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TEST 1 OF 2

Practice test · Term 1–2
Version 1.6 · 21 October 2026

Technology · Grade 7

Design, Structures and Mechanisms

Term 1–2 | 8 questions | CAPS-aligned

TOTAL 60 MARKS

NAME AND SURNAME _____ CLASS _____ DATE _____

Instructions

1. This question paper consists of THREE sections. Answer ALL three.
2. Answer all the questions on the question paper itself.
3. Use the mark allocation to guide you.
4. Use a pencil for all drawings and sketches.
5. Read the instructions at each question carefully, or you will forfeit marks.
6. This is Test 1 of 2 of the Grade 7 November exam. It covers the work of Term 1 and Term 2. Test 2 covers the work of Term 3 and Term 4.

Question	Content of the question	Marks	Obtained
1	Multiple choice	6	
2	Design process	12	
3	Structures	9	
4	Mechanisms	15	
5	Design brief	10	
6	Perspective: the basics	4	
7	Perspective: drawing	3	
8	Perspective: why it matters	1	
	Total	**60**	
	Percentage		%

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Section A Lower order

1 Multiple choice — 6 marks

Choose the correct answer and circle the letter.

1.1 In which step of the design process do you test your product against the specifications? **(1)**

(a) investigate (b) make (c) evaluate

1.2 A structure with a framework of bars is a: **(1)**

(a) shell structure (b) frame structure (c) solid structure

1.3 Two syringes are joined by a plastic tube. Why does the system push more firmly when it is filled with water instead of air? **(1)**

(a) water is heavier than air (b) air can be squashed (compressed), but water cannot (c) water is colder than air

1.4 Which class of lever ALWAYS gives a mechanical advantage? **(1)**

(a) first class (b) second class (c) third class

1.5 Which one is a NATURAL structure? **(1)**

(a) a bird's nest (b) a bridge (c) a cell phone tower

1.6 A triangle makes a frame structure strong because it is: **(1)**

(a) attractive (b) light (c) rigid

2 Design process — 12 marks

2.1 Write down the FIVE steps of the design process in the correct order. **(5)**

2.2 What is the difference between a SPECIFICATION and a CONSTRAINT? Give an example of either one. **(3)**

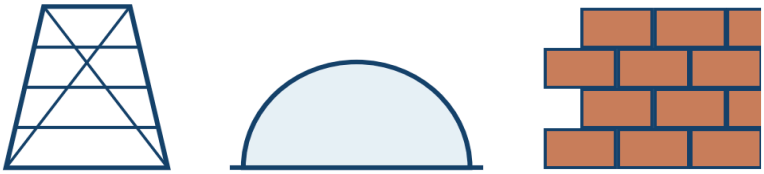
2.3 Name FOUR things a good technical drawing must include. **(4)**

Section B Middle order

3 Structures

9 marks

3.1 Write at each letter what kind of structure it is. **(3)**



A B C

A: _____ B: _____ C: _____

3.2 Name THREE ways to make a structural material or a frame stiffer and stronger. **(3)**

3.3 Explain why a triangle makes a frame structure stronger than a square. **(3)**

4 Mechanisms

15 marks

4.1 The table describes three first-class levers. The effort and the load are at the two ends of each lever. Write whether each lever gives a mechanical advantage (MA) greater than 1, equal to 1 or less than 1. Then explain your answer for lever B. **(4)**

Lever	Where the fulcrum (pivot) is	MA
A	Exactly in the middle	
B	Close to the load	
C	Close to the effort	

4.2 Explain the difference between a mechanism that changes the DIRECTION of a force and one that changes the SIZE of a force. Give ONE example of each. **(3)**

4.3 Name TWO tools that are linked levers, and say which class of lever each one is. **(4)**

4.4 Write next to each object which class of lever it is. **(4)**

Object	Class of lever
A wheelbarrow	
A seesaw	
A fishing rod	
A bottle opener	

Section C Higher order

5 Design brief — 10 marks

THE DESIGN BRIEF

A school has a problem: bicycles are stacked against the wall, they fall over, and two have been stolen. Design a bicycle rack for ten bicycles.

5.1 Write the DESIGN PROBLEM in ONE sentence. **(2)**

5.2 Name THREE SPECIFICATIONS. **(3)**

5.3 Name TWO CONSTRAINTS. **(2)**

5.4 Draw a labelled sketch. Label at least FOUR parts and give ONE dimension. **(3)**

6 Perspective: the basics — 4 marks

6.1 What is a VANISHING POINT in a drawing? **(2)**

6.2 What do we call a drawing with ONE vanishing point, and what impression does it give? **(2)**

7 Perspective: drawing

3 marks

7.1 Draw a simple cube in ONE-POINT PERSPECTIVE. Mark the horizon line and the vanishing point. **(3)**

8 Perspective: why it matters

1 mark

8.1 Why does a designer draw a product in perspective rather than only from the front? Explain. **(1)**

Total **60 marks**



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