ENGRD 202 Homework 2 Comments

Common Mistakes

1) Many students did not include the direction of moments.
A moment is a vector ⇒ MUST have it's direction !!!
2 ways to define direction :

a) Using vectors
e.g. $\vec{M}_o = (40\,\hat{k})$ Nm (i.e. anticlockwise)

b) Using curly arrows
e.g. $M_o = 40$ Nm ↻

c) Just write words !

2) Recall : $\vec{M}_o = \vec{r} \times \vec{F}$

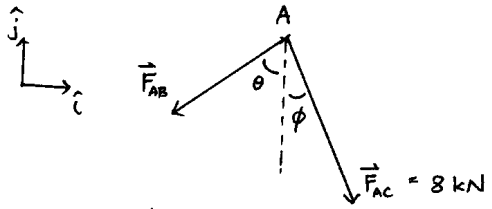
$$= \begin{vmatrix} \hat{i} & \hat{j} \\ r_x & r_y \\ F_x & F_y \end{vmatrix}$$

and NOT the other way around !!! i.e. $\begin{vmatrix} \hat{i} & \hat{j} \\ F_x & F_y \\ r_x & r_y \end{vmatrix}$
Several of you made this mistake and ended up with a wrong direction.

3) Vector Diagrams

Things to have in them :
- → magnitude (if known)
- → direction (using angles or arrows)
- → distances
- → co-ordinate axis
- → label your forces

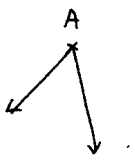
Example :



where $\tan\theta = \frac{5}{4}$

$\tan\phi = \frac{2}{3}$

Bad Diagram



No information given at all ! ☹
Vector diagrams are supposed to help you when solving the problem.
⇒ so make them big and clear.

Partial Credit will be awarded in the regrade if you drew a diagram, with the amount of credit depending on how relevant the diagram is.