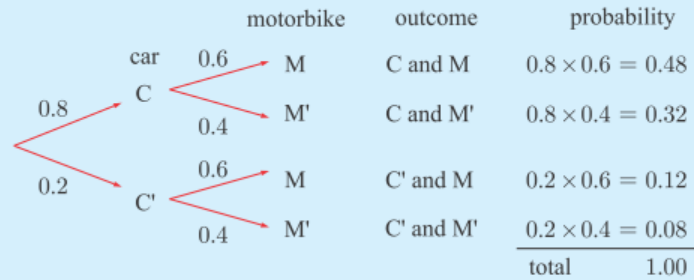


**Example 13****Self Tutor**

Carl is not having much luck lately. His car will only start 80% of the time and his motorbike will only start 60% of the time.

- a** Draw a tree diagram to illustrate this situation.  
**b** Use the tree diagram to determine the chance that:
- i** both will start
  - ii** Carl can only use his car.

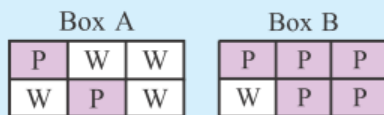
- a** C = car starts  
 M = motorbike starts



- b i** P(both start)  
 $= P(C \text{ and } M)$   
 $= 0.8 \times 0.6$   
 $= 0.48$
- ii** P(car starts but motorbike does not)  
 $= P(C \text{ and } M')$   
 $= 0.8 \times 0.4$   
 $= 0.32$

**Example 14****Self Tutor**

Two boxes each contain 6 petunia plants that are not yet flowering. Box A contains 2 plants that will have purple flowers and 4 plants that will have white flowers. Box B contains 5 plants that will have purple flowers and 1 plant that will have white flowers. A box is selected by tossing a coin, and one plant is removed at random from it. Determine the probability that it will have purple flowers.



P(purple flowers)  
 $= P(A \text{ and } P) + P(B \text{ and } P)$   
 $= \frac{1}{2} \times \frac{2}{6} + \frac{1}{2} \times \frac{5}{6}$  {branches marked ✓}  
 $= \frac{7}{12}$

