

function ExpectiMiniMax-Decision(*state*) **returns** *an action*
 return $\arg \max_{a \in \text{Actions}(s)} P(\text{Result}(\text{state}, a))$

function Max-Value(*state*) **returns** *a utility value*
 if Terminal-Test(*state*) **then return** Utility(*state*)
 $v \leftarrow -\infty$
 for each *a* **in** Actions(*state*) **do**
 $v \leftarrow \text{Max}(v, \text{P-Value}(\text{Result}(s, a)))$
 return *v*

function Min-Value(*state*) **returns** *a utility value*
 if Terminal-Test(*state*) **then return** Utility(*state*)
 $v \leftarrow \infty$
 for each *a* **in** Actions(*state*) **do**
 $v \leftarrow \text{Min}(v, \text{P-Value}(\text{Result}(s, a)))$
 return *v*

function P-Value(*state*) **returns** *a utility value*
 $\text{sum} \leftarrow 0$
 for each *r* **in** Roll(*state*) **do**
 if Player(*state*) = Max **then**
 $\text{sum} \leftarrow \text{sum} + \text{Max}(v, \text{Min-Value}(\text{Result}(s, r))) * \text{Chance}(r)$
 else
 $\text{sum} \leftarrow \text{sum} + \text{Min}(v, \text{Max-Value}(\text{Result}(s, r))) * \text{Chance}(r)$
 return *sum*

