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GRADE 9

TERM 1

A BRIDGE TO HELP THE COMMUNITY

MINI-PAT

(PRACTICAL ASSESSMENT TASK)

NAME & SURNAME:

GRADE & CLASS:

MARK:

_____/70

ASSESSMENT:

ACTIVITY	DESCRIPTION	POSSIBLE MARKS	MARKS OBTAINED
Investigation process	Activity 1	10	
	Activity 2	10	
	Activity 3	10	
Design process	Write a design brief, specifications and constraints	10	
	Sketch your freehand designs (include labels)	10	
	3-D (isometric drawing)	10	
	2-D (orthographic projection)	10	
TOTAL		70	

PROBLEM STATEMENT / SCENARIO/ CONTEXT**THE SCENARIO FOR THE MINI-PAT**

Rivers provide much-needed water for communities, but sometimes they can also make life difficult for people. For example, during the rainy season, people from villages on one side of a river struggle to get to the other side of the river, if there is no bridge. Many of the people in the KwaNogawu village next to the uThukela River in KwaZulu-Natal work on the other side of the river. The doctors, banks and shops that they need to visit are also on the other side. School children cross this river to get to their schools, and the elderly have to walk through it once a month to collect their government grants from the offices on the other side. Usually, the villagers cross the river on foot, because the nearest bridge is very far away. But during the rainy season, when the river is in flood, it becomes very dangerous. The water levels are so high that it is difficult to get through it safely, and the villagers have also seen crocodiles in the river. Everyone is scared of drowning or getting attacked by the crocodiles, but they don't have a choice and have to go through the river to get to the other side.

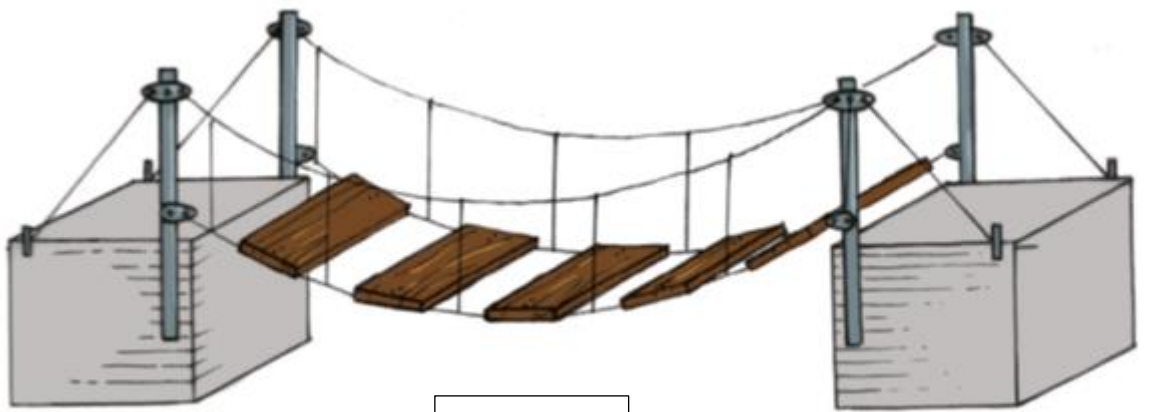


Figure A

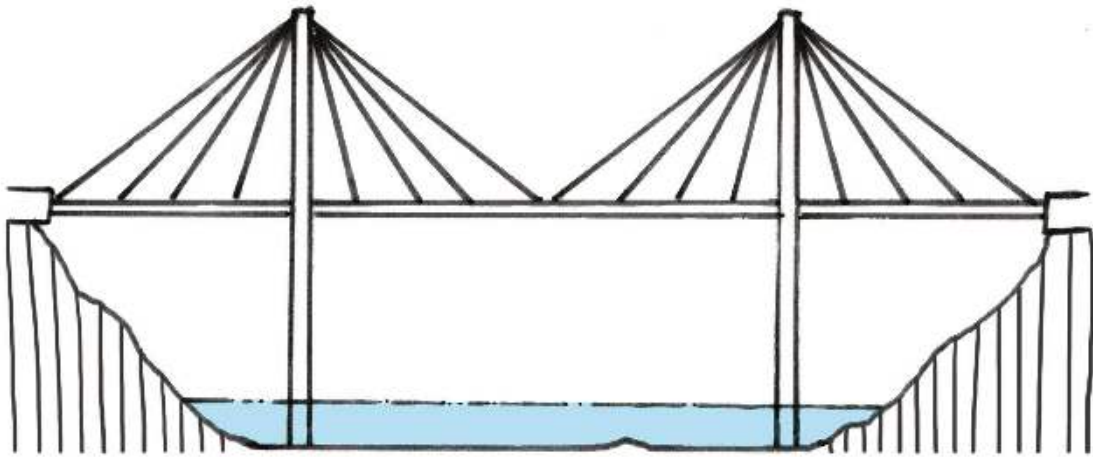


Figure B

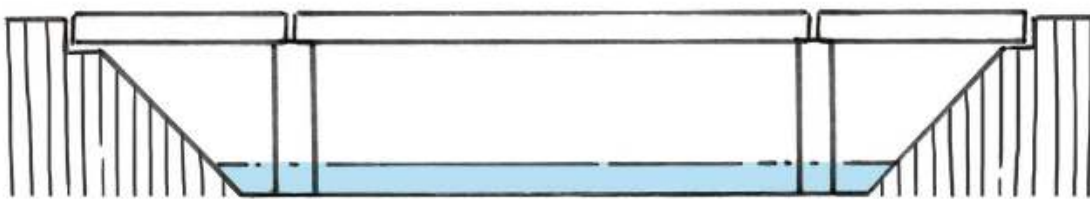


Figure C

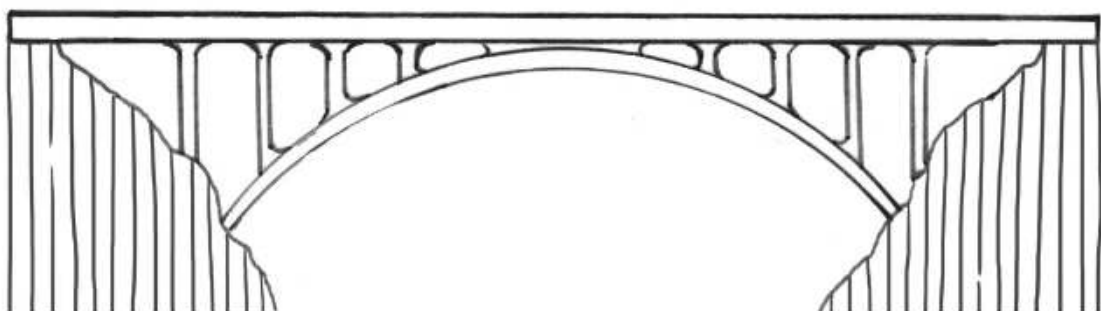


Figure D

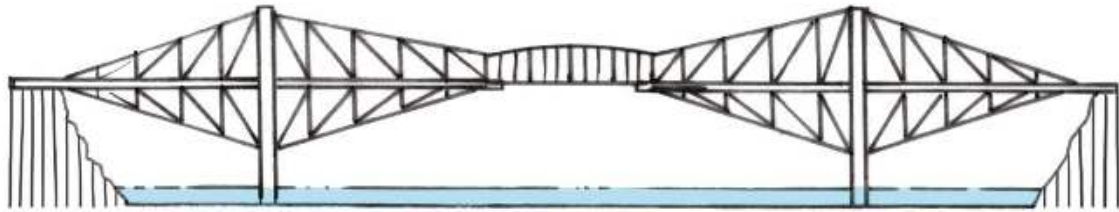


Figure E

ACTIVITY 1.1**INVESTIGATION SKILLS****[10 marks]****CASE STUDY / RESEARCH - BRIDGES**

Johannesburg had a bad reputation for crime and degradation. The city of Johannesburg has worked hard, and in a short time the city has turned around to take its rightful place as a leading city in Africa

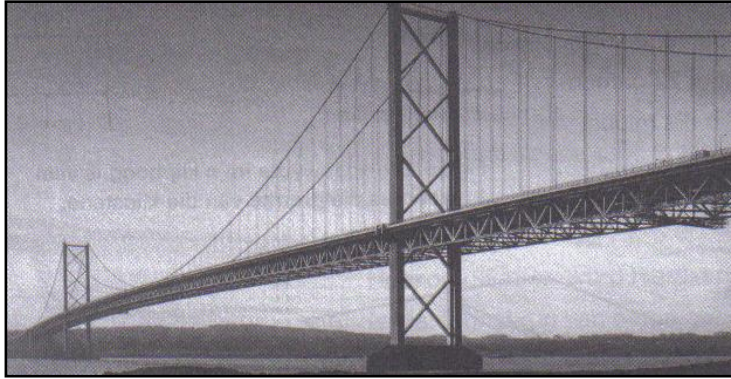
1. What impact does the Nelson Mandela Bridge have on the lives of people living and working in Newton and surrounding areas?



2. What symbolic impact might this bridge have on South African citizens?

3. The bridge cost R300 million to build. Do you think this was money well spent? Write about the positive and/or negative impact that this bridge has on people's lives and the Johannesburg environment.

4. Compare the Nelson Mandela Bridge with the suspension bridge (below) over the Forth River in Scotland and answer the following questions:



Describe the difference between a suspension bridge and a cable-stayed bridge

Suspension Bridge:

Cable-stayed Bridge:

5. What forces (tensile or compressive) can be found in the cables and towers of both bridges?

ACTIVITY 1.2

INVESTIGATION SKILLS

[5 marks]

TYPES OF BRIDGES

1. Give names to the above bridges.

- a) _____
 b) _____
 c) _____

- d) _____
- e) _____

1.2 Checklist

Checklist for investigating bridges	Yes	No	If NO, state why?
Is the bridge for cars?			
Is the bridge for people?			
Will the material required going to be easily available?			
Is the bridge too expensive for the tender?			
Can the bridge be built strong and high enough so that it is not washed away by floods?			
Can the bridge be built enough so that it can reach or span across the river?			
Is the bridge strong enough that the villagers can walk safely			

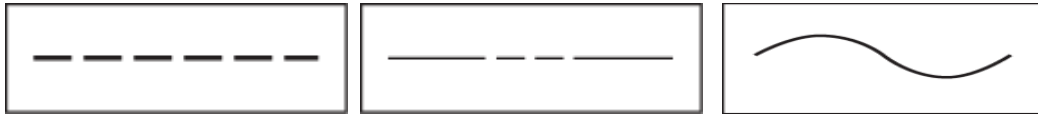
ACTIVITY 1.3**INVESTIGATION SKILLS****10 marks]****GRAPHIC COMMUNICATION**

DRAW the correct line type next to the correct question number and explain the use of each of these line types below.

1. Visible Line

— — — — —	—————	— — — — —
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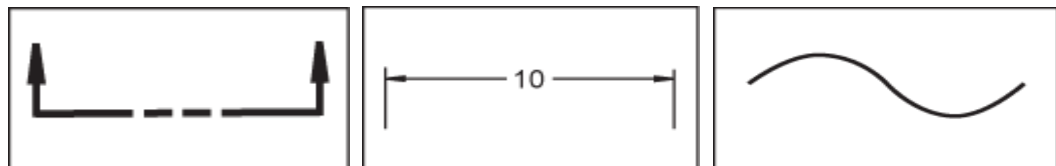
2. Hidden Line



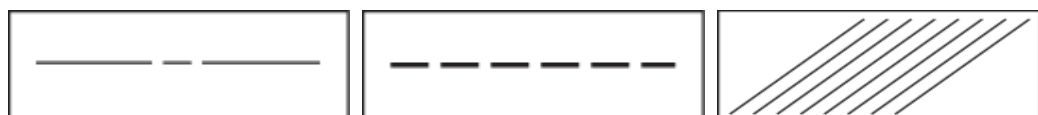
3. Centre Line



4. Dimension & Extension Lines



5. Hidden detail line



Activity 2.1**DESIGN SKILLS****[10 marks]**

(The design brief) Each learner writes his/her suggestion on how to solve the problem indicated in the scenario along with the specification and constraints.

Design brief with specifications and constraints.

2.1.1. Identify the problem from the scenario you have been given

2.1.2. Write the design brief: **Start your paragraph with: *We are going to design and make ...***

2.1.3. List 4 specifications:

2.1.4. List 2 constraints.

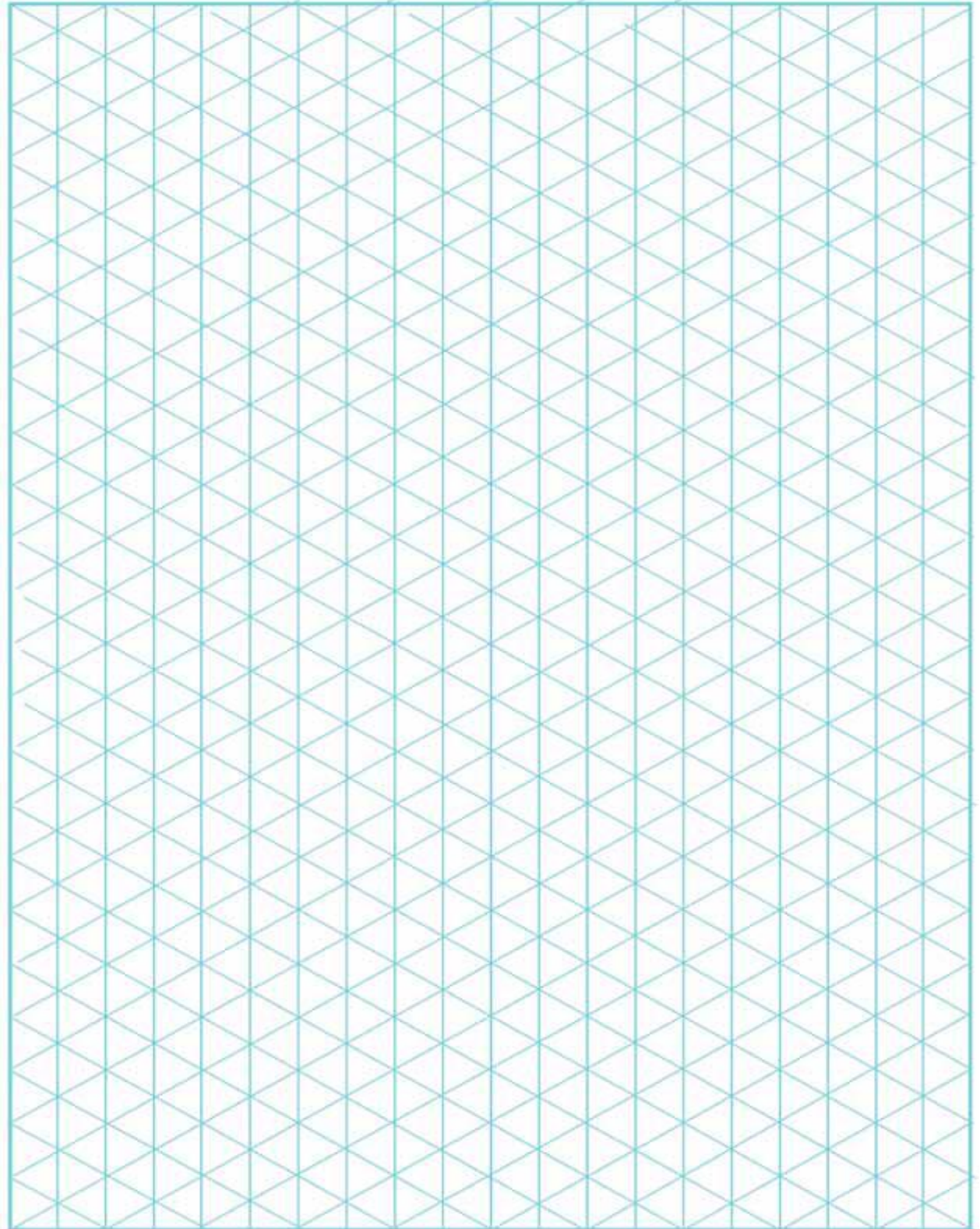
Activity 2.1**DESIGN SKILLS****[10 marks]**

Use the space provided below to do **TWO** free-hand sketches of your solution. Your drawing should be labelled and should show different line types.

Sketch 1
Sketch 2

Activity 2.1**DESIGN SKILLS****[10 marks]**

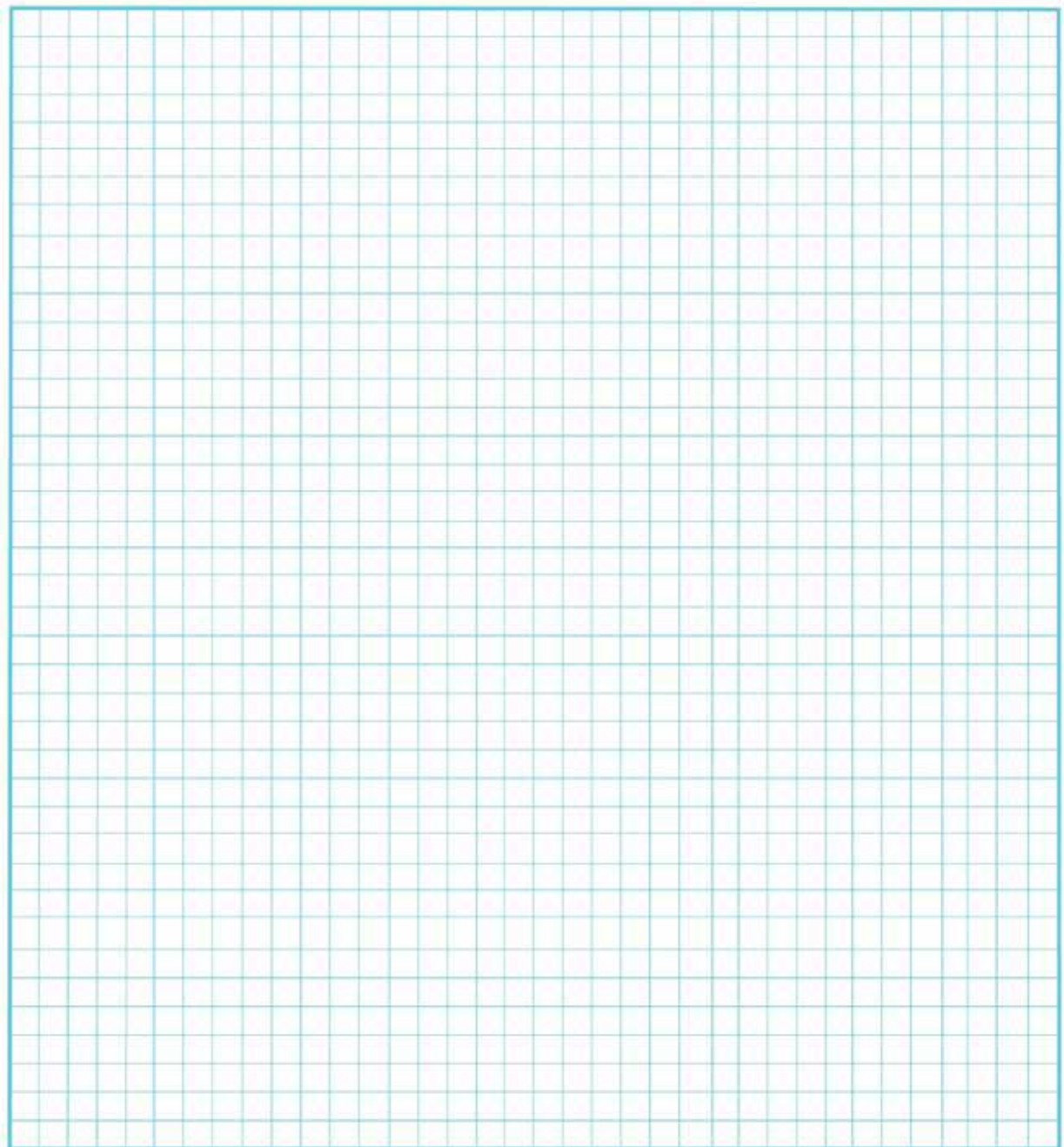
Use the isometric grid paper below to draw your solution in 3D. Your drawing should be drawn in first angle, indicate your Front view using an arrow. Show all hidden details.



Activity 2.2**DESIGN SKILLS****[10 marks]**

Use the square grid paper below to draw a first angle orthographic projection of the 3D you drew in Activity 2.1. The following views should be shown: **top view, front view and left view**. Make sure that all your projection lines are indicated. Label your views.

NB: drawing should be on a Cartesian plane.

**TOTAL [70 MARKS]**