

MATHEMATICS ENRICHMENT CLUB.  
Solutions to Problem Sheet 9, July 22, 2014

3.  $2 \cdot 10^{23}$  meters
4. (a)  $m_3 + m_4$   
(b)  $m_3 = 2; m_4 = 1$ .  
(c) Something like  $m_1 d_1 = m_3 d_3^0 + m_4 d_4^0$
5. (a) 5.  
(b) Try not to break anything.  
(c) Since the series  $1 + 1=2 + 1=3 + \dots$  diverges, the overhang can be infinite. But you will need to use a lot of bricks.
6. (a) Halfway between **A** and **B**  
(b) The centroid.  
(c) The centroid.
7. Consider a convex quadrilateral **ABCD** .  
(d) They are colinear, and in the ratio 1 : 2.