# Interview Assessment – Sample Questions

What is the difference between inner join and left join?

Can you explain the concept of random forest?

How would you explain machine learning to your grandma?

What is the difference between efficiency and accuracy?

We are looking to expand into this region. If you were the head of data & analytics, what would you do?

The head of marketing told you we want to expand our market reach into a certain region in a voice mail before they left for vacation and would like a plan when they return in two weeks. They will not be accessible by email or phone until then. What would you do?

Looking at this data set, what clarifying questions would you like to ask? What insights are you able to gather?

How would you calculate client retention at the service level?

Provide me some examples of when you used Tableau

If your manager provided you an unreasonable request, what would you do?

If our bank does not currently have a credit card business, estimate our profits from having one.

Describe your most technically challenging project at Rotman. What were the challenges faced and how did you go about solving them?

If you were appointment as Chief of Analytics, how would you approach an organizational plan for the next X-years?

How would you handle missing values?

How would you handle outliers?

What’s the bias variance tradeoff?

How do you describe what <data science, logistics regression, machine learning> is to a non-technical audience?

How would you rate your skills in <insert programming language>?

Walk me through what you would do for an Analytical project

If a lily pad doubles in size each day, when will it be half the size of a pond?

What are the stages and components of a data science project?

What is the difference between cross validation & regularization?

Complete a competitor SWOT analysis

How would you handle unstructured data?

What types of libraries have you used? Where did you get stuck? How did you solve it?

ROC confusion metric threshold – various ARC vs. accuracy?

What functions are used for logistic regression? Draw it out

Find the price of a stock closest to a desired time eg 12:00:00 pm where stock data is recorded every 30-45 seconds.

Favorite product, why, feature, attribution

Coding:

* Loops
* Basic join tables for certain results
* A lot of whiteboard coding – i.e. writing small pieces of code from scratch

**Themes**

* Basic Python array & looping questions
* SQL joins/between
* GIS
* Assumptions of regression OLS
* How to test regression & logistical regression
* Time series
* Bias variance trade off
* Causality
* CIPI stat inference
* Fundamentals of statistics
* Logical questions

**Take-home assessments**

* Provide a copy of your technical writing
* Research & analyze a topic
* Research a topic
* Evaluate a model
* Business model evaluation
* Some sample assignments:
  + Background:

XX Asset Management (AM) Marketing teams support five business channels. For this assignment, I'd like you to focus on investment advisors. We produce content for this channel to sell our funds. The content we produce includes, fund information, thought leadership, financial planning…etc. Ultimately, each piece of content (i.e. touchpoint) is meant to drive sales. My team adds value by measuring the impact of our marketing pieces/tactics and making recommendations to improve outcomes.

For your assignment, I would like you to answer the following questions. As I mentioned in our meeting, there is a lot of ambiguity that my team must navigate. So I need to see how you would proceed given minimal information. Be creative. Take Risks. Learn More.

How much time and resources (content marketing) should AM spend on each client lead to get a meaningful ROI?

- What are the data that you need to test hypothesis?

- What are the KPI you will use for each stage of the research?

- What questions will you need answered from your stakeholders

- What are the metrics that you will use to support your hypothesis

- How will you demonstrate/present your points to stakeholders?

- How will you navigate resistance?

* Here is a data set consisting of (1) Country-level variables for 2018 (including GDP, average income, extent of the road network, etc.), and (2) Auto sales and production (personal vs commercial vehicles) by country for last 20 years.
  + Tell us something interesting based on this data (this is a take-home assignment, 48 hrs)
  + Feel free to supplement with any other publically available data