ANSWERS TO QUESTIONS:

I.

A.) What percentage of companies with a 6sense score (ss_score) of at least 85 and were added to the database (created) in January 2018 have been won (became a 6sense customer)?

```
select
round(100.0*(sum(
  case when (ss_score >=85) and (won = 'true') and (won_dt >= '2018-01-01' and won_dt <
'2018-02-01')
  then 1 else 0 end) :: decimal /count(id)),1)
AS percentage
from Company;
```

B.) At the company level, what is the average number of contacts that were interacted with before a successful (won) sale?

```
select comp.company_name, count (con.id)/(count (distinct comp.company_name))
                        as "Average Contacts Per Won Company"

from Contact con
inner join Company comp
on con.company_id = comp.id
where won = 'true'
group by comp.company_name;
```

C.) What is the interaction channel and the name of BOTH the Sales rep and Customer Service rep who last interacted with the following companies: XYZ inc., ABC co., 123 ltd.

Note: Sales reps interact with a company through the date of a sale, while CS reps interact with a company after the date of sale.

```
select i.interaction_channel,
case when comp.won_dt is null then i.rep_name end as sales_rep,
case when comp.won_dt is not null then i.rep_name end as cust_serv_rep
from Contact cont
inner join Company comp
on cont.company_id = comp.id
inner join Interaction i
on cont.id = i.contact_id
```

```
where comp.company_name in ('XYZ inc.', 'ABC co.', '123 ltd.');
```

Bonus (time permitting): See if you return the number of times those reps have interacted with this company in the same query output.

```
select comp.company_name, i.interaction_channel,
case when comp.won_dt is null then i.rep_name end as sales_rep,
sum(case when comp.won_dt is null then 1 else 0 end) as Total_Sales_Rep_Interactions,
case when comp.won_dt is not null then i.rep_name end as cust_serv_rep,
sum(case when comp.won_dt is not null then 1 else 0 end) as Total_CS_Rep_Interactions
from Contact cont
inner join Company comp
on cont.company_id = comp.id
inner join Interaction i
on cont.id = i.contact_id
where comp.company_name in ('XYZ inc.', 'ABC co.', '123 ltd.')
group by comp.company_name, i.interaction_channel, comp.won_dt, i.rep_name;
```

II.

How can the team test if targeting with the "Qualifying Model" score impacts the success of the campaign?

I would perform the test of seeing if the "Qualifying Model" score would impact the success of the campaign by designing A/B tests which follow.

An A/B test is defined as:
A/B testing (**bucket tests** or **split-run testing**) is a randomized experiment with two variants, A and B. It includes application of statistical hypothesis testing or "two-sample hypothesis testing" as used in the field of statistics. A/B testing is a way to compare two versions of a single variable, typically by testing a subject's response to variant A against variant B, and determining which of the two variants is more effective.

1. **PROBLEM:**

   Low sales last month/did not meet last quarter's expected earnings.

2. **BUSINESS GOAL:**

   Increase sales.

3. **PROMOTION GOAL:**

Have prospects respond with sales call.

4. **DEFINE HYPOTHESES:**

   A/B Test with:

   i. H0: Conversion rate between control (score <= 70) and promotion (score >70) are the same
   ii. H1: Conversion rate between control (score <= 70) and promotion (score >70) are different
   iii. If there is a high volume of response/does not take long for test to be run, there can be a series of A/B tests performed in succession: (First one would be no treatment vs. score >70 treatment and second test would be no treatment versus all prospects given promotion)

5. **KEY PERFORMANCE INDICATORS (KPI'S):**

   Number of prospects that end up having call with Sales Rep's.

6. **TARGET METRICS:**

   In order to compensate for last quarter's loss, 60% of prospects need to respond with sales call in order to deem significant conversion rate for treatment group. This was an arbitrary number to start with. Determining sample size and statistical significance are where real significant lift from treatment group is determined.

7. **DETERMINE SAMPLE SIZE:**

   When calculating the sample size, will need to specify the significance level, power and desired relevant difference between conversion rates.

8. **SPLIT SAMPLES EVENLY AND RANDOMLY:**

   Consider segmenting data here so that responsive groups are not masked by statistical aggregates such as average response number from test dataset.

9. **PRIORITIZE TESTS:**

   Rank tests by value of test results in increasing business activity, cost and volume of traffic available/wait time to get data.

10. **TRACKING:**

Prospect response to promotion.

11. DETERMINE STATISTICAL SIGNIFICANCE:

This is usually 5%. A 5% significance level means that if you declare a winner in your A/B test (reject the null hypothesis), then you have a 95% chance that you are correct in doing so. It also means that you have significant result difference between the control and the treatment with a 95% “confidence.” This threshold is, of course, an arbitrary one and one chooses it when making the design of an experiment, but this is the standard choice when completing statistical analysis.

12. COLLECTION OF QUALITATIVE DATA:

There is opportunity to get feedback from participants, but it is not needed here since in introduction phase with prospect to platform. It would be a different case if rolling out a new feature (at this point, relationship not too strong to bombard potential customers with multiple questions).

13. MEASURE SIGNIFICANCE:

To measure significance will use Chi-Squared test since data is discrete. Discrete is a fancy way of saying that there are a finite number of results that can be produced. A prospect will either welcome a sales call or not; there are no varying degrees of conversion for a single prospect.

Lift is also mentioned when determining test results. It is simply the percentage difference in conversion rate between your control version and a successful test treatment.

14. TEST FOR REVENUE:

Measuring the bottom line is a fast and easy indicator for increased sales/increased conversion rate.

15. TAKE ACTION BASED ON RESULTS:

Plan the next A/B test based on these test results. Let us say that the test results reveal that potential customers who had a score of >70 responded with a sales call. Then on the next round of new potential clients, all of those in the population group (not sample group anymore) with a score > 70 would be given promotion to increase chances that they would speak with a Sales Rep.

16. CONCLUDING REMARKS:

Besides just testing these two black and white versions of promotions to increase sale numbers, one can use A/B test to incrementally introduce promotion such as the case here. Instead of giving one group promotions, only those with score>70 are given the promotion. And if the test is a success then can roll out with all prospects getting promotion. Therefore, A/B test can be used as a safety net instead of being used as something to determine strict winners and losers. For example, when a treatment fails, it can actually be used as a benefit to iteratively “bake” in a new sales gimmicks.