

# RAG Evaluation Results

## Relevant Documents (4 total)

1. Paris is the capital of France.
2. France is located in Europe.
3. The Eiffel Tower is in Paris.
4. French is the official language of France.

## Retrieved Documents (Top-4)

#	Document	Relevant?
1	France is located in Europe.	 Yes
2	French is the official language of France.	 Yes
3	Berlin is the capital of Germany.	 No
4	Rome is the capital of Italy.	 No

**Relevant documents retrieved:** 2 out of 4 (items 1 and 2)

## Metrics Computation

### Recall@4

$$\text{Recall@4} = \frac{\text{Relevant Retrieved}}{\text{Total Relevant}} = \frac{2}{4} = 0.5$$

### Precision@4

$$\text{Precision@4} = \frac{\text{Relevant Retrieved}}{\text{Total Retrieved}} = \frac{2}{4} = 0.5$$

## F1@4

$$\text{F1}@4 = 2 \times \frac{\text{Precision} \times \text{Recall}}{\text{Precision} + \text{Recall}} = 2 \times \frac{0.5 \times 0.5}{0.5 + 0.5} = 2 \times \frac{0.25}{1.0} = 0.5$$

## 🎯 Final Results

Metric	Value
Recall@4	0.5
Precision@4	0.5
F1@4	0.5