

**AQA – Materials – A2 Physics P1**

1. June/2021/Paper\_7408\_01/No. 26

Two wires **X** and **Y** have the same extension for the same load.

**X** has a diameter  $d$  and is made of a metal of density  $\rho$  and Young modulus  $E$ .

**Y** has the same mass and length as **X** but its diameter is  $2d$ .

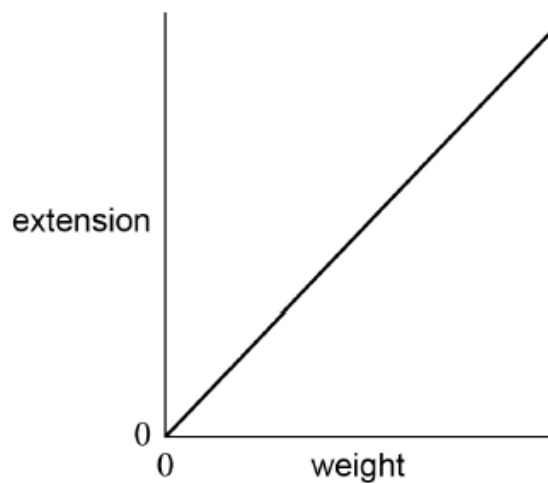
What are the density and the Young modulus of the metal from which **Y** is made?

[1 mark]

	Density	Young modulus	
<b>A</b>	$\frac{\rho}{2}$	$\frac{E}{4}$	<input type="checkbox"/>
<b>B</b>	$\frac{\rho}{2}$	$4E$	<input type="checkbox"/>
<b>C</b>	$\frac{\rho}{4}$	$\frac{E}{4}$	<input type="checkbox"/>
<b>D</b>	$\frac{\rho}{4}$	$4E$	<input type="checkbox"/>

2. June/2020/Paper\_7408\_01/No. 26

An experiment is carried out to determine the Young modulus  $E$  of steel using a vertical wire of initial length  $L$  and cross-sectional area  $A$ . Various weights are suspended from the wire. A graph of extension against weight is plotted.



What does the gradient of the graph represent?

[1 mark]

A  $E$

B  $\frac{1}{E}$

C  $\frac{EA}{L}$

D  $\frac{L}{EA}$