Unit 1 Topic 2 Materials
Target sheet

I can:

Statement	Spec ref	
Understand and use the terms *density, laminar flow, streamline flow, terminal velocity, turbulent flow, upthrust* and *viscous drag*, for example in transport design or in manufacturing	1.4.18	
Recall, and use primary r secondary data to show that the rate of flow of a fluid is related to its viscosity	1.4.19	
Recognise and use the expression for Stokes's Law, $F = 6\pi\eta rv$ and upthurst = weight of fluid displaced	1.4.20	
Investigate, using primary or secondary data, and recall that the viscosities of most fluids change with temperature. Explain the importance of this for industrial applications	1.4.21	
Obtain and draw force-extension, force-compression and tensile/compressive stress-strain graph. Identify the *limit of proportionality, elastic limit* and *yield point*	1.4.22	
Investigate and use Hooke's law, $F = k\Delta x$, and know that it applied only to some materials	1.4.23	
Explain the meaning and use of, and calculate *tensile/compressive stress, tensile/compressive strain, strength, breaking stress, stiffness* and *Young Modulus*. Obtain the Young modulus for a material	1.4.24	
Investigate elastic and plastic deformation of a material and distinguish between them	1.4.25	
Explore and explain what is meant by the terms *brittle, ductile, hard, malleable, stiff* and *tough.* Use these terms, give examples of materials exhibiting such properties and explain how these properties are used in a variety of applications, for example, safety clothing, foodstuffs	1.4.26	
Calculate the elastic strain energy E_{el} in a deformed material sample, using the expression $E_{el} = ½ FX$, and from the area under its force/extension graph	1.4.27	