



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

NOVEMBER 2018

**CIVIL TECHNOLOGY: WOODWORKING
MARKING GUIDELINE**

MARKS: 200

This marking guideline consists of 16 pages, including 5 pages of answer sheets.

QUESTION 1: SAFETY AND MATERIAL (GENERIC)

- | | | | |
|-----|-------|--|-------------|
| 1.1 | 1.1.1 | Hard hat / Safety hat | (1) |
| | 1.1.2 | All building sites / construction sites | (1) |
| 1.2 | 1.2.1 | Loose clothing – Button up / Remove | (1) |
| | 1.2.2 | Type of shoes in a workshop – Non-slip / Metal point | (1) |
| | 1.2.3 | When sharp object are carried – Point downwards | (1) |
| | 1.2.4 | Dangerous moving parts of power tools – Covered by guards | (1) |
| | 1.2.5 | Number of operators who operates a machine – Only one | (1) |
| 1.3 | | Contractor | (1) |
| 1.4 | | Any FOUR safety measures which are applicable to the storage of flammable liquids. | |
| | | <ul style="list-style-type: none"> Room must be well ventilated Door must have a threshold No material that may cause a spark Liquids that may interact chemically not to be stored in close proximity Containers sealed properly | (4 x 1) (4) |
| 1.5 | 1.5.1 | Suspended concrete floors – Reinforced concrete | (1) |
| | 1.5.2 | Lintels above door openings – Precast concrete | (1) |
| | 1.5.3 | Foundations for single-storey buildings – Unreinforced concrete | (1) |
| 1.6 | | Any ONE use of screed. | |
| | | <ul style="list-style-type: none"> A finish for floors and walls Facing material Surfacing of suspended floors Insulated roof screed | (1) |
| 1.7 | | Any TWO reasons why lime can be added to a mortar mix | |
| | | <ul style="list-style-type: none"> Increases plasticity Makes mortar more workable | (2 x 1) (2) |
| 1.8 | | (1) Cheap (2) easy workable | (2) |
| 1.9 | 1.9.1 | True | (1) |
| | 1.9.2 | False | (1) |
| | 19.3 | False | (1) |
| | 1.9.4 | True | (1) |

- 1.10 (1) High hygienic properties and (2) easy to clean (2)
- 1.11 (1) Two or more metals (2) are combined to (3) form a new metal / with better properties / other properties (3)
- 1.12 Any ONE use of thermosetting plastic.
- Sewerage pipes
 - Gutters
 - Cold- and hot water pipes
- (1 x 1) (1)
[30]

QUESTION 2: EQUIPMENT, TOOLS AND GRAPHICS (GENERIC)

- 2.1 2.1.1 Comb hammer (1)
- 2.1.2 Steel comb, finish bricks, blocks/roughen smooth surfaces (2)
- 2.1.3 (1) Hammering on hard bricks (2) decays the comb / make comb blunt (2)
- 2.2 (1) Mitre try square
 Any THREE uses of it.(3)
- Testing squareness
 - Marking out perpendicular lines
 - Can be used as a ruler
 - Marking square lines
 - Test if surfaces are straight
 - Drawing 45° lines (4)
- 2.3 (1) Radial arm saw
 Any THREE caring measures for it.(3)
- Maintain – lubricate and adjust according to instructions
 - Clean after use
 - Repair damaged electrical cords
 - Handle with care not to damage accuracy
 - Use only for intended purpose
 - Do not force the saw
 - Avoid blunt blades
 - Keep ventilation holes open
 - Service regularly (4)
- 2.4 Any TWO caring measures for a concrete mixer.
- Clean inside after use
 - Do not leave water in the drum
 - Oil inside of drum when storing for a long time (2 x 1) (2)

- | | | | |
|-----|---|---|-------------|
| 2.5 | 2.5.1 | Site plan | (1) |
| | 2.5.2 | 124 | (1) |
| | 2.5.3 | Building boundary | (1) |
| | 2.5.4 | 2.5.B – Manhole
2.5.C – Rodding eye | (2) |
| 2.6 | FIGURE 2.6 on ANSWER SHEET A shows an incomplete section view of a single brick wall. Complete the section view on scale 1 : 20 and show the following parts with symbols and labels: | | |
| | 2.6.1 | A strip foundation of 700 x 250 mm with the invert level of 400 mm | (3) |
| | 2.6.2 | A single brick wall with a height of 2 700 mm from the floor level and 10 mm plaster work on the outside and inside | (5) |
| | 2.6.3 | The hard core filling of 250 mm | (1) |
| | 2.6.4 | The damp proof course | (2) |
| | 2.6.5 | The blinding layer of 50 mm | (1) |
| | 2.6.6 | The concrete floor slab of 90 mm | (1) |
| | 2.6.7 | A door opening with a height of 2 100 mm | (1) |
| | 2.6.8 | A concrete lintel with a thickness of 70 mm above the door opening | (2) |
| | 2.6.9 | A wall plate of 114 x 38 mm | (2) |
| | 2.10 | Show any TWO labels. | (2 x 1) (2) |
| | | | [40] |

QUESTION 3: QUANTITIES, JOINING AND GRAPHICS (GENERIC)

3.1 FIGURE 3.1 shows the foundation wall of a building. The width of the wall is 220 mm and the height 450 mm.

Use the quantity list on ANSWER SHEET B and calculate the following:

3.1.1 Determine the centre line of the foundation wall. (6)

3.1.2 Determine the quantity of bricks needed to build the foundation wall and make provision of 5% brick breakage damage. (9)

3.2 (1) Thorough description of the (2) item that was measured and (3) any preliminary calculations or sketches (3)

3.3 (1) Apply adhesive to both surfaces (2) allow to dry and (3) when almost dry, clamp parts together (3)

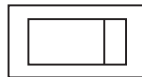
3.4 Epoxy (1)

3.5 Any TWO properties of mastic sealant. (2 x 1)

- Works well on metals
- Prevents dust penetration in joints
- Flexible, yet keeps surfaces together
- Adhesion for 5 years
- Smooth exterior
- Can be used outdoors
- Water tight
- Withstand low and high temperatures
- Not weakened by exposure to sun

(2 x 1) (2)

3.6 3.6.1 Gully



(2)

3.6.2 Check valve



(2)

3.6.3 Dressed wood



(2)

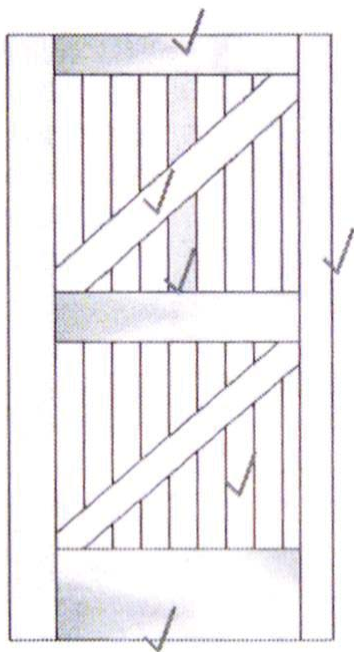
[30]

QUESTION 4: MATERIAL, TOOLS, GRAPHICS AND WINDOWS (SPECIFIC)

- 4.1 Softwood and hardwood (2)
- 4.2 4.2.1 More expensive
- 4.2.2 Any type of wood
- 4.2.3 50 mm
- 4.2.4 25% (4)
- 4.3 4.3.1 Table saw / circular saw (1)
- 4.3.2 4.3.A – blade cover
4.3.B – mitre gauge
4.3.C – hand wheel for blade-height adjustment
4.3.D – mitre gauge slot
4.3.E – rip fence (5)
- 4.4 4.4.1 Cutting of curves and circles on large surfaces
Cutting a wide range of materials such as hardboard, laminated boards, plastic and thin metal (Any 1) (1)
- 4.4.2 Sanding across as well as along the grain of wood
Sanding surfaces before polishing
Sanding between layers of varnish (Any 1) (1)
- 4.4.3 Shaping of surfaces and edging of wood
Cutting of profiles to a straight or curved edge
Cutting grooves
Cutting dovetail joints (Any 1) (1)
- 4.5 ANSWER SHEET C – ROOF TRUSS (12)
- 4.6 4.6.1 Skirting (1)
- 4.6.2 Cornice (1)
- 4.6.3 Rebate (1)
- [30]**

QUESTION 5: JOINING WINDOWS, DOORS AND WALL PANELLING (SPECIFIC)

- 5.1 To be built into brickwork/Fix door frame to wall (1)
- 5.2 Floating shelves
Steel rail brackets
Dowels
Wall plug, supporting pins and screws (Any 3) (3)
- 5.3. 5.3.1 Double mortise and tenon joint (1)
- 5.3.2 Doorframes (1)
- 5.3.3 Tenons (2)
- 5.3.4 5.3.B – Face cheek 5.3.C – Edge cheek (2)
- 5.3.5 Mortise chisel (1)
- 5.4 ANSWER SHEET D (7)
- 5.5 For shrinkage and expansion (2)
- 5.6 Z-framed, ledged and braced batten door



(6)

- 5.7 It gives a pleasing, decorative and durable appearance
It conceals cracks in walls
Panelling does not require the entire wall to be plastered
Does not expand and shrink in the same way as solid timber
Provides good insulation
Requires no framework

(4 x 1)

(4)

[30]

QUESTION 6: CENTRING, FORMWORK, SHORING AND SUSPENDED FLOORS (SPECIFIC)

6.1 The top shape of the framework must be the same as the underside of the arch

Centre must support the weight of the wet masonry/brickwork until the cement between the arc stones has set

Centres must be rigid and strong in order to support the masonry of the arch

Must easily be removed

Must be secured with round wire nails

Size of members is determined by the design and construction of the centre

(4 x 1) (4)

6.2 Two solid timber strips 25 mm thick

(1)

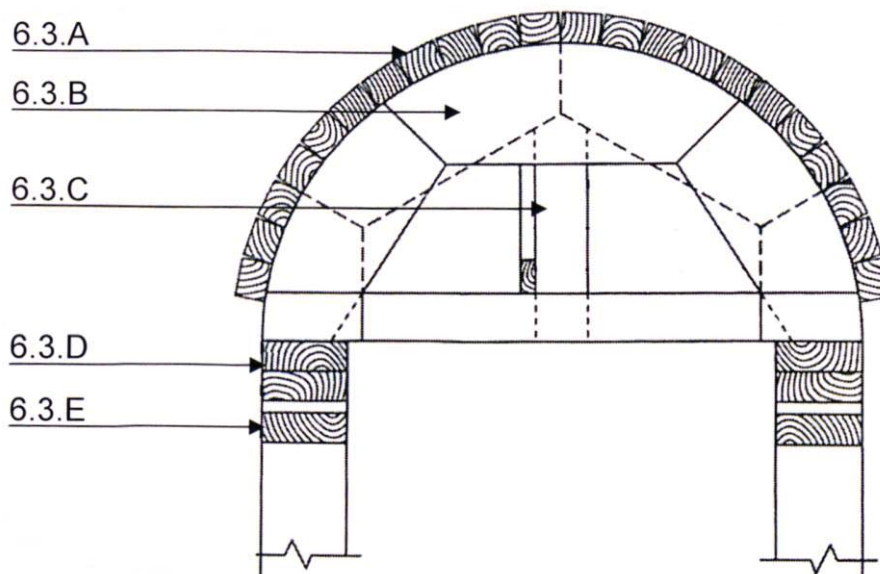
6.3 A. Laggings

B. Rib

C. Strut

D. Bearer

E. Folding wedges



(5)

6.4 Any TWO.

- The boards are economical
- Used where a smooth or quality finish is not needed
- Big sheets available

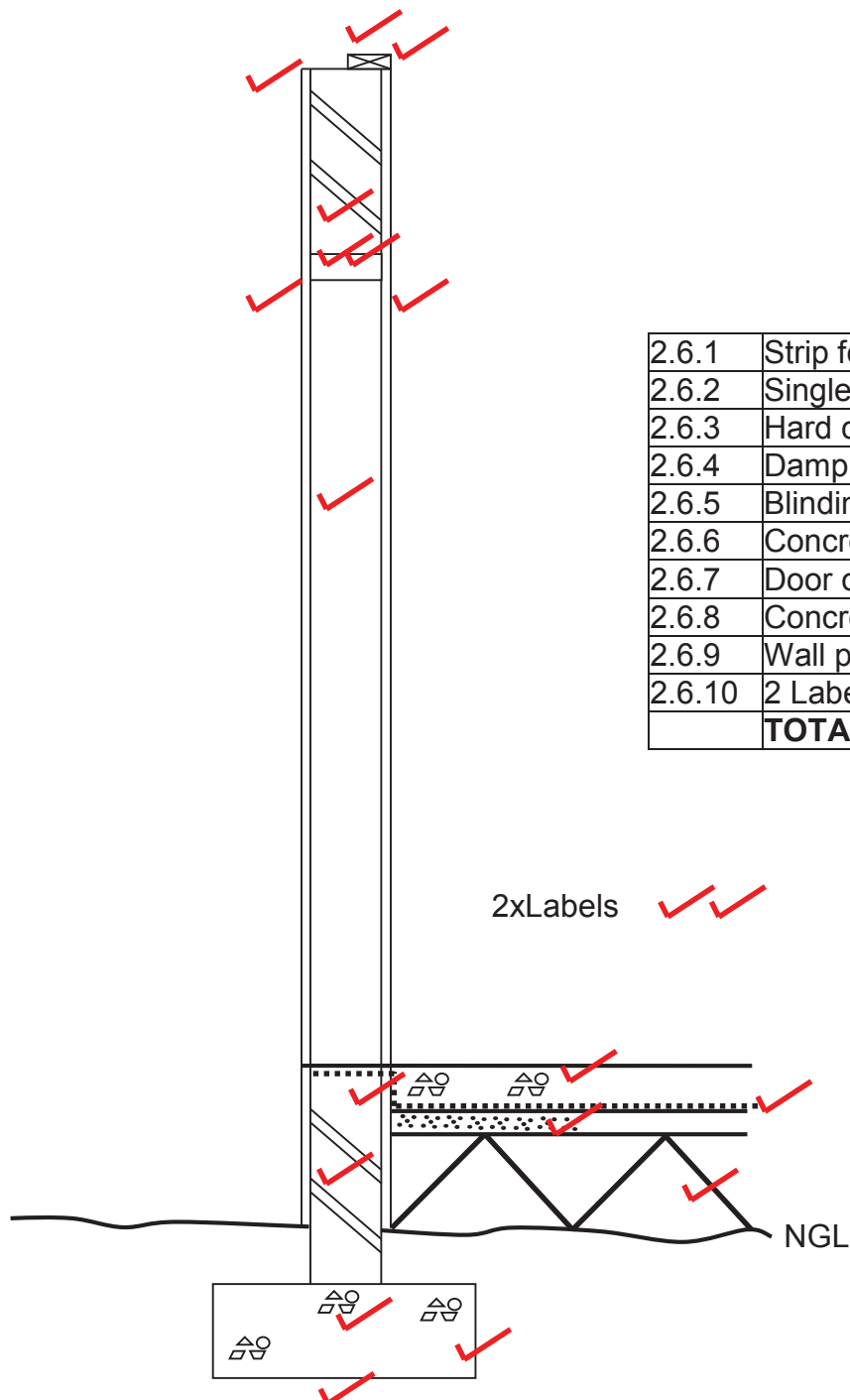
(2 x 1) (2)

6.5	6.5.1	To prevent the concrete from sticking to surfaces of the timber	(2)
	6.5.2	To ensure that the surface of the column is even	(2)
	6.5.3	To ease assembling and dismantling of formwork	(2)
6.6	ANSWER SHEET E		(10)
6.7	Make provision for raising or lowering the formwork to the required height Ease the removal of the formwork after completion of lintel		(2)
6.8	Made of wood and metal and used to pull together the box of a square column by means of nuts and bolts		(2)
6.9	6.9.1	False	(1)
	6.9.2	False	(1)
	6.9.3	False	(1)
	6.9.4	True	(1)
6.10	A	Rising butt	(3)
	B	Parliament	
	C	Strap	
6.11	For ventilation of timber floor		(1)
			[40]

TOTAL: 200

ANSWER SHEET A	CIVIL TECHNOLOGY GENERIC	NAME: _____
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- 2.6 FIGURE 2.6 on ANSWER SHEET A shows an incomplete section view of a single brick wall. Complete the section view to scale 1 : 20.



2.6.1	Strip foundation	3	
2.6.2	Single brick wall	5	
2.6.3	Hard core filling	1	
2.6.4	Damp proof course	2	
2.6.5	Blinding layer	1	
2.6.6	Concrete floor slab	1	
2.6.7	Door opening	1	
2.6.8	Concrete lintel	2	
2.6.9	Wall plate	2	
2.6.10	2 Labels	2	
TOTAL		20	

ANSWER SHEET B	CIVIL TECHNOLOGY GENERIC	NAME: _____

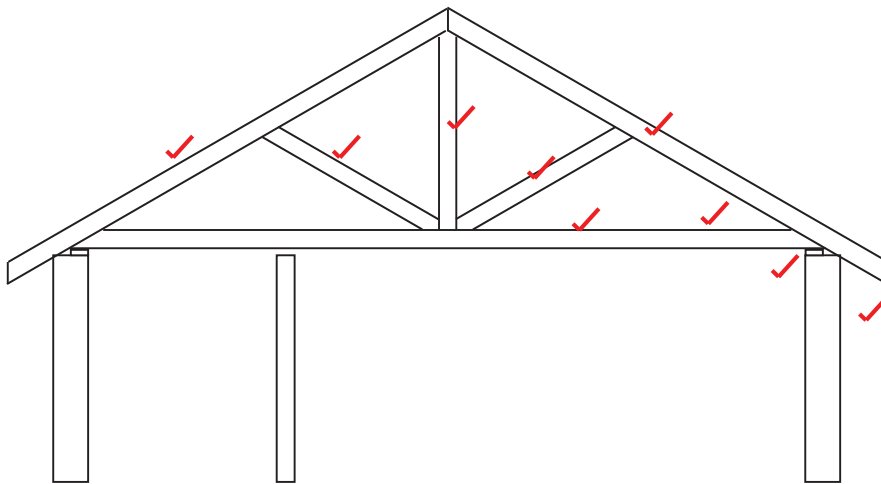
QUESTION 3.1

A	B	C	D
			3.1.1 CENTRE LINE: (6)
			✓
			2 x 9 m = 18 m
			✓
			2 x 6 m = 12 m
			✓
			= 30 m
			✓
			Minus: 4 x 0.22 m = 0.88 m
			✓
			TOTAL CENTRE LINE = 29.12 m ✓
			3.1.2 QUANTITY OF BRICKS: (9)
			<u>AREA:</u>
			<u>Total wall area</u>
✓ 1 —	✓ 29.12		
	<u>0.45</u>	<u>13.104</u>	Thus: Total wall area = 13.104 m ² ✓
	✓		
			<u>TOTAL BRICKS</u>
	13.104		100 bricks/ m ² for single brick wall
	<u>100</u>	<u>1 310.4</u>	Thus: 1 311 bricks for total wall ✓
	✓		
			<u>5% BREAKAGE</u>
			$\frac{5}{100} \times 1\,311$ ✓
			= 66 bricks ✓
			<u>TOTAL BRICKS :</u> ✓
			1 311 + 66 = 1 377 total quantity bricks

ANSWER SHEET C	CIVIL TECHNOLOGY WOODWORKING	NAME: _____
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- 4.5 FIGURE 4.5 on ANSWER SHEET C shows the incomplete sectional view of the outside walls and one inner wall of a building. Complete to a scale 1 : 50, the SA type roof truss construction with supports on the outside walls. The roof pitch is at 30° with a overhang of 300 mm.

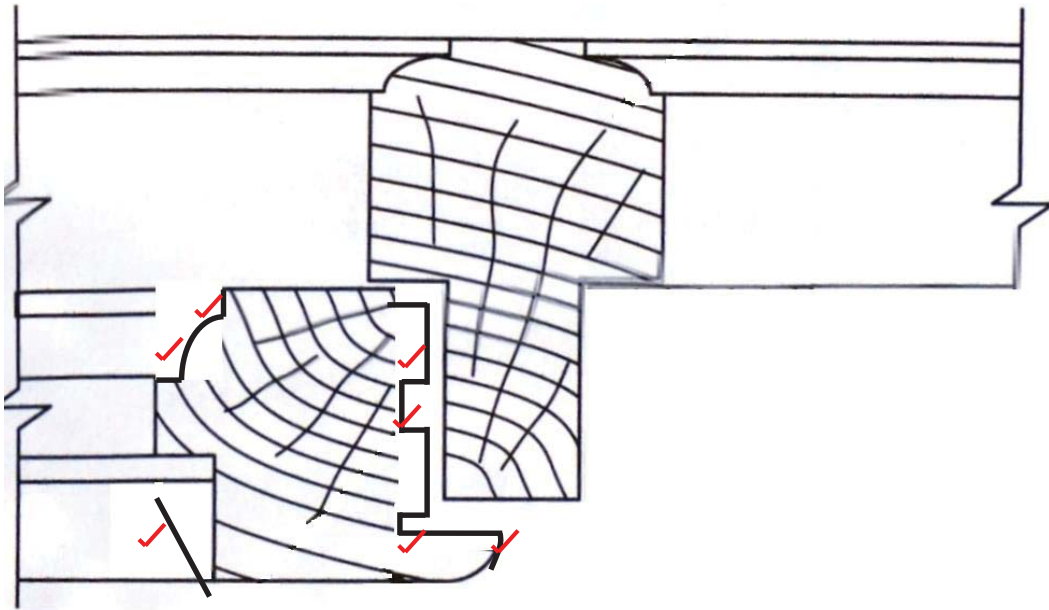
(12)



✓ SA-type roof truss	1	
Tie beam	1	
Principal rafter	2	
King post	1	
Strut	2	
Position of supports	1	
30° Pitch	1	
300 mm Overhang	1	
✓✓ Scale	2	
TOTAL	12	

ANSWER SHEET D	CIVIL TECHNOLOGY WOODWORKING	NAME: _____
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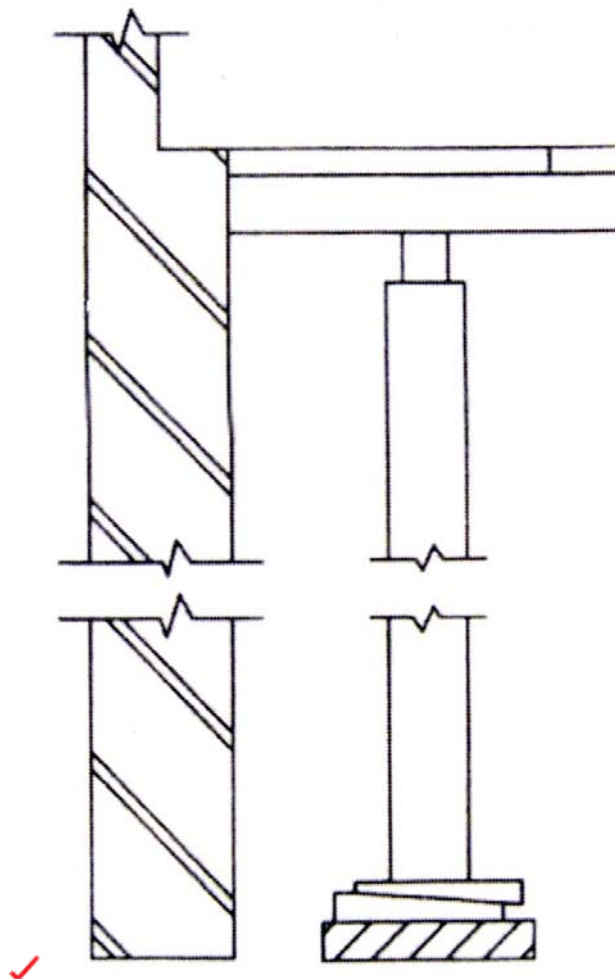
- 5.4 FIGURE 5.4 on ANSWER SHEET D shows the incomplete horizontal section through the mullion and adjacent stiles with glass and partially rebated. Complete in good proportion the section view through the adjacent left view.



Ovolo mould	2	
Putty	1	
Lip of stile	2	
Drip groove	2	
TOTAL	7	

ANSWER SHEET E	CIVIL TECHNOLOGY WOODWORKING	NAME: _____
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- 6.6 FIGURE 6.6 on ANSWER SHEET E shows the vertical view of a wall, sole plate and formwork board for a concrete floor slab. Complete by drawing the parts of formwork supports on a scale of 1 : 20. (10)



Wedges	2	
Prop	2	
Cross-bearer	2	
Bearer	2	
Scale	2	
TOTAL	10	