1: Dynamic arrays.

- Code for the four questions:
  - What are the platforms in the table.
    - `=TRANSPOSE(UNIQUE(Table5[Platform]))`
  - What games have more than 1 million Japanese sales
    - `=TRANSPOSE(FILTER(Table5[Name];Table5[JP_Sales]>1))`
  - Display the games sorted by year.
    - `=TRANSPOSE(SORTBY(Table5[Name];Table5[Year]))`
  - Make a sorted list of European sales.
    - `=TRANSPOSE(SORTBY(Table5[Name];Table5[Year]))`
- Remember to comment on the `#SPILL` error.

2: Using SEQUENCE

- Mention the row times columns convention together with the RC Cars memnomic.

3: Applications of SEQUENCE.

- **Summing odd numbers**:
  - Old way: Use flash fill on odd numbers.
  - Old way 2: Use flash fill on all numbers, then use `=MOD(A34;2)=1` to make a row of `TRUE` only for odd numers.
  - New way: `=SUM(SEQUENCE(15;1;1;2))`. (There are exactly 15 odd numbers less than thirty.)
  -

4: `LAMBDA` and the name manager

- First answer: `=LAMBDA(x;1+x)(A16)`.
- Second answer: `=LAMBDA(x;y;x+y)(A36;B36)`.
- Third answer: Press CTRL+F3 and enter the function `TWOSUM = LAMBDA(x;y;x+y);;`
- Third answer: Show how to do it without the shortcut too. (Formulas -> Name manager.) ## 5: Using `LAMBDA`
- **First question:**
  - Old way: Fill a row with 1,2,3…,30. Then square them,
  - New way (1): `=TRANSPOSE(MAP(SEQUENCE(30);LAMBDA(x;x^2)))`

  - New way (2): `=MAP(SEQUENCE(1;30);LAMBDA(x;x^2))`

- **Second question:**
  - Old way: Fill in, square, and use sum.
  - New way: `=SUM(MAP(SEQUENCE(30);LAMBDA(x;x^2)))`

- **Third question:**
  - New way: `=SUM(MAP(SEQUENCE(15;;1;2);LAMBDA(x;x^2)))`

- **Fourth question:**
  - Old way: Use intermediate calculations.
  - New way: `=AVERAGE(MAP(A87:J87;LAMBDA(x;ABS(x-MEDIAN(A87:J87)))))`.

6: Advanced formula environment

Code for dot product.

```
/**
 * Calculate the dot product of four cells.
 */

DOTPRODUCT = LAMBDA(a; b; c; d; a * b + c * d);;
```

Code for three sums.

```
/**
 *A summer function for three numbers.
 */

THREESUM = LAMBDA(x;y;z;x+y+z)
```

Code for arrays

```
=XLOOKUP(D163;GRADES_CUTTOFFS;GRADES_LETTERS;;-1)
```

7 Uses of `MAP`

Task 1

Old way

- Fill in numbers
- Use `=IF(MOD(A13;2)=0;SQRT(A13);A13^2)`.
- Then sum.

New way

```
=SUM(MAP(SEQUENCE(15);LAMBDA(x;IF(MOD(x;2)=0;SQRT(x);x^2)))
```

Task 2

```
/**
 * Sum the numbers from 1 to n when the odd numbers are squared and even numbers are taken tl
 */

COMPLEXSUM = LAMBDA(n;SUM(MAP(SEQUENCE(n);LAMBDA(x;IF(MOD(x;2)=0;SQRT(x);x^2)))));;
```

Task 3

New way: `=MAP(C110:C121;LAMBDA(x;x="DS"))`

8: BYROW

Task 1

```
=BYROW(G14:H25;LAMBDA(x;SUM(x)))
```

Task 2

Old: `=IF(F61="Nintendo";G61;H61)` **New:** `=BYROW(F61:H72;LAMBDA(x;IF(INDEX(x;1;1)="Nintendo";INDE`

9: TEXTSPLIT

Wordcount is done with `=COLUMNS(TRIM(TEXTSPLIT(C39;" ")))`.

10: TEXTJOIN

11: RANDARRAY

Task 1

- `=TRANSPOSE(RANDARRAY(10000;;1;6;TRUE))`
- `=AVERAGE(B16#)`
- `=STDEV.P(B16#)`

Task 2

- Formula: `=TRANSPOSE(NORM.INV(RANDARRAY(1000);0;1))`
- Select data to make chart.

12: Counting dice

- Use RANDARRAY(10000;6;1;6;TRUE) and make column of sums.
- The probability is `=COUNTIFS(G15:G10014;24)/ROWS(A15:G10014)`.