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basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL
SENIOR CERTIFICATE

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1

NOVEMBER 2016

MARKS: 100
TIME: 3 hours

This question paper consists of 6 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions.
2. Answer ALL the questions.
3. ALL drawings are in first-angle orthographic projection, unless otherwise stated.
4. ALL drawings must be completed using instruments, unless otherwise stated.
5. ALL answers must be drawn accurately and neatly.
6. ALL the questions must be answered on the QUESTION PAPER as instructed.
7. ALL the pages, irrespective of whether the question was attempted or not, must be re-stapled in numerical sequence in the TOP LEFT-HAND CORNER ONLY.
8. Proper planning is essential in order to complete all the questions.
9. Print your examination number in the block provided on every page.
10. Any details or dimensions not given must be assumed in good proportion.

FOR OFFICIAL USE ONLY											
QUESTION	MARKS OBTAINED			$\frac{1}{2}$	SIGN	MODERATED			$\frac{1}{2}$	SIGN	RE-MARKING
1											
2											
3											
4											
TOTAL											
	2	0	0			2	0	0			2 0 0

FINAL CONVERTED MARK

100

CHECKED BY

COMPLETE THE FOLLOWING:

CENTRE NUMBER

CENTRE NUMBER

EXAMINATION NUMBER

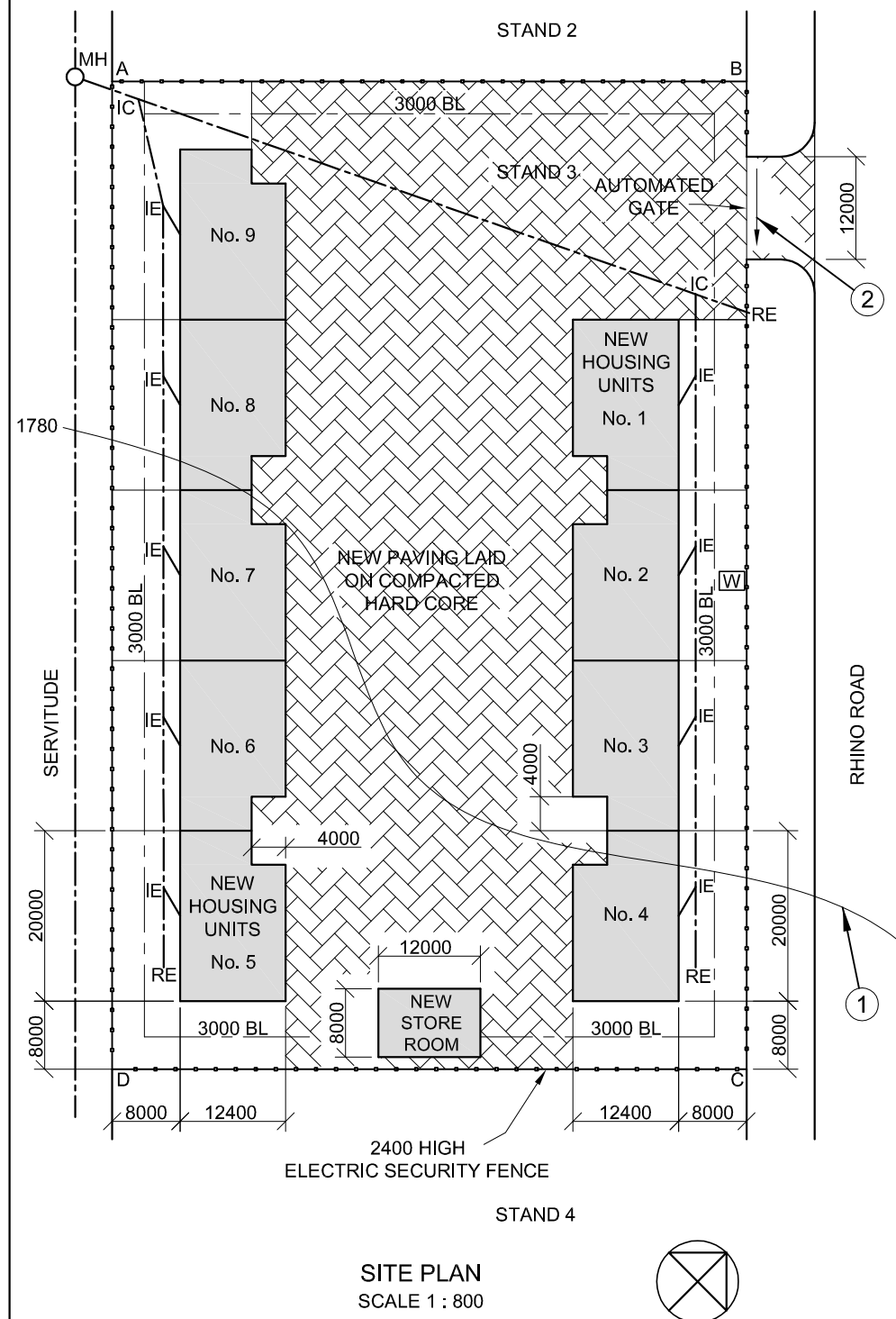
EXAMINATION NUMBER





**LAND SURVEYOR'S CERTIFICATE OF THE
BOUNDARY LENGTHS AND CORNER
HEIGHTS ON STAND 3.
SURVEYED ON 2015-05-06**

BOUNDARY LENGTHS IN MILLIMETRES	CORNER HEIGHTS IN METRES
AB = 74569	A = 1780,6
BC = 116000	B = 1780,7
CD = 74569	C = 1779,7
DA = 116000	D = 1779,3



NOTE:

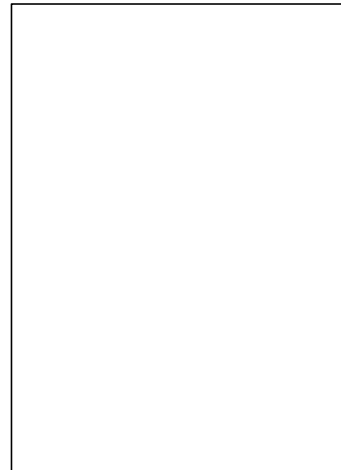
- Contractors must verify all dimensions and levels on site before commencing work. Architects to be notified immediately of any discrepancies.
- All the houses are the same size.

ARCHITECT'S SIGNATURE

CLIENT'S SIGNATURE

ANSWER 20

In the space below, draw, in neat freehand, the front view and top view of the SANS 10143 graphic symbol for a BIDET.



REVISION	DATE	DESCRIPTION
<i>ON-THE-DOT ARCHITECTS</i> PO BOX 2000 LEOPARD VALLEY 1012		
PRINTED BY NAT PRINTERS		DATE OF PRINT 2015/07/09
DRAWING TITLE SITE PLAN		
PROJECT PROPOSED NEW HOUSING UNITS IN A SECURITY COMPLEX ON STAND 3, RHINO ROAD, OBSERVATION PARK		
PROJECT NUMBER 2015-RR-07		DRAWING NUMBER EP 3-01-2016
DATE 2015/07/07	DRAWN WILLIAM	CHECKED VERNON
REFERENCE CODE QV1-2016		SCALE 1 : 800
		



QUESTION 1: ANALYTICAL (CIVIL)

Given:

The site plan for proposed housing units in a security complex, a title panel and a table of questions. The drawing has not been prepared to the indicated scale.

Instructions:

Complete the table below by neatly answering the questions, which refer to the accompanying drawing and title panel. **[30]**

QUESTIONS		ANSWERS		
1	How many signatures are required?		1	
2	Who prepared the drawing?		1	
3	What scale is indicated for the drawing?		1	
4	Who checked the drawing?		1	
5	Who was responsible for the printing of the site plan?		1	
6	How many times have the drawing been revised?		1	
7	When was the site surveyed?		1	
8	How many rodding eyes are shown on the site plan?		1	
9	What does the abbreviation <i>IC</i> stand for?		1	
10	In what colour should glass be indicated on a detailed drawing?		1	
11	Name the feature at 1.		1	
12	In what unit are the dimensions on the site plan?		1	
13	On what must the new paving be laid?		1	
14	What type of fence is proposed for the complex?		2	
15	What is indicated by the arrow at 2?		1	
16	Why would a residential development not be allowed on the land immediately south-west of STAND 3?		2	
17	Referring to the building regulations, why would this proposed site plan not be approved?		2	
18	In the space below (ANSWER 18), determine the length of the electric security fence in metres.		3	
19	In the space below (ANSWER 19), determine the combined total area of ALL the proposed buildings in square metres.		4	
20	In the space in the title panel (ANSWER 20), draw, in neat freehand, the front view and top view of the <i>SANS 10143</i> graphic symbol for a BIDET.		3	
TOTAL			30	

ANSWER 18
Show ALL calculations.

ANSWER 19
Show ALL calculations.

EXAMINATION NUMBER

EXAMINATION NUMBER

2



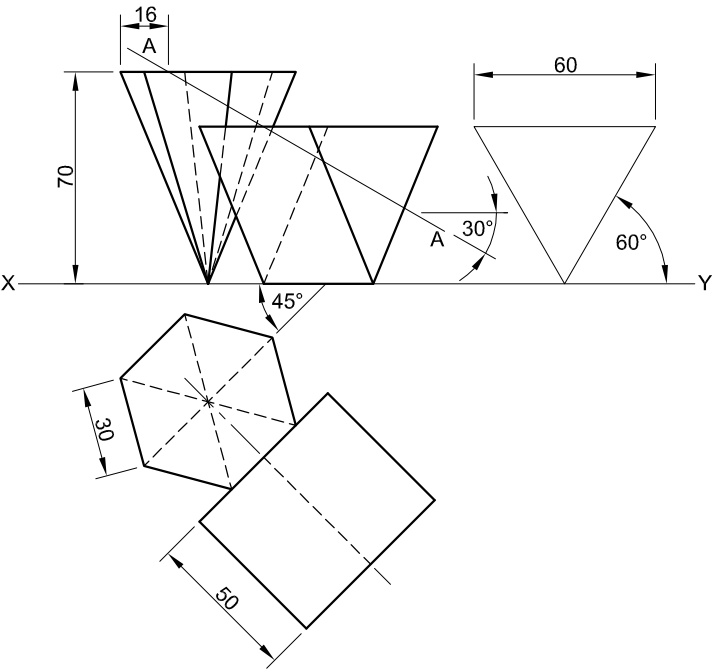
QUESTION 2: SOLID GEOMETRY

- Given:**
- The front view and the top view of a right regular hexagonal pyramid and a right equilateral triangular prism. The axes of both solids lie in a common vertical plane.
 - An auxiliary view of the triangular prism

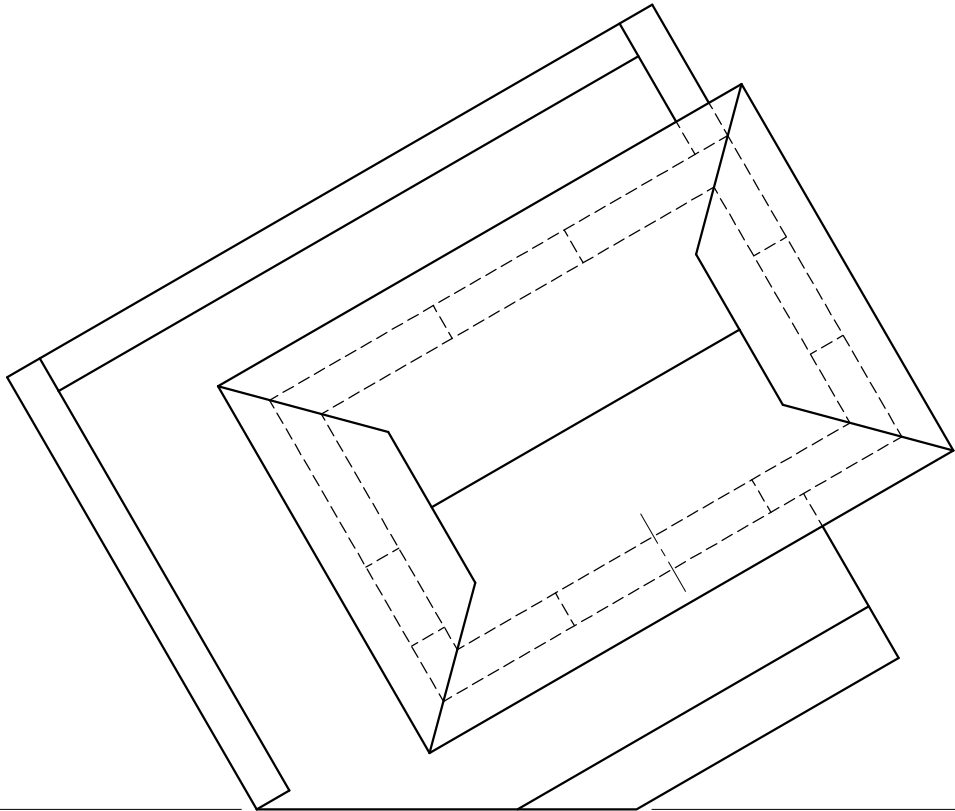
- Specifications:**
- The two solids do not touch.
 - Both solids are cut by cutting plane AA.

- Instructions:**
Draw, to scale 1 : 1, the following views of the TWO solids:
- 2.1 The given front view
 - 2.2 The sectional top view
 - 2.3 The sectional right view

- Planning is essential.
 - Show ALL necessary construction.
 - Show ALL hidden detail on all three views.
- [37]



ASSESSMENT CRITERIA					
1	CONSTRUCTION	3			
2	FRONT VIEW	9			
3	SECTIONAL TOP VIEW	11			
4	SECTIONAL RIGHT VIEW	14			
PENALTIES (-)					
TOTAL		37			
EXAMINATION NUMBER					
EXAMINATION NUMBER					3



QUESTION 3: PERSPECTIVE

Given:
Three views of a shelter with a viewing deck and
the information needed to draw a two-point
perspective drawing
PP – Picture plane
HL – Horizon line
GL – Ground line
SP – Station point

- Instructions:**
Complete the perspective drawing.
- Align the drawing sheet with the ground line (GL).
 - Determine and label the vanishing points.
 - Show ALL necessary construction.
 - NO hidden detail is required.
- [40]

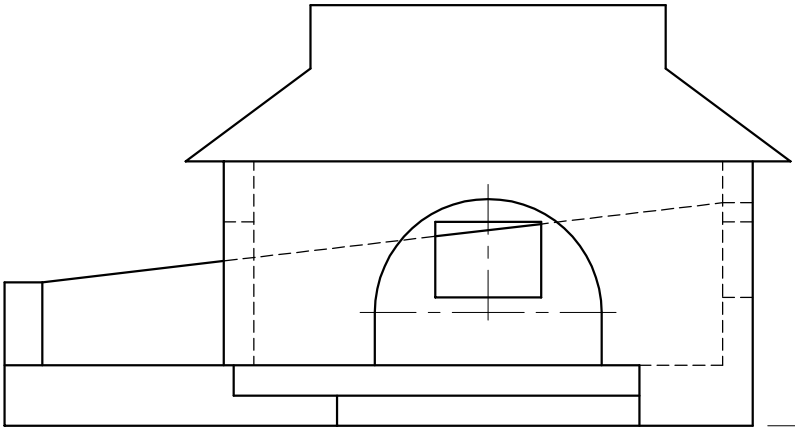
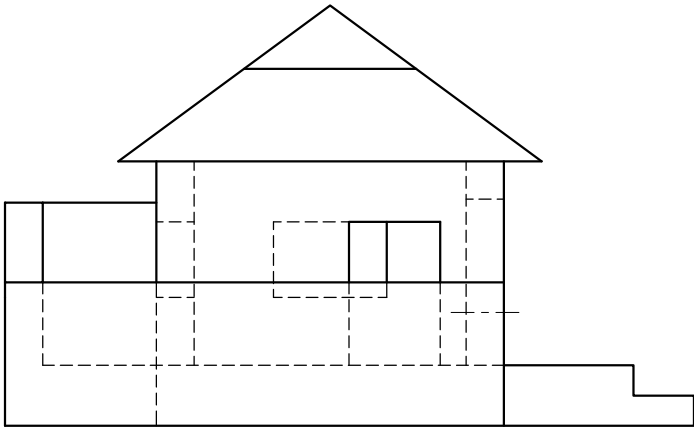
PP

PP

HL

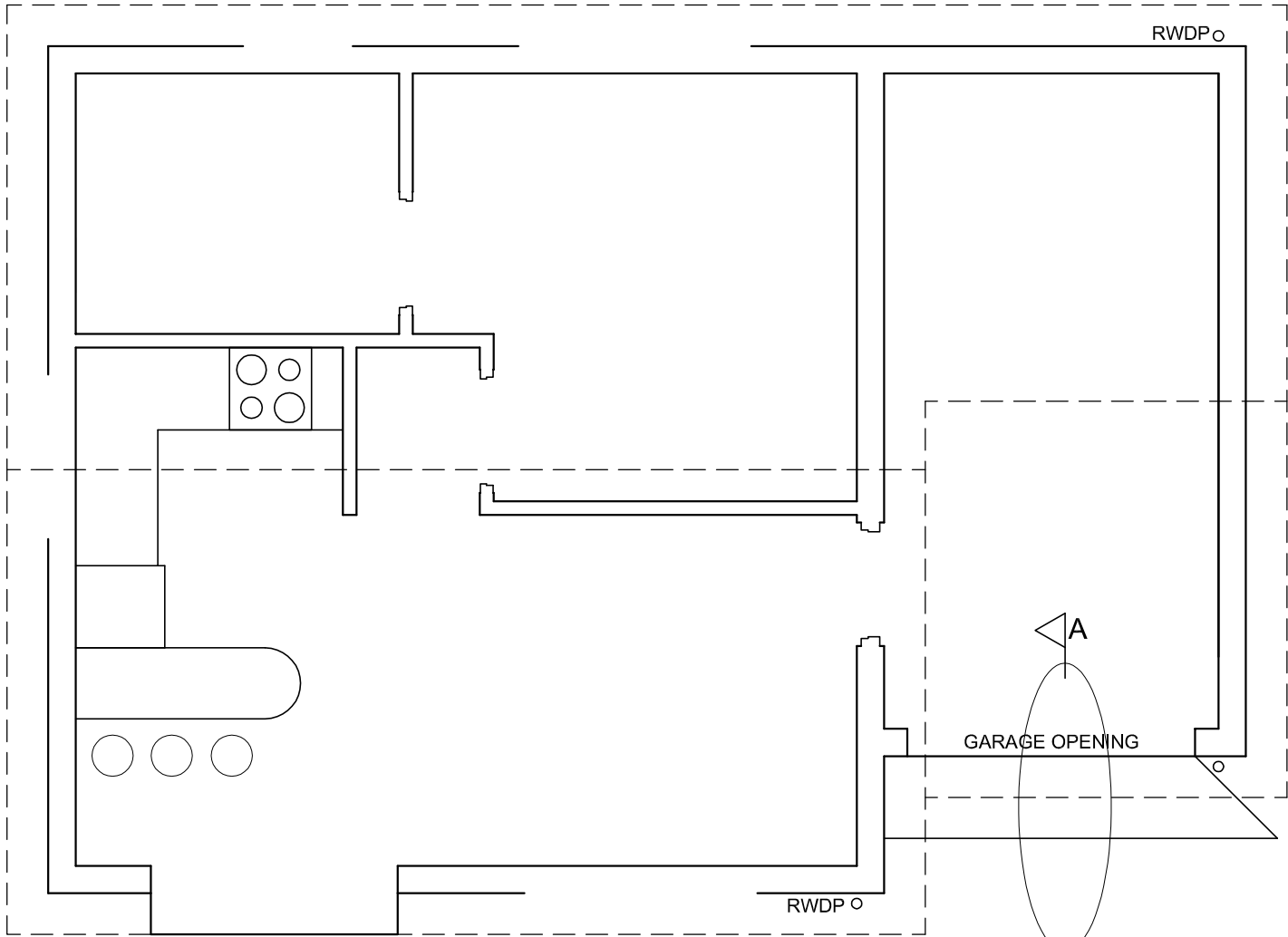
HL

GL



SP

ASSESSMENT CRITERIA					
1	CONSTRUCTION + VPs	7			
2	WALLS + DOORS	22			
3	ROOF	5			
4	CIRCULAR ARC	6			
TOTAL		40			
EXAMINATION NUMBER					
EXAMINATION NUMBER					4



FLOOR PLAN
SCALE 1 : 50

A

GARAGE OPENING

A



SECTION A-A
SCALE 1 : 20



* B A S I C - E D U C A T I O N *

1. MARK ALLOCATION FOR SECTION OF ROOF		FOR OFFICIAL USE ONLY	
A (1)		INCORRECT SCALE	
B (1)		INCORRECT POSITIONING OF VIEWS	
C (1)		NON-ALIGNMENT OF VIEWS	
D (2)			
E (1)			
F (1)			
G (1)			
H (1)			
I (2)			
TOTAL		TOTAL	

ASSESSMENT CRITERIA					
FLOOR PLAN					
1	DOORS + WINDOWS	14			
2	ELECTRICAL	11			
3	FIXTURES	8			
4	HATCHING	4			
5	LABELS	5			
SUBTOTAL		42			
SOUTH ELEVATION					
1	ROOF	5 1/2			
2	WALLS + RWDP + FFL	7			
3	DOOR + WINDOW	10			
4	LABELS	1			
SUBTOTAL		23 1/2			
DETAILED SECTION					
1	ROOF	11			
2	FOUNDATION + WALLS + SLAB	7			
3	GUTTER + RWDP	4			
4	HATCHING	5			
5	LABELS	1/2			
SUBTOTAL		27 1/2			
TOTAL		93			
PENALTIES (-)					
GRAND TOTAL					
EXAMINATION NUMBER					
EXAMINATION NUMBER					