Physics 12
Solving Problems with Newton's Laws, Vector Forces and Free-Body Diagrams.

$\vec{F}_1$

707 N

$\vec{F}_2$

500 N

y

30° 45°

x

966 N

$\vec{F}_3$

(a)
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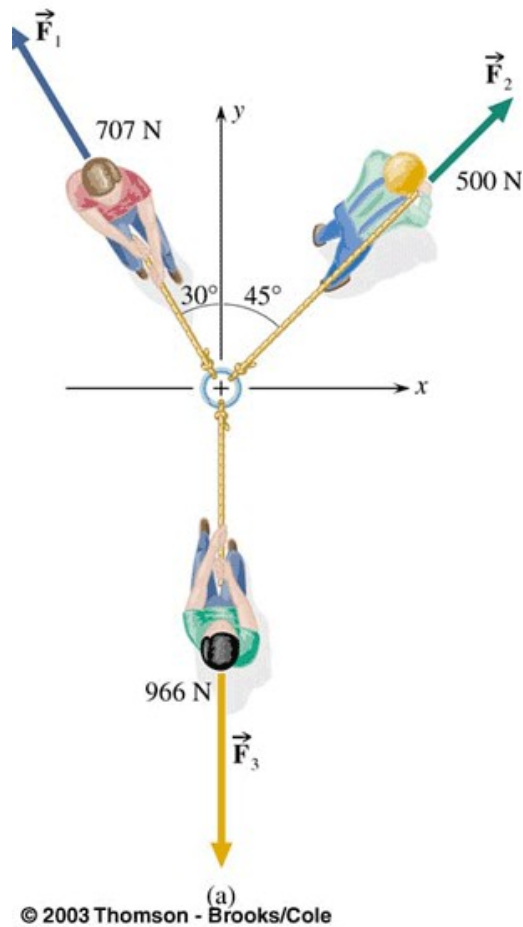
Example:

Draw a free body diagram of the above and determine the net force of the system.
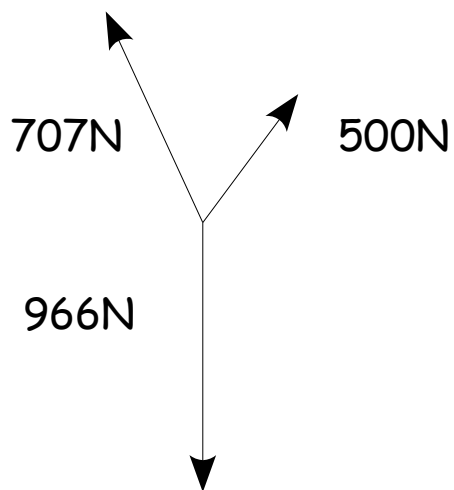
707N   500N

966N

To find the net force set up a table to keep track of the x and y direction of the forces involved.

Force	X component	Y component
966N		-966
707N	-707 sin30°= -353.5	707cos30°= 612.3
500N	500 sin45°= 353.5	500 cos45°= 353.5
Resultant components	0	0

The resultant components are zero so the objects are stationary.