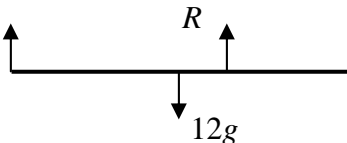
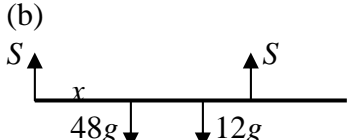
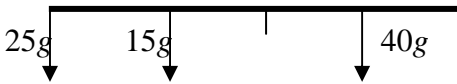
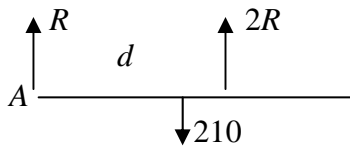


Question Number	Scheme	Marks
2	<div data-bbox="256 293 946 409"> </div> <p data-bbox="225 443 1082 546">(a) $R(\uparrow): T + 3T = 40g + 20g$ $T = 15g$, so tension at C is <u>45g or 441 N or 440 N</u></p> <p data-bbox="225 613 868 716">(b) $M(B) \quad 15g \times 3 + 45g \times d = 40g \times 1.5$ Solve: $d = \underline{1/3 \text{ or } 0.33 \text{ or } 0.333 \text{ m}}$</p>	<p data-bbox="1321 443 1362 477">M1</p> <p data-bbox="1362 510 1433 577">A1 (2)</p> <p data-bbox="1310 613 1465 752">M1 A2,1,0✓ ↓ M1 A1 (5)</p>

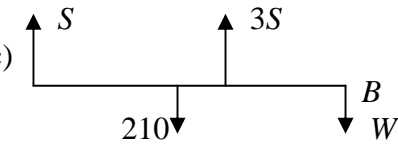
Question Number	Scheme	Marks
6	<div><div></div><div><p>(a) M(A): $12g \times 1.5 = R \times 2$</p><p>$R = \underline{9g \text{ or } 88.2 \text{ N}}$</p></div><div></div><div><p>(b) R(↑) $2S = 48g + 12g$</p><p>$S = 30g$</p><p>M(A): $S \times 2 = 12g \times 1.5 + 48g \times x$</p><p>Sub for S and solve for x: $x = \underline{7/8 \text{ or } 0.875 \text{ or } 0.88 \text{ m}}$</p></div></div> <div>M1 A1 A1 (3) M1 A1 M1 A2,1,0 ↓↓ M1 A1 (7)</div>	

Question Number	Scheme	Marks
3.	<p>(a) M(C): $25g \times 2 = 40g \times x$</p> <p>$x = \underline{1.25 \text{ m}}$</p> <p>(b) Weight/mass acts at mid-point; or weight/mass evenly distributed (o.e.)</p> <p>(c)</p>  <p>M(C): $40g \times 1.4 = 15g \times y + 25g \times 2$</p> <p>Solve: $y = \underline{0.4 \text{ m}}$</p>	<p>M1 A1</p> <p>A1</p> <p>(3)</p> <p>B1</p> <p>(1)</p> <p>M1 A1</p> <p>↓</p> <p>M1 A1</p> <p>(4)</p> <p>8</p>

Qu 5

(a)  $R + 2R = 210 \Rightarrow R = \underline{70\text{ N}}$

(b) e.g. M(A): $140 \times 90 = 210 \times d$
 $\Rightarrow d = 60 \Rightarrow AB = \underline{120\text{ cm}}$

(c)  $4S = 210 + W$
 e.g. M(B): $S \times 120 + 3S \times 30 = 210 \times 60$
 Solve $\rightarrow (S = 60 \text{ and}) W = \underline{30}$

M1 A1
(2)M1 A1✓
↓
M1 A1
(4)M1 A1
↓
M1 A2,1,0
↓
M1 A1
(7)

Note that they can take moments legitimately about many points

(a) M1 for a valid method to get R (almost always resolving!)

(b) 1st M1 for a valid moments equation

2nd M1 for complete solution to find AB (or verification)

Allow 'verification', e.g. showing $140 \times 90 = 210 \times 60$ M1 A1

$1260 = 1260$ QED M1 A1

(c) In both equations, allow whatever they think S is in their equations for full marks (e.g. if using $S = 70$).

2nd M1 A2 is for a moments equation (which may be about any one of 4+ points!)

1st M1 A1 is for a second equation (resolving or moments)

If they have two moments equations, given M1 A2 if possible for the best one
 2 M marks only available *without* using $S = 70$.

If take mass as 210 (hence use 210g) consistently: treat as MR, i.e. deduct up to two A marks and treat rest as f.t. (Answers all as given = 9.8). But allow full marks in (b) (g's should all cancel and give correct result).

January 2007
6677 Mechanics M1
Mark Scheme

Question Number	Scheme	Marks
2.	<p>(a) $M(C) \quad 80 \times x = 120 \times 0.5$ $x = 0.75 \quad *$ cso</p> <p>(b) Using reaction at $C = 0$ $M(D) \quad 120 \times 0.25 = W \times 1.25$ ft their x $W = 24 \quad (\text{N})$</p> <p>(c) i $X = 24 + 120 = 144 \quad (\text{N})$ ft their W</p> <p>(d) The weight of the rock acts precisely at B.</p>	<p>M1 A1 A1 <u>3</u></p> <p>B1 M1 A1 A1 <u>4</u></p> <p>M1 A1ft <u>2</u> B1 <u>1</u> 10</p>

