



# basic education

Department:  
Basic Education  
**REPUBLIC OF SOUTH AFRICA**

## **NATIONAL SENIOR CERTIFICATE**

**GRADE 12**

**ENGINEERING GRAPHICS AND DESIGN P2**

**NOVEMBER 2010**

**MEMORANDUM**

**MARKS: 100**

**This memorandum consists of 6 pages.**

Engineering drawing of a wheel hub assembly. The drawing includes a front view, a top view, and a right side view. The front view shows a cross-section of the hub with a central bore and a flange. The top view shows the hub from above, highlighting the circular flange and the central bore. The right side view shows the hub from the side, highlighting the flange and the central bore. The drawing is annotated with dimension lines and callouts. The front view has a vertical centerline and a horizontal centerline. The top view has a vertical centerline and a horizontal centerline. The right side view has a vertical centerline and a horizontal centerline. The drawing is also annotated with a 'STAPLE' label and a 'PAPER 2 QUESTION 4' label.

HALF-SECTIONAL FRONT VIEW	
THIRD-ANGLE	2
1. AXLE PIPE	3
2. STUB AXLE	9½
3. WHEEL STUD	8½
4. WHEEL HUB	8
5. BEARINGS	7
6. SPACER	1
7. WASHER	1½
8. CIRCLIP	1½
9. HUB CAP	5
SUBTOTAL	47

RIGHT VIEW + GENERAL	
1. WHEEL HUB	4½
2. WHEEL STUD	2
3. BEARING	9
4. WASHER	1
5. CIRCLIP	3
6. STUB AXLE	2
7. ASSEMBLY	9
8. SECTION A-A	4
9. CENTRE LINES	4
10. HATCHING (▲)	11½
SUBTOTAL	50
TOTAL	97

PAPER 2 QUESTION 4  
GRADE 12  
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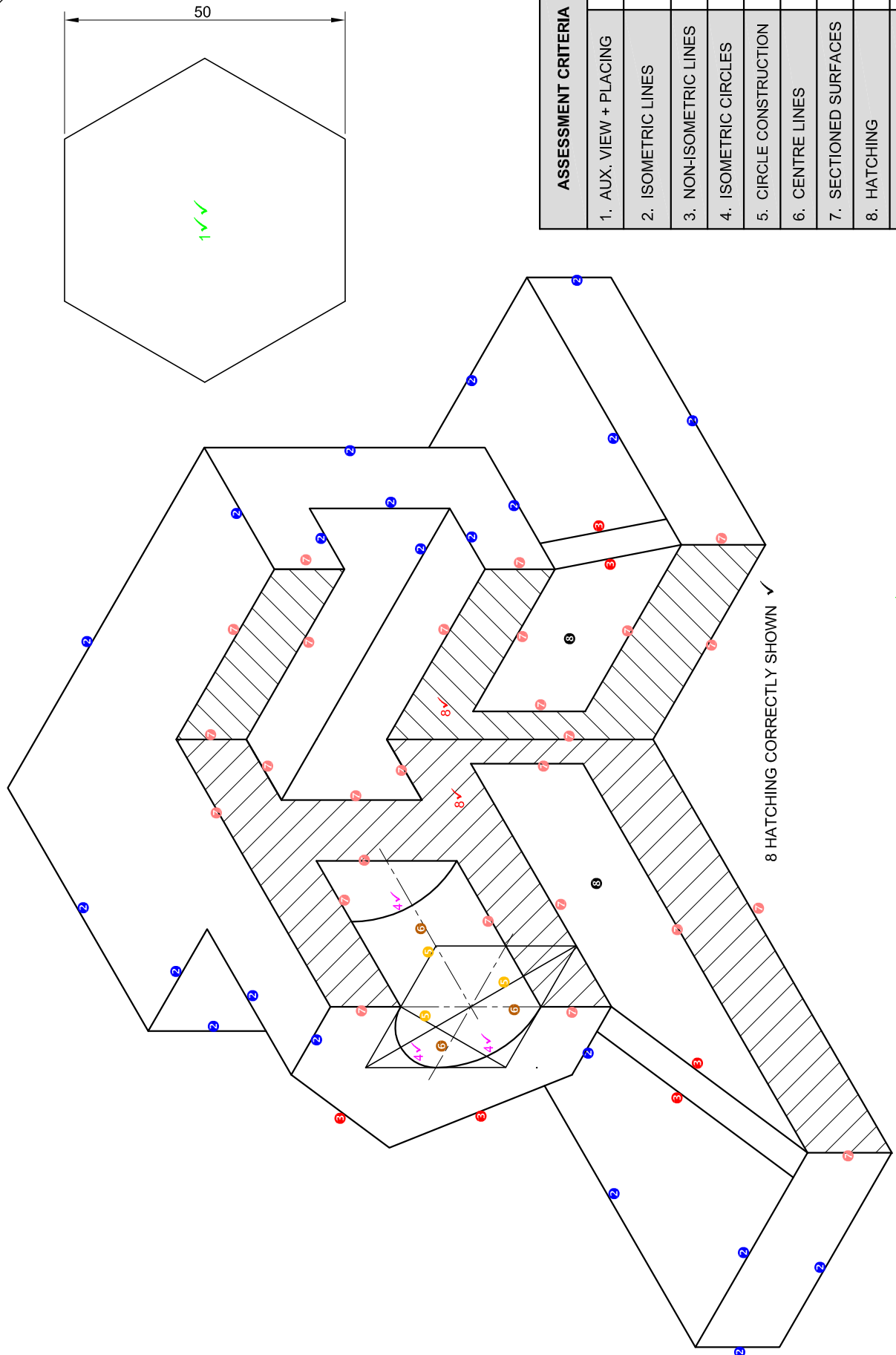
STUB AXLE NOT HATCHED ✓

BOTTOM HALF NOT HATCHED ✓

BALL BEARING x2 & HATCHING x 2

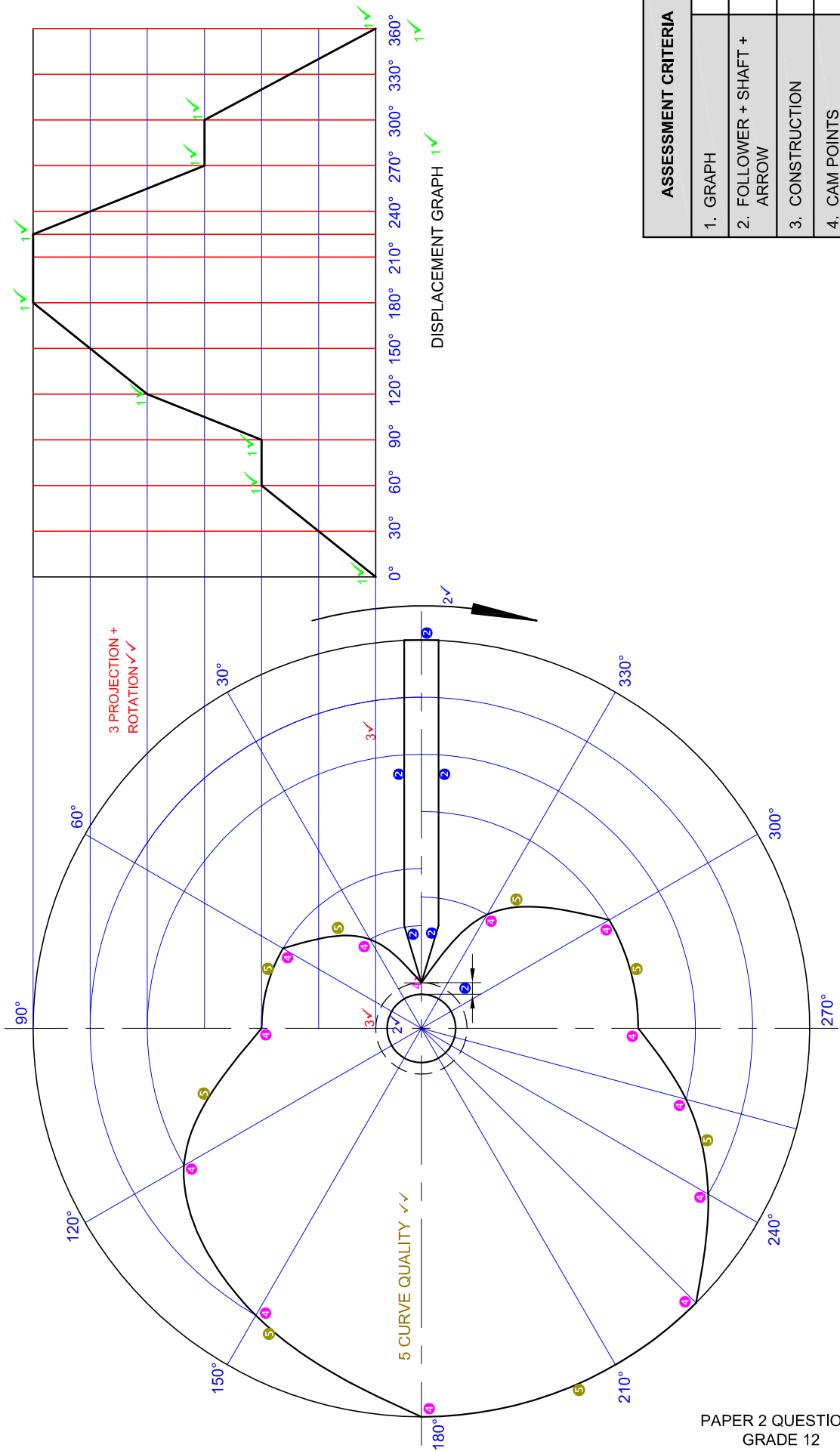
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Please turn over



ASSESSMENT CRITERIA	
1. AUX. VIEW + PLACING	3
2. ISOMETRIC LINES	11
3. NON-ISOMETRIC LINES	3
4. ISOMETRIC CIRCLES	3
5. CIRCLE CONSTRUCTION	1½
6. CENTRE LINES	1½
7. SECTIONED SURFACES	13
8. HATCHING	4
<b>TOTAL</b>	<b>40</b>

PAPER 2 QUESTION 3  
GRADE 12  
NOVEMBER 2010  
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ASSESSMENT CRITERIA	
1. GRAPH	11
2. FOLLOWER + SHAFT + ARROW	5
3. CONSTRUCTION	4
4. CAM POINTS	7
5. CURVE + QUALITY	6
TOTAL	33

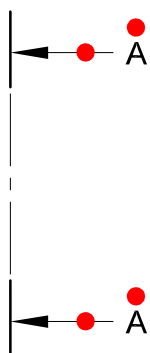


## ANSWERS

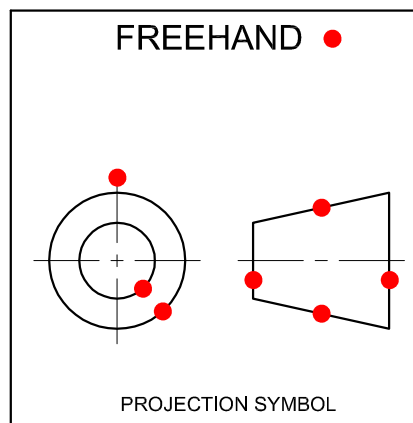
1	26/04/2010	1
2	BRASS	1
3	CAD	1
4	ONE	1
5	FOUR	1
6	$\pm 0,25$	1
7	16	1
8	THE END IS SQUARE	1
9	FILLET	1
10	$40^\circ$	1
11	CHAMFER	1
12	$\varnothing 6$	1
13	R3	1
14	HALF-SECTION	1
15	P: 48      Q: $\varnothing 88$	2
16	PITCH-CIRCLE DIAMETER	1
17	SIX	1
18		2
19		4
20		6

TOTAL: 30

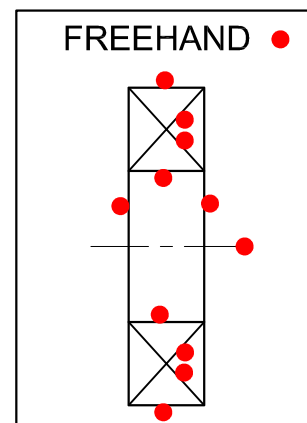
ANSWER 18

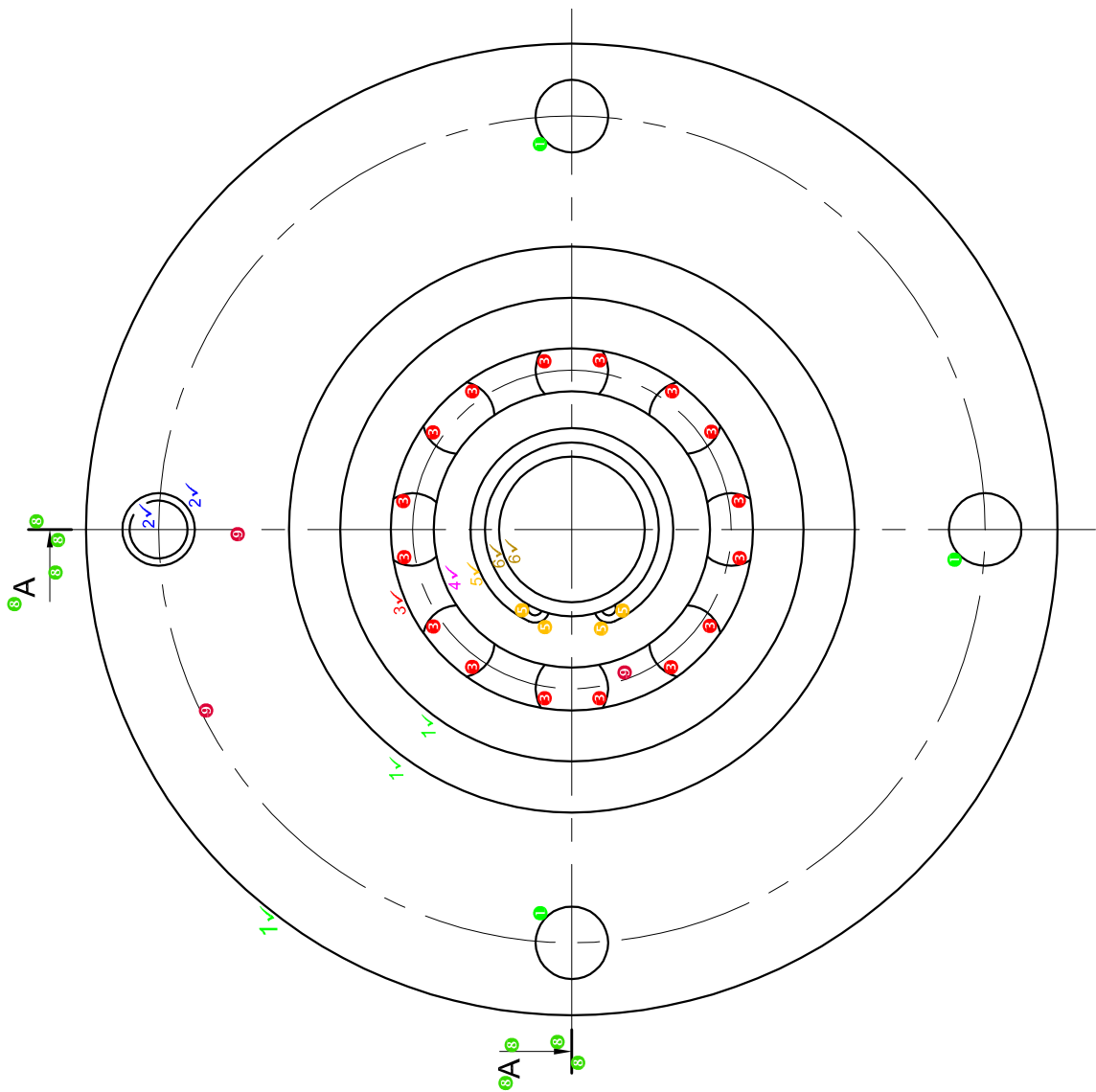


ANSWER 19



ANSWER 20





RIGHT VIEW + GENERAL	
1. WHEEL HUB	4 1/2
2. WHEEL STUD	2
3. BEARING	9
4. WASHER	1
5. CIRCLIP	3
6. STUB AXLE	2
7. ASSEMBLY	9
8. SECTION A-A	4
9. CENTRE LINES	4
10. HATCHING (▲)	11 1/2
SUBTOTAL	50
TOTAL	97