Forces and stresses · notes sheet

Name: _____ Date: _____ AQA 3.2.2

1. The five forces

Force	What it does	Sketch with arrows	Example product
Tension			
Compression			
Bending			
Torsion			
Shear			

Test rig: a diver on the end of a diving board. Which force?	
I predict:	**What happened and why:**

2. Folding and corrugation

Folding or corrugating a sheet makes it stiffer because

_____

Test rig: flat, folded and corrugated card under the same coins. Which bends most?	
I predict:	**What happened and why:**

3. Lamination

Lamination means

_____

A curve cut from solid wood is weak because of _____ grain. Example product:

_____

Test rig: a curve cut from solid wood and a laminated curve carry the same load.	
I predict:	**What happened and why:**

4. Triangulation

A square frame leaning sideways is called _____. It is fixed by adding _____ because triangles _____.

Test rig: a square frame and a braced frame pushed from the side.	
I predict:	**What happened and why:**

5. Webbing and ribs

Ribs/webs are better than making a moulded part thicker because

_____

Test rig: a plain and a ribbed plastic bracket carry the same load.	
I predict:	**What happened and why:**

6. Textiles: interfacing and webbing

Method	What it does	Example
Fabric interfacing		
Webbing		
Bar tacks / box-cross stitching		

Test rig: two collars, one with interfacing, after washing.	
I predict:	**What happened and why:**

7. Spot the force

Situation	Force
A tow rope pulling a car	
A stool leg when you sit down	
A shelf loaded with books	
Turning a stiff screw	
Scissors cutting paper	
A bookcase leaning sideways	

Exam question (3 marks)

A pine shelf sags in the middle when loaded with books. Name the force and describe two ways to redesign the shelf so it does not sag.

*Tip: name the force first, then link each fix to it with **so…***