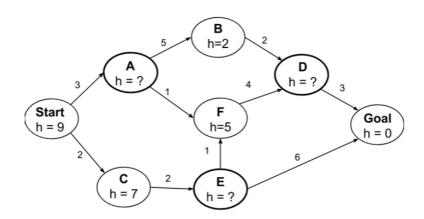
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Course > Week 11 > Final E... > Q2: Mi...

# Q2: Missing Heuristic Values Q2: Missing Heuristic Values

Consider the state space graph shown below in which some of the states are missing a heuristic value.



Determine the possible range for each missing heuristic value so that the heuristic is admissible and consistent. If this isn't possible, write 'x'. For each of the following parts, you receive credits only if *both* bounds are correct.

#### Part 1

0.0/2.0 points (graded)

$$a_1 \leq h(A) \leq a_2$$

$a_1$		$a_2$	
6	Answer: 6	6	Answer: 6

#### **Explanation**

We only need to check for consistency since admissibility is implied by consistency. A consistent heuristic is one such that  $h\left(s\right) \leq c\left(s,s'\right) + h\left(s'\right)$ . For the search graph above, this means that:

For s = A:

$$h\left(Start\right) \leq c\left(Start,A\right) + h\left(A\right) \implies 6 \leq h\left(A\right)$$

$$h(A) \le c(A, B) + h(B) \implies h(A) \le 7$$

$$h(A) \leq c(A,G) + h(F) \implies h(A) \leq 6$$
 to be consistent

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You have used 0 of 2 attempts

**1** Answers are displayed within the problem

#### Part 2

0.0/2.0 points (graded)

$$d_1 \leq h\left(D\right) \leq d_2$$

$d_1$		$d_2$	
1	Answer: 1	3	Answer: 3

### **Explanation**

We only need to check for consistency since admissibility is implied by consistency. A consistent heuristic is one such that  $h\left(s\right) \leq c\left(s,s'\right) + h\left(s'\right)$ . For the search graph above, this means that:

For s=D:

$$h\left(D\right) \leq c\left(D,G\right) + h\left(G\right) \implies h\left(D\right) \leq 3$$

$$h(B) \le c(B,D) + h(D) \implies 0 \le h(D)$$

$$h(F) \leq c(F,D) + h(D) \implies 1 \leq h(D)$$
 to be consistent

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You have used 0 of 2 attempts

**1** Answers are displayed within the problem

## Part 3

0.0/2.0 points (graded)

$$e_1 \leq h\left(E\right) \leq e_2$$

$e_1$		$e_2$	
5	Answer: 5	6	Answer: 6

#### **Explanation**

We only need to check for consistency since admissibility is implied by consistency. A consistent heuristic is one such that  $h\left(s\right) \leq c\left(s,s'\right) + h\left(s'\right)$ . For the search graph above, this means that:

For  ${\it s}={\it E}$ :

$$h\left(E\right) \leq c\left(E,G\right) + h\left(G\right) \implies h\left(E\right) \leq 6$$

$$h(C) \stackrel{-}{\leq} c(C, E) + h(E) \implies 5 \stackrel{\cdot}{\leq} h(E)$$

$$h(E) \leq c(E,F) + h(F) \implies h(E) \leq 6$$
 to be consistent

Submit

You have used 0 of 2 attempts

**1** Answers are displayed within the problem