



STATE DA VINCI DECATHLON 2017

CELEBRATING THE ACADEMIC GIFTS OF STUDENTS
IN YEARS 5 & 6



GENERAL KNOWLEDGE

TEAM NUMBER _____

SECTION ONE: ALTERNATE POWER SOURCES (5 MARKS)

SOME SOCIETIES WORLDWIDE ARE TRYING TO USE ALTERNATE POWER SOURCES AS THEIR PRIMARY SOURCES OF POWER.

Define the following sources of energy.

1. *Biomass*
2. *Hydropower*
3. *Nuclear fusion*
4. *Nuclear fission*
5. *Piezoelectricity*

SECTION TWO: SYMBOLS OF POWER (15 MARKS)

INSTANTLY RECOGNISABLE SYMBOLS REPRESENT OFFICES OF POWER.

Below are images of symbols of power from around the world. Can you identify the office which these symbols represent? Where indicated, name the symbols.



1.



2.



3.



4.



5.



6.



7.



8.



9.



10.

SECTION THREE: BUSHRANGERS (10 MARKS)

BUSHRANGERS EXERTED THEIR POWER ON OTHERS THROUGHOUT REGIONAL AUSTRALIA.

Answer the following questions.

1. What is a bushranger?
2. Who were the first bushrangers?
3. What year is the first Australian bushranger known to have escaped into the bush?
4. Who owned this armour?



5. What was the town and state where the gang which this bushranger led had their final shoot-out?
6. Where was this bushranger sent after this shoot-out?
7. How did he die?
8. What were his final words?

SECTION FOUR: SPORT (20 MARKS)

FROM SUCCESSFUL ATHLETES TO THE MEDIA, THERE ARE MANY POWERFUL ENTITIES AND PEOPLE IN AUSTRALIAN SPORT.

Answer the following questions.

1. Sport in Australia has a centre of excellence in each State and Territory, as well as a national centre of excellence. Name this centre of excellence **for the State/Territory which you are currently in**.
2. Identify three of the top four team sport competitions by total spectatorship (including televised spectatorship) in Australia between 2015 and 2017.

Much power within Australian Sport lies in media boardrooms.

Questions 3-5 address media and sport.

3. What 'world first' took place in Channel Nine's broadcast of the 2010 State of Origin Series?
4. Which Australian network broadcasts the Australian Open?
5. In which decade did this network start broadcasting the Australian Open?
6. This man is one of Australia's most famous sports broadcasters. Who is he?



Questions 7-12 relate to influential individuals in Australian sport.

Identify who is pictured below, and the sport they are famous for competing in.



7.

8.



9.



10.





11.



12.

SECTION FIVE: POWERFUL SPEECHES (15 MARKS)

FOR CENTURIES, SPEECHES MADE BY FAMOUS PEOPLE HAVE DEFINED HOW THEY HAVE BEEN PERCEIVED BY THE WORLD.

The following are powerful quotes. Whose quote was it, and, where indicated, what was the capacity or position they were in at the time?

1. "The lady's not for turning"
2. "I have a dream"
3. "Brexit means Brexit"
4. "On behalf of the parliament of Australia, I am sorry."
5. "Tear down this wall!"
6. "We shall fight on the beaches"
7. "And to all the little girl whose are watching this, never doubt that you are valuable and powerful and deserving of every chance and opportunity in the world to pursue and achieve your own dreams."
8. "I stand here before you not as a prophet but as a humble servant of you, the people"
9. "Let us remember: One book, one pen, one child, and one teacher can change the world."
10. "I cannot lead you into battle, I do not give you laws or administer justice but I can do something else, I can give you my heart and my devotion to these old islands."

SECTION SIX: THE POWER OF MACHINES (15 MARKS)

MACHINES ARE INCREDIBLY POWERFUL AND ALLOW US TO EXECUTE OTHERWISE UNIMAGINABLE FEATS.

The A380 is the largest commercial passenger plane in the world.

- 1) Once a plane is on the runway and all checks have been completed (so that the plane is ready to take off), what causes the plane to move forward down the runway?
- 2) What is the name of the shape of the wing of a plane?
- 3) As air moves over this shape, what happens to the wing?
- 4) What force results from the process described in question 3?
- 5) Draw an annotated diagram referring to the *forces* acting in each direction once the A380 is in-flight and level. (9 marks)

The Large Hadron Collider (LHC) contains magnets which are in excess of 100,000 times more powerful than the Earth's gravitational field.

- 6) What is the Large Hadron Collider (LHC)?
- 7) When did the conditions which the LHC produces exist?
- 8) Scientists use the LHC to perform experiments on fundamental concepts of which core area of science?
- 9) Name the four specific purposes of the LHC.



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GENERAL KNOWLEDGE ANSWERS

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SECTION ONE: ALTERNATE POWER SOURCES (5 MARKS)

ANSWER		
1	Energy from plants/organic matter	/1
2	Energy generated by the gravitational force of moving or falling water	/1
3	The <u>process of fusing atomic nuclei</u> with low atomic numbers to form a heavier nucleus, releasing energy	/1
4	The process of splitting a heavy nucleus into two smaller nuclei, releasing energy	/1
5	The process of <u>applying mechanic stress</u> to a substance (which results in electric polarisation of the substance)	/1
TOTAL		/5

SECTION TWO: SYMBOLS OF POWER (15 MARKS)

ANSWER		
1	Office represented: Queen of the United Kingdom OR Monarch of the United Kingdom	/1
	Name of symbol: Queen's Carriage	/1
2	Office represented: The Pope	/1
	Name of symbol: Popemobile	/1
3	Office represented: Vice President of the United States	/1
4	Office represented: President of France	/1
	Name of symbol: Élysée Palace	/1
5	Office represented: Russian President	/1
6	Office represented: Australian Prime Minister	/1
	Name of symbol: Kirribilli House	/1
7	Office represented: President of the United States	/1
	Name of symbol: The Beast OR Cadillac One OR Limousine One OR First Car OR Stagecoach	/1
8	Office represented: Emperor of Japan	/1
9	Office represented: King of Thailand	/1
10	Office represented: President of Germany	/1
TOTAL		/15

SECTION THREE: BUSHRANGERS (10 MARKS)

ANSWER		
1	An outlaw who lived off the land by robbing free settlers in the Australian bush. (1 mark) Nomadic lifestyle so as to avoid capture. (1 mark)	/2
2	Escaped convicts	/1
3	1790	/1
4	Ned Kelly	/1
5	Glenrowan (1 mark) Victoria (1 mark)	/2
6	Melbourne Gaol	/1
7	He was hanged	/1
8	"Such is life"	/1
TOTAL		/10

SECTION FOUR: SPORT (20 MARKS)

ANSWER		
1	Accept the relevant answer depending on the State/Territory you are in: <ul style="list-style-type: none"> • ACT Academy of Sport • New South Wales Institute of Sport • Northern Territory Institute of Sport • Queensland Academy of Sport • South Australian Sports Institute • Tasmanian Institute of Sport • Victorian Institute of Sport • Western Australian Institute of Sport 	/1
2	Accept any three of: <ul style="list-style-type: none"> • Australian Football League (AFL) • National Rugby League (NRL) • A-League • Big Bash League 	/3
3	It was the first sport match to be broadcast in 3D	/1
4	The Seven Network	/1
5	1970s	/1
6	Bruce McAvaney	/1
7	Person: Sally Pearson <hr/> Sport: Athletics / Track and Field	/1 /1
8	Person: Adam Scott	/1

9	Person: Stephanie Gilmore	/1
	Sport: Surfing	/1
10	Person: Sir Don Bradman	/1
	Sport: Cricket	/1
11	Person: Dawn Fraser	/1
	Sport: Swimming	/1
12	Person: Kyle Chalmers	/1
	Sport: Swimming	/1
TOTAL		/20

SECTION FIVE: POWERFUL SPEECHES (15 MARKS)

ANSWER		
1	Person: Margaret Thatcher	/1
	Position: British Prime Minister	/1
2	Person: Dr Martin Luther King Junior	/1
3	Person: Theresa May	/1
4	Person: Kevin Rudd	/1
	Position: Prime Minister of Australia	/1
5	Person: Ronald Reagan	/1
	Position: President of the United States	/1
6	Person: Winston Churchill	/1
7	Person: Hillary Clinton	/1
	Position: 2016 Democratic Party nominee for US President – do not accept former Secretary of State	/1
8	Person: Nelson Mandela	/1
9	Person: Malala Yousafzai	/1
10	Person: Queen Elizabeth II	/1
	Position: Queen of the United Kingdom, Canada, Australia, and New Zealand (also accept: Queen of the United Kingdom OR British Commonwealth OR The British Monarch OR Queen of England)	/1
TOTAL		/15

SECTION SIX: THE POWER OF MACHINES (15 MARKS)

Note to markers: this is the most challenging section in the paper. It is designed to be a differentiator in the paper. Question 9 is particularly challenging, but is designed to be so.

ANSWER		
1	Engines accelerate the plane down the runway	/1
2	Aerofoil	/1
3	The wing is forced towards the ground	/1
4	An upwards force, known as lift	/1
<p>Diagram:</p> <ul style="list-style-type: none"> • 1 mark: sketch of plane (which is level) – if plane is pointing up or down, do not award the mark • 1 mark: an arrow pointing forwards • 1 mark: 'Thrust' label on the arrow pointing forwards • 1 mark: an arrow pointing backwards • 1 mark: 'Drag' label on the arrow pointing backwards • 1 mark: an arrow pointing upwards • 1 mark: 'Lift' label on the arrow pointing upwards • 1 mark: an arrow pointing downwards • 1 mark: 'Weight' label on the arrow pointing downwards 		
5	Example diagram below:	/9
<p>The diagram shows a side view of a white and green airplane. Four black arrows represent forces acting on it: 'THRUST' points to the left from the engine area, 'DRAG' points to the right from the tail, 'LIFT' points upwards from the wing area, and 'WEIGHT' points downwards from the fuselage.</p>		
6	World's most powerful and largest particle accelerator	/1
7	Within a billionth of a second / immediately after the Big Bang	/1
8	Physics	/1
9	<ul style="list-style-type: none"> • Test existence of Higgs boson • Find out what dark matter is • Test supersymmetric theories • Test existence of extra dimensions 	/4
TOTAL		/15