PHY 211 Statics   HW 6
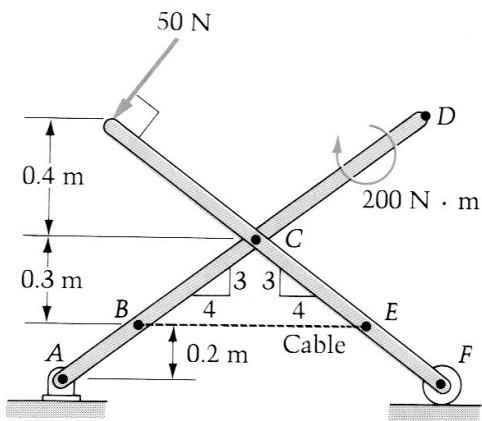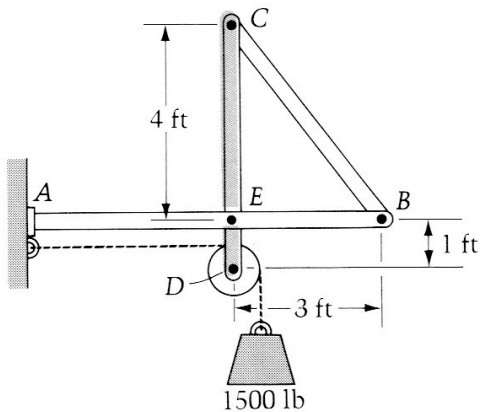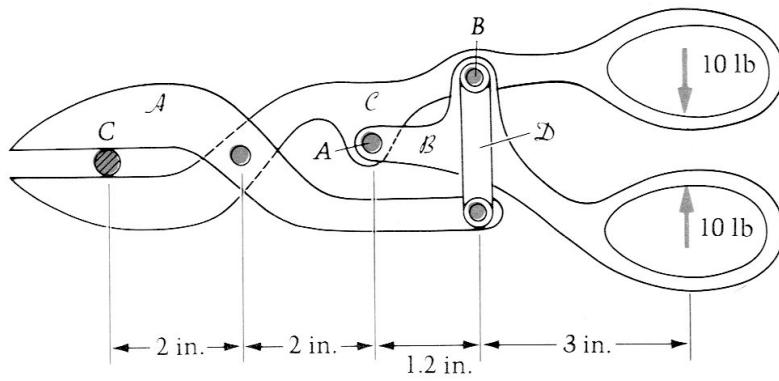

1. Find the forces exerted on member *ABCD* by the pin at *B*.

2. Find the forces exerted on member *ABCD* by the pin at *C*.

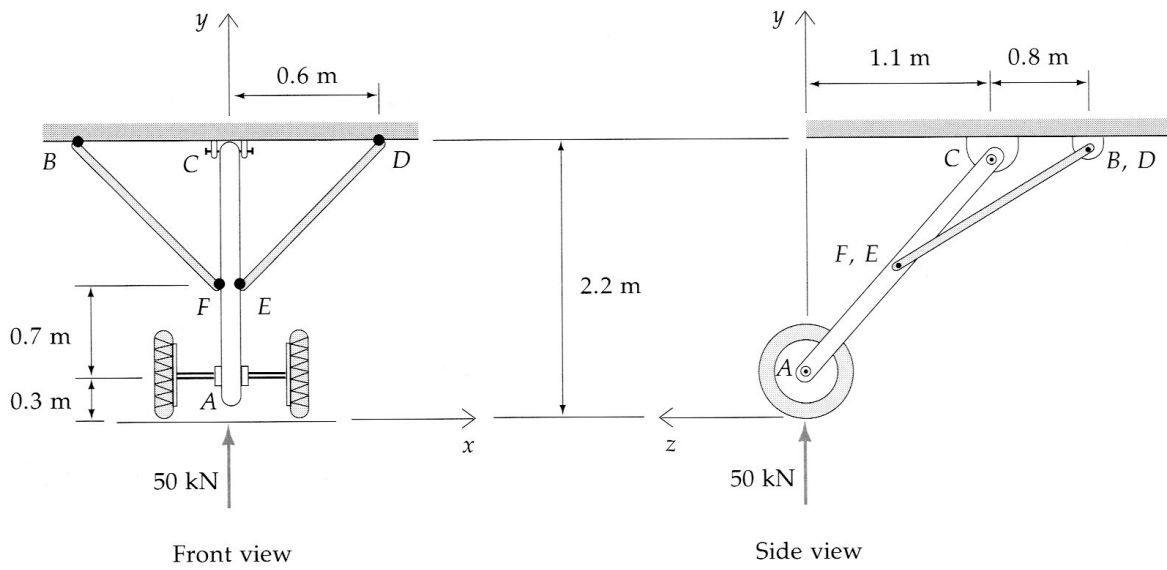3. Find the forces exerted on member AEB by the pin at D

4. In the upper figure at left, the pin at B is not attached to the upper handle. Find the cutting force exerted by the blade on the object at C. Then repeat your analysis on the simple shears in the lower diagram, assuming the same force at the handles. How large is the mechanical advantage of the compound shears?
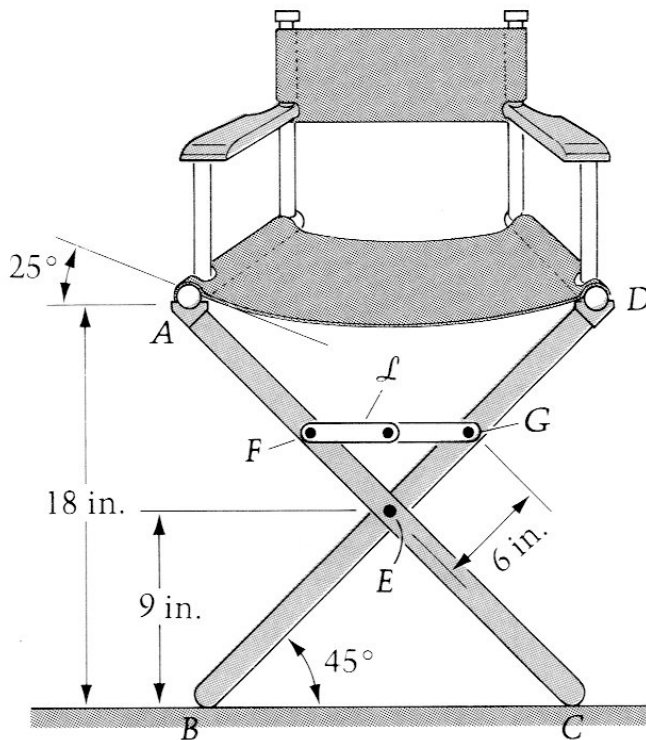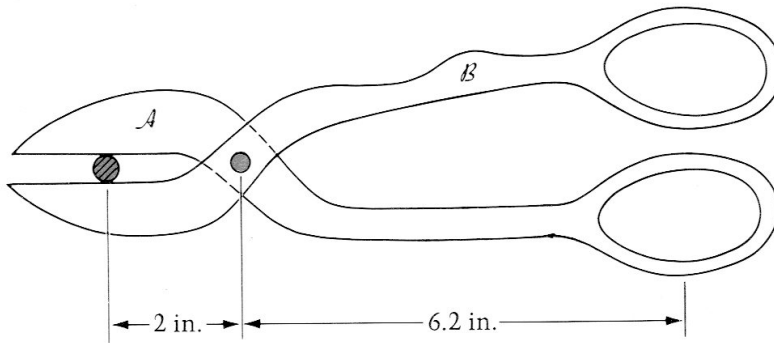
5. If each of the four legs of the director's chair shown supports a weight of 52 lbs, find the force in the folding link *FG* and the force exerted by pin *E* onto member *BED*.

Back legs not shown

y
0.6 m
B   C   D
0.7 m
F   E
0.3 m
A
50 kN

Front view

y
1.1 m   0.8 m
C   B, D
F, E
2.2 m
A
50 kN
x   z

Side view

6. The struts *BF* and *DE* are connected to the center member *CA* by ball-and-socket joints. If the total force exerted by the ground on the wheels is 50 kN, find the force in either of the struts (they carry equal forces by symmetry).