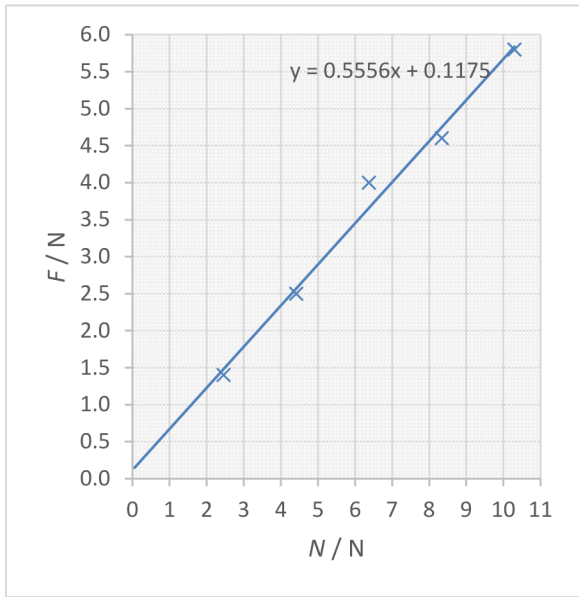


Question Number	Answer	Mark												
4(a)	<ul style="list-style-type: none"><li>• Increase the mass of the slotted masses until rubber starts to slide (1)</li><li>• Calculate friction/tension/weight using <math>mg</math> (1)</li><li>Or measure weight of slotted masses (with a newton meter)</li></ul>	2												
4(b)(i)	<ul style="list-style-type: none"><li>• Add 250 g to mass <math>m</math> (1)</li><li>Or add 0.25 kg to mass <math>m</math></li><li>Or add 2.45 N to the weight of <math>m</math></li><li>• Use <math>W = mg</math> (1)</li></ul>	2												
4(b)(ii)	<ul style="list-style-type: none"><li>• Labels axes with quantities and units (1)</li><li>• Sensible scales (1)</li><li>• Plotting (2)</li><li>• Line of best fit (1)</li></ul> <div><table><thead><tr><th><math>N / N</math></th><th><math>F / N</math></th></tr></thead><tbody><tr><td>2.45</td><td>1.4</td></tr><tr><td>4.41</td><td>2.5</td></tr><tr><td>6.38</td><td>4.0</td></tr><tr><td>8.34</td><td>4.6</td></tr><tr><td>10.3</td><td>5.8</td></tr></tbody></table></div>	$N / N$	$F / N$	2.45	1.4	4.41	2.5	6.38	4.0	8.34	4.6	10.3	5.8	5
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2.45	1.4													
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4(c)	<ul style="list-style-type: none"><li>• Calculates gradient using large triangle (1)</li><li>• Value of <math>\mu</math> in the range of 0.54 to 0.59 (1)</li><li>• Value given to 2 or 3 s.f. with no unit (1)</li></ul> <p><u>Example of calculation</u></p> <p>Gradient = <math>(5.6 \text{ N} - 0.6 \text{ N}) \div (10.0 \text{ N} - 1.0 \text{ N}) = 0.556</math></p>	3												
4(d)	<ul style="list-style-type: none"><li>• To test tyres would provide enough friction/braking force (1)</li><li>Or to test tyres provide enough grip</li><li>Or to test the rubber on wet/icy/cold/loose surface materials</li><li>• So that the tyres can stop the car in a safe distance/time (1)</li><li>Or to prevent cars from skidding/sliding</li></ul>	2												
Total for question 4		14												