



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NASIONALE SENIOR SERTIFIKAAT

GRAAD 12

INGENIEURSGRAFIKA EN -ONTWERP V1

NOVEMBER 2011

PUNTE: 100

TYD: 3 uur

Hierdie vraestel bestaan uit 6 bladsye.

INSTRUKSIES EN INLIGTING

1. Hierdie vraestel bestaan uit VIER vrae.
2. Beantwoord AL die vrae.
3. ALLE tekene is in eerstehoekse ortografiese projeksie, tensy anders aangedui.
4. ALLE tekene moet volgens skaal 1 : 1 geteken word, tensy anders aangedui.
5. AL die vrae moet, soos voorgeskryf, op die VRAESTEL beantwoord word.
6. AL die bladsye moet weer in nommervolgorde vasgeklam word, ongeag of die vraag beantwoord is.
7. Tydsbeplanning is noodsaaklik om al die vrae te voltooi.
8. Drukskryf jou eksamennummer in die blokkie voorsien op elke bladsy.
9. Enige besonderhede of afmetings wat nie gegee is nie, moet in goeie verhouding veronderstel word.
10. ALLE antwoorde moet akkuraat en netjies geteken word.

SLEGS VIR AMPTELIKE GEBRUIK									
VRAAG	PUNTE BEHAAL			½	TEKEN	GEMODEREER			½
1									
2									
3									
4									
TOTAAL									
	2	0	0			2	0	0	

FINALE VERWERKTE PUNT	NAGESIEN DEUR
100	

VOLTOOI DIE VOLGENDE:	
SENTRUMNUMMER	
SENTRUMNUMMER	
EKSAMENNUMMER	
EKSAMENNUMMER	





Voltooi die tabel hieronder deur die vrae, wat almal na die bygaande tekene en titelpaneel verwys, netjies te beantwoord. **[30]**

EKSAMENNUMMER	
EKSAMENNUMMER	2



VRAAG 2: ONTWIKKELING

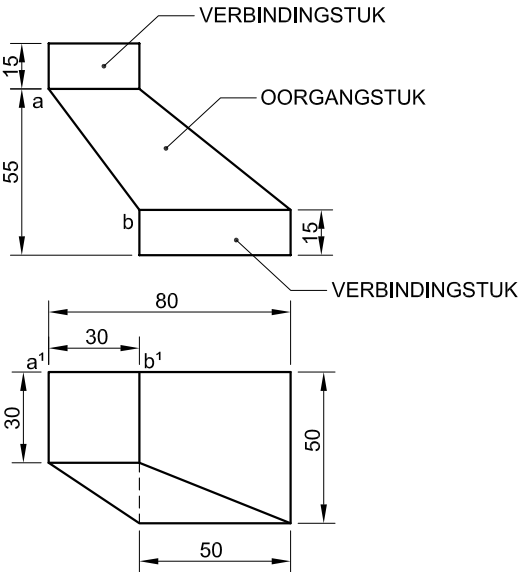
Gegee:

Die vooraansig en bo aansig van 'n gedeelte van 'n kanaal wat 'n wegstaan- vierkant-na-vierkant-oorgangstuk met twee verbindingstukke toon.

Instruksies:

- 2.1 Teken, volgens skaal 1 : 1, die gegewe vooraansig en bo aansig van die gegewe gedeelte van die kanaal.
- 2.2 Ontwikkel die oppervlak van SLEGS die oorgangstuk. Maak sy AB die naat.

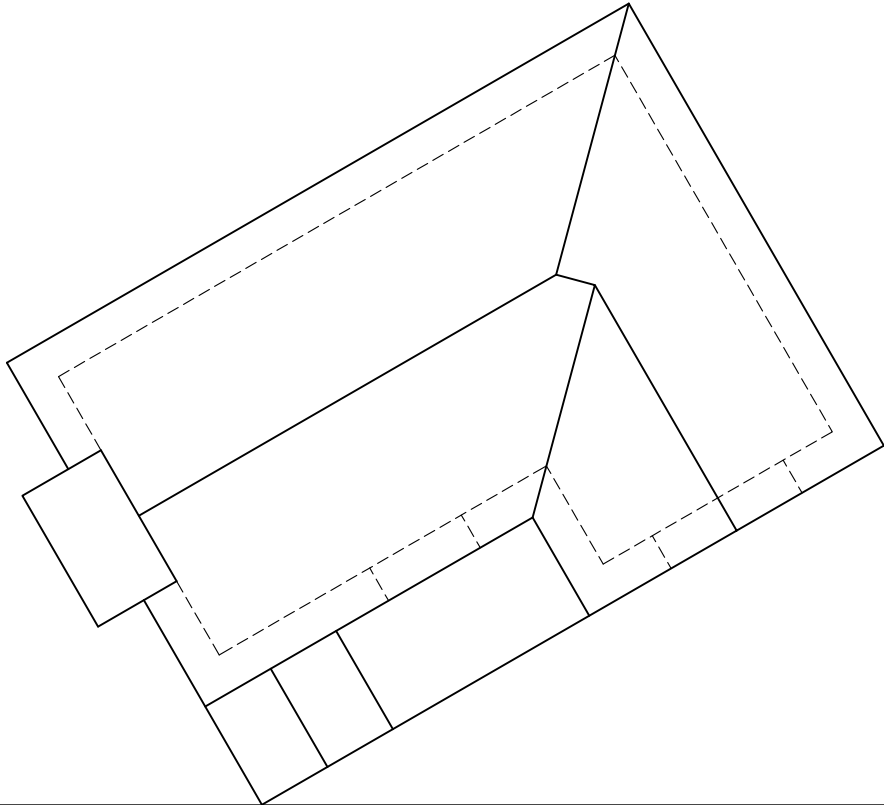
Toon ALLE nodige konstruksies en voulyne. [34]



SY AB IS DIE NAAT.

ASSESSERINGSKRITERIA				
VOORAANSIG + BOAANSIG	10			
WARE LENGTE + METODE	10			
ONTWIKKELING	14			
TOTAAL	34			
EKSAMENNOMMER				
EKSAMENNOMMER				3





VRAAG 3: PERSPEKTIEF

Gegee:
Twee aansigte van 'n kothuis en die inligting benodig om 'n tweekpuntperspektieftekening te teken.
PV – Prentvlak
HL – Horisonlyn
GL – Grondlyn
SP – Staanpunt

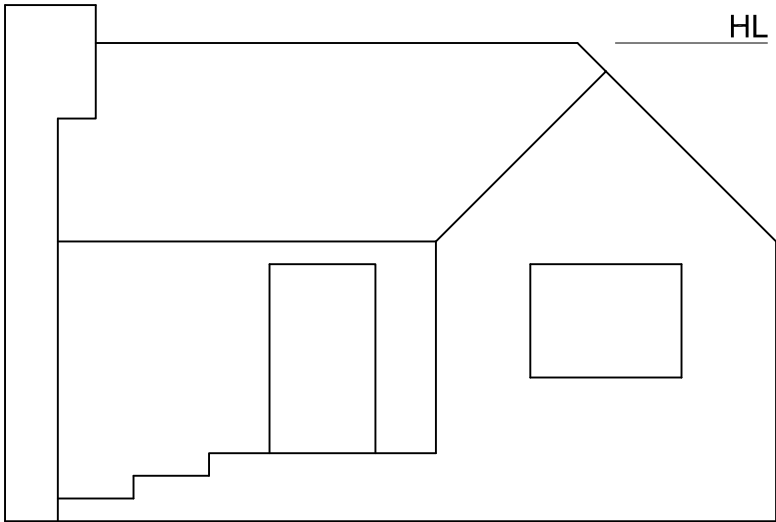
- Instruksies:**
Voltooi die perspektieftekening.
- Rig die tekenvel volgens die grondlyn (GL).
 - Toon ALLE nodige konstruksies.
 - Toon die muurdikte by die deur en die venster.
 - GEEN verborge besonderhede word verlang nie. **[41]**

PV

HL

GL

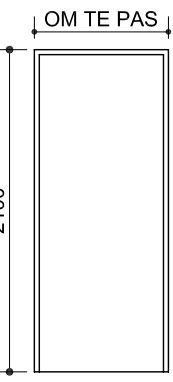
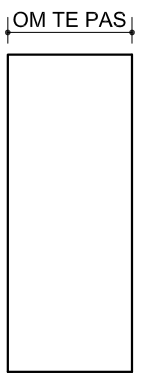
SP

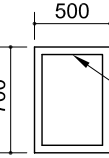


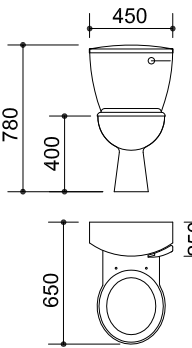
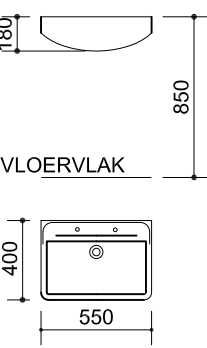
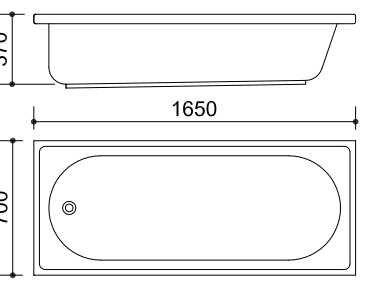
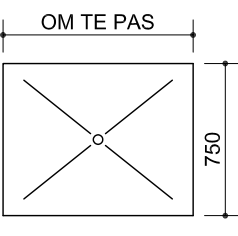
HL

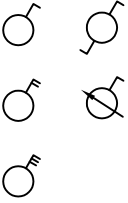
ASSESSERINGSKRITERIA				
KONSTRUKSIES + VP'e	7			
GEBOU	18			
DAK + SKOORSTEEN	16			
TOTAAL	41			
EKSAMENNOMMER				
EKSAMENNOMMER				4

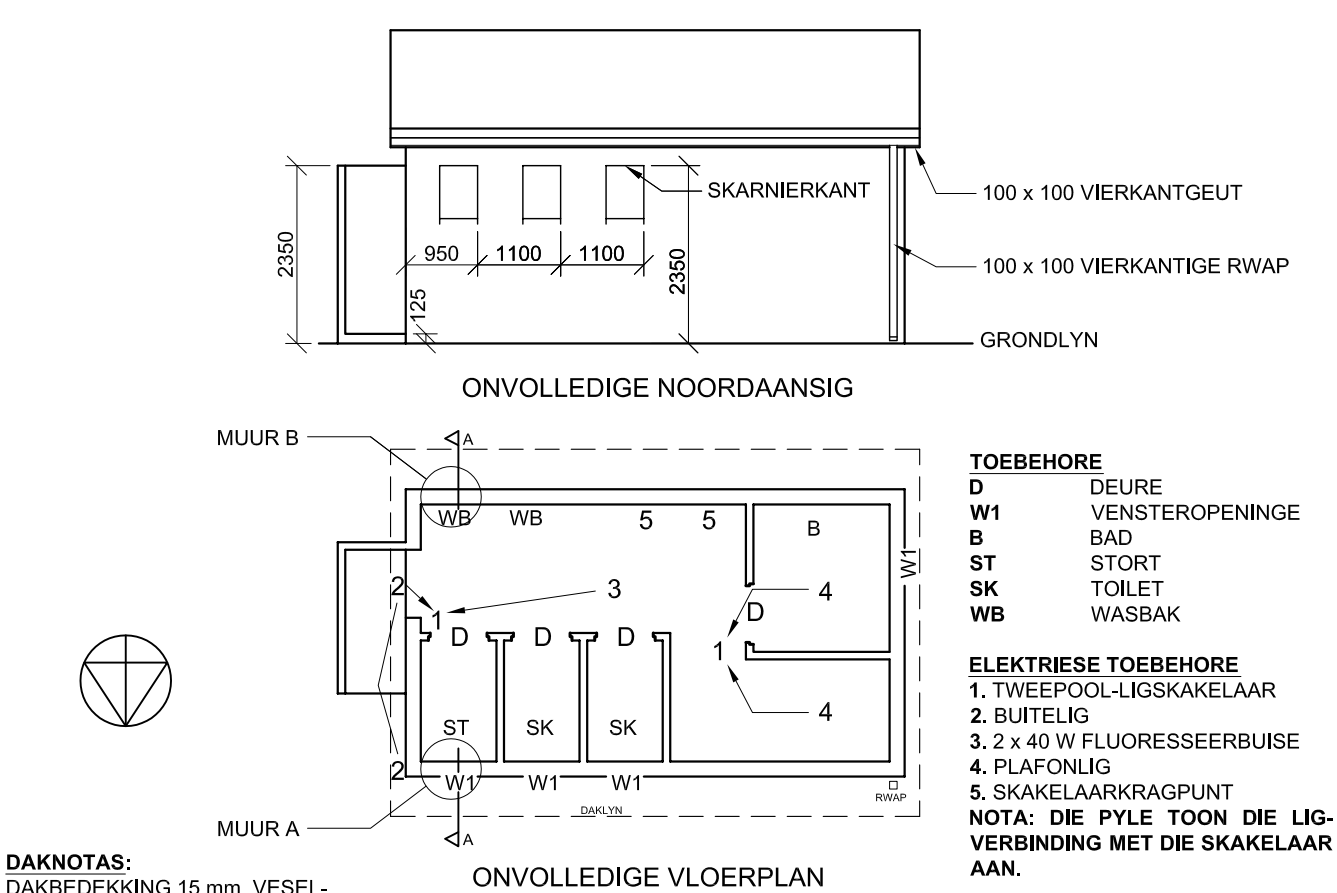
DAKKOMPONENTE	
	75 x 50 KAPLATTE
	228 x 20 FASSIEPLANK
	114 x 38 MUURPLAAT

DEURSKEDULE	
	DEURRAAM
	HOLKERNDEUR (D)

VENSTERSKEDULE	
	HOUTRAAM (W1)
NOTA: 150 x 20 VESELSEMENTVENSTERBANK ONDER ALLE VENSTERS	

AFMETINGS VAN SANITÊRE TOEBEHORE	
	TOILET (SK)
	WASBAK (WB)
	BAD (B)
	STORT (ST)

ELEKTRIESE SIMBOLE	
	
	
	
	
	
	
	
	
	



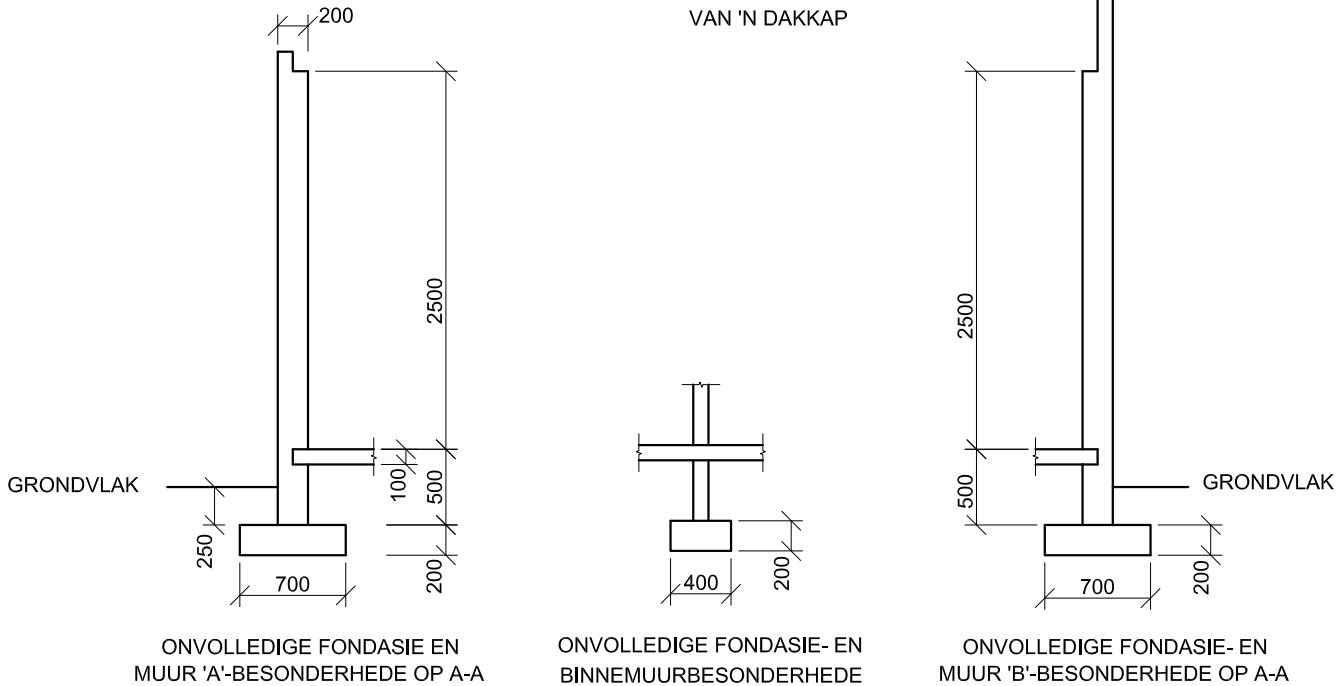
DAKNOTAS:
DAKBEDEKKING 15 mm VESEL-
SEMENTBORD OP 75 x 50 mm
KAPLATTE @ 1200 s/s

114 x 38 mm DAKKAPPE OP
114 x 38 mm MUURPLAAT

228 x 20 mm FASSIEPLANK AAN
BEIDE KANTE

DAKHELLING 15°

100 mm VIERKANTGEUT



VRAAG 4: SIVIELE TEKENING

Gegee:

- Die onvolledige noordaansig van 'n nuwe **waskamer** vir 'n kampterrein wat die mure, die posisie van die vensters, die dak en notas toon
- Die onvolledige vloerplan wat die mure, posisie van die vensters, deure, sanitêre toebehore en die elektriese toebehore toon
- Daknotas en 'n skematiese diagram van 'n dakkap
- Die onvolledige fondasie- en muurbesonderhede van muur 'A' en muur 'B' volgens snyvlak A-A
- 'n Tabel van dakkomponente
- 'n Deur- en vensterskedul
- 'n Tabel met elektriese simbole
- 'n Tabel met sanitêre toebehore
- Die onvolledige vloerplan van die nuwe **waskamer**, geteken volgens skaal 1 : 50, op bladsy 6

Instruksies:

- Beantwoord hierdie vraag op bladsy 6.
- Deur die gegewe onvolledige vloerplan te gebruik, teken, volgens skaal 1 : 50 en die spesifikasies, die volgende aansigte van die nuwe **waskamer**:
 - 4.1 Die volledige vloerplan**
 - 4.2 Die noordaansig**
 - 4.3 'n Deursnee-aansig** volgens snyvlak A-A
- ALLE tekene moet voldoen aan die riglyne en konvensies vervat in die *SABS 0143*.

SPESIFIKASIES:

DIE VLOERPLAN

Voeg die volgende kenmerke by die tekening:

- AL die deure en vensters
- AL die sanitêre toebehore soos met die afkortings aangedui
- AL die elektriese toebehore soos met die nommers aangedui

DIE NOORDAANSIG

Toon die volgende kenmerke op die tekening:

- Die buitemure
- Die dakbesonderhede, insluitend die geut, fassieplank en reën-waterafvoerpy
- Die vensterbesonderhede
- Die voltooide vloervlak

DIE DEURSNEEAANSIG

Toon die volgende kenmerke op die tekening:

- Die volledige fondasie-, muur-, blad- en dakbesonderhede
- Die venster, met 'n enkele latei, en deurbesonderhede
- ALLE kenmerke en toebehore op en oos van snyvlak A-A
- ALLE arseringbesonderhede

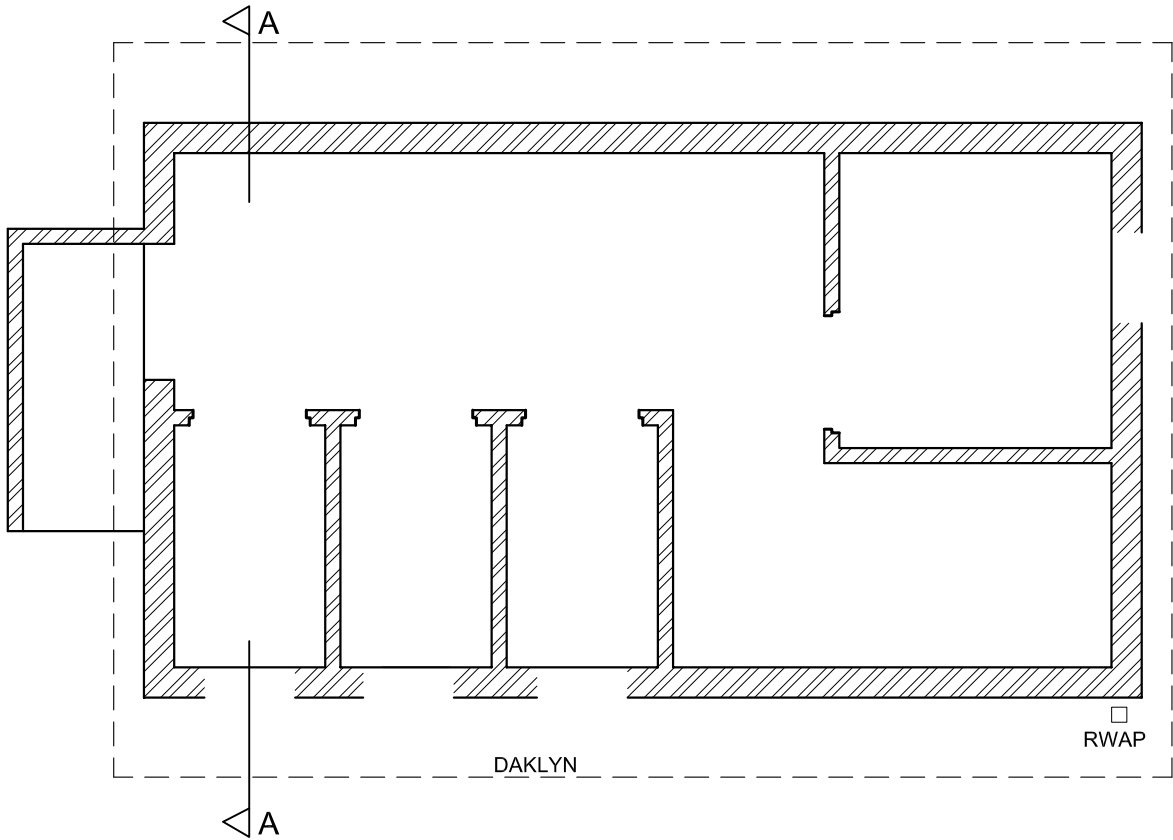
Benoem die volgende:

- Die vloerplan, insluitend die skaal
- Die kameraanduiding met vloerafwerking (keramiekteël)
- Die noordaansig en die deursnee-aansig
- Deur die korrekte afkortings te gebruik, benoem die volgende kenmerke op die korrekte aansig: grondvlak, voltooide vloervlak en vogweerlaag.

LET WEL:

- ALLE substruktuurarsering mag in vryhand geteken word. [95]





ASSESSERINGSKRITERIA					
VLOERPLAN					
1	BYSKRIFTE	2			
2	ELEKTRIES	7			
3	TOEBEHORE	8			
4	DEURE + VENSTERS	14			
SUBTOTAAL		31			
NOORDAANSIG					
1	MURE + VVV	4			
2	DAK + FASSIE + GEUT + RWAP	5			
3	VENSTERS	10½			
4	BYSKRIFTE	1½			
SUBTOTAAL		21			
DEURSNEEAANSIG					
1	DAK	11			
2	MURE + VLOER + FONDASIE	14½			
3	VENSTER + DEURE + TOEBEHORE	8			
4	ARSERING	7			
5	BYSKRIFTE	2½			
SUBTOTAAL		43			
TOTAAL		95			
EKSAMENNOMMER					
EKSAMENNOMMER					6





basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL
SENIOR CERTIFICATE

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1

NOVEMBER 2011

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 stated otherwise.
- 4. ALL drawings must be drawn to scale 1 : 1, unless stated otherwise.
- 5. ALL the questions must be answered on the QUESTION PAPER as instructed.
- 6. ALL the pages must be restapled in numerical sequence, irrespective of whether the question was attempted.
- 7. Time management is essential in order to complete all the questions.
- 8. Print your examination number in the block provided on every page.
- 9. Any details or dimensions not given, must be assumed in good proportion.
- 10. ALL answers must be drawn accurately and neatly.

FOR OFFICIAL USE ONLY									
QUESTION	MARKS OBTAINED			½	SIGN	MODERATED			½
1									
2									
3									
4									
TOTAL									
	2	0	0			2	0	0	

FINAL CONVERTED MARK	CHECKED BY
100	

COMPLETE THE FOLLOWING:

CENTRE NUMBER

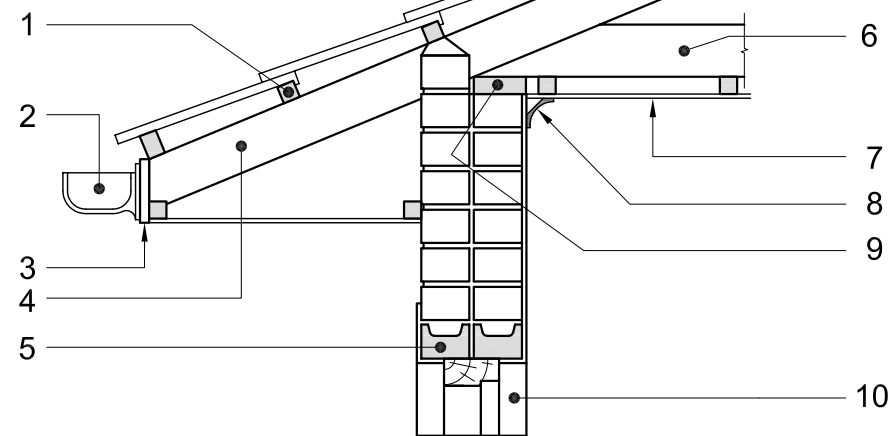
CENTRE NUMBER

EXAMINATION NUMBER

EXAMINATION NUMBER



NOTE:
THE HATCHING DETAIL
HAS BEEN OMITTED.



DETAILED DRAWING OF A SECTION THROUGH THE COMPONENTS OF A WALL AND ROOF

NOTE:
Contractors must verify all dimensions and levels on site before commencing work. Architects to be notified immediately of any discrepancies.

14. In the space provided below, draw, in neat freehand, the symbol for the north point according to *SABS 0143*.



ARCHITECT'S SIGNATURE

CLIENT'S SIGNATURE

REVISION		DATE		DESCRIPTION	
MEDI-DESIGN ARCHITECTS 121 CHURCH STREET PRETORIA Tel: 012 312 8459					
PRINTED BY DDP			DATE OF PRINT 2011-06-17		
DRAWING TITLE SITE PLAN					
PROJECT PROPOSED MEDICAL CENTRE FOR DR SMITH AND PARTNERS ON STAND 92 AT 19 HOSPITAL ROAD BENONI.					
PROJECT NUMBER 34			DRAWING NUMBER 2/08		
REFERENCE CODE Q1P1-S-2011			DRAWN BY SANELE		CHECKED BY LEBO
DATE 2011-05-30	SCALE 1 : 150				



QUESTION 1: ANALYTICAL (CIVIL)

Given:

A detailed drawing of a section through the components of a wall and roof, the site plan for a proposed medical centre, a title panel and a table of questions. The drawings have not been prepared to the indicated scale.

Instructions:

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

QUESTIONS		ANSWERS		
1	With reference to the detailed section through the components of a wall and roof, link the number on the drawing with the correct component in the column to the right of this question.	CEILING BOARD		10
		GUTTER		
		REVEAL		
		RAFTER		
		WALL PLATE		
		FASCIA BOARD		
		BATTEN		
		TIE BEAM		
		CORNICE		
		LINTEL		
2	What is the drawing number?		1	
3	In which road is the exit of the property located?		1	
4	What does the line at 1 indicate?		1	
5	Name the feature at 2.		1	
6	Name the feature at 3.		1	
7	Name the feature at 4.		1	
8	What does the line at 5 indicate?		1	
9	How many rodding eyes are shown on the site plan?		1	
10	How many proposed suites must be built?		1	
11	Which is the highest corner of the stand?		2	
12	Determine the perimeter of stand 92 in metres. Show ALL calculations.		3	
13	Determine the total area of stand 92 in square metres. Show ALL calculations.		3	
14	In the space provided in the title panel, draw, in neat freehand, the symbol for the north point according to <i>SABS 0143</i> .		3	
TOTAL			30	

EXAMINATION NUMBER	
EXAMINATION NUMBER	2



QUESTION 2: DEVELOPMENT

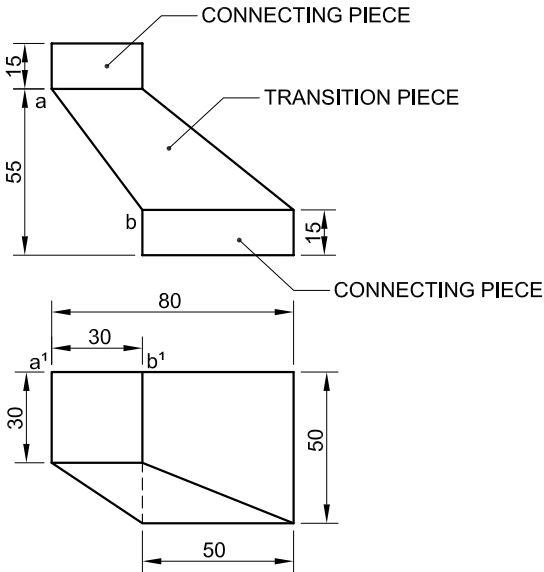
Given:

The front view and top view of a portion of a duct showing an offset square-to-square transition piece with two connecting pieces.

Instructions:

- 2.1 Draw, to scale 1 : 1, the given front view and top view of the given portion of the duct.
- 2.2 Develop the surface of the transition piece ONLY. Make edge AB the seam.

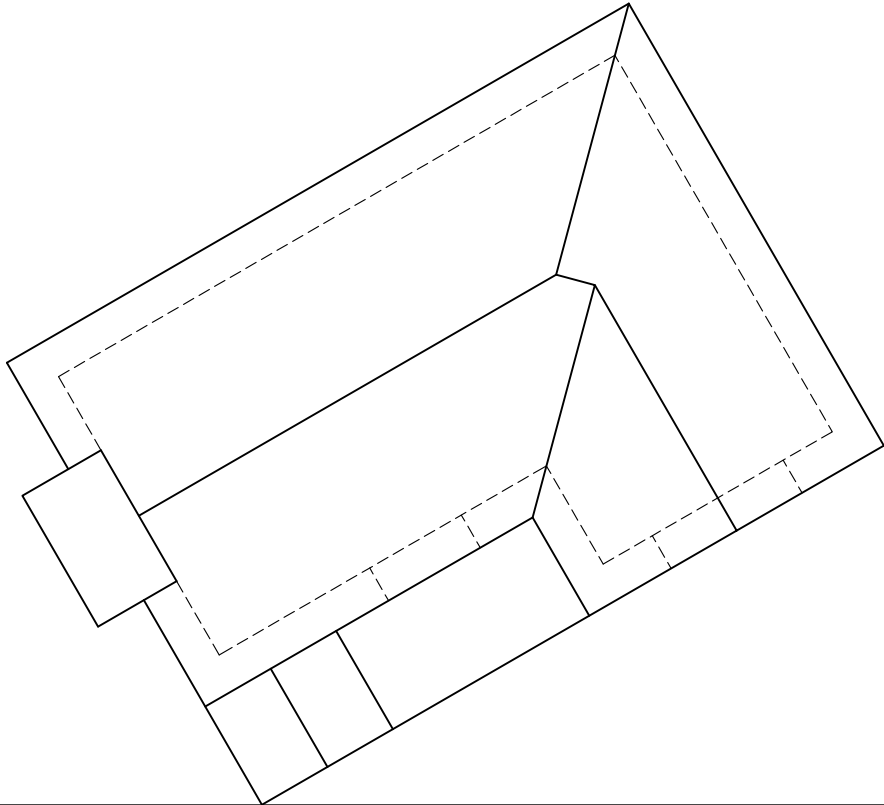
Show ALL necessary construction and fold lines. [34]



EDGE AB IS THE SEAM.

ASSESSMENT CRITERIA				
FRONT VIEW + TOP VIEW	10			
TRUE LENGTH + METHOD	10			
DEVELOPMENT	14			
TOTAL	34			
EXAMINATION NUMBER				
EXAMINATION NUMBER				3





QUESTION 3: PERSPECTIVE

Given:
Two views of a cottage and the information needed to draw a two-point perspective drawing.
PP – Picture plane
HL – Horizon line
GL – Ground line
SP – Station point

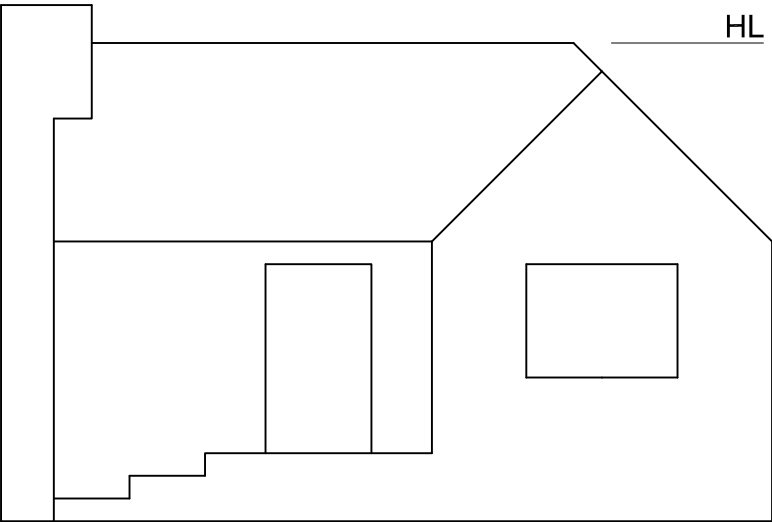
- Instructions:**
Complete the perspective drawing.
- Align the drawing sheet with the ground line (GL).
 - Show ALL necessary construction.
 - Show the wall thickness at the door and the window.
 - NO hidden detail is required.
- [41]

PP

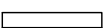
HL

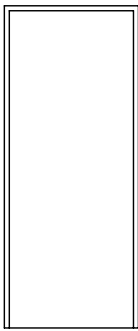
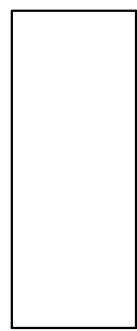
GL

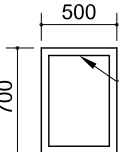
SP

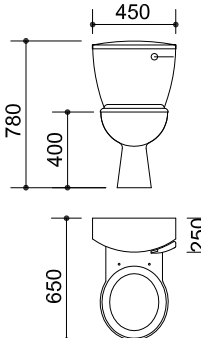
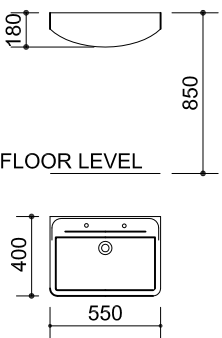
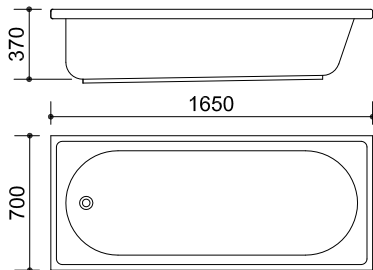
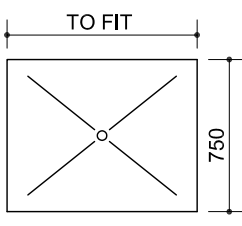


ASSESSMENT CRITERIA				
CONSTRUCTION + VPs	7			
BUILDING	18			
ROOF + CHIMNEY	16			
TOTAL	41			
EXAMINATION NUMBER				
EXAMINATION NUMBER				4

ROOF COMPONENTS	
	75 x 50 PURLINS
	228 x 20 FASCIA BOARD
	114 x 38 WALL PLATE

DOOR SCHEDULE	
TO FIT	TO FIT
	
FRAME	HOLLOW CORE DOOR (D)

WINDOW SCHEDULE

HINGED END
WOODEN FRAME (W1)
NOTE: 150 x 20 FIBRE CEMENT SILL UNDER ALL WINDOWS

DIMENSIONS OF SANITARY FIXTURES	
	
TOILET (WC)	WASHBASIN (WB)
	
BATH TUB (B)	SHOWER (SH)

ELECTRICAL SYMBOLS



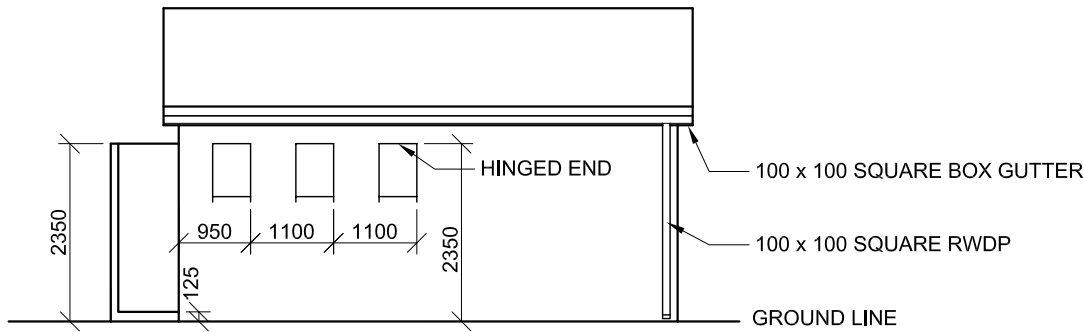




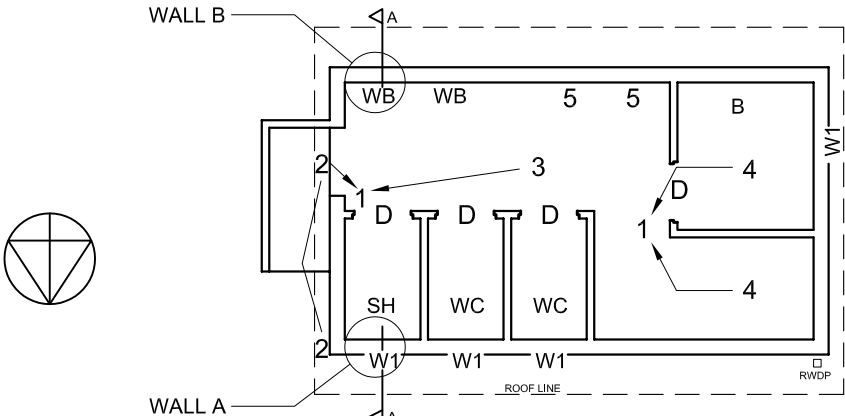








INCOMPLETE NORTH ELEVATION



INCOMPLETE FLOOR PLAN

FIXTURES

- D DOORS
- W1 WINDOW OPENINGS
- B BATH
- SH SHOWER
- WC TOILET
- WB WASHBASIN

ELECTRICAL FIXTURES

- 1. TWO-POLE LIGHT SWITCH
- 2. OUTSIDE LIGHT
- 3. 2 x 40 W FLUORESCENT TUBES
- 4. CEILING LIGHT
- 5. SWITCH SOCKET OUTLET

NOTE: THE ARROWS SHOW THE LIGHT CONNECTION TO THE SWITCH.

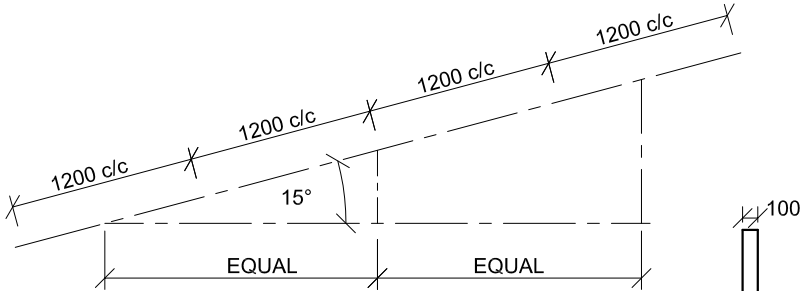
ROOF NOTES:
ROOF COVER 15 mm FIBRE CEMENT BOARD ON 75 x 50 mm PURLINS @ 1200 c/c

114 x 38 mm ROOF TRUSSES ON 114 x 38 mm WALL PLATE

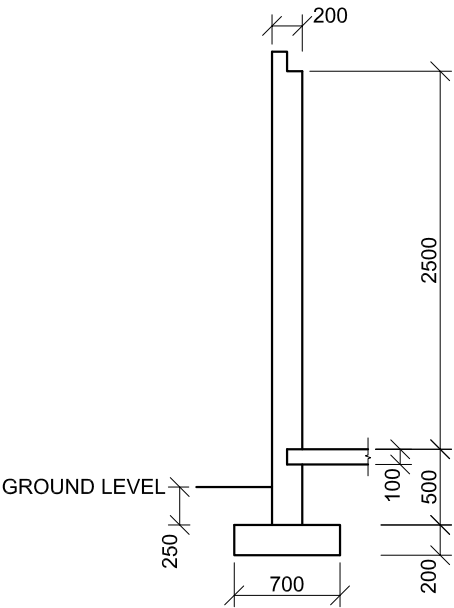
228 x 20 mm FASCIA BOARD ON BOTH ENDS

ROOF PITCH 15°

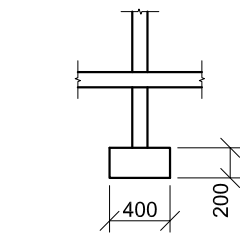
100 mm SQUARE BOX GUTTER



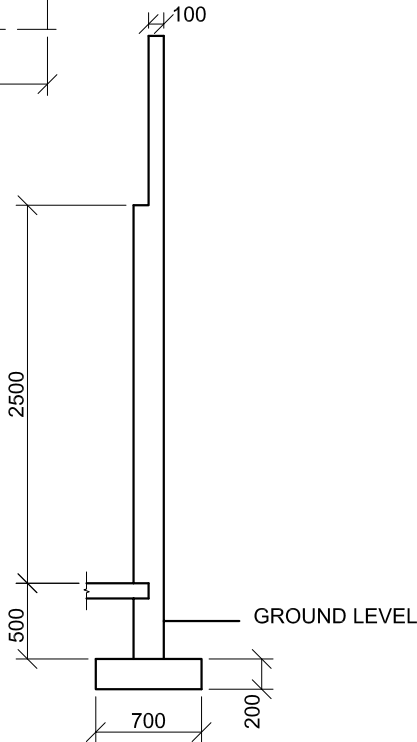
SCHEMATIC DIAGRAM OF A ROOF TRUSS



INCOMPLETE FOUNDATION AND WALL 'A' DETAIL ON A-A



INCOMPLETE FOUNDATION AND INTERNAL WALL DETAIL



INCOMPLETE FOUNDATION AND WALL 'B' DETAIL ON A-A

QUESTION 4: CIVIL DRAWING

Given:

- The incomplete north elevation of a new **ablution block** for a campsite showing the walls, the position of the windows, the roof and notes
- The incomplete floor plan showing the walls, position of the windows, doors, sanitary fixtures and the electrical fixtures
- Roof notes and a schematic diagram of a roof truss
- The incomplete foundation and wall detail of wall 'A' and wall 'B' on cutting plane A-A
- A table of roof components
- A door and window schedule
- A table of electrical symbols
- A table of sanitary fixtures
- The incomplete floor plan of the new **ablution block**, drawn to scale 1 : 50, on page 6

Instructions:

- Answer this question on page 6.
- Using the given incomplete floor plan, draw, to scale 1 : 50 and to the specifications, the following views of the new **ablution block**:
 - 4.1 The complete floor plan**
 - 4.2 The north elevation**
 - 4.3 A sectional elevation** on cutting plane A-A
- ALL drawings must comply with the guidelines and conventions contained in the *SABS 0143*.

SPECIFICATIONS:

THE FLOOR PLAN

Add the following features to the drawing:

- ALL the doors and windows
- The sanitary fixtures as indicated with the abbreviations
- ALL the electrical fixtures as indicated with the numbers

THE NORTH ELEVATION

Show the following features on the drawing:

- The outside walls
- The roof detail including the gutter, fascia board and rainwater downpipe
- The window detail
- The finished floor level

THE SECTIONAL ELEVATION

Show the following features on the drawing:

- The complete foundation, wall, slab and roof detail
- The window, with a single lintel, and door detail
- ALL features and fixtures on and to the east of cutting plane A-A
- ALL hatching detail

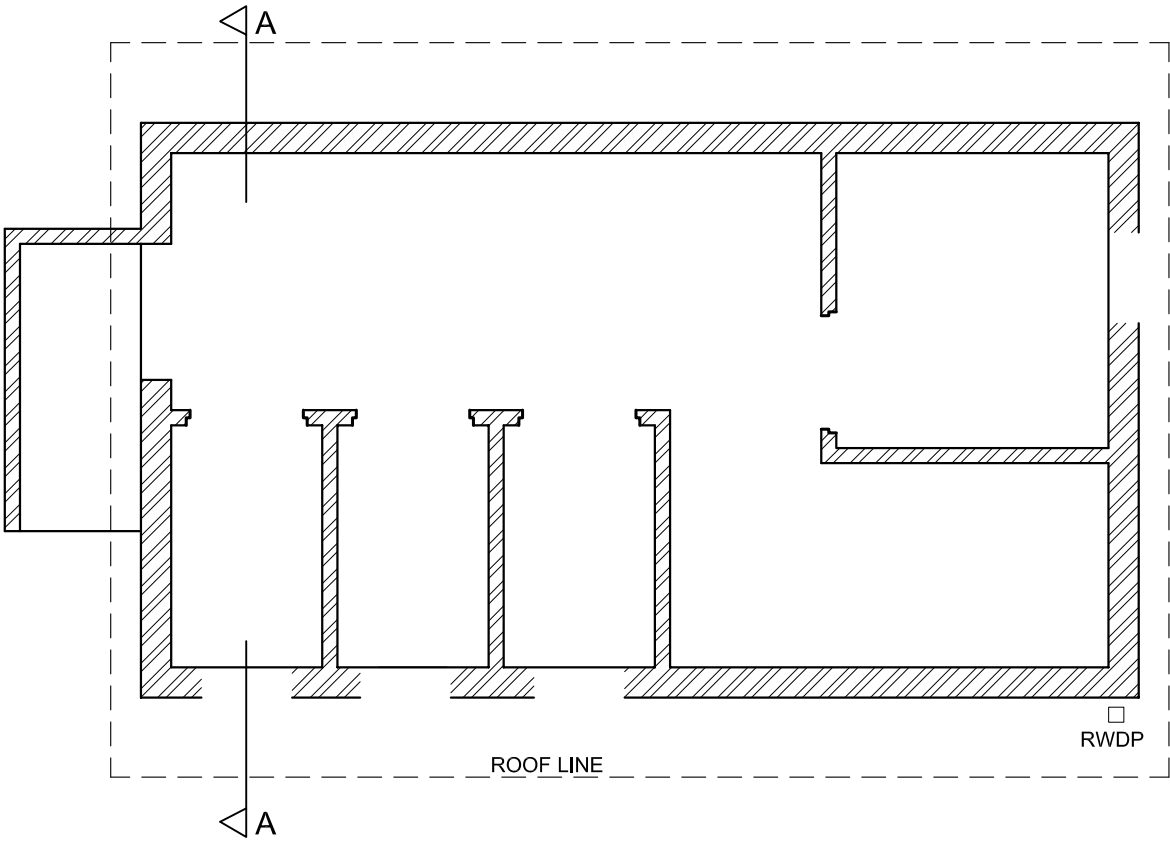
Label the following:

- The floor plan, including the scale
- The room designation and floor finish (ceramic tile)
- The north elevation and the sectional elevation
- Using the correct abbreviations, label the following features in the correct view: ground level, finished floor level and damp-proof course.

NOTE:

- ALL substructure hatching may be drawn in freehand. [95]





ASSESSMENT CRITERIA					
FLOOR PLAN					
1	LABELS	2			
2	ELECTRICAL	7			
3	FIXTURES	8			
4	DOORS + WINDOWS	14			
SUBTOTAL		31			
NORTH ELEVATION					
1	WALLS + FFL	4			
2	ROOF + FACIA + GUTTER + RWDP	5			
3	WINDOWS	10½			
4	LABELS	1½			
SUBTOTAL		21			
SECTIONAL ELEVATION					
1	ROOF	11			
2	WALLS + FLOOR + FOUNDATION	14½			
3	WINDOW + DOORS + FIXTURES	8			
4	HATCHING	7			
5	LABELS	2½			
SUBTOTAL		43			
TOTAL		95			
EXAMINATION NUMBER					
EXAMINATION NUMBER					6

