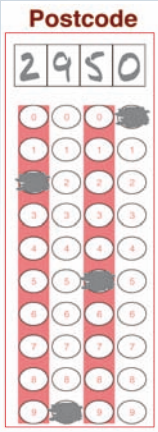
Question Booklet

2012 National Geographic Channel Australian Geography Competition

INSTRUCTIONS

1. Fill in your **name, school code** (your teacher will give you this), school's **postcode,** your **gender** and **age**. You must fill in the ovals, not just write the letters and numbers, as the computer only reads the ovals. For example, a filled-in postcode (for some other school) would look like the sample on the right. Also fill in an oval in the school assigned column if instructed to do so by your teacher. Otherwise leave it blank.



2. If you are 13 years or under on 31 August 2012 complete Questions 1-30, or continue to Question 40 to be eligible for major prizes.

3. If you are 14 or 15 years old on 31 August 2012 complete Questions 1-40.

4. If you are 16 to 18 years old on 31 August 2012 complete Questions 16-50.

5. Answer all questions by filling in **only one** oval on the answer sheet corresponding to the most appropriate answer for each question.

6. You have 35 minutes to answer the questions. The time to fill in the preliminary information is extra.

7. Do not mark the front or back of the answer sheet in any other way as this can lead to errors in the computerized marking, or to your not getting a result.

The Royal Geographical Society of Queensland Inc

Australian Geography Teachers' Association Ltd

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Figure 1. *Map of Thailand* *© D. Dalet, d-maps.com*

Start at Question 1 if you are **under 16 years** old on 31 August 2012. Start at Question 16 if you are older.

1 The tourist resort of Phuket (see Figure 1) is on the coast of which ocean?

A Arctic
B Atlantic
C Indian
D Pacific
E Southern

2 Thailand has been sheltering approximately 100,000 refugees from which neighbouring country?

A Afghanistan
B Burma
C China
D Indonesia
E Vietnam

3 Which major river forms part of the border between Thailand and Laos?

A Ganges
B Indus
C Mekong
D Volga
E Yangtze

4 In 2011 Thailand experienced disastrous and widespread flooding. What was the cause of this flooding?

A cyclonic storm surge
B El Niño conditions
C failure of the Sirikit Dam
D heavy monsoon rains
E snow melt from Thailand's mountains

5 Which features protected central Bangkok from the worst of the flooding?

A buoys
B docks
C flood gauges
D levees
E terraces

6 Which religion do most people in Thailand follow?

A Buddhism
B Christianity
C Hinduism
D Islam
E Shintoism

7 Which milestone was world population estimated to have reached in 2011?

A 3 billion
B 4 billion
C 5 billion
D 6 billion
E 7 billion

8 Which Australian state has approximately 40% of its land area reserved for nature conservation?

A Queensland
B South Australia
C Tasmania
D Victoria
E Western Australia

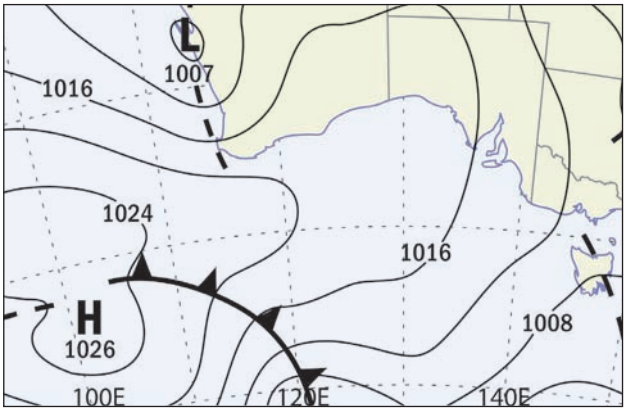


Figure 2. *© Commonwealth of Australia*

9 Figure 2 is an extract from which type of map?

A political map
B relief map
C road map
D topographic map
E weather map

10 The symbol ▲▲▲ in Figure 2 represents:

A a cold front
B high pressure
C an isobar
D low pressure
E a warm front

Figure 3. *Miyako, Japan, 20 March 2011*
Source: U.S. Navy

11 What caused the devastation shown in Figure 3?

A fire
B tornado
C tsunami
D typhoon
E volcanic eruption

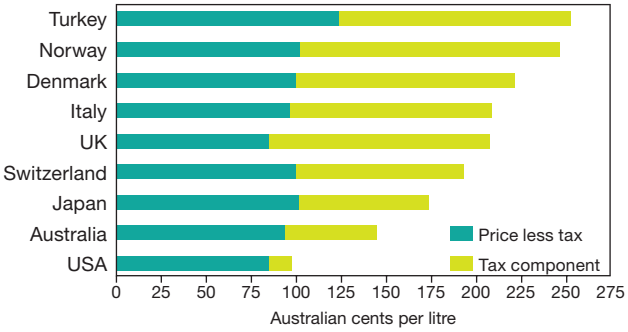


Figure 4. *Petrol prices in selected OECD countries, June 2011* *Source: Australian Petroleum Statistics, no. 182*

12 From Figure 4, which OECD country had an average petrol price of approximately A$0.97 in June 2011?

A Australia
B Italy
C Switzerland
D UK
E USA

13 From Figure 4, which OECD country had the highest petrol taxes in June 2011?

A Australia
B Denmark
C Japan
D Norway
E Turkey

14 From Figure 4, why did Turkey have higher petrol prices than Norway in June 2011?

A Norway had higher petrol taxes.
B Norway's petrol price before tax was higher.
C Turkey had higher petrol taxes.
D Turkey had larger oil reserves than Norway.
E Turkey's petrol price before tax was higher.

15 Some farmers are concerned that coal seam gas extraction in the Liverpool Plains, NSW, will cause water pollution, affecting which of Australia's drainage divisions?

A Murray-Darling
B Northeast Coast
C Southwest Coast
D Timor Sea
E Western Plateau

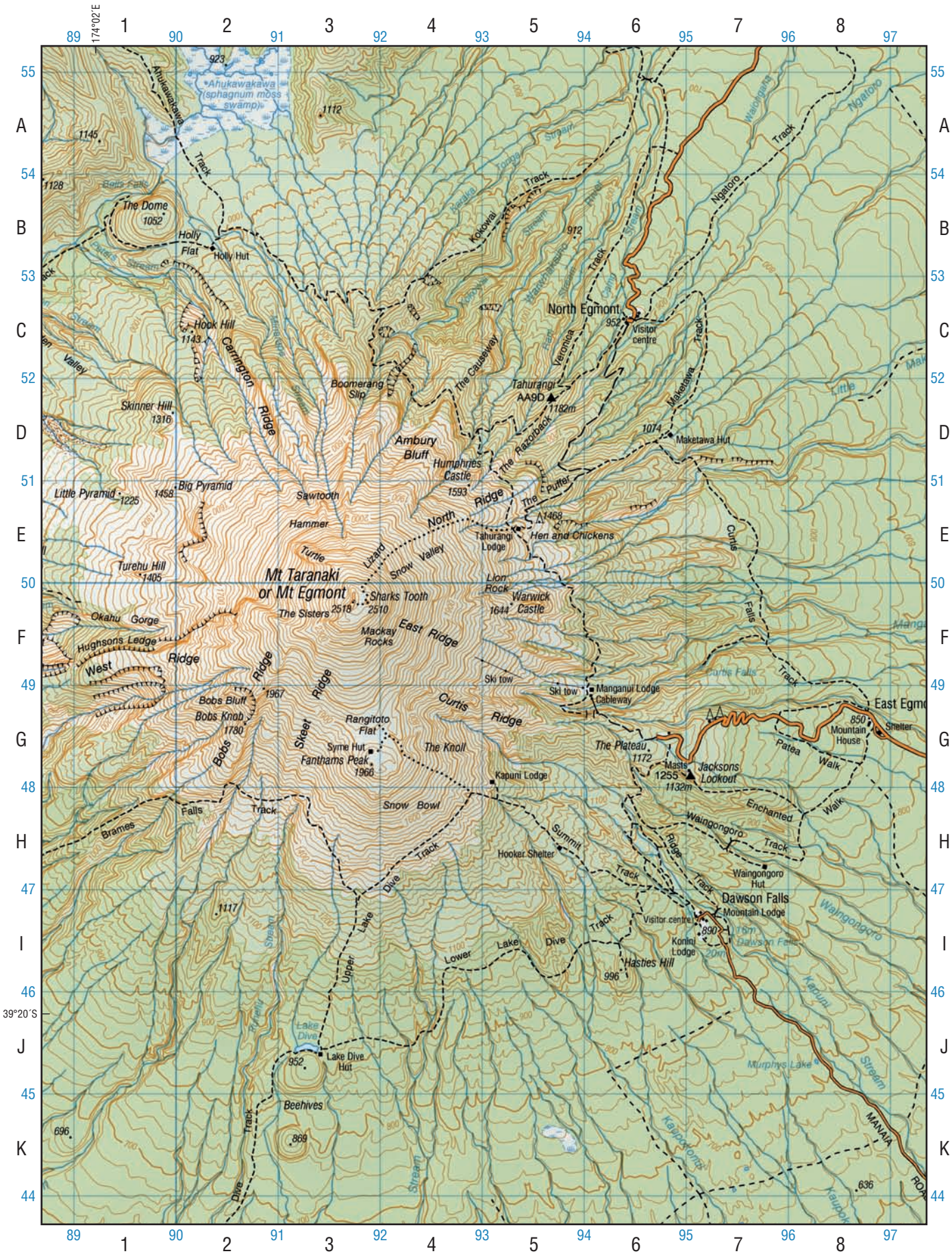
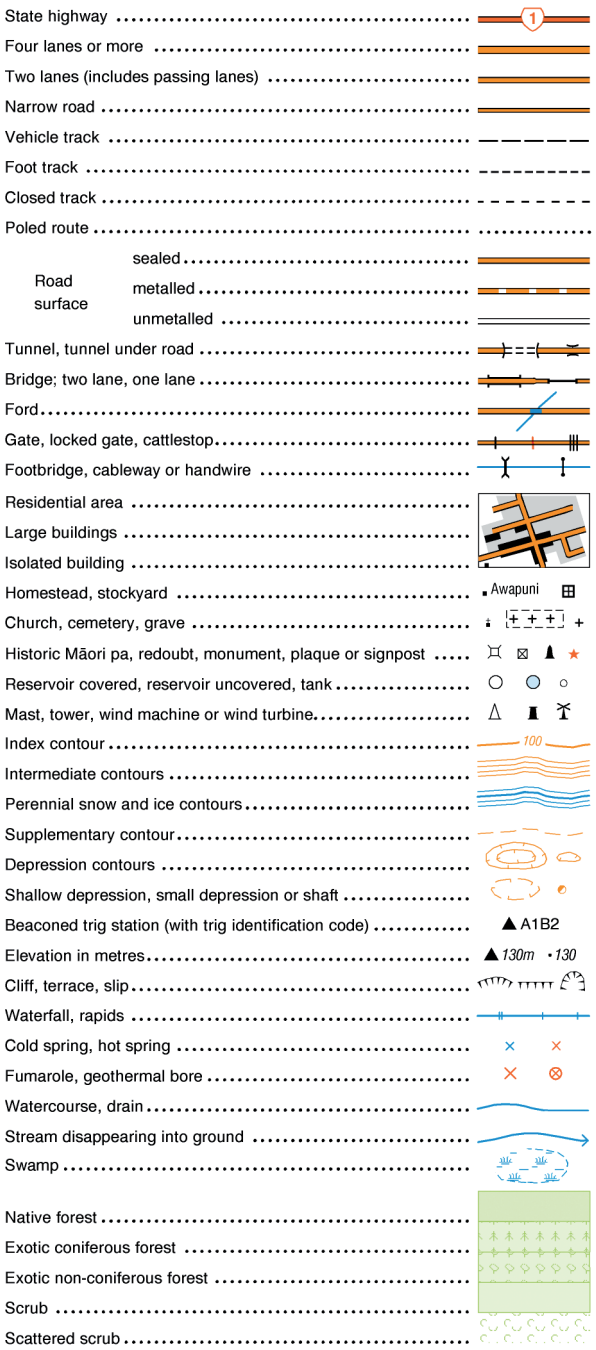
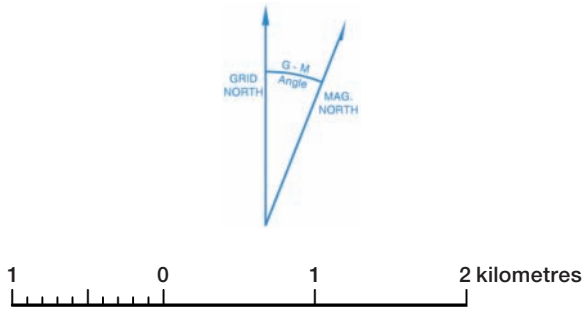


Figure 5. *Topographic map of Mt Taranaki*

Legend





20 metre contour interval

Source: LINZ; Crown copyright reserved, 2009

Start at Question 16 if you are **16** to **18 years** old on 31 August 2012. If you are younger, continue answering questions.

16 Using Figure 5, where is Mt Taranaki located?

A Alaska
B Iceland
C Japan
D New Zealand
E Sicily

17 What is the approximate distance from Lake Dive Hut (square J3) to Kapuni Lodge (G5), following the shortest tracks?

A 3.5 km
B 4.5 km
C 5.5 km
D 6.5 km
E 7.5 km

18 The vegetation around Lake Dive Hut (J3) is mostly:

A exotic coniferous forest
B exotic non-coniferous forest
C native forest
D scattered scrub
E swamp

19 What is the approximate height above sea level of Lake Dive Hut (J3)?

A 910 m
B 930 m
C 950 m
D 975 m
E 1000 m

20 Which natural feature is located at grid reference 925503?

A East Ridge
B Hen and Chickens
C The Sisters
D Snow Valley
E Turtle Ridge

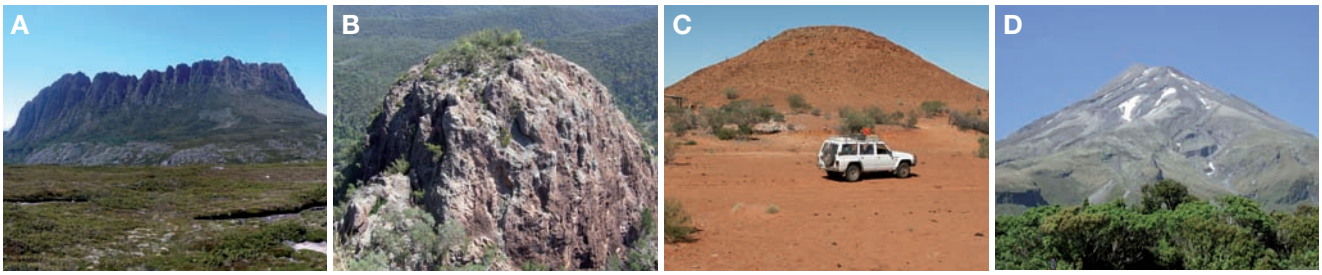


Figure 6.

A © Sbork; B © Diceman; C © H. Duckworth; D © Pseudopanax

21 Which photo in Figure 6 is of Mt Taranaki?

A photo A
B photo B
C photo C
D photo D
E none of the above

22 How was The Dome (B1 in Figure 5) formed?

A erosion of soft sediment
B landslide on a steep slope
C lava solidifying around a vent
D slippage along a fault line
E subsidence of the underlying strata

23 Which activity is <u>not</u> catered for within the area shown in Figure 5?

A bushwalking
B overnight hikes
C rock climbing
D skiing
E wind surfing

24 Which type of drainage does the area shown in Figure 5 have?

A dendritic
B internal
C radial
D rectangular
E trellis

25 During the recent earthquakes in Christchurch, the structure of some soils collapsed, transforming the soil material into a fluid mass. What is this process called?

A dissolution
B hydration
C leaching
D liquefaction
E percolation

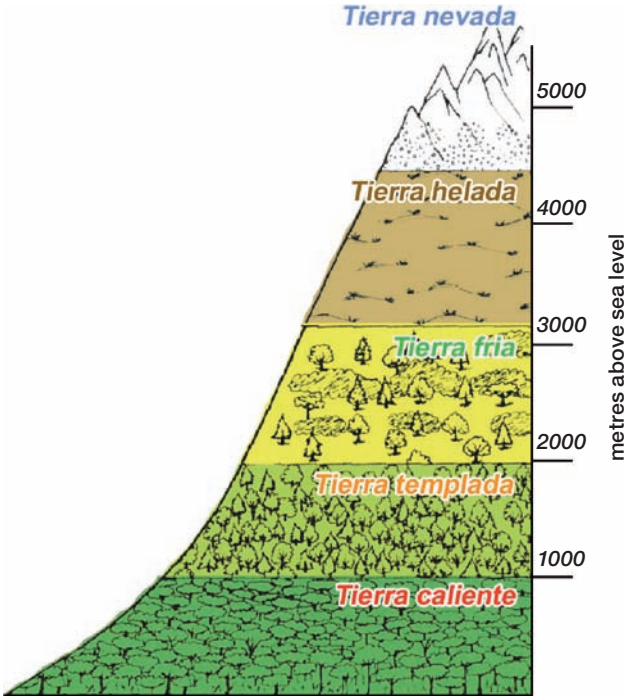


Figure 7. *Altitudinal zones, northern Andean region*

Source: www.kartenraum.de

26 Using Figure 7, alpine grasslands are found in which zone in the northern Andean region?

A tierra caliente
B tierra fria
C tierra helada
D tierra nevada
E tierra templada

27 Using Figure 7, which of these agricultural activities occurs in the *tierra caliente* in the northern Andean region?

A growing bananas
B growing grapes
C growing wheat
D rearing llamas
E rearing sheep

The International Date Line is an imaginary line located at about the 180° line of longitude. Despite its name, the International Date Line has no international status and is not defined by any treaty. This means that countries close to the Date Line are free to choose which date they will observe.

Figure 8. *International Date Line*

Adapted from Royal Observatory, Greenwich

28 Which of these countries skipped a day in 2011 as it realigned the International Date Line (see Figure 8) to its east instead of its west?

A Jamaica
B Papua New Guinea
C Samoa
D Sri Lanka
E United Kingdom

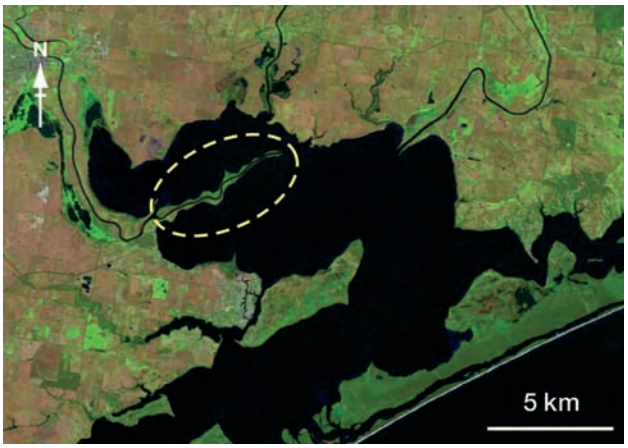


Figure 9. *Satellite mosaic image*

© Commonwealth of Australia (Geoscience Australia)

29 The water body featured in the satellite image in Figure 9 is part of:

A Gippsland Lakes, Vic
B Lake Eyre, SA
C Lake St Clair, Tas
D Sydney Harbour, NSW
E Swan River Estuary, WA

30 The feature circled in Figure 9 is made mostly of:

A ash
B concrete
C rock
D sediment
E shells

If you are **under 14 years** old on 31 August 2012 you may stop at Question 30 or continue to Question 40 to be eligible for major prizes.

31 From Table 1, the number of visitors from which country decreased the most between 2000 and 2010?

A China
B Japan
C Singapore
D South Korea
E Taiwan

32 From Table 1, visitors from which of these countries increased at the highest <u>rate</u> between 2005 and 2010?

A China
B Hong Kong
C India
D Indonesia
E Malaysia

33 The increase in visitor numbers from China to 2010 was partly due to:

A increasing income levels in China
B onset of the global financial crisis
C outbreak of flu in Australia
D rise in value of the Australian dollar
E Shanghai Expo

Table 1. *Visitors to Australia from selected Asian countries (in thousands)* *Source: Tourism Research Australia*

	Japan	China	Singapore	South Korea	Malaysia	Hong Kong	India	Indonesia	Taiwan
2000	721	120	286	157	152	154	41	98	134
2005	685	285	266	251	166	160	68	83	111
2010	398	454	308	214	237	164	139	124	87

34 Although world population is rising, some countries have falling populations. Which list is of three such countries?

A Bangladesh, Laos, Nepal
B Bolivia, Colombia, Peru
C Bulgaria, Hungary, Ukraine
D Canada, Mexico, USA
E Kenya, Nigeria, Tanzania

35 Which city, experiencing rapid population growth, is building a light rail system to alleviate traffic congestion?

A Alice Springs, NT
B Broken Hill, NSW
C Canberra, ACT
D Gold Coast, Qld
E Launceston, Tas

36 Which of these is <u>not</u> part of the new infrastructure for the proposed expansion of the Olympic Dam mine in South Australia?

A electricity transmission line from Port Augusta
B expanded tailings storage
C new airport for larger aircraft
D rail link to the national rail network
E water pipeline from Lake Eyre

37 Which of these is a <u>qualitative indicator</u> used to compare levels of human well-being?

A doctors per 1000 people
B infant mortality
C literacy rates
D per capita income
E social harmony

38 The fact that most malaria cases occur in tropical areas in an example of which geographic concept?

A change over time
B movement
C scale
D spatial association
E sustainability

Figure 10. *Satellite image showing smoke plumes, 23 November 2011* *Source: NASA*

39 Which tourism and wine region was burnt by the fires with the largest smoke plume in Figure 10?

A Barossa Valley, SA
B Granite Belt, Qld
C Hunter Valley, NSW
D Margaret River, WA
E Yarra Valley, Vic

40 The wind on 23 November 2011 in the area of the satellite image (Figure 10) is best described as:

A calm
B cool, moist westerly wind
C hot, dry southerly wind
D moderate easterly wind
E strong northerly wind

If you are **under 16 years** old on 31 August 2012 stop at Question 40. If you are older, continue to Questions 41- 50.

Wind power is set to become an important means of generating electricity worldwide. For thousands of years it has turned windmills, flown kites, cooled houses and filled sails. Now, technological advances are breathing new life into our use of wind power as a clean, renewable, cost-effective means of generating electricity.

There are probably two main reasons for the increasing interest in wind power. First, most electricity generated today uses non-renewable fuels such as coal, oil and gas. These contribute vast quantities of carbon dioxide to the atmosphere, causing the enhanced greenhouse effect warming Earth's atmosphere. The second reason is that advances in wind power science and technology are reducing the cost of wind power to a point at which it is becoming competitive with many other energy sources.

The power available from a wind turbine increases very rapidly with wind speed: a doubling of wind speed results in as much as an eight-fold increase in power. Therefore it is important to site wind generators in a place where the wind speed is high, as well as reasonably constant. A drawback to wind power is that the wind can be erratic, changing direction by the hour. There may be no wind at all one day and a howling gale the next. It may blow hard at times when electricity demand is low, and be a mere gentle breeze when demand is high. Wind is slowed by friction with the land surface.

The large-scale production of wind-powered electricity involves the use of windfarms. These are concentrations of wind turbines – from just a few to hundreds.

How far can wind power take us? The Australian government wants 20% of the nation's electricity to be obtained from renewable sources such as wind power. Wind power technology has the potential to supply a significant proportion of the nation's electricity needs – just as long as the wind keeps blowing.

***Figure 11**. Wind power gathers speed*

Adapted from Australian Academy of Science

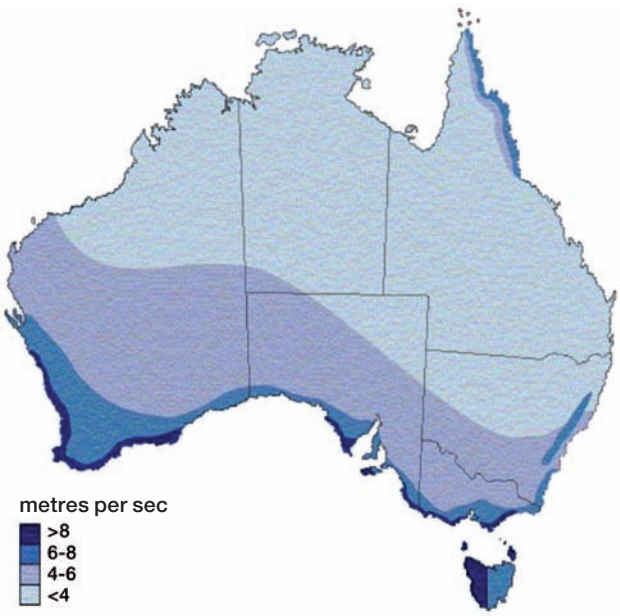


***Figure 12.** Background winds in Australia*

Source: Australian Greenhouse Office

***Figure 13.** Albany Wind Farm* *© J. Grant*

To answer Questions 41 to 50 use the information in Figures 11 to 16, Table 2, and your own knowledge.

41 Which of these energy sources is best described as intermittent but predictable?

A biomass
B geothermal
C solar
D tidal
E wind

42 The areas of Australia with the greatest wind farm potential are influenced by which winds?

A Fremantle Doctor
B Monsoons
C Polar Easterlies
D Roaring Forties
E Trade Winds

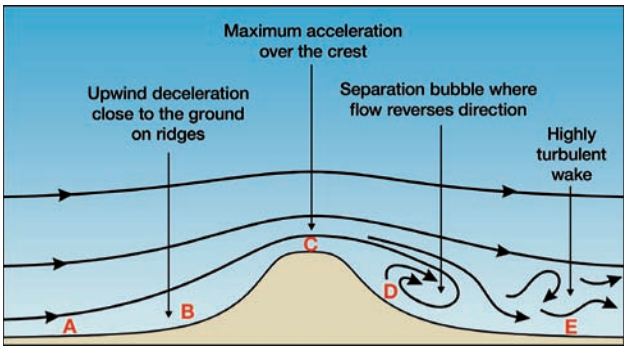


Figure 14. *Wind flow over an isolated steep hill*

Source: CSIRO

Table 2. *Land area available at selected wind speeds in sample area in Great Dividing Range, NSW*

Source: CSIRO

Mean annual wind speed exceeded (m/sec)	Percentage land area
9	0.02%
8.5	0.08%
8	0.16%
7.5	0.54%
7	3.07%
6.5	12.13%
6	28.60%

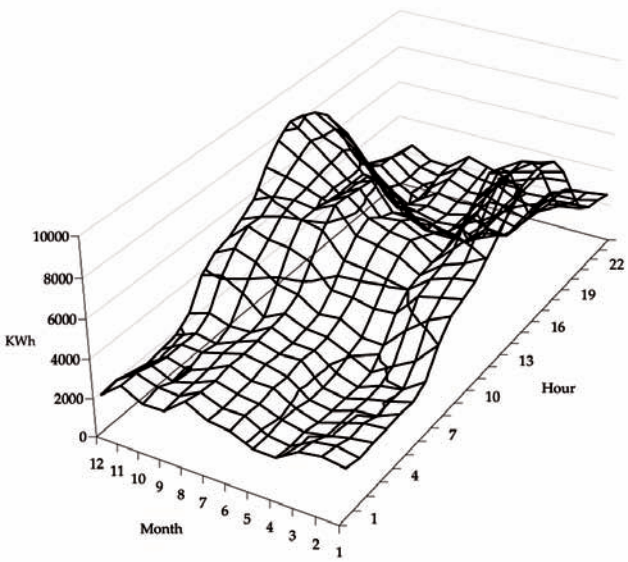


Figure 15. *Seasonality in mean half-hourly wind power output from the Albany Wind Farm*

Source: H. Suenaga & M. Lampard

43 Placing a wind turbine at which of the sites in Figure 14 would be likely to result in the highest output of power?

A site A
B site B
C site C
D site D
E site E

44 A site with strong winds may still be unsuitable for a wind farm. Which of these is a disadvantage in siting a wind farm?

A high levels of wind turbulence from uneven terrain
B mostly bare ground surface
C scarcity of water for on-going wind farm operation
D short distance to connect to existing electricity grid
E wind speeds are high and relatively constant

45 Technological advances have allowed power to be economically generated at lower wind speeds. For the area reported in Table 2, how much more land is available if the threshold for viable production is lowered from 8 m/sec to 7 m/sec?

A approx 2 times
B approx 3 times
C approx 8 times
D approx 20 times
E approx 50 times

46 Changes to regulations in some Australian states will affect the development of wind farms within 2 km of a residence. The primary reason for these changes is:

A bushfires from lightning strikes on turbines
B community concern over turbine noise
C erratic energy production not being economical
D high levels of carbon dioxide produced by turbines
E injuries to endangered bird species

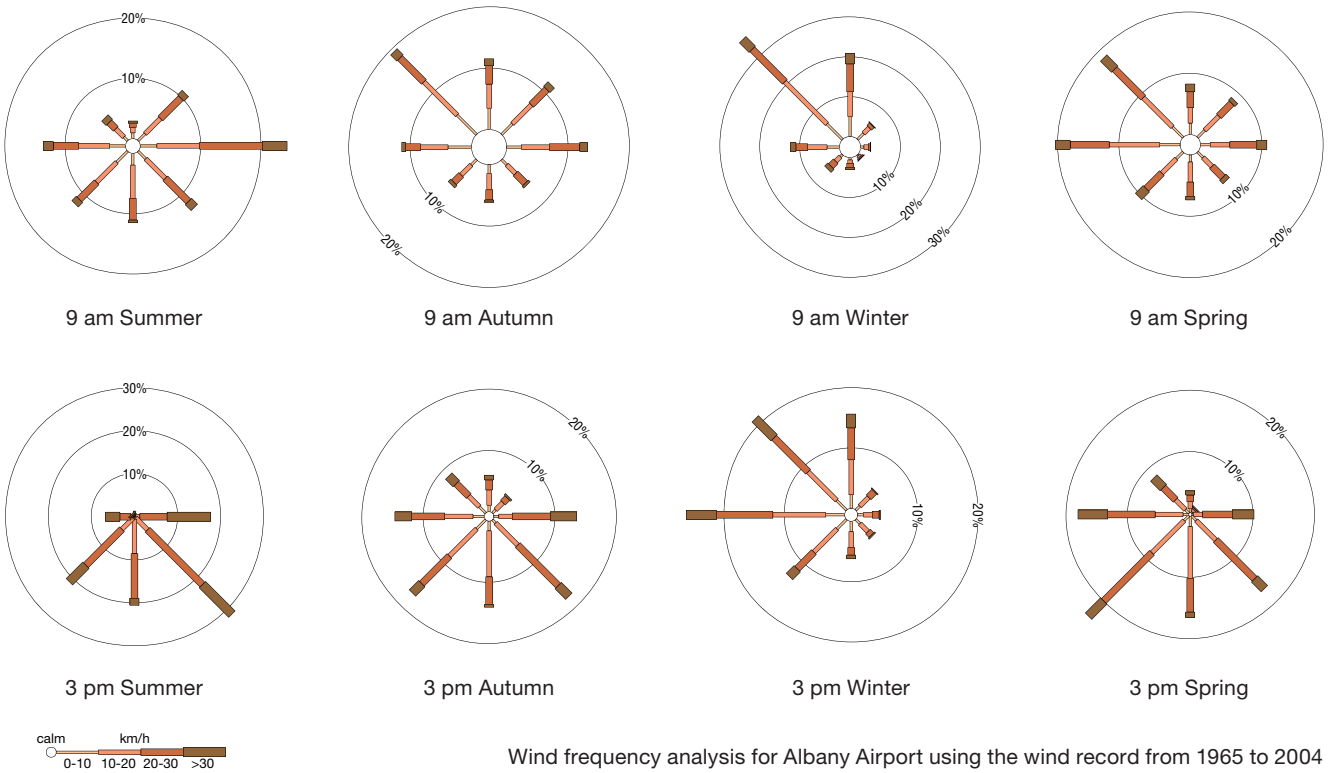


Figure 16. *Wind roses for Albany Airport*

47 Albany is in the country of the Noongar people. The Noongar season of *bunuru* commonly has easterly winds, and people moved to the coast to fish. *Bunuru* overlaps with:

A autumn
B spring
C summer
D winter
E none of the above

48 Which statement about the winds at Albany Airport is correct?

A Autumn afternoons have the gentlest winds.
B On spring afternoons, easterlies blow about 10% of the time.
C The strongest winds come from the northwest on winter mornings.
D Westerlies blow above 30 km/h 20% of the time on spring mornings.
E all of the above

49 Using Figure 15, on average, the greatest output from the Albany Wind Farm occurs on:

A autumn mornings
B summer afternoons
C summer mornings
D winter afternoons
E winter nights

50 The output of the Albany Wind Farm:

A can be adjusted to meet rising electricity demand
B does not relate to the wind strength experienced at Albany Airport
C is greatest at the time of day when demand for electricity is increasing
D is greatest in the season when demand for electricity for heating is highest
E is lowest in the season when demand for electricity for cooling is highest

Thank you for taking part in the
2012 National Geographic Channel
Australian Geography Competition.