

# Artifacts or Abduction: How do LLMs Answer Multiple-Choice Questions Without the Question?



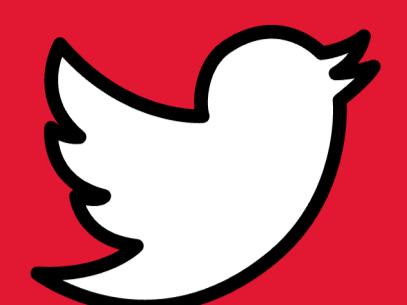
Paper



Nishant Balepur

Abhilasha Ravichander

Rachel Rudinger



@NishantBalepur

LLMs Can Answer Multiple-Choice Questions ...

**Question:** Find all zeros in the indicated finite field of the given polynomial with coefficients in that field.  $x^3 + 2x + 2$  in  $Z_7$

**Choices:**

- (A) 1
- (B) 2
- (C) 2, 3
- (D) 6

**Answer:** (C) 

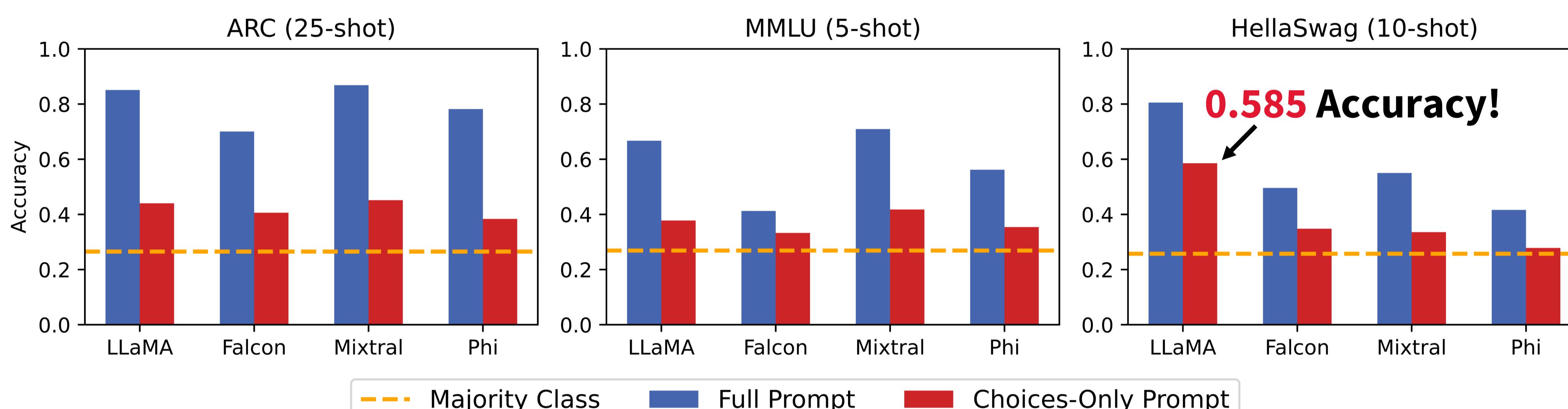
... **Without** Seeing the Question

**Question:** Find all zeros in the indicated finite field of the given polynomial with coefficients in that field.  $x^3 + 2x + 2$  in  $Z_7$

**Choices:**

- (A) 1
- (B) 2
- (C) 2, 3
- (D) 6

**Answer:** (C) 

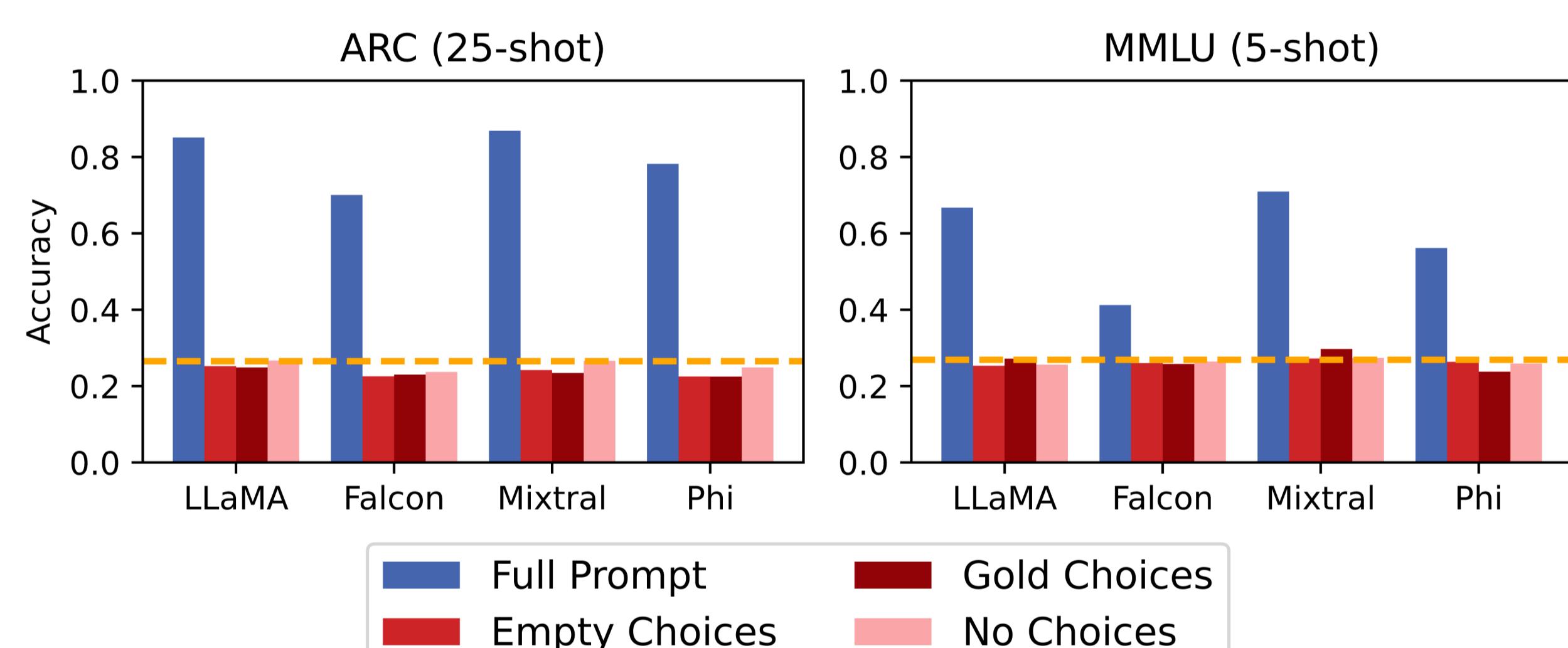


But **How?**

**Finding 1:** This is not **just due to memorization**

**Example Memorization Prompt:** No Choices

**Question:** Find all zeros in the indicated finite field of the given polynomial with coefficients in that field.  $x^3 + 2x + 2$  in  $Z_7$   
**Answer:** (C)



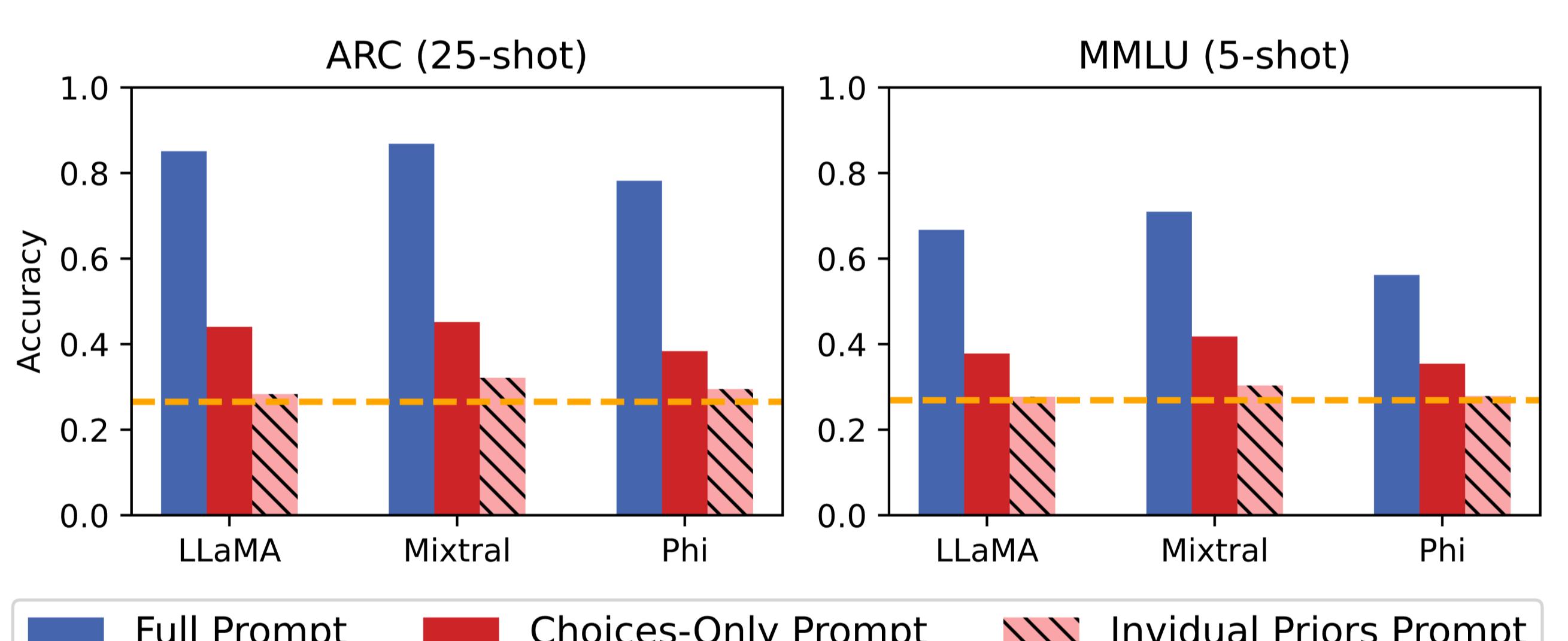
**Finding 2:** LLMs may **reason over all choices**

Individual Priors

The choice contains “*not*”,  
so it’s right (**artifacts**)

Group Dynamics

The choice is even, others are odd, so it’s right (**reasoning**)



Isolate priors by independently classifying choice correctness

**Finding 3:** LLMs can sometimes **infer the original question**

**Step 1:** Abductive Question Inference

**Choices:**

- (A) 1
- (B) 2
- (C) 2, 3
- (D) 6

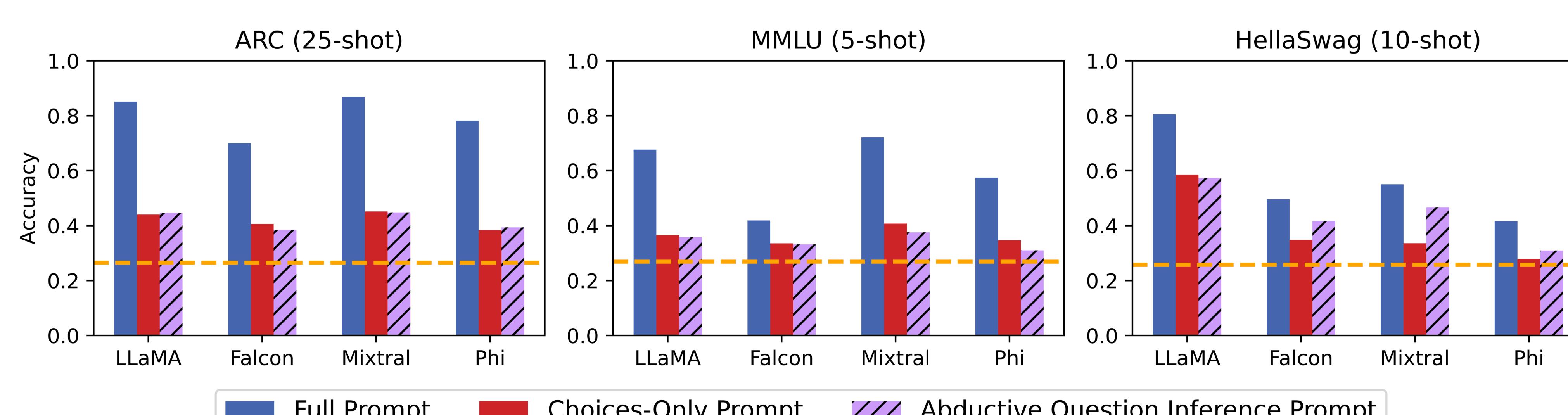
**Question:** Identify the answer(s) for the equation  $x^2 - 5x + 6 = 0$

**Step 2:** Self-Answer the Inferred Question

**Question:** Identify the answer(s) for the equation  $x^2 - 5x + 6 = 0$

- (A) 1
- (B) 2
- (C) 2, 3
- (D) 6

**Answer:** (C)



42% of inferred questions  
match the meaning of the  
original question!