

# KANGAROO ISLAND

## SKILLS WORKBOOK

Name: .....

Class: .....



SA Government National Parks visitation snapshot Kangaroo Island.

<https://cdn.environment.sa.gov.au/parks/docs/national-parks-visitation-snapshot-kangaroo-island.pdf>

Activities <i>*Stage 6 only</i>	Page	Marks
<b>Introduction to island geography</b> <ul style="list-style-type: none"> <li>- Types of islands</li> <li>- Photo interpretation (Layers of inference)</li> <li>- Interconnections between climate, ocean temperatures and altitude</li> </ul>	2 - 3	25 marks
<b>Kangaroo Island - Spatial patterns and characteristics</b> <ul style="list-style-type: none"> <li>- Location map</li> <li>- Topographic map</li> <li>- Cross section</li> <li>- Gradient, local relief, vertical exaggeration</li> <li>- <i>Creating a scale for a photograph*</i></li> <li>- <i>Direction, scale, distance – time – speed*</i></li> <li>- <i>Area* and proportional area*</i></li> <li>- <i>Direction a photographer is facing*</i></li> <li>- Economy</li> <li>- <i>Population trends and economic links*</i></li> </ul>	3 - 9	90 marks
<b>Kangaroo Island – Weather, climate and climate change</b> <ul style="list-style-type: none"> <li>- Isohyet map</li> <li>- Circular climate graph</li> <li>- Influences on weather and climate</li> <li>- Synoptic chart – high / low pressure system, cold front</li> <li>- Drought and bushfires</li> </ul>	9-14	95 marks

# Kangaroo Island skills workbook

## INTRODUCTION TO ISLAND GEOGRAPHY

1. Name the feature that differentiates islands from continents. 1mk

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2. Identify the two main types of islands with an example of each. 2 mks

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3. Refer to SOURCE 1

a. Describe the characteristics of the Lofoten Islands seen in this photograph. 3 mks

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b. How might the climate of the islands differ from the landscape in the background? 1mk

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c. Complete a Layers of Inference analysis using the graphic organiser below. See SOURCES 4 and 5. 8 mks

What does the photograph definitely tell me about the Lofoten Islands?	2 mks
What can I infer from the photograph about physical and human characteristics of the islands? What guesses can I make?	2 mks
What does the photograph not tell me about the Lofoten Islands?	2 mks
What else would I like to find out? What other questions do I need to ask?	2 mks

4. Refer to SOURCE 2.  
a. Explain the impact of ocean temperatures on coastal climates. 2 mks

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- b. Why is this coastal effect an important influence on island climates? 3 mks

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5. Refer to SOURCE 3. How would the influence of topography on climate be different for an island of low altitude? 2 mks

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6. Explain why islands have more moderate climates than larger land masses nearby. 3 mks

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## **KANGAROO ISLAND: SPATIAL PATTERNS and CHARACTERISTICS**

### **ACTIVITIES**

1. Refer to SOURCE 7 Describe the geographic location of Kangaroo Island in Australia and South Australia. 2 mks

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2. Is Kangaroo Island a continental or oceanic Island? Use evidence from Sources 8 and 9 to justify your response. 3 mks

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3. Explain the separation of Kangaroo Island from mainland Australia. 3 mks

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4. Analyse the underwater topography of south of Kangaroo Island in SOURCE 8

a. Name two types of submarine landform to the south of Kangaroo island. 2 mks

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b. Name the continent south of Kangaroo Island. \_\_\_\_\_ 1mk

c. Suggest one ocean landform found beyond the bottom of the map in SOURCE 8. \_\_\_\_\_ 1mk

5. Refer to SOURCES 9 and 10.

a. Describe the variations in altitude across Kangaroo Island using statistics and references to direction in your response. 4 mks

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b. Use SOURCE 10 to create a simple contour map of Kangaroo Island. Use a contour interval of 50 metres for your map. 4 mks

6. Refer to SOURCE 10 (Show all working)

- a. Identify the geographical tool used to show changes in elevation from west to east across Kangaroo island. 1mk

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- b. Calculate the average gradient of the slope between the western coastline (0 metres) and the highest point on the elevation profile. 3 mk

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- c. Calculate the local relief of the island between the segment 50 km and 125 km from the west coast. 3 mks

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- d. Create a scale for the satellite image shown in SOURCE10 using details from SOURCE 11. 3 mks

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- e. Use the scale you created in 5c to determine the vertical exaggeration (VE) of the terrain profile. Assume the vertical scale is 1cm represents 50 metres. 3 mks

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7. Refer to SOURCE 11 to complete these mapping activities

- a. State the direction from Kingscote to Seal Bay conservation park. 1mk

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- b. Calculate the distance by road from Kingscote to Cape du Couedic. 1mk

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- c. How long would it take to travel by car between the two places travelling at 100 kph. 2 mks

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- d. Calculate the distance from Penneshaw to Cape Jarvis on the mainland. How long a trip on this route take by ferry travelling at 30 kph? 2 mks

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- e. Estimate the proportion of Kangaroo island covered by Flinders Chase National Park. \_\_\_\_\_ 1mk
- f. Calculate the area of Kangaroo island covered by Flinders Chase National Park. \_\_\_\_\_ 2 mks
- g. Refer to SOURCE 12. Locate the lighthouse using SOURCE 11. 1mk  
What direction was the photographer facing on the road to Cape Willoughby Lighthouse? \_\_\_\_\_
- h. Create a photo sketch to illustrate and label characteristics of the island. 3 mks

8. Refer to Source 12.

- a. What is the dominant landcover in the satellite image? 1mk

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- b. Explain one advantage of the satellite image over the maps in SOURCES 9 and 11. 2 mks

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9. Refer to Sources 11, 13 and 14.

- a. What do the darker green areas on each image represent. 1mk

- b. Estimate the proportion of the island covered by the areas identified in 9a. 1mk

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- c. Explain the suitability of Kangaroo Island for agriculture based on the topography and elevation. 2 mks

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- d. Identify the characteristics of Kangaroo Island in Source 14. 2 mks

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- e. Suggest one place you may see each of the images in Source 14 if you were travelling around the island. Refer to places in Source 11. 3 mks

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10. Refer to Source 15

- a. Identify the photograph with the largest scale. \_\_\_\_\_ 1mk  
 b. Name the conservation area where the Remarkable Rocks are located. 1mk \_\_\_\_\_  
 c. Explain the purpose of the boardwalks and signs. 2 mks

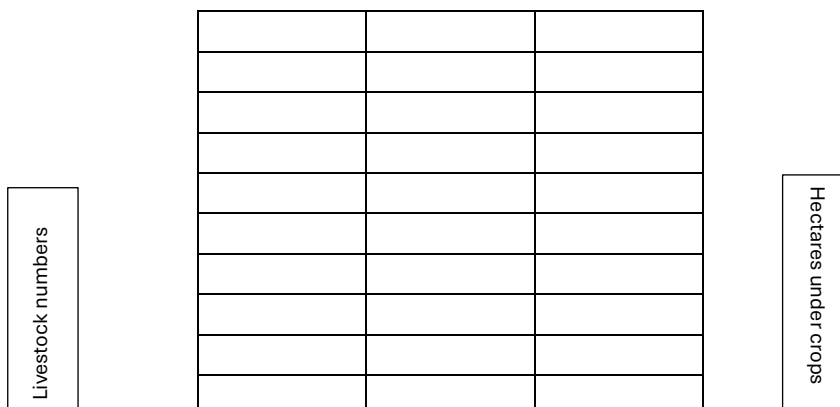
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11. Refer to Source 16

- a. Create a column graph to visualise the numbers of farmed animals and area under crops on Kangaroo Island. Show livestock numbers using the Y axis to the left and hectares using the Y axis on the right. 4 mks



Farmed animals and crops

- b. Write a 200 word paragraph explaining in your own words the value of agriculture to the economy of Kangaroo Island. 4 mks

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- c. Explain the relationship between farmers conserving nature and features of the environment shown on the satellite image in Source 13. 3 mks

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- d. Why is the conservation of nature important on Kangaroo Island? 2 mks

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12. Refer to Sources 17 and 18

- a. Identify projected trends for two different age groups on Kangaroo Island between 2023 and 2041. 2 mks

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- b. Explain the potential implications of each trend on the provision of services and facilities on Kangaroo Island. 4 mks

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- c. Explain the potential implications of each trend for the economy of Kangaroo island. 4 mks

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- d. Compare the proportions of the population in different age groups for Kangaroo Island in 2023 and Adelaide in 2021. Suggest reasons for two differences that are linked to Kangaroo Island's distance from mainland South Australia. 5 mks

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- e. Calculate the average population density of Kangaroo Island. Hint: Use data on total population and area of the island. 1mk

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## **KANGAROO ISLAND: WEATHER, CLIMATE and CLIMATE CHANGE**

### 1. Refer to Source 19

- a. Identify the climate classification for Kangaroo Island. 1mk

- b. Describe the conditions experienced on Kangaroo Island within the climate type identified in question 1. 1mk

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- c. Explain the influence of latitude in the climate of Kangaroo Island. 2 mks

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- d. Explain why Kangaroo Island does not experience the grassland or desert climate types. 2 mks

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### 2. Refer to Source 20

- a. Construct a circular climatic graph using the template provided on the next page. Graph the daily mean maximum and minimum temperatures and average monthly precipitation. 6 mks

- b. Calculate the mean temperature for January and July. 2 mks

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- c. Analyse the yearly distribution of rainfall and number of rainy days. What does the statistical data reveal about the climate of Kangaroo Island. Use data in your response. 4 mks

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d. Justify the statement 'Although Kangaroo Island has a temperate climate it still gets very cold and very hot'. Use data in your response. 4 mks

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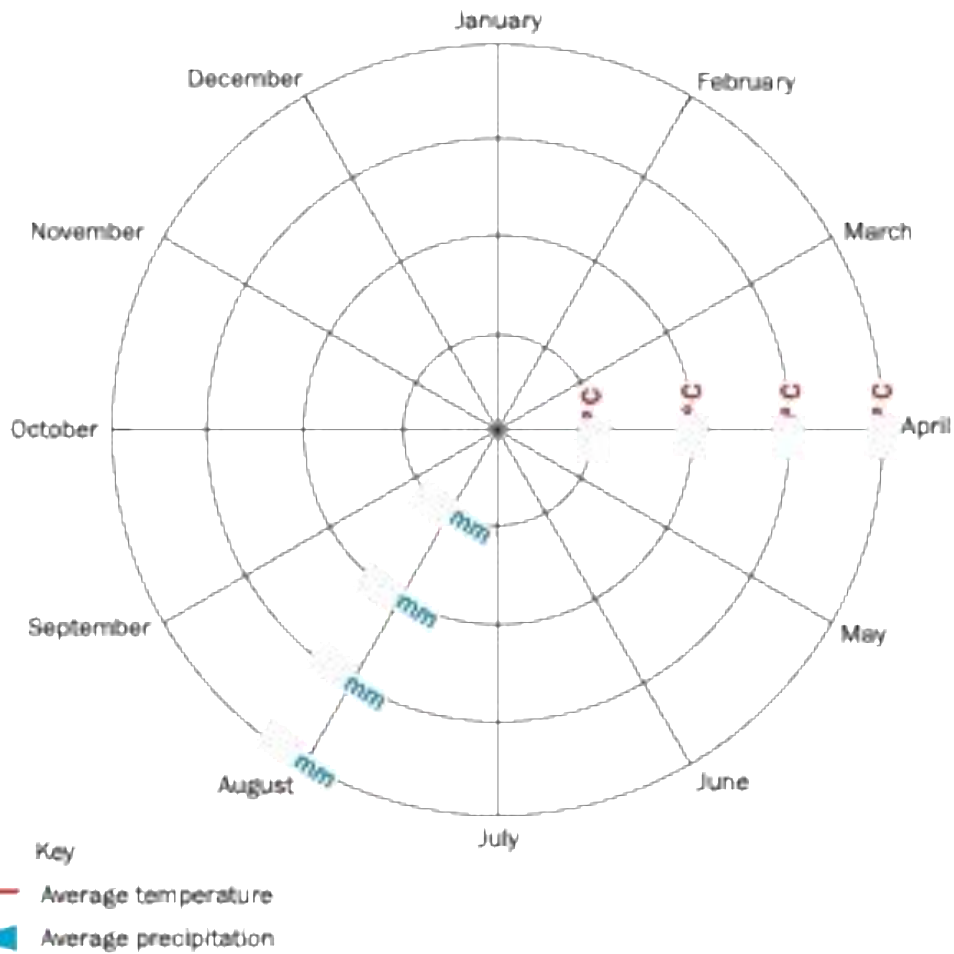


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Question 2a. Circular climate graph. Location \_\_\_\_\_



3. Refer to Source 21.

a. Identify three differences in the climate of Kingscote ( Kangaroo Island) and Adelaide (Mainland) that have the same climate classification. 3 mks

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b. Suggest how a climate graph for Cape Borda (west coast) might differ from that for Kingscote. See Source 11. Justify your suggestion. 4 mks

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4. Refer to Sources 22 and 23

a. What is an isohyet map? 1mk

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b. Compare the amount of precipitation across Kangaroo Island in 2018 – 2019 against the 30 year average. 2 mks

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c. Describe the severity of the drought experienced during 2014 – 2025 across South Australia, including Kangaroo Island in Source 23. 3 mks

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d. Explain how low precipitation across multiple years contributes to extreme bushfire conditions and events such as the devastating bushfire on Kangaroo Island in 2019 – 20. See Sources 27 and 28. 4 mks

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5. Refer to Source 24

a. Describe the location of the belt of high pressure in relation to South Australia between summer and winter. 2 mks

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- b. Explain two ways that high pressure creates dry conditions. Hint: Think about air movement. 4 mks

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- c. How would westerly winds influence weather conditions on Kangaroo Island. 2 mks

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- d. What information on pressure systems is not shown on these maps. Hint: See Source 25. 1mk

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6. Refer to Sources 25 and 26

- a. State the air pressure at the centre of the low pressure cell over Kangaroo Island. \_\_\_\_\_ 1mk

- b. Describe the movement of air within and around low pressure cells. 2 mks

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- c. Explain how low pressure can result in precipitation on Kangaroo Island. 2 mks

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- d. Explain why cold fronts are linked to low pressure cells. 2 mks

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- e. Determine the wind direction at Kangaroo Island before and after the trough of low pressure. Why is the wind direction significant for Kangaroo Island? 3 mks

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- f. When would the cold front near Tasmania have passed over Kangaroo Island? Justify your response. 2 mks

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- g. What information shown in Source 26 is missing in Source 25. State two ways this missing element is usually shown on synoptic charts. 3 mks

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- h. Explain how the weather at Kangaroo Island would have changed with the passing of the cold front referred to in 6f. Refer to wind direction and strength, air pressure, temperature and precipitation. 4 mks

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- i. Describe the precipitation Kangaroo Island will receive as the cold front in Source 25 crosses the island. 2 mks

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- j. Create a diagram to show how a cold front causes precipitation. 4 mks

- k. Why are Sources 25 and 26 typical for Kangaroo Island in winter? 2 mks

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- l. Source 26 is a GIS map. Explain what that means and how such a map is created. 3 mks

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7. Refer to Sources 27, 28 and 29.

- a. Explain the benefit of NASA satellite images to firefighters on Kangaroo Island. 2 mks

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- b. Estimate the proportion of Kangaroo Island impacted by the 2019 – 20 bushfires. Convert this to km<sup>2</sup>. Hint: The area of Kangaroo Island is 4,405 km<sup>2</sup> 2 mks

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- c. Despite the intensity and extent of the fires there was a low loss of human life. Suggest reasons for this. Hint: Refer to population density and distribution of population and landuse. 2 mks

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- d. Explain why loss of biodiversity was one of the most devastating impacts of the fires. 2 mks

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- e. Mind map the environmental, economic and social impacts of bushfires on Kangaroo Island. 4 mks

- f. Explain the connection between climate change and bushfire events such as the 2019 – 20 bushfires on Kangaroo Island. 3 mks

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- g. How does Source 29 illustrate the concept of resilience in relation to Kangaroo Island's ecosystems. 2 mks

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