The Holiday Game Plan

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Externship: Breaking Games Analytics & Database Design Externship
Submitted: [Date]

How to use this document. Make a copy of this template at the start of Week 1. Each week, you'll add one section. By the end of the externship, this document — plus your HTML dashboard — is what you present to the Breaking Games team.

Don't worry about polish on day one. Some sections will be empty until later weeks. That's fine.

Note: This is one running document. You'll add to it a section at a time and paste the same link whenever a task asks for it.

Executive Summary

Fill this in last (during the capstone). Three to five sentences. The one-page version of "what did we find and what should we do."

[Your executive summary goes here.]

Week 1: Getting Into Breaking Games' Raw Data

1.1 Data inventory

For each of the six data sources, write what's in it, what questions it can answer, and what it can't answer alone.

File	What it contains
shopify_sales	Product-level sales summary (one row per product): units sold (`net_items_sold`), gross/net/total sales, discounts, returns, taxes. Good for product rankings and revenue by product, but has no order-level or date-level detail.
shopify_orders	Order-level sales data (one row per line item within an order): date, order ID/name, product, gross/net/total sales, shipping, taxes, returns. Good for tracking sales over time and by individual order, but doesn't include customer or

File	What it contains
	checkout-funnel details.
shopify_checkouts	Line-item-level checkout records (one row per item in a checkout, so a session can span multiple rows): customer info, financial/fulfillment status, pricing, discount codes, billing/shipping location, payment method, and traffic `source`. Good for checkout/customer/geography analysis, but represents *started* checkouts, not just completed orders need `financial_status` or similar to isolate paid orders.
referrals	Site-traffic data by referrer and landing page: pageviews, add-to-cart rate, conversion rate, bounce rate, checkout sessions started, plus prior-year comparisons. Good for understanding top-of-funnel traffic sources and

File	What it contains
	conversion, but doesn't tie to specific orders or revenue amounts.
meta_campaigns	Meta (Facebook/Instagram) ad performance at the campaign level: spend, reach, impressions, clicks, CPM/CPC, results. Good for overall ad spend and campaign effectiveness, but doesn't break out by product or connect directly to which sales resulted.
meta_ad_sets	Meta ad performance at the ad-set level (a finer breakdown within campaigns): same metrics as `meta_campaigns` — spend, reach, impressions, clicks, etc. Useful for granular ad-set comparisons, but note it's a *partial* breakdown (sums to less than the campaign totals), so don't treat it as a

File	What it contains
	full duplicate of `meta_campaigns`.

1.2 Five instant answers

The questions Mike asks every Monday morning. Paste the SQL query and the answer for each.

Q1: Top 10 products by units sold this period.

```sql
SELECT product_title, SUM(net_items_sold) AS total_units_sold
FROM shopify_sales
GROUP BY product_title
ORDER BY total_units_sold DESC
LIMIT 10;
```

Answer:
Dwellings of Eldervale – Oracle Hex... — 178
Dwellings of Eldervale – LEGENDARY ... — 175
Dwellings of Eldervale – Minotaur ... — 135
Dwellings of Eldervale – ... — 134
Dwellings of Eldervale 2nd Edition:... — 129
Dwellings of Eldervale – Wooden ... — 127
We're Doomed! — 104
Dwellings of Eldervale – DELUXE ... — 89
MIXTAPE — 83
The Big Box of Magic — 46

Q2: Top 10 products by total revenue.

```sql
SELECT product_title, SUM(total_sales) AS total_revenue
FROM shopify_sales
GROUP BY product_title
ORDER BY total_revenue DESC
LIMIT 10;
```

Answer:
Dwellings of Eldervale 2nd Edition: Standard — $13,323.56
Dwellings of Eldervale – LEGENDARY Upgrade Kit — $12,514.05
Dwellings of Eldervale – DELUXE Upgrade Kit — $5,014.81
We're Doomed! — $3,810.47
Dwellings of Eldervale – Wooden Upgrade Treasure and Trove Tokens — $2,586.22
The Big Box of Magic — $1,920.14
Dwellings of Eldervale – Exclusive Game Mat — $1,874.13
MIXTAPE — $1,733.39
Dwellings of Eldervale – Minotaur Mercenary Mini Expansion — $1,370.38
Dwellings of Eldervale – Shapeshifter Mercenary Mini Expansion — $1,361.17

Q3: How many products are in the catalog?

```sql
SELECT COUNT(DISTINCT product_title) AS product_count
FROM shopify_sales;
```

Answer: 99

Q4: What was the total Meta ad spend?

```sql
SELECT SUM(spend_usd) AS total_meta_ad_spend
FROM meta_campaigns;
```

Answer: $37,200.94

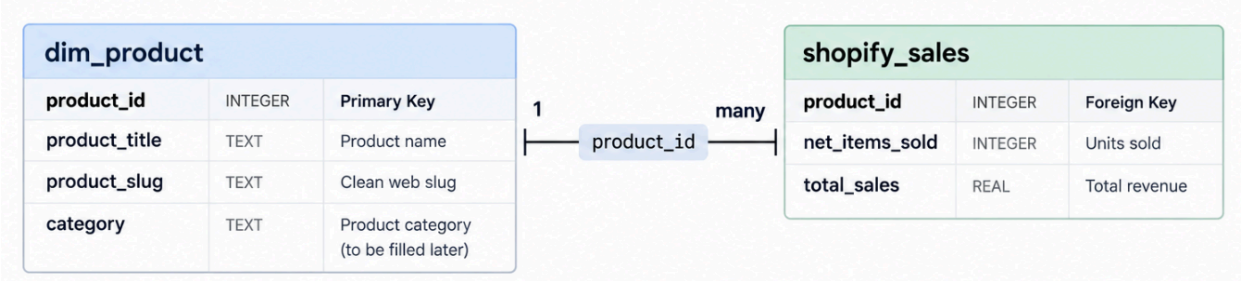
Q5: How many unique checkout sessions started?

```sql
SELECT COUNT(DISTINCT name) AS unique_checkout_sessions
FROM shopify_checkouts;
```

Answer: 1062

Week 2 — Designing Your First Database

2.1 Schema diagram



Each product appears once in `dim_product` with a unique `product_id` and consistent product information.

Each row in `shopify_sales` contains sales metrics for a product and links to `dim_product` through `product_id`.

2.2 The dim_product design decision

I created `dim_product` with `product_id`, `product_title`, `product_slug`, and `category` because these fields describe the product itself and can be reused across different tables. The `product_id` acts as a stable key that allows `shopify_sales` to connect to the dimension table consistently. I kept sales measures such as units sold and

total sales outside `dim_product` because they are performance metrics that can change over time and belong in the fact table.

```
SELECT ss.product_id, dp.product_title, ss.net_items_sold, ss.total_sales
FROM shopify_sales ss
INNER JOIN dim_product dp ON ss.product_id = dp.product_id
ORDER BY ss.total_sales DESC
LIMIT 5;
```

	product_id	product_title	net_items_sold	total_sales
1	1	Dwellings of Eldervale 2nd Edition:…	129	13323.56
2	2	Dwellings of Eldervale - LEGENDARY …	175	12514.05
3	3	Dwellings of Eldervale - DELUXE …	89	5014.81
4	4	We're Doomed!	104	3810.47
5	5	Dwellings of Eldervale - Wooden …	127	2586.22

2.3 Connect the journey

Three queries that connect traffic to sales across the catalog. Paste each query and a one-line summary of what it returned.

Query 1 — Products with sales but mysterious origins. Products with sales rows but no referral traffic matching their slug.

```sql
SELECT
    dp.product_title,
    SUM(ss.net_items_sold) AS total_sales
FROM dim_product dp
JOIN shopify_sales ss
    ON dp.product_id = ss.product_id
LEFT JOIN referrals r
    ON r.landing_page LIKE '%' || dp.product_slug || '%'
WHERE r.landing_page IS NULL
GROUP BY dp.product_id, dp.product_title;
```

Result: 58

	product_title	total_sales
1	Dwellings of Eldervale 2nd Edition: …	129
2	Dwellings of Eldervale - LEGENDARY …	175
3	Dwellings of Eldervale - DELUXE …	89
4	We're Doomed!	104
5	Dwellings of Eldervale - Wooden …	127
6	Dwellings of Eldervale - Exclusive …	28
7	Dwellings of Eldervale - Minotaur …	135
8	Dwellings of Eldervale - Shapeshifte…	134
9	Expancity | Family Strategy City …	21
10	Dwellings of Eldervale - Oracle Hex …	178
11	We're Doomed: Meritocracy Expansion …	45
12	Klask (First Edition)	9

Query 2 — Products with traffic but no sales. Traffic comes in, nobody buys.

```sql
SELECT
    dp.product_title,
    SUM(r.pageviews) AS total_pageviews
FROM dim_product dp
JOIN referrals r
    ON r.landing_page LIKE '%' || dp.product_slug || '%'
WHERE NOT EXISTS (
    SELECT 1
    FROM shopify_sales ss
    WHERE ss.product_id = dp.product_id
)
GROUP BY dp.product_id, dp.product_title;
```

Result: 0, The query returned no products with referral traffic but without sales records. All matched products had corresponding rows in `shopify_sales`.

Query 3 — The full story. Every product with `total_sales`, `total_pageviews`, and a pageviews-per-unit-sold ratio.

```sql
WITH sales_totals AS (
    SELECT
        product_id,
        SUM(net_items_sold) AS total_sales
    FROM shopify_sales
    GROUP BY product_id
)

SELECT
    dp.product_title,

    COALESCE(st.total_sales, 0) AS total_sales,

    COALESCE(SUM(r.pageviews), 0) AS total_pageviews,

    CASE
        WHEN COALESCE(st.total_sales, 0) = 0 THEN NULL
        ELSE ROUND(
            1.0 * COALESCE(SUM(r.pageviews), 0) / st.total_sales,
            2
        )
    END AS pageviews_per_unit_sold

FROM dim_product dp

LEFT JOIN sales_totals st
    ON dp.product_id = st.product_id

LEFT JOIN referrals r
    ON r.landing_page LIKE '%' || dp.product_slug || '%'

GROUP BY
    dp.product_id,
    dp.product_title,
    st.total_sales

ORDER BY total_pageviews DESC;
```

Result: 99 rows in total.

	product_title	total_sales	total_pageviews	pageviews_per_unit_sold
1	MIXTAPE	83	14861	179.05
2	Trellis	13	6059	466.08
3	Hypothetically Fun	28	5426	193.79
4	Letter Tycoon	32	4880	152.5
5	POOP: The Game	10	4274	427.4
6	Billionaire Banshee	20	4238	211.9
7	Suddenly Stoned	12	4139	344.92
8	Suddenly Drunk: Gross Expansion	5	3917	783.4
9	Pocket Dungeon Quest	27	3749	138.85
10	Fake News	7	3600	514.29

What you found — *a short paragraph covering:*

- Which products had high traffic but no sales?
- Which products had sales you couldn't trace to a source?
- What's the most interesting finding?

The analysis found no products with referral traffic but no sales, suggesting that alldeThe analysis found no products with referral traffic but no sales, suggesting that all products receiving identifiable website traffic generated at least some sales. However, 58 products had sales that could not be traced to a referral source. Notable examples include Dwellings of Eldervale - Oracle Hex with 178 sales, Dwellings of Eldervale - Legendary with 175 sales, Dwellings of Eldervale - Minotaur with 135 sales, and We're Doomed! with 104 sales. The most interesting finding is the scale of the attribution gap: several products generated substantial sales despite having no matching referral records.

Week 3: What's Actually Selling

3.1 Product performance leaderboard

Query used:

```
SELECT
    product_title,
    SUM(total_sales) AS total_sales,
    SUM(net_items_sold) AS net_items_sold,
    ROUND(
        SUM(total_sales) / NULLIF(SUM(net_items_sold), 0),
        2
    ) AS aov,
    RANK() OVER (ORDER BY SUM(total_sales) DESC) AS revenue_rank
FROM shopify_sales
GROUP BY product_title
HAVING SUM(net_items_sold) > 0
ORDER BY total_sales DESC
LIMIT 25;
```

Top 25 products by revenue, with total sales, net items sold, and AOV for each.

RANK	PRODUCT	TOTAL SALES	NET ITEMS SOLD	AOV
1	Dwellings of Eldervale 2nd Edition: Standard	13323.56	129	103.28
2	Dwellings of Eldervale - LEGENDARY Upgrade Kit	12514.05	175	71.51

3	Dwellings of Eldervale - DELUXE Upgrade Kit	5014.81	89	56.35
4	We're Doomed!	3810.47	104	36.64
5	Dwellings of Eldervale - Wooden Upgrade Treasure and Trove Tokens	2586.22	127	20.36
6	The Big Box of Magic	1920.14	46	41.74
7	Dwellings of Eldervale - Exclusive Game Mat	1874.13	28	66.93
8	MIXTAPE	1733.39	83	20.88
9	Dwellings of Eldervale - Minotaur Mercenary Mini Expansion	1370.38	135	10.15
10	Dwellings of Eldervale - Shapeshifter Mercenary Mini Expansion	1361.17	134	10.16
11	Expancity | Family Strategy City Building Game | 2-4 Players	1272.8	21	60.61
12	Dwellings of Eldervale - Oracle Hex Tile	1269.99	178	7.13
13	We're Doomed: Meritocracy Expansion Pack | Party Game | 4-12 Players	933.33	45	20.74
14	Letter Tycoon	833.14	32	26.04

15	Hypothetically Fun	753.55	28	26.91
16	Pocket Dungeon Quest	687.41	27	25.46
17	Billionaire Banshee	534.99	20	26.75
18	Klask (First Edition)	466.96	9	51.88
19	Rise of Tribes: Beast and Bronze Expansion (Base Game Required)	355.99	14	25.43
20	Dwellings of Eldervale - Frost Giant Miniature with Bifröst Bridge Hex Tile	351.66	43	8.18
21	Flick Wars: Deluxe Edition	340.3	4	85.08
22	Trellis	327.52	13	25.19
23	The Game of 49 | Family Friendly Strategy Board Game | 2-5 Players	324.31	18	18.02
24	Top That Toast	295.26	14	21.09
25	Keep Calm! | Hilarious Party Game for Friends and Family | Ideal for Game Night | Ages 17+, 3-8 Players	285.46	11	25.95

3.2 Reorder recommendation

For Mike's November 1 reorder commit, your call:

Summary:

For Mike's November 1 reorder decision, I recommend focusing on proven bestsellers rather than spreading inventory across too many products. Our analysis shows that the top 11 products generate approximately 76.6% of total revenue. We should prioritize these products for the holiday season, place smaller orders for mid-performing products, and avoid reprinting slow sellers.

Print heavy — reorder confidently (~10 products)

- **Dwellings of Eldervale 2nd Edition: Standard** — Highest revenue ($13,323.56) and strong sales volume.
- **Dwellings of Eldervale – LEGENDARY Upgrade Kit** — Second-highest revenue ($12,514.05), with 175 units sold.
- **Dwellings of Eldervale – DELUXE Upgrade Kit** — Strong revenue ($5,014.81), showing demand for premium upgrades.
- **We're Doomed!** — Consistent sales performance with 104 units sold.
- **Dwellings of Eldervale – Wooden Upgrade Treasure and Trove Tokens** — Strong accessory sales with 127 units sold.
- **The Big Box of Magic** — Among the highest-revenue products.
- **Dwellings of Eldervale – Exclusive Game Mat** — High average order value ($66.93).
- **MIXTAPE** — Good demand with 83 units sold.
- **Dwellings of Eldervale – Minotaur Mercenary Mini Expansion** — High unit sales (135).
- **Dwellings of Eldervale – Shapeshifter Mercenary Mini Expansion** — Strong demand with 134 units sold.

Print light — modest reorder (~5 products)

- **Expancity** — Moderate revenue ($1,272.80), but relatively low sales volume.
- **Dwellings of Eldervale – Oracle Hex Tile** — High unit sales but low average value ($7.13).
- **We're Doomed: Meritocracy Expansion** — Lower revenue than the main game; test demand with smaller quantities.

- **Letter Tycoon** — Moderate sales ($833.14), suitable for limited restocking.
- **Hypothetically Fun** — Lower revenue ($753.55), so avoid overstocking.

Don't print — let it go (~3 products)

- **The Game of 49** — Low revenue ($324.31) and limited sales volume.
- **Top That Toast** — Low revenue ($295.26) and only 14 units sold.
- **Keep Calm!** — Low revenue ($285.46) and only 11 units sold.

Final recommendation: Focus the holiday inventory budget on high-performing products, especially the Dwellings of Eldervale series. Keep smaller quantities of mid-performing products and avoid additional printing of slow sellers. Before finalizing quantities, check current inventory, profit margins, and expected holiday demand.

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Week 4 — Following the Money

4.1 Channel breakdown

Where did the $37,000 in Meta spend actually drive traffic? Where are customers coming from organically?

Channel	Pageviews	Checkout sessions	Conversion rate	Spend	Cost per pageview	Cost per checkout session
Paid Social (Meta)	91,694	115	0.125%	$37,200.94	$0.4057	$323.49
Organic	80,660	384	0.476%	—	—	—

Search						
Direct	153,759	360	0.234%	—	—	—
Community/Referral	3,312	13	0.393%	—	—	—
Email	2,028	9	0.444%	—	—	—
Other	2,097	6	0.286%	—	—	—

Key finding: [one sentence — e.g., “BoardGameGeek converts at about 2.9x Facebook’s rate on 54x less traffic, worth investing in community partnerships.”]

4.2 Meta campaign ROI

Top 5 best-performing campaigns:

Campaign	Spend	Results	Cost per result	CTR	CPC
*DA | Traffic TOF	$8,634.89	39,419 LPVs	$0.22	1.40%	$0.21
DA | MAT Test | Dwellings | Traffic - LPV	$4,344.57	17,753 LPVs	$0.24	1.75%	$0.23

Campaign	Spend	Results	Cost per result	CTR	CPC
* DA | Sales | Advantage Plus Campaign	$6,863.81	97 purchases	$70.76	1.00%	$1.52
DA | Sales | ATC	$1,441.94	291 add-to-carts	$4.96	2.51%	$0.91
DA | MAT Test | We're Doomed | Traffic - LPV	$1,386.31	3,540 LPVs	$0.39	0.78%	$0.36

Bottom 5 (the ones to question):

Campaign	Spend	Results	Why we should reconsider
DA | Sales	$12,917.08	N/A	High spend with no reported results. Investigate tracking.
DA | Reach | Retargeting	$1,612.34	1,208,484 reached	Low CTR (0.10%). Review awareness effectiveness.
DA | Sales | Black Friday	$0	N/A	No performance history. Test before investing.
DA | Sales - Purchase DTC	$0	N/A	No conversion evidence. Evaluate before relaunching.
DA | Sales | Catalog	$0	N/A	No recorded activity. Test before scaling.

Campaign	Spend	Results	Why we should reconsider

4.3 Q4 ad allocation plan

Continue running ($X total):

- [Campaign 1] — why: [your reason]
- ...

Cut or pause ($X freed up):

- [Campaign 1] — why: [your reason]
- ...

New investment (where the freed dollars go):

- [Channel/strategy] — why: [your reason]

4.4 The uncomfortable finding

One paragraph: what's a result here that Mike won't want to hear, and how do you back it up with data?

[Your honest read.]

Week 5: Carts in the Wild

5.1 The real abandonment rate

Metric	Value
Unfinished checkout sessions in the export (2016-2025)	
Completed orders (July 2025, from `shopify_orders`)	
Naive abandonment rate (mismatched windows)	
Carts flagged as suspicious (your criteria)	
Adjusted abandonment rate (July 2025, clean carts)	

5.2 Bot detection criteria

The patterns you used to flag suspicious activity.

1. [Rule 1] — e.g., "Carts with lineitem_quantity greater than 5"
2. [Rule 2]
3. ...

5.3 Where carts get abandoned

Top abandoned products (from your query): List your top 10, with the carts-vs-orders gap.

Product	Carts	Orders	Gap

- **Time of day:** [pattern you noticed]
- **Day of week:** [pattern you noticed]
- **Cart size:** [pattern you noticed]
- **Discount usage:** [pattern you noticed]
- **Geography:** [pattern you noticed]

What looks off: The first thing I noticed that looks off is [X]. I'll investigate it as a bot/automation candidate in Step 3.

5.4 What Breaking Games can actually fix

Three concrete recommendations the team could act on before Q4:

1. [Recommendation 1] — backed by: [data point]
2. [Recommendation 2] — backed by: [data point]
3. [Recommendation 3] — backed by: [data point]

Capstone Project — The Holiday Game Plan

6.1 The dashboard

Paste a screenshot of your final HTML dashboard here. (Open dashboard.html in a browser → take a screenshot → drag in.)

[Dashboard screenshot]

6.2 The five numbers

#	KPI	Value	What it tells the team
1			
2			
3			
4			
5			

6.3 Key findings (three to five)

Each one: one sentence finding + one sentence "so what."

1. **Finding:** [your finding] **So what:** [the action it implies]
2. **Finding:** [your finding] **So what:** [the action it implies]
3. **Finding:** [your finding] **So what:** [the action it implies]
4. **Finding:** [your finding] **So what:** [the action it implies]
5. **Finding:** [your finding] **So what:** [the action it implies]

6.4 Recommendations to Breaking Games

The three things the team should do before Q4 — backed by your analysis.

1. **[Recommendation]**

    - **Rationale:** [what the data shows]
    - **Owner:** [who should drive it — Mike, Jess, ops, etc.]
    - **Expected impact:** [your estimate]

2. **[Recommendation]**

    - **Rationale:**
    - **Owner:**
    - **Expected impact:**

3. **[Recommendation]**

    - **Rationale:**
    - **Owner:**
    - **Expected impact:**

6.5 What you'd need next

If you had another four weeks, what data or analysis would unlock the most additional value?

[Your wishlist.]