✅ **Congratulations! You passed!**

| **Grade** received 100% | **Latest Submission** Grade 100% | **To pass** 80% or higher | **Go to next item** |

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1.   1 / 1 point

You are using reinforcement learning to control a four legged robot. The position of the robot would be its _____.

◉ state

○ reward

○ return

○ action

✓ **Correct**
Great!

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2.   1 / 1 point

You are controlling a Mars rover. You will be very very happy if it gets to state 1 (significant scientific discovery), slightly happy if it gets to state 2 (small scientific discovery), and unhappy if it gets to state 3 (rover is permanently damaged). To reflect this, choose a reward function so that:

◉ R(1) > R(2) > R(3), where R(1) and R(2) are positive and R(3) is negative.

○ R(1) > R(2) > R(3), where R(1), R(2) and R(3) are positive.

○ R(1) < R(2) < R(3), where R(1) and R(2) are negative and R(3) is positive.

○ R(1) > R(2) > R(3), where R(1), R(2) and R(3) are negative.

✓ **Correct**
Good job!

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3.   1 / 1 point

You are using reinforcement learning to fly a helicopter. Using a discount factor of 0.75, your helicopter starts in some state and receives rewards -100 on the first step, -100 on the second step, and 1000 on the third and final step (where it has reached a terminal state). What is the return?
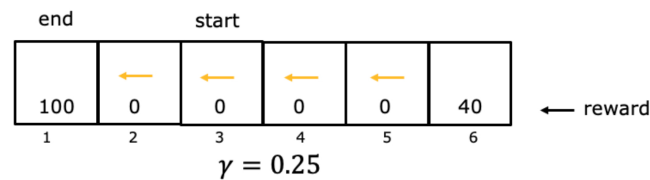
○ -0.75*100 - 0.75^2*100 + 0.75^3*1000

◉ -100 - 0.75*100 + 0.75^2*1000

○ -0.25*100 - 0.25^2*100 + 0.25^3*1000

○ -100 - 0.25*100 + 0.25^2*1000

✓ **Correct**
Awesome!

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4.   1 / 1 point

Given the rewards and actions below, compute the return from state 3 with a discount factor of $\gamma = 0.25$.

○ 0

○ 0.39

○ 25

◉ 6.25

✓ **Correct**
If starting from state 3, the rewards are in states 3, 2, and 1. The return is
$0 + (0.25) \times 0 + (0.25)^2 \times 100 = 6.25$.