# Cell addresses

## INTERMEDIATE SPREADSHEETS

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# Rows and columns

|   | A | B |
|---|---|---|
| 1 | *Command* | *Result* |
| 2 | `=ROW(C5)` | 5 |
| 3 | `=COLUMN(C5)` | 3 |

# Addresses

| | A | B |
|---|---|---|
| 1 | *Command* | *Result* |
| 2 | `=ROW(C5)` | 5 |
| 3 | `=COLUMN(C5)` | 3 |
| 4 | `=ADDRESS(B2, B3)` | $C$5 |
| 5 | `=ADDRESS(B2, B3, 4)` | C5 |

# Indirection

|   | A | B | C |
|---|---|---|---|
| 1 | *Value* | *Command* | *Result* |
| 2 | 99 | `=ADDRESS(2, 1)` | `$A$2` |
| 3 |  | `=INDIRECT(C2)` | `99` |

# Finding nearby cells

| | A | B | C | D |
|---|---|---|---|---|
| 1 | *Value1* | *Value2* | *Command* | *Result* |
| 2 | 3 | 5 | `=OFFSET(A3, 3, 1)` | 31 |
| 3 | 5 | 7 | `=OFFSET(A3, -1, 0)` | 3 |
| 4 | 11 | 13 | | |
| 5 | 17 | 19 | | |
| 6 | 29 | 31 | | |

# Relative addresses

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | | | | *Command* | *Result* |
| 2 | | | | `=INDEX($B$3:$C$7, 3, 1)` | 11 |
| 3 | | 3 | 5 | `=INDEX($B$3:$C$7, 4, 3)` | #NUM! |
| 4 | | 5 | 7 | | |
| 5 | | 11 | 13 | | |
| 6 | | 17 | 19 | | |
| 7 | | 29 | 31 | | |

# Summary

- There are two ways of specifying a cell address.

- `ROW()` & `COLUMN()` return integer positions.

- `ADDRESS()` returns the address in `A1` format text.

- `INDIRECT()` returns the value an an address.

- `OFFSET()` find returns values relative to another cell.

- `INDEX()` finds values within a cell range.

# Happy cell hunting!

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# Lookups & matching

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|   | A | B | C | D |
|---|---|---|---|---|
| 1 | *id* | *nspec* | | |
| 2 | Ant | 10k | | |
| 3 | Fly | 125k | | |
| 4 | Bee | 20k | | |
| 5 | | | | |
| 6 | *id* | *size* | *command* | *nspec* |
| 7 | Ant | 25 | =VLOOKUP(A7, $A$2:$B$4, 2, FALSE) | 10k |
| 8 | Bee | 40 | =VLOOKUP(A8, $A$2:$B$4, 2, FALSE) | 20k |
| 9 | Moth | 300 | =VLOOKUP(A9, $A$2:$B$4, 2, | #N/A |

# Programmatically sorting data

```
=SORT($A$2:$C$5, 2, FALSE)
```

– –

|   | A | B | C |
|---|---|---|---|
| 1 | *id* | *nspec* | *size* |
| 2 | Moth | 250000 | 300 |
| 3 | Fly | 125000 | 70 |
| 4 | Bee | 20000 | 40 |
| 5 | Ant | 10000 | 25 |

# Matching values

| | A | B | C |
|---|---|---|---|
| 1 | *id* | *nspec* | *size* |
| 2 | Moth | 250000 | 300 |
| 3 | Fly | 125000 | 70 |
| 4 | Bee | 20000 | 40 |
| 5 | Ant | 10000 | 25 |

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```
=MATCH(100000, $B$2:$B$5, -1)
```

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# Summary

- `VLOOKUP()` preforms left joins on two datasets.

- `SORT()` programmatically sorts data.

- `MATCH()` finds positions in sorted data where a value would occur.

# Let's practice!

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# Three Challenges

- **Advanced filtering** with logical operations.

- **Conditional summary statistics** using `COUNTIF()`.

- **Simple interpolation** using `VLOOKUP()` and `AVERAGEIF()`.

# Let's practice!

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# Final thoughts

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# Let's practice!

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