Developments in new materials · notes sheet

Name: _____ Date: _____ AQA 3.1.3

1. Four kinds of new material

Kind	What it means	Two examples
Modern materials		
Smart materials		
Composites		
Technical textiles		

2. Modern materials

Material	Key properties	A product that uses it
Graphene		
Metal foam		
Titanium		

Lab test: three beams designed to carry the same load: which is lightest?

I predict:	What happened and why:

3. Smart materials

Material	Reacts to…	What it does	A product that uses it
Shape memory alloy			
Thermochromic pigment			
Photochromic pigment			

Lab test: we turn up the heat only. Which items change: SMA wire, thermochromic mug, photochromic lens?

I predict:	What happened and why:

4. Composites

Material	Made from	Key properties	A product that uses it
CFRP			
GRP			

In a composite, the **fibres** _____ and the **resin** _____.

Lab test: resin only, GRP and CFRP beams carry the same weight. Which bends the least?

I predict:	What happened and why:

5. Technical textiles

Material	What it does	A product that uses it
Conductive fabric		
Fire-resistant fabric		
Kevlar		
Micro-encapsulation		

Lab test: plain cotton and fire-resistant fabric over a flame.	
I predict:	**What happened and why:**

6. Choose the material

Product	Material	Category
Lenses that darken outdoors		
A kayak hull on a budget		
A hip replacement		
Gloves that work on a phone		
A car crash zone		
A kettle that shows it is hot		

Exam question (2 marks)

Explain why shape memory alloy is used for children's glasses frames.

*Tip: name the property, then link it to the product with **so…***