

Grade 8 Technology Worksheet

Structures and stability

Stable and stiff frame structure

1. Look carefully at the swings, and then answer the questions that follow.



- 1.1 What is the function of the vertical bars and what is the function of the horizontal bars? [4 marks]
- 1.2 Are these structures stable? Why or why not? [3 marks]
- 1.3 Are these structures stiff? Why or why not? [3 marks]
- 1.4 What is the purpose of the horizontal bar between the cross members? How/Why are the ropes of the left-hand swing in tension? [4 marks]
- 1.5 What supports the seat of the left-hand swing? [4 marks]
- 1.6 How does the material of the frame make each a safe structure? [2 marks]

[20 marks]

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Suggested Solutions

Question number	Possible marks	Answers
1	4 marks	1.1 The vertical ones give height to the swing and the horizontal ones give stability.
	3 marks	1.2 Structures are very stable because of the position of the triangles.
	3 marks	1.3 Structures are very stiff and rigid due to the nature of the material, so will not bend.
	4 marks	1.4 Horizontal bar supported between the cross members forms a triangle.
	4 marks	1.5 The weight on the left-hand swing seat will cause the ropes to be in tension and will pull the bar downwards, thus preventing it from falling out.
	2 marks	1.6 Left-hand swing seat supported by ropes in tension. Both stiffness and strength.

[20 marks]