



# **MAFIKENG HIGH SCHOOL**

**GRADE 9**

**TECHNOLOGY**













**JUNE 2023**

**MARKS: 80**

**DURATION: 2 Hours**

**MEMORANDUM**

**This question paper consists of 12 pages.**

SECTION A																					
QUESTION 1	ANSWER																				
<b>1.1</b>																					
	1.1.1	C	1																		
	1.1.2	A	1																		
	1.1.3	D	1																		
	1.1.4	D	1																		
	1.1.5	B	1																		
			<b>[5]</b>																		
<b>1.2</b>																					
	1.2.1	True	1																		
	1.2.2	True	1																		
	1.2.3	False	1																		
	1.2.4	True	1																		
	1.2.4	False	1																		
			<b>[5]</b>																		
<b>TOTAL QUESTION 1:</b>			<b>[10]</b>																		
QUESTION 2	ANSWER																				
<b>2.1</b>																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Line Convention</th> <th style="width: 35%;">Name of line / Type</th> <th style="width: 35%;">Property</th> </tr> </thead> <tbody> <tr> <td><i>E.g.</i> _____</td> <td><i>Construction line</i></td> <td><i>Very thin and continuous</i></td> </tr> <tr> <td style="text-align: center;"></td> <td>OUTLINE ✓</td> <td>THICK AND CONTINUOUS ✓</td> </tr> <tr> <td style="text-align: center;"></td> <td>HIDDEN DETAIL ✓ Dotted line</td> <td>THIN AND INTERRUPTED / DOTTED ✓</td> </tr> <tr> <td style="text-align: center;"></td> <td>LIMIT / DIMENSION LINE ✓ Measurement line</td> <td>THIN AND CONTINUOUS / ARROWS ON BOTH SIDES ✓</td> </tr> <tr> <td style="text-align: center;"></td> <td>CENTRE LINE ✓ Chained line</td> <td>THIN AND INTERRUPTED ✓</td> </tr> </tbody> </table>				Line Convention	Name of line / Type	Property	<i>E.g.</i> _____	<i>Construction line</i>	<i>Very thin and continuous</i>		OUTLINE ✓	THICK AND CONTINUOUS ✓		HIDDEN DETAIL ✓ Dotted line	THIN AND INTERRUPTED / DOTTED ✓		LIMIT / DIMENSION LINE ✓ Measurement line	THIN AND CONTINUOUS / ARROWS ON BOTH SIDES ✓		CENTRE LINE ✓ Chained line	THIN AND INTERRUPTED ✓
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<b>TOTAL QUESTION 2:</b>			<b>[8]</b>																		

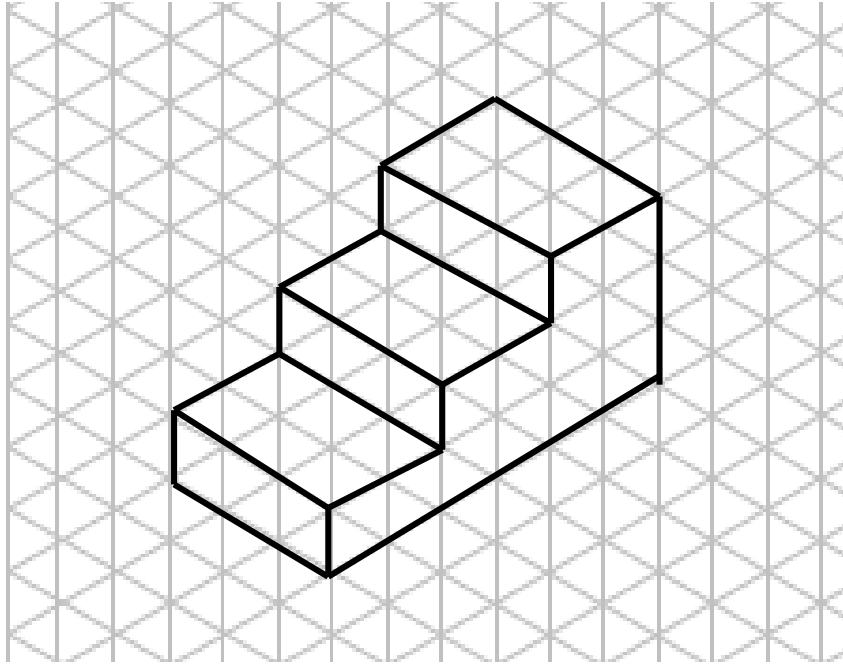
<b>QUESTION 3</b>		<b>ANSWER</b>	
<b>3.1</b>			
	3.1.1	D	1
	3.1.2	C	1
	3.1.3	B	1
	3.1.4	A	1
			<b>[4]</b>
<b>3.2</b>			
	3.2.1	E	1
	3.2.2	F	1
	3.2.3	B	1
	3.2.4	A	1
	3.2.5	D	1
			<b>[5]</b>
<b>TOTAL QUESTION 3:</b>			<b>[9]</b>
<b>QUESTION 4</b>		<b>ANSWER</b>	
<b>4.1</b>			
	4.1.1	People might drown while crossing a dangerous river. ✓✓ People might be killed by crocodiles. (any acceptable answer)	2
	4.1.2	I am going to design and make a bridge✓ for people to cross over the river. ✓	2
	4.1.3	a. Static force ✓ b. Dynamic force ✓	2
	4.1.4	a. Steel(I-beam,rods) ✓– can rust, water resistant, strong ✓ b. Concrete ✓ – dense, strong, water resistant ✓ c. Wires – bend easily, water resistant d. Wood- light in mass, it can be shaped (Any suitable material)	4
	4.1.5	a. Safety rail ✓ b. Ramp for wheelchairs ✓ c. Signage d. Sufficient lighting  <b>(any other relevant answer)</b>	2
			<b>[12]</b>
<b>4.2</b>			
	4.2.1	STATIC ✓ EVEN ✓	2
	4.2.2	UNEVEN ✓ STATIC ✓	2
	4.2.3	DYNAMIC ✓	1

	4.2.4	1. TENSION / TENSILE ✓ 2. COMPRESSION / COMPRESSIVE ✓ 3. TORSION / TORSIONAL ✓	3						
			[8]						
<b>TOTAL QUESTION 4:</b>			<b>[20]</b>						
<b>QUESTION 5</b>	<b>ANSWER</b>								
<b>5.1</b>									
	5.1.1	A mechanical system uses liquids ✓ in a cylinder to give mechanical advantage. ✓	2						
	5.1.2	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">INPUT</th> <th style="text-align: left;">PROCESS</th> <th style="text-align: left;">OUTPUT</th> </tr> </thead> <tbody> <tr> <td>Person pushes and pulls the handle of the jack up and down ✓✓</td> <td>The one way valve is forced to open and oil lifts the output piston. ✓✓</td> <td>The jack lifts the car or the load. ✓✓</td> </tr> </tbody> </table>	INPUT	PROCESS	OUTPUT	Person pushes and pulls the handle of the jack up and down ✓✓	The one way valve is forced to open and oil lifts the output piston. ✓✓	The jack lifts the car or the load. ✓✓	6
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	5.1.3	$M_a = \text{Load/Effort} \quad \checkmark$ $= 2500 \text{ N} / 500 \text{ N} \quad \checkmark$ $= 5 \quad \checkmark$	4						
	5.1.4	A pulley is a grooved wheel that performs a similar function to a gear. ✓	1						
	5.1.5	A person can pull down on a rope to lift a load, instead of trying to lift a load up. ✓ Pulleys create a mechanical advantage to make work easier. ✓	2						
			[15]						
<b>TOTAL QUESTION 5:</b>			<b>[15]</b>						

**QUESTION 6**

6.1

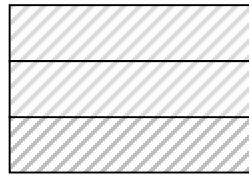
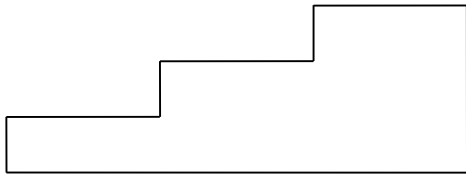
8



Assessment Criteria	Mark	Mark
Isometric view (3 edges)	3	
3 Steps	3	
Correctness	2	
Total	8	

6.2

10



Assessment Criteria	Mark	Mark
Top view	3	
Front view	3	
Side view	3	
Neatness	1	
Total	10	

**18**

**GRAND TOTAL: [80]**