Find the tension in each cord if the weight of the suspended object is 490 N.

\[ \sum F_y = 0 \Rightarrow T_3 - 490N = 0 \]
\[ T_3 = 490N \]

\[ \sum F_x = 0 \Rightarrow T_2 \cos 40^\circ - T_1 \cos 60^\circ = 0 \]

Solving for \( T_2 \) in terms of \( T_1 \), we find:
\[ T_2 = T_1 \cos 60^\circ \text{ or } T_2 = 0.653T_1 \]

Substituting \( T_2 = 0.653T_1 \) for \( T_2 \) we find:
\[ (0.653T_1) \sin 40^\circ + T_1 \sin 60^\circ = 490N \]

Factoring \( T_1 \) we find:
\[ T_1 \left( 0.653 \sin 40^\circ + \sin 60^\circ \right) = 490N \]

\[ T_1 = \frac{490N}{0.653\sin 40^\circ + \sin 60^\circ} = 381N \]

Now, substitute \( T_1 = 381N \) into \( T_2 = 0.653T_1 \)

\[ T_2 = 0.653(381N) = 249N \]

12. Find the tension in each cord if the weight of the suspended object is 490 N.
16. Two objects A and B on a perfectly horizontal surface are connected by a light cord. The mass of A is greater than that of B. A horizontal force \( F \) is applied to Q as shown in the figure below, accelerating the bodies to the right.

The magnitude of the force exerted by the connecting cord on body P will be
(a) less than \( F \) but not zero.  (c) zero.
(b) greater than \( F \).  (d) equal to \( F \).

Ans.  **A**