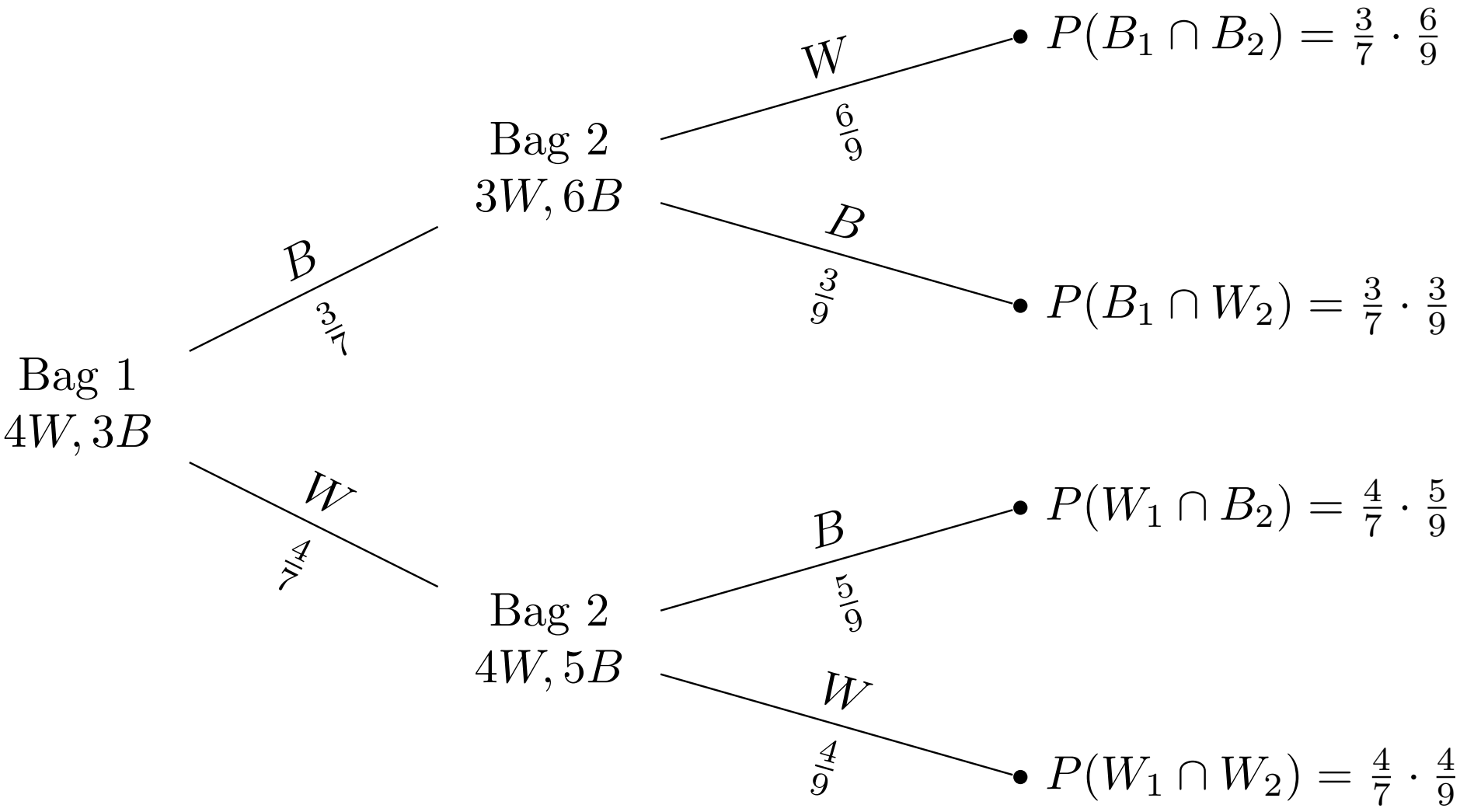
Bag 1
$4W, 3B$
B
$\frac{3}{7}$
W
$\frac{4}{7}$
Bag 2
$3W, 6B$
Bag 2
$4W, 5B$
W
$\frac{6}{9}$
B
$\frac{3}{9}$
B
$\frac{5}{9}$
W
$\frac{4}{9}$
$P(B_1 \cap B_2) = \frac{3}{7} \cdot \frac{6}{9}$
$P(B_1 \cap W_2) = \frac{3}{7} \cdot \frac{3}{9}$
$P(W_1 \cap B_2) = \frac{4}{7} \cdot \frac{5}{9}$
$P(W_1 \cap W_2) = \frac{4}{7} \cdot \frac{4}{9}$