such as food and water. Overall, installing new heating methods such as clean stoves and home insulation is the best possible solution to prevent air pollution and care for the environment.

M5

Merit Exemplar 2020

Subject	Geography	Standard	91429	Total score	05
Q	Grade score	Annotation			
	M5	<p>This candidate describes a lot of aspects of the environment but does not fully analyse how they contribute to the levels of air pollution. Explaining why coal is used and then linking this to the gers would have provided a more comprehensive response.</p> <p>The graph the candidate has drawn demonstrates precision.</p> <p>Although the candidate has correctly identified a range of solutions and can articulate how they might solve the air pollution issue, they do not critically evaluate the solutions by considering the cons as well as the pros. This also means that their preferred solution is not as justified as it could have been.</p> <p>They have gained M5 overall as a result of the precision in their graphing and the detailed understanding they have demonstrated. The use of specifics was borderline for M in part (c) and the lack of critical evaluation in part (c) limited the grade to an M5 overall.</p>			