Learn SQL from Scratch

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Understanding the data

```
SELECT *
FROM survey
LIMIT 10;
```

survey columns

First I looked at the columns in the survey table, and the kind of data they contained.

```
SELECT question,
COUNT(DISTINCT user_id)
FROM survey
GROUP BY 1;
```

survey columns

Then I grouped the results by the survey question and counted the number of users who responded to each question. This revealed where users dropped off in the survey.

Analyzing the data

```
SELECT question,
COUNT(DISTINCT user_id) AS ‘responses’
FROM survey
GROUP BY 1;
```

Survey funnel

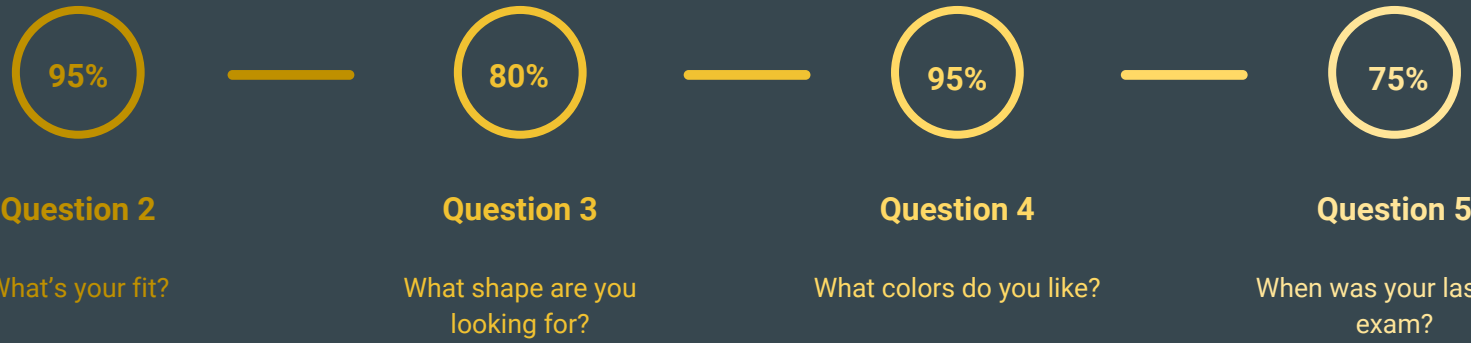
Importing these results into a spreadsheet allowed me to add a column calculating the percentage of users who moved from one answer to the next. This shows me where we are losing users in the process of answering survey questions.

```
SELECT question,
COUNT(DISTINCT user_id) AS ‘responses’
FROM survey
GROUP BY 1;
```

Survey funnel

question	responses	Completion %
1	500	100%
2	475	95%
3	380	80%
4	361	95%
5	270	75%

Survey funnel



It appears that we're losing more of them at questions 3 and 5. Maybe users need to see the shapes of the glasses first in order to decide which ones they like best. Maybe they don't remember the last time they saw an eye doctor. I don't!

```
SELECT *
FROM quiz
LIMIT 5;

SELECT *
FROM home_try_on
LIMIT 5;

SELECT *
FROM purchase
LIMIT 5;
```

Creating a purchase funnel

Looking at the three tables that will make up the purchase funnel will help me understand the data in each table, and how I might join them to get the results I want.

```
SELECT *
FROM quiz
LIMIT 5;

SELECT *
FROM home_try_on
LIMIT 5;

SELECT *
FROM purchase
LIMIT 5;
```

Columns in a purchase funnel

quiz	home_try_on	purchase
user_id	user_id	user_id
style	number_of_pairs	product_id
fit	address	style
shape		model_name
color_____		color
		price

```
SELECT q.user_id,
CASE WHEN
(h.user_id IS NOT NULL)
THEN 'True'
ELSE 0
END AS 'is_home_try_on',
h.number_of_pairs,
CASE WHEN
(p.product_id IS NOT NULL)
THEN 'True'
ELSE 0
END AS 'is_purchase'
FROM quiz AS 'q'
LEFT JOIN home_try_on AS 'h'
ON q.user_id = h.user_id
LEFT JOIN purchase AS 'p'
ON h.user_id = p.user_id
LIMIT 10;
```

Joining the tables

Each table contains a user_id, which is likely a unique number identifying each user. Since each table had this piece of data in common, it could be used to join them all.

I created a column to identify whether the user had tried on glasses, as well as a column to identify whether they had made a purchase. This allowed me to count the number of users who moved on to each step of the funnel (from quiz to home try-on to purchase).

```
SELECT h.number_of_pairs, AS ‘pairs’,
COUNT(DISTINCT q.user_id) AS ‘quiz_takers’,
COUNT(DISTINCT h.user_id) AS 'home_tryons',
COUNT(DISTINCT p.user_id) AS 'purchases'
FROM quiz as 'q'
LEFT JOIN home_try_on as 'h'
ON q.user_id = h.user_id
LEFT JOIN purchase AS 'p'
ON h.user_id = p.user_id
GROUP BY 1;
```

A/B testing

To compare results for users of the two groups (tried on 3 pairs of glasses or 5) to see whether their purchase rates differed, I used this query. It groups the results by number_of_pairs, so I can calculate the purchase rate separately for these two groups.

The results of this query are below:

pairs	quiz_takers	home_try_ons	purchases
3 pairs	379	379	201
5 pairs	371	371	294
0 pairs	250	0	0

Warby Parker purchase funnel

Style Quiz

1000 users took the style quiz.

750 moved on to try on glasses at home, while 250 did not try on any glasses.

Home Try On

Of the users who tried on glasses, 379 tried on 3 pairs and 371 tried on 5 pairs.

Purchase

In total, 495 users made a purchase.

Of the 379 people who tried on 3 pairs of glasses, 201 made a purchase.

Of the 371 people who tried on 5 pairs of glasses, 294 made a purchase.

Warby Parker purchase funnel

Overall Conversion Rate

Out of the total 1000 users who took the style quiz, 495 ended up buying glasses.

The purchase rate for Warby Parker's quiz-takers is almost 50%.

Conversion in Stages

Out of the 1000 total users that took the style quiz, 750 moved on to home try-on (75% conversion from quiz to home try-on).

495 of those users continued on to make a purchase (66% conversion from home try-on to purchase).

A/B Testing

The two groups had roughly the same conversion rate from quiz to home try-on (76%).

For those who tried on 3 pairs of glasses, 53% made a purchase.

For those who tried on 5 pairs, 79% made a purchase.

Warby Parker purchase funnel:

The more glasses users try on, the more likely it is that they will make a purchase!