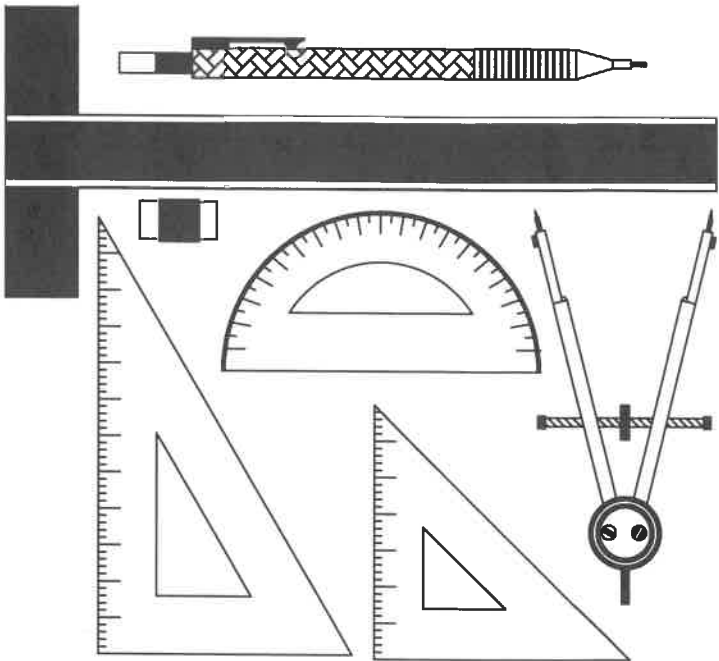




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NATIONAL SENIOR CERTIFICATE EXAMINATION

2022

ENGINEERING GRAPHICS AND DESIGN

PAPER 1

MARKS: 200
TIME: 3 HOURS

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

- 1. This question paper consists of **6 pages** including the cover page and **4 questions**.
- 2. **All** questions must be answered.
- 3. Unless specified otherwise, all questions are in **First-angle Orthographic Projection**.
- 4. Unless specified otherwise, all questions are to be completed to a **scale of 1:1**.
- 5. **All** answer sheets must be restapled in numerical order, even questions that have not been answered.
- 6. All **construction work** must be shown.
- 7. Print your **examination number** neatly on each page.
- 8. Use only the **answer sheets** provided.
- 9. Your drawings should reflect **neatness** and **accuracy**.
- 10. All dimensions or detail not given must be **assumed** in **good proportion**.
- 11. Your drawings should comply with SANS 10143.

FOR OFFICIAL USE ONLY

QUESTION	SECTION	MARK	MODERATED	MAXIMUM	CODE
1	CIVIL ANALYTICAL			20	
2	INTERPENETRATION & DEVELOPMENT			40	
3	TWO-POINT PERSPECTIVE			40	
4	CIVIL DRAWING			100	
TOTAL				200	

CHECKED BY

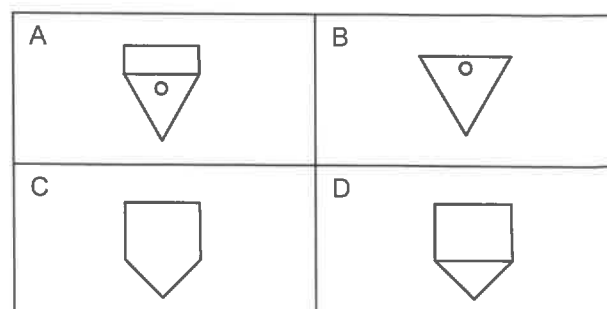
EXAMINATION NUMBER

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FIGURE C



CIVIL
ANALYTICAL

INDICATE THE LETTER CORRESPONDING TO YOUR ANSWER IN THE BLOCK PROVIDED

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EXAMINATION NUMBER

[illegible]

QUESTION 2

INTERPENETRATION
& DEVELOPMENT

The drawings below show the INCOMPLETE Front View, COMPLETE Top View and Left View of a horizontal right TRIANGULAR pipe joined together with a vertical right regular PENTAGONAL duct.

Draw the following:

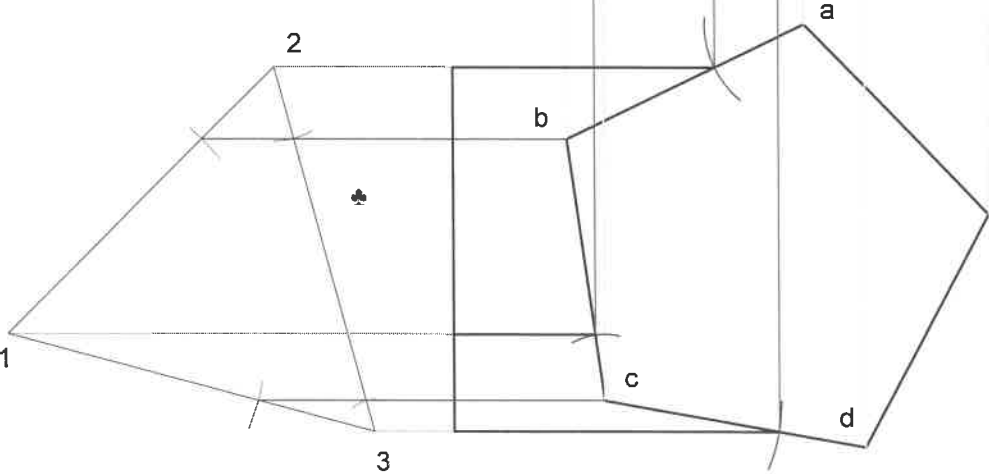
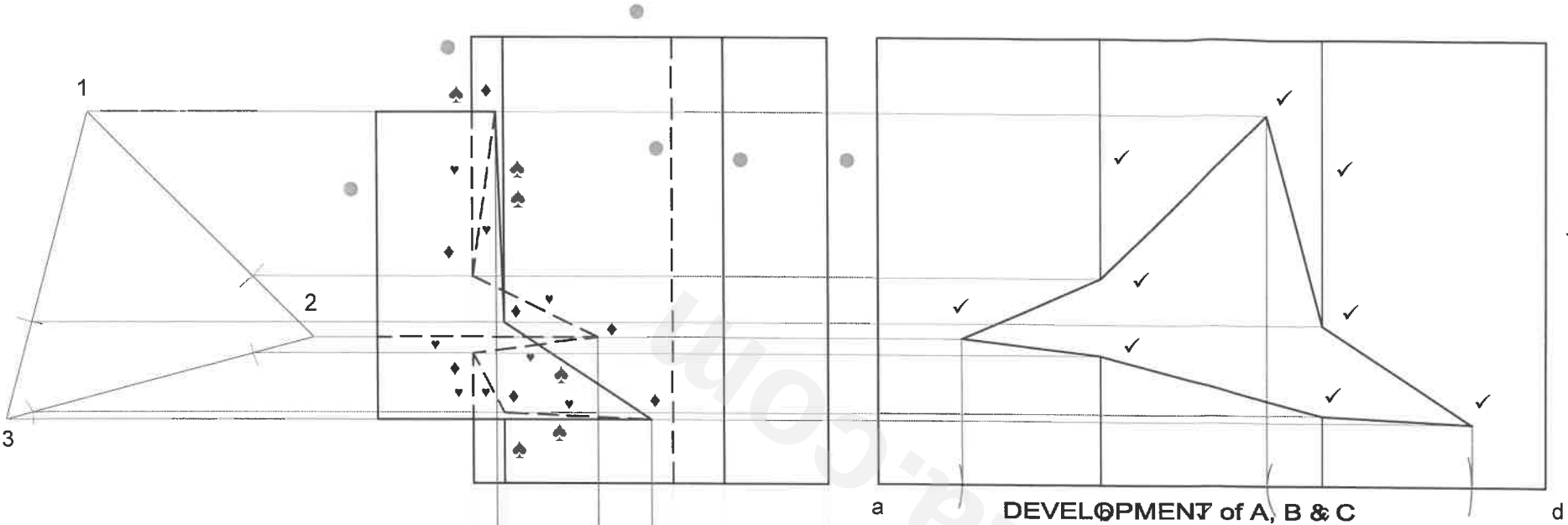
- 2.1 the complete Front View clearly showing the line of interpenetration formed between the two solids.
- 2.2 the surface development of the 3 rectangular panels of the pentagonal duct which shows the lines of interpenetration. These rectangular panels have been indicated by A, B & C below.

Show all hidden detail.
Show all construction.
Do not draw the left view.

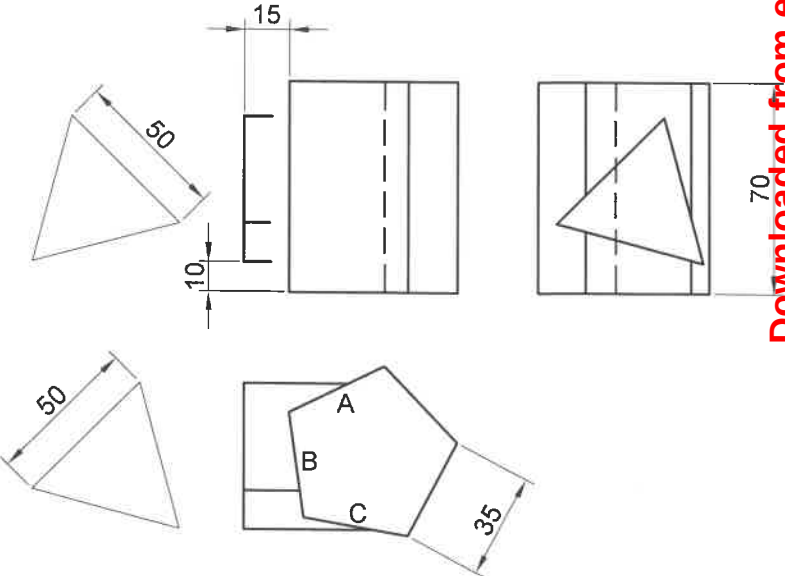
ASSESSMENT CRITERIA

You will be assessed on your ability to do the following:

- | | |
|--|----|
| • draw the given incomplete Front View | 6 |
| • complete the Front View | 21 |
| • show necessary construction | 2 |
| • draw the development | 11 |



Front View:		27
Given	●	= 6
Hidden Detail	▼	= 8
Interpen	◆	= 7
Solid Lines	♠	= 6
Construct	♣	= 2
Development	✓	= 11
		40



FV	27
CON	2
DEV	11

40 MARKS

EXAMINATION NUMBER

ANSWER SHEET 2

QUESTION 3

TWO-POINT PERSPECTIVE

The figures show the three views of a partly covered verandah, a pool surface at ground level, a fire pit, a braai and a doorway into an existing dwelling. Draw a neat two-point perspective view of the verandah, pool surface, fire pit, braai and doorway.

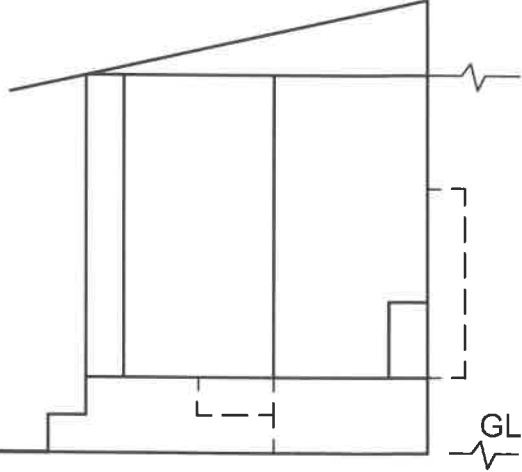
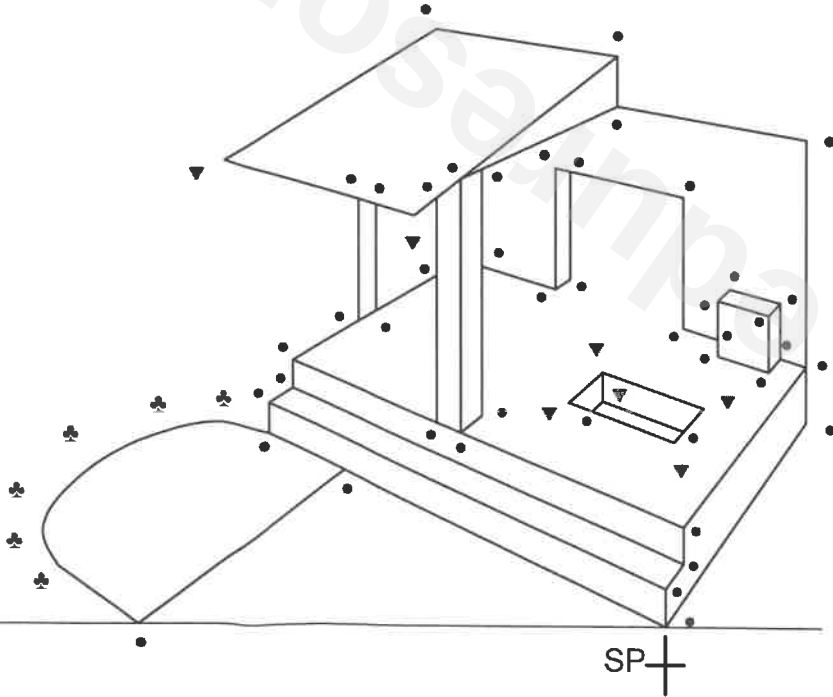
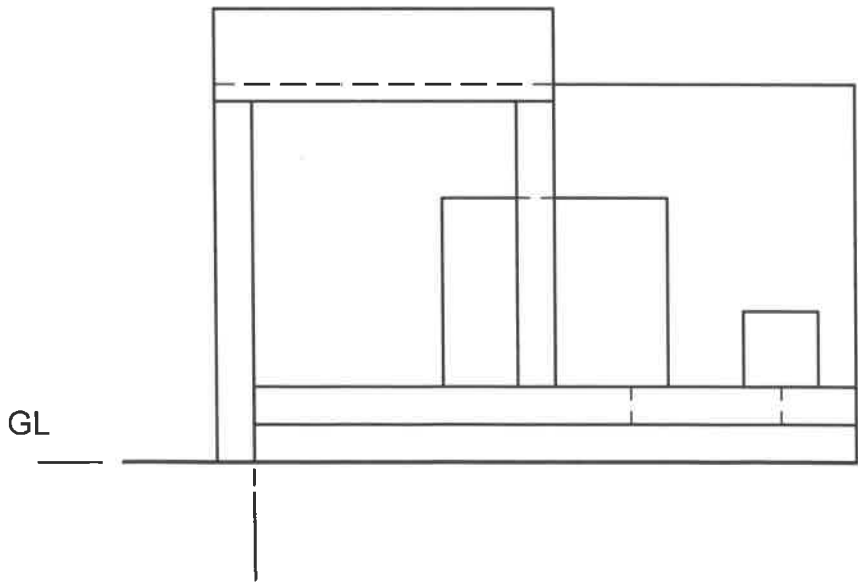
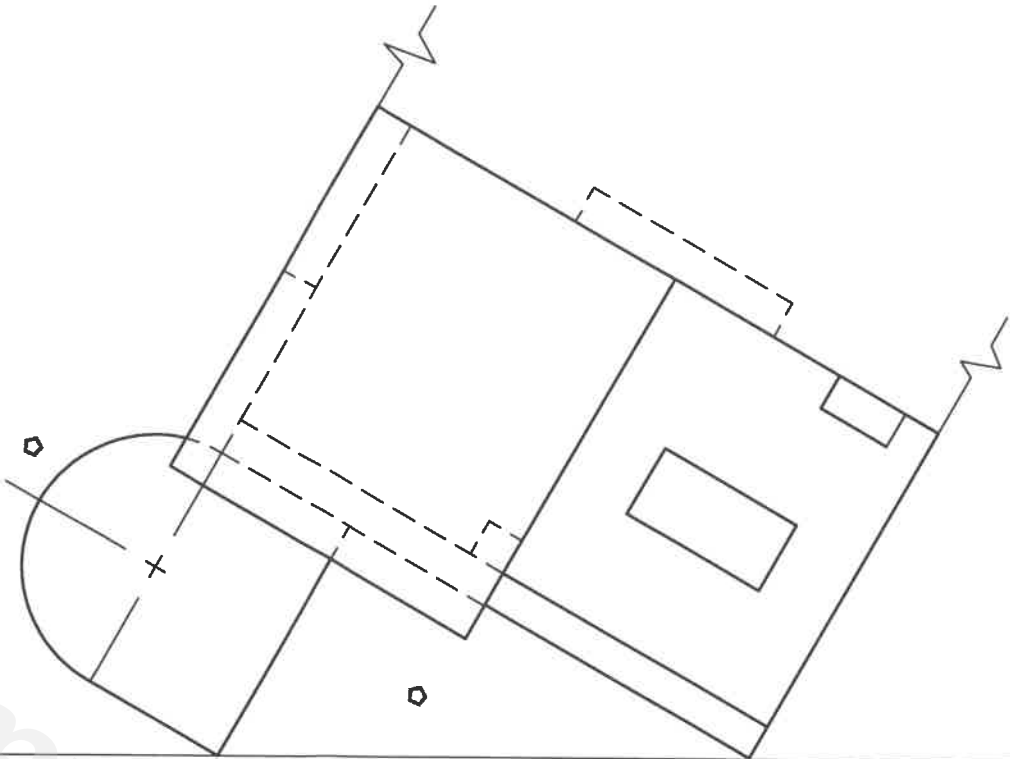
- PP - Picture Plane
HL - Horizon Line
GL - Ground Line
SP - Station Point

Neatly label the vanishing points RVP and LVP.
Do not show any depth in the pool.
NO HIDDEN DETAIL IS REQUIRED.

ASSESSMENT CRITERIA

- You will be assessed on your ability to do the following:
- determine and label the vanishing points
 - draw the two-point perspective view

PTS	•	44/2 = 22
PTS	▼	= 7
CON	◊	= 3
Arc	♣	= 6
VPS	•	= 2
40		



PTS	
22	
PTS	
7	
Con	
3	
Arc	
6	
VPS	
2	

40 MARKS

EXAMINATION NUMBER

ANSWER SHEET 3

QUESTION 4

CIVIL
DRAWING

Assessment Criteria

Sectional Elevation

1	Ceiling Battens	2	
2	Wall Plates	2	
3	Ceiling Board	1	
4	Truss Plates	4	
5	Roof Truss	5	
6	Purlins	4	
7	Roof	1	
8	Sectioned Walls	4	
9	Sectioned Window	5	
10	Floor & Foundation	6	
11	DPC & NGL	2	
12	Hatching	9	
13	External Walls	2	
14	Roof & Roof Detail	3	
15	Internal Detail	3	
16	Step	3	
17	Labels	2	

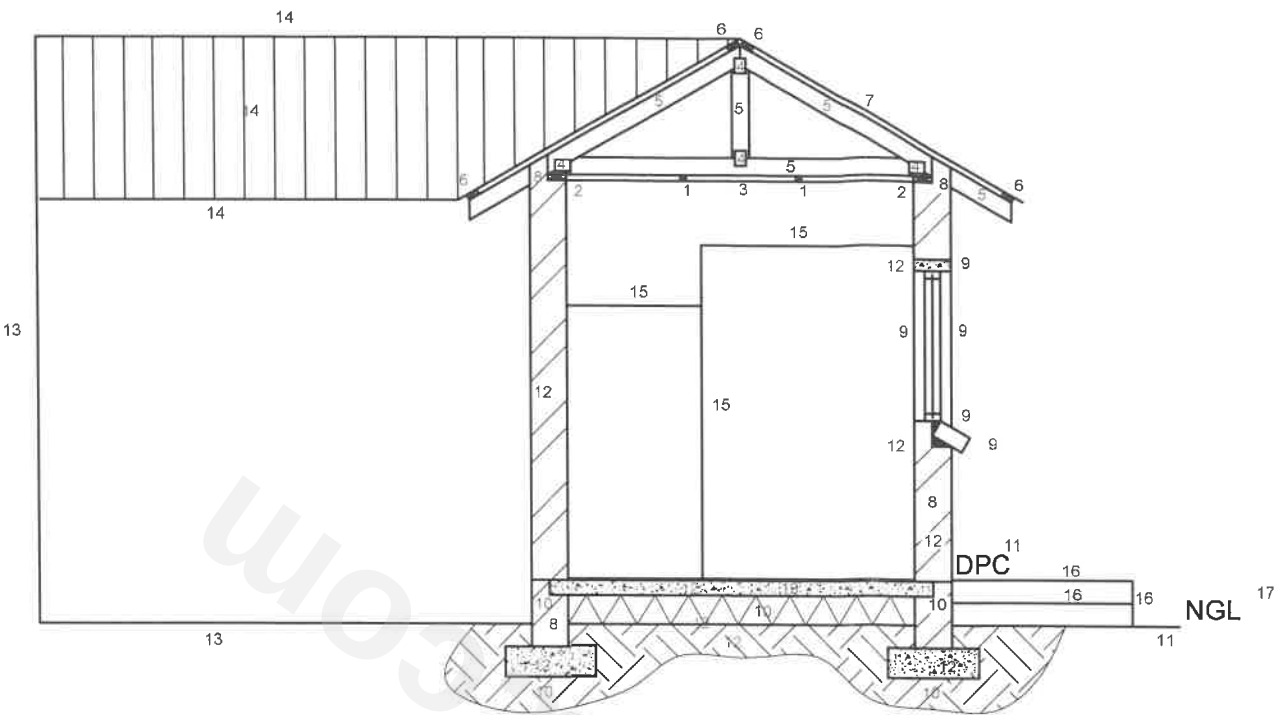
Subtotal	58	
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Floor Plan

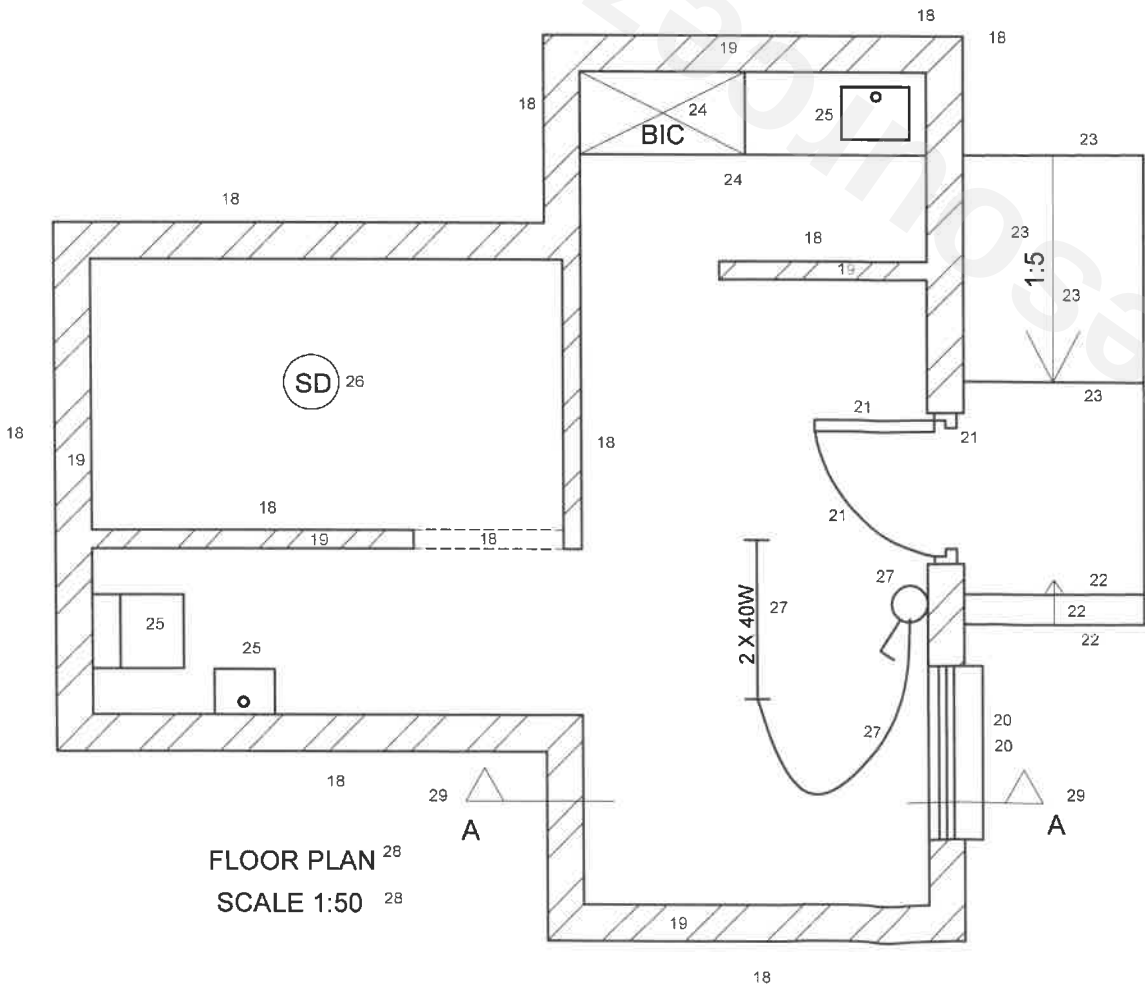
18	Walls	11	
19	Hatching	5	
20	Window	2	
21	Door	3	
22	Step	3	
23	Ramp	5	
24	Built-in-Cupboard	2	
25	Plumbing Fixtures	3	
26	Smoke Detector	1	
27	Electrical	3	
28	Labels	2	
29	Cutting Plane	2	

Subtotal	42	
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TOTAL	100	
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SECTIONAL SOUTH ELEVATION ON A-A 17



FLOOR PLAN 28
SCALE 1:50 28

ANSWER SHEET 4

EXAMINATION NUMBER

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