ANSWERS TO ACTIVITY 9 AND 10.

1. The principle of moments states that at equilibrium, the anti clock wise moments are equal to clock wise moments.

2a. pivot

b. Levers

c. First class levers.

d. Note the formula; FORCE(LOAD) X DISTANCE(LOAD ARM)=FORCE(EFFORT) X DISTANCE(EFFORT ARM).

L X L.a	= E X E.a.
30kg x 4m	= X x 6m
120	= 6X
120/6	= 6X/6
20	=X

Therefore the value of x above is 20kg of beans.

3.draw referring to the next page 17.

b. To find how far/distance, you need to first identify the load and distances on either sides.

SOLUTION

Force x Distance on left = Force x Distance on right ie

Dady x distance A = Daughter x distance

60 kg x A	= 4	0kg x 3m.
60A	=	40x3
60a	=	120
60A/60	=	120/60
A=2m		

Therefore the length/distance of the man to the daughter is 3m + 2m = 5m. OR The man is 5m from the daughter.

4a.try it		
b. L X L.a = E X E.a		
50 kg x ym = 40 kg x5m		
50xy=40x5		
50y = 200		
50y/50 = 200/50		
*Y =4m.so Matilda is 4m far from the fulcrum.		
c). y + 5m		
4m +5m		
=9m. so Matilda is 9m from Rose.		
5a.The woman is heavier.		
b.w is the Fulcrum/pivot		
c. Let the distance be n		
L X L.a = E X E.a		
30kg x (2m + n) =(60 x 4m)		
30 x (2+n) = 60 x 4		
60+30n = 240		
30n + 60-60 = 240-60		
30n + 0 = 180		
30n = 180		
30n/30 = 180/30		
N = 6m		

Therefore the woman should move 6m forward to balance with the man.

ACTIVITY 10.

1.You have been dealing with two loads on a lever.Now,there are 3 loads on a lever.But Using the same formula;L X L.a = E X E.a,LETS call the first load with 5kg to be Dady,then the 2^{nd} load(p) to be Mummy carrying you with 2kg.We now find out Dady's weght ok?. Now I will say for instance;

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FINDING THE VALUE OF P
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5 kg x 4m = 2 kg x 2m + p x (2m+2m ie Distance from the fulcrum to the weight p)20 =2x2 + p (2+2) = 4+4p 20 20-4=4-4+4p 16 = 4p16/4 4p/4 4kg = pTherefore p is = to 4kg. No2. FINDING THE VALUE OF W LXLa = EXEa $90\text{Kg} \times 9\text{m} = \text{Wkg} \times 5\text{m} + 50\text{kg} \times (5\text{m}+11\text{m})$ 90x9 = 5w + 50x16810 = 5w + 800810-800=800-800+5w 10=0+5w 10/5 = 5w/52 = wTherefore the value of W=2Kg. No3. FINDING THE VALUE OF X LOAD X LOAD ARM = EFFORT X EFFORT ARM

 $100 \text{gm} \times 35 \text{m} = 50 \text{gm} \times \text{Xm} + 150 \text{gm} \times (10\text{m} + \text{Xm})$ $100 \times 35 = 50 \times + 150 \times (10 + \text{x})$ $3500 = 50 \times + 1500 + 50 \times$ $3500 - 1500 = 50 \times + 150 \times + 1500 - 1500$ $2000 = 200 \times$ $2000/200 = 200 \times 2000 \times 20000$

10 = X

Therefore the value of X is 10m.