

## The Distribution and Physical Characteristics of Biomes

**Article – Katerina Stojanovski, Stella Maris College**  
**Teaching Resource: PowerPoint – Christina Kalinic, Stella Maris College**

### Outcomes

- GE5-1** explains the diverse features and characteristics of a range of places and environments
- GE5-7** acquires and processes geographical information by selecting and using appropriate and relevant geographical tools for inquiry
- GE5-8** communicates geographical information to a range of audiences using a variety of strategies

### Inquiry Questions

*What is the spatial distribution of the world's biomes?*

*What are the main characteristics that differentiate the world's biomes?*

**Concepts** – Space and Sustainability

**Key Terms** – Biomes, anthromes, anthropogenic

**Content** – Investigate the distribution and physical characteristics of biomes

Sustainable Biomes is an exciting topic. At our school we deliver this unit to Year 9 in Term 2. We spend several lessons investigating the spatial distribution of Biomes and the main characteristics of the world's biomes. We are fortunate to have in our HSIE department, Christina Kalinic. Christina develops and shares with the team unique, well-structured and visually appealing resources that engage our students. Christina also teaches Society and Culture and History. Christina is a regular contributor to *Culturescope*, the journal of the Society and Culture Association. This year Christina was the recipient of the Dr David Dufty Award for Excellence in Teaching and Learning in Society and Culture <https://sca.nsw.edu.au/2021-society-and-culture-awards/>.

The following PowerPoint Presentation “*An Introduction to Biomes*” was developed by Christina and incorporates a good balance of content and skills. I have mapped the tools and skills according to the K–10 Tools continuum to suggest ways to integrate tools and skills with the content. Sample student work from Christina's Year 9 Geography class is included. The PowerPoint presentation and world map will be available as Appendix items on the GTA NSW & ACT website.



*Image Source: Unsplash*

# SUSTAINABLE BIOMES: DISTRIBUTION & CHARACTERISTICS

## Tools and Skills

K-10 TOOLS CONTINUUM	TOOLS AND SKILLS	ACTIVITY
<b>Maps</b>	Mapping Task	Label a map of the world's biomes using coloured pencils or the drawing toolbar in Microsoft Word.
<b>Fieldwork</b>	Developing and conducting interviews and surveys	Using primary research (interview, questionnaire), describe how your biome has been changed by anthropogenic forces.
	Virtual Fieldtrip	Visit and choose <a href="https://askabiologist.asu.edu/explore/Virtual-360-Biomes">https://askabiologist.asu.edu/explore/Virtual-360-Biomes</a> to go on a virtual tour for one of the following; Desert, Rainforest or Temperate Forest.
<b>Spatial Technologies</b>	Virtual Reality (VR)	Draw and fill in a Y-chart – looks, feels, sounds like.
<b>Graphs and Statistics</b>	Pie Graph	Construct a pie graph using a compass or excel to demonstrate the world coverage of biomes
	Statistics to find patterns and trends	
	Graphs presented on a geographical theme	
	Data Table	Record the temperature range and average rainfall for each biome
		Identify a plant and animal from each biome
<b>Virtual Representations</b>	Multimedia	View a video of the world's biomes (3 minutes) and construct a data table, recording temperature, rainfall, plants and animals of each biome
	Web Tools	Using secondary research (e.g. websites) describe how your biome has been changed by anthropogenic forces.

See Appendix 1 for an Introduction to Biomes mapping and graphing worksheet.



# SUSTAINABLE BIOMES: DISTRIBUTION & CHARACTERISTICS

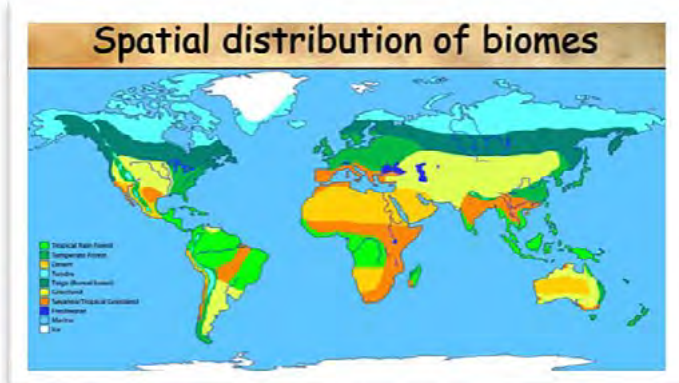
## PowerPoint Presentation

PPT available as an Appendix on the GTA NSW & ACT website with this edition.



### Defining Biomes

- The world is home to different environments or biomes, which are large ecosystems, each characterised by a particular climate and its dominant plants and animals.
- Biomes are divided into two broad groups:
  - Aquatic or water-based ecosystems: oceans, rivers, lakes and wetlands
  - Terrestrial or land-based ecosystems: deserts, rainforests, tundra, grasslands, woodlands and forests



### Geographical Skill- Drawing a Pie Graph

- Convert data into degrees using the formula:  $\text{sector size} = \frac{\text{sector size} \times 360}{\text{total sample size}}$
- Draw a circle using a compass
- Draw a line from the centre of the circle to the 12 o'clock position on the circumference
- Use a protractor to divide the circle using your data and the centre point  
USEFUL TIPS:  
  - Work clockwise from 12 o'clock
  - Draw the largest sector first
- Colour/shade each sector in a different colour, add labels and a title

BIOME TYPE	COVERAGE (%)	DEGREES (°)
Desert	19	68.4
Boreal Forest	17	61.2
Tropical Forest	13	46.8
Temperate Grassland	13	46.8
Tundra	11	39.6
Savanna	10	36
Temperate Forest	8	28.8
Mountain	6	21.6
Scrub	3	10.8

HINT: this should total to 360

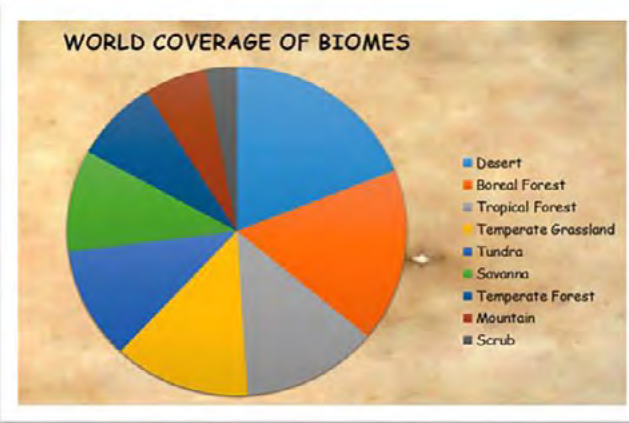
### Investigating Biomes

Earth is a world of many beautiful places!

**TASK:**

- Draw the table below in your Geography exercise book.
- Record the temperature range and average rainfall for each biome.
- Choose one plant and one animal for each biome type and name and sketch it.

BIOME TYPE	TEMPERATURE	RAINFALL	PLANTS	ANIMALS
Desert				



### Sustainability

- Over time, humans have restructured biomes for agricultural, mining and urban function
- Modified biomes are called anthropogenic biomes or anthromes
  - This covers more of the Earth's surface than natural ecosystems!

The United Nations has stated that biomes need to be protected to meet the needs of the present, without compromising the ability of future generations to meet their own needs.

**TASK:**

- What biome do you live in?
- Using primary and secondary research, describe how your biome has been changed by anthropogenic forces.  
Primary research examples: interview, questionnaire, etc.  
Secondary research examples: books, websites, etc.

### Investigating Biomes continued...

**TASK:**

- Visit and choose <https://askbiologist.asu.edu/explore/Virtual-360-Biomes> to go on a virtual tour for one of the following:
  - Desert- South Western United States of America
  - Rainforest- Panama
  - Temperate Forest- Arizona and Colorado
- Draw and fill in a Y-chart in your Geography exercise book.

Image source: <https://askbiologist.asu.edu/explore/biomes>



# SUSTAINABLE BIOMES: DISTRIBUTION & CHARACTERISTICS

## World Map – Spatial distribution of biomes

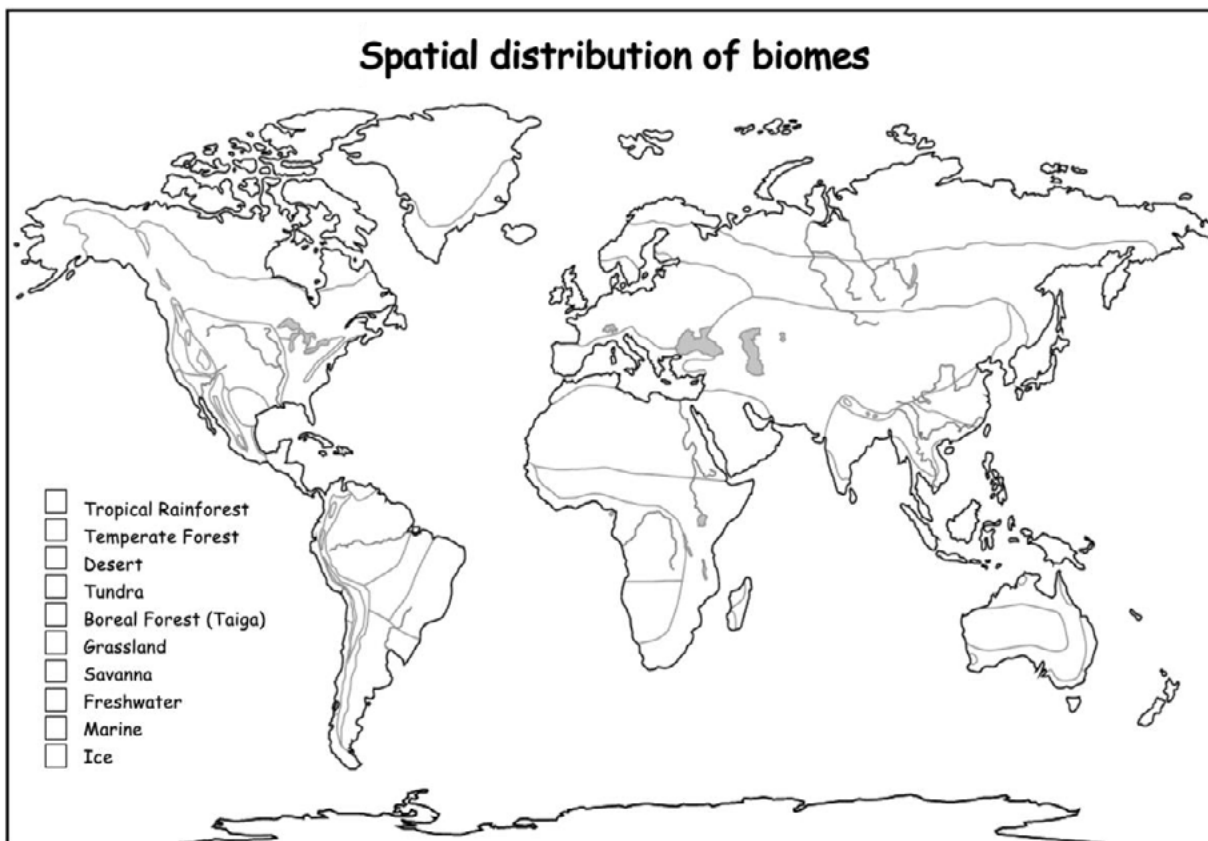
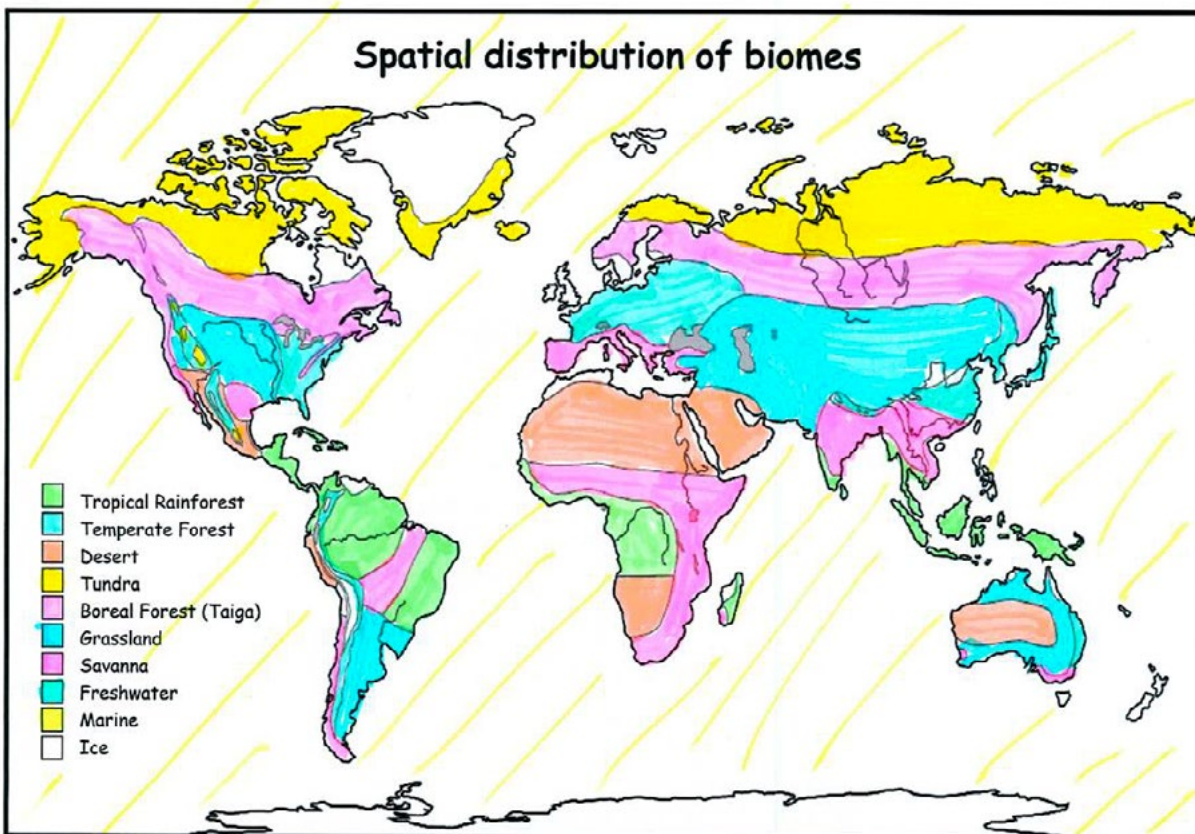


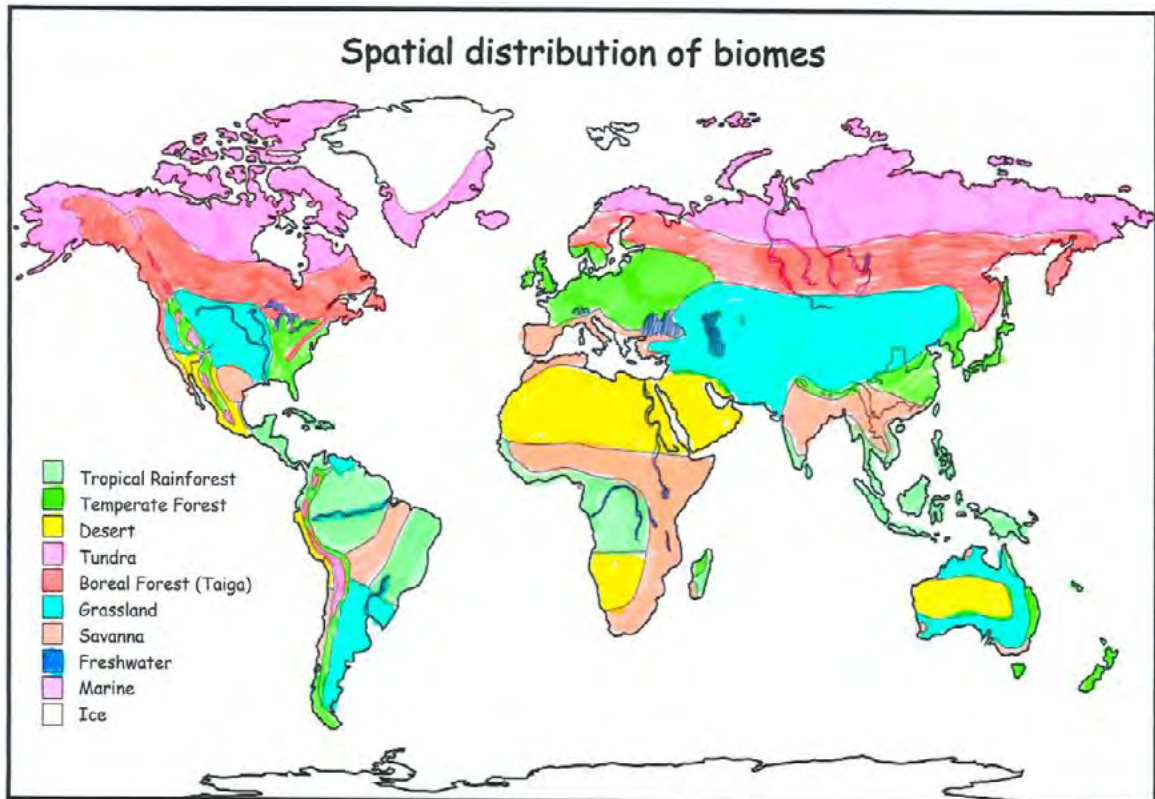
Image Source: [https://askabiologist.asu.edu/sites/default/files/resources/coloring\\_pages/pdf/aab-biome-activity.pdf](https://askabiologist.asu.edu/sites/default/files/resources/coloring_pages/pdf/aab-biome-activity.pdf)

## Sample student work

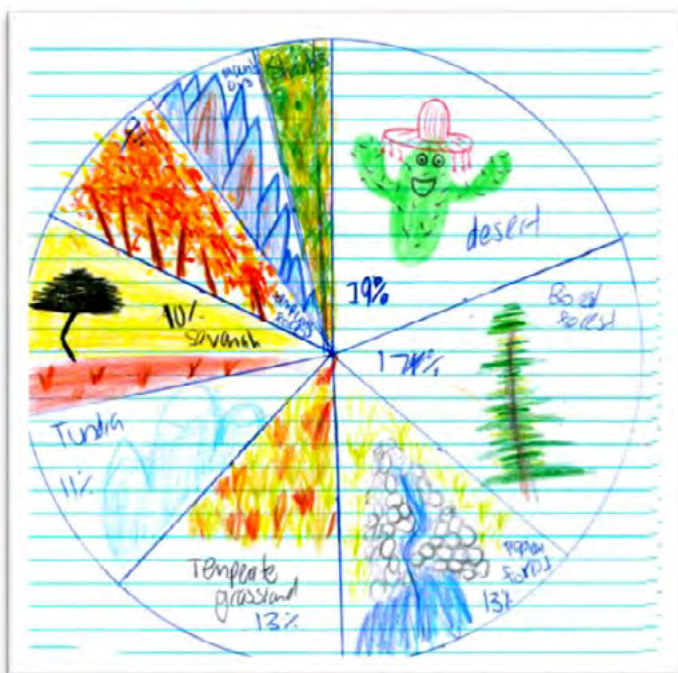


Tarryn Sargent – Year 9 Geography 2022

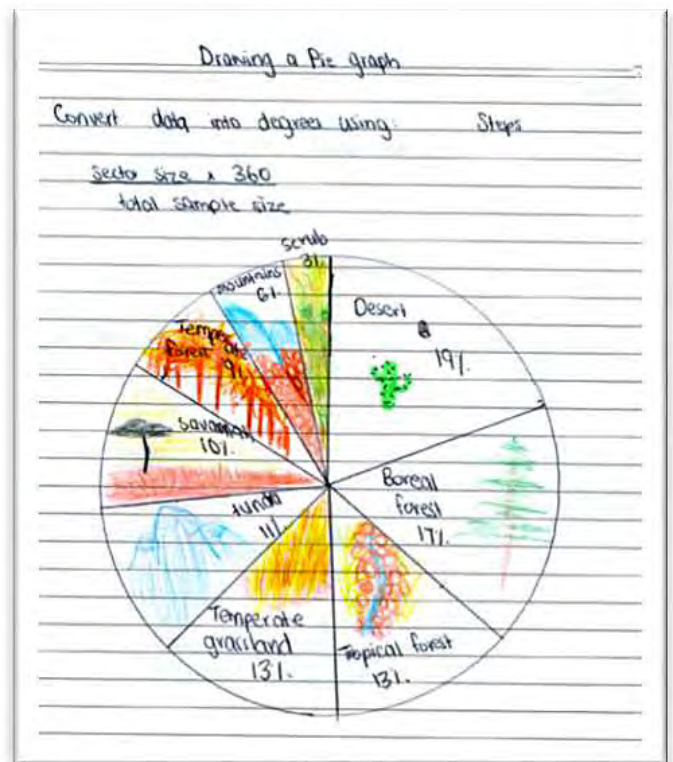
# SUSTAINABLE BIOMES: DISTRIBUTION & CHARACTERISTICS



Elisha Cuthbert - Year 9 Geography 2022



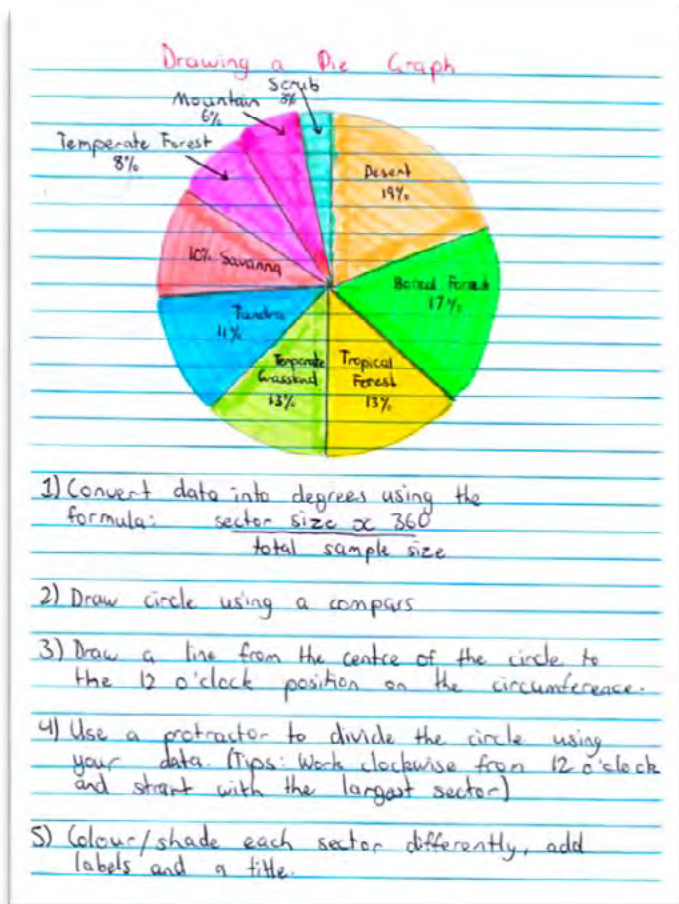
Celeste McConachie - Year 9 Geography 2022



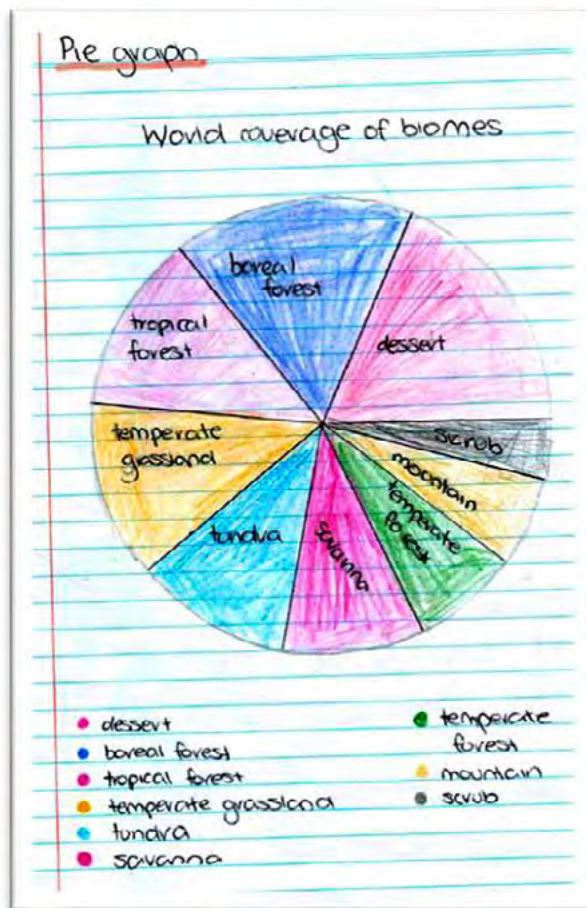
Talia Stedman - Year 9 2022



# SUSTAINABLE BIOMES: DISTRIBUTION & CHARACTERISTICS



Zoe Rigato - Year 9 Geography 2022

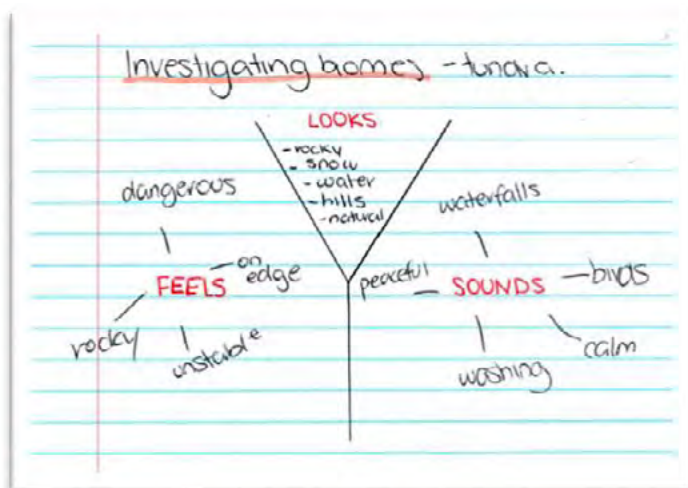


Kate Naylor - Year 9 2022

### Investigating biomes

biome	temp	rainfall	plants	animals
desert	33°C	10 inches	cacti	kit fox
boreal forest	-30 - -65°F	40 inches	willow	snow goose
tropical forest	20°C	70 - 394	rafflesia	touran
temp grassland	-20°C	35 inches	sunflower	deer
tundra	-34°C	10 inches	bearberry	penguin
savanna	65 - 86°F	30-40 inches	rhode grass	elephant
tempe forest	10°C	30-154 inches	mosses	chick
mountain	5°C	1090 mm	spruces	bear
scrub			shrubs	lizards

Kate Naylor - Year 9 2022



Kate Naylor - Year 9 2022