

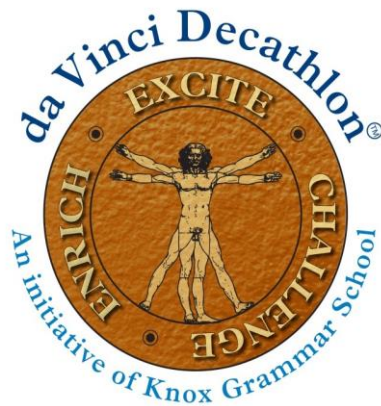


KNOX  
GRAMMAR  
SCHOOL

STATE

# DA VINCI DECATHLON 2019

CELEBRATING THE ACADEMIC GIFTS OF STUDENTS  
IN YEARS 9, 10 & 11



## ENGINEERING

TEAM NUMBER \_\_\_\_\_

Total	Rank
/50	

# LANDSCAPE OBSERVER

## BACKGROUND

You have likely seen many vistas and lavish landscapes all thanks to observation decks and platforms. Observation platforms have become very popular tourist attractions that allow people to see views of landscapes otherwise hidden. Observation platforms also ensure tourists don't disturb the natural landscape, protecting the area for future generations.

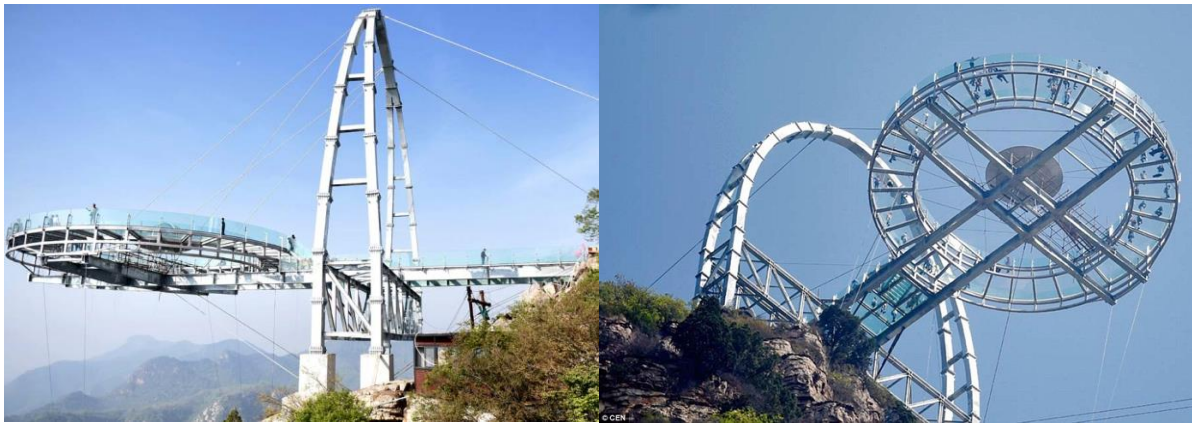
In recent years, observation decks have become an opportunity for engineers to be creative, test the limits of materials, and design some of the most daring structures in history. Below is the recently installed skywalk Grand Canyon, consisting of a cantilevered semicircle.



In Norway, a bent structure (left) provides an open viewing platform over a popular Fjord but also a thrilling sense of vertigo, along with a stunning sculptural feature for viewers afar.



Two of the most recent cutting-edge designs for observation decks have been built in China. They consist of cantilevered structures built from glass and metal that contain a suspended circle viewing platform at the end (see below)!



Here are a few other observation platform designs.



## THE TASK



You have been commissioned by the Department of Tourism to create a new observation platform for the location shown to the left. The platform is to be cantilevered from the top of the left cliff, as circled. You are instructed that there is a flat surface at the top of the cliff, sufficient to install any supporting structures for the platform. You may take inspiration from the designs shown in the Background above, but your observation platform **must be original and unique**.

## DESIGN STATEMENT

Your observation platform must:

1. Be a **cantilevered** structure (i.e. suspended from the edge of the cliff, not on the cliff). You may have infrastructure attached to the top of the cliff (a table top) using the blu-tack from which your cantilevered structure will be held.
2. Contain a platform which provides a clear field of view for tourists.
3. Be built as a functional observation platform but also be creative so as to create a sculptural man-made marvel for viewers to see, rather than simply use.

## DESIGN PARAMETERS

You will have between **60 minutes** to design and construct your observation platform. At the conclusion of the task, you will take your platform to the marking area. You will then have **2 minutes** to blu-tack the connecting structure of the platform to the edge of the table (the cliff top). The platform will be marked according to:

- Weight bearing capacity (theoretical, not tested physically)
- Design of supporting structures and platform stability
- Functionality as a tourist viewing platform
- Novelty/originality/uniqueness
- Sculptural form as an attraction
- Correct size and scale of model
- Quality of model build
- Use of materials
- Design details (**Remember to complete this – see page 5**)
- Design sketch (**Remember to complete this – see page 6**)

## MATERIALS TO BE PROVIDED

You will be provided with a number of materials. It will be up to your team to decide what materials you will use to construct the model property. You are able to select from the following materials:

- 2 pieces of A3 paper
- 2 pieces of A4 paper
- 1 piece of A4 card
- 6 plastic straws (bendable)
- 2 rubber bands (large size)
- 1 Sandwich size resealable bag
- Blu-tack (small quantity *only* to be used to connect your supporting structure to the table).

You may also use your own sticky tape, but sparingly.

## DESIGN DETAILS (8 MARKS)

1. Explain what elements of your supporting structure design makes it the **strongest** design possible **compared to other options you may have tested**. Consider how it will support a large amount of weight, but also how it may be resistant to fierce wind. (2 marks)


2. Explain how your platform is **unique** and **original**. Refer to any inspiration for your design and how you expanded the design from this inspiration (2 marks)


3. Being a tourist attraction, your platform must have an engaging **name** and **description**.

Prepare a name for your platform and describe in no more than **60 words** the unique experience a tourist will have when seeing and experiencing the platform (4 marks).


### **DESIGN SKETCH (5 MARKS)**

Briefly sketch your design with approximate proportions, labelling any important features.

## MARKING MATRIX

Team No.: \_\_\_\_\_

	CRITERIA	SKILFUL	EFFECTIVE	SOUND	LIMITED	SCORE
1	Weight bearing capacity (theoretical)	4	3	2	1	
2	Design of supporting structure	5	4	3	2-0	
3	Functionality as a tourist viewing platform	5	4	3	2-0	
4	Novelty/ uniqueness	6	4	2	1	
5	Sculptural form as an attraction	5	4	3	2-0	
6	Correct size and scale of model	3	2	1	0	
7	Quality of model build	5	4	3	2-0	
8	Use of materials	4	3	2	1	
9	Design details	8-7	6-5	4-3	2-0	
10	Design sketch	5	4	3	2-0	

<b>TOTAL</b> <b>/50</b>
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**END OF PAPER**