THE DATA DETECTIVE TOOLKIT

Got a question? Ask the data.

Eight skills for finding answers you can trust.

1 Ask a good question
DATA

What do I want to find out?

2 Collect the clues
SURVEY

Did I ask enough people, the same way?

3 Sort it out
CATEGORY

Which groups do these belong in?

4 Picture the data
GRAPH

What picture shows this best?

5 Read the graph
SCALE

What do the title, labels and scale tell me?

6 Find what's typical
AVERAGE

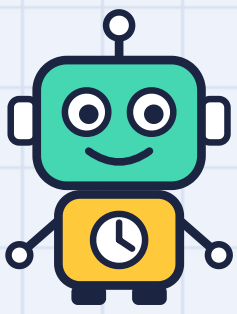
Which one number sums this up?

7 Don't be fooled
MISLEADING

Is this graph playing a trick?

8 What's the chance?
PROBABILITY

How likely is it?



Don't guess. Collect the clues, then let the numbers tell you.

1 DATA SKILL ONE

Ask a good question

Data say: DAY-tuh

Information collected to answer a question.

EVERY DATA INVESTIGATION

1 Ask > 2 Collect > 3 Sort > 4 Show > 5 Explain

Needs data

"What is our class's favourite fruit?"

Everyone answers differently, so ask them all.

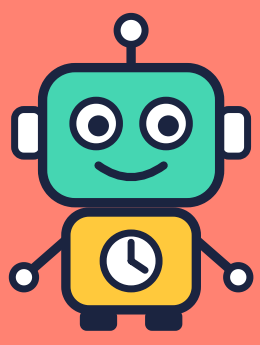
One quick answer

"What did I eat for breakfast?"

There is only one answer. No data needed.

IN MATHS

Number data is counted or measured. Category data is words, like dog, cat or fish.



ASK YOURSELF

What do I want to find out?

2 DATA SKILL TWO

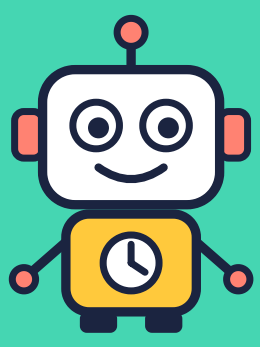
Collect the clues

Survey say: SUR-vay
Asking lots of people the same question and recording their answers.

Dog	𝍸 |	6
Cat	𝍸	5
Fish	|||	3
Bird	||	2

TALLY MARKS Each gate is 5. Count the gates in 5s, then add the loose lines.

A fair survey needs **the same question** **enough people** **a mix of people**



ASK YOURSELF

Did I ask enough people, the same way?

3 DATA SKILL THREE

Sort it out

Category say: KAT-uh-gor-ee

A group of things that are alike in some way.

A TABLE

PET	TOTAL
Dog	6
Cat	5
Fish	3
Bird	2
All answers	16

A TWO-WAY TABLE

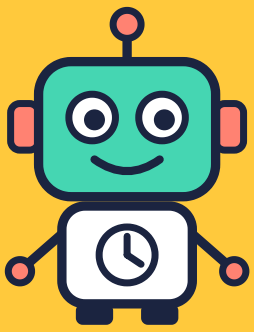
	UNDER 20	20 OR MORE
Even	8, 14	20, 34
Odd	7, 19	55, 61

Every number fits exactly one box.

IN MATHS

The totals must add up to the number of answers.

$6 + 5 + 3 + 2 = 16$



ASK YOURSELF

Which groups do these belong in?

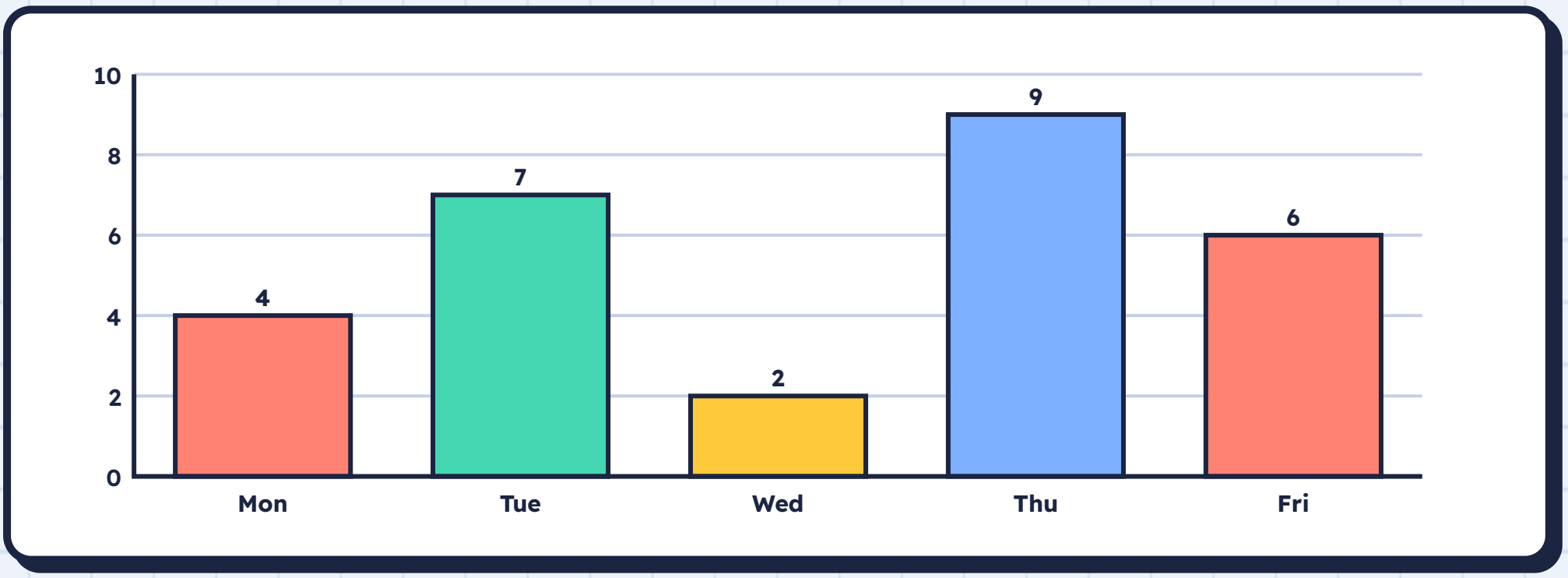
4 DATA SKILL FOUR

Picture the data

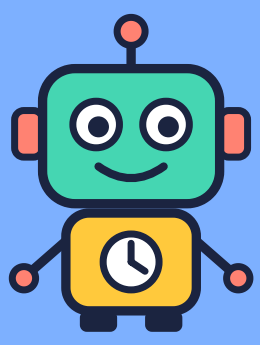
Graph rhymes with laugh

A picture of data that lets you compare at a glance.

BOOKS BORROWED FROM THE LIBRARY



A good graph has **a title** **labels** **an even scale** **equal bars**



ASK YOURSELF

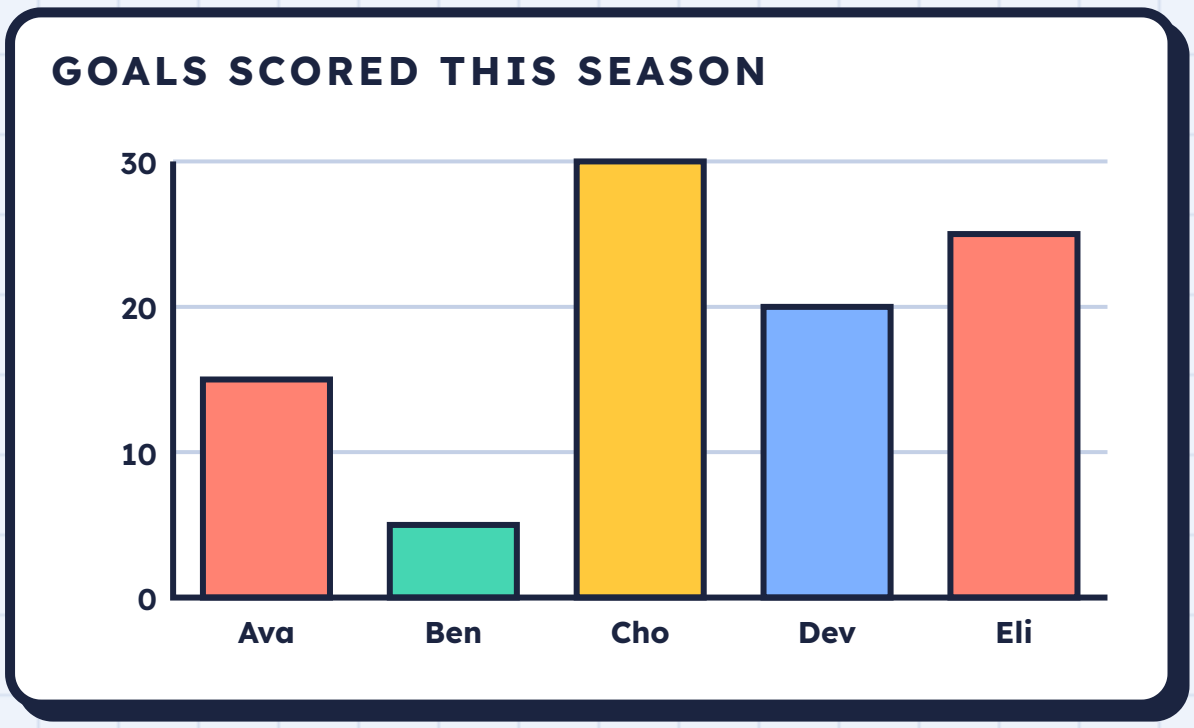
What picture shows this best?

DATA SKILL FIVE

Read the graph

Scale rhymes with whale

The numbers along the side of a graph that tell you what each step is worth.



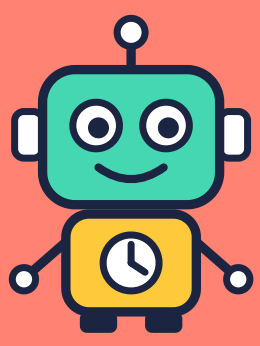
Title
What is it about?

Labels
What is each bar?

Scale
What is one step worth?

IN MATHS

To compare two bars, subtract. Cho 30 – Dev 20 = 10 more goals.



ASK YOURSELF

What do the title, labels and scale tell me?

6 DATA SKILL SIX

Find what's typical

Average say: AV-rij

One number that sums up a whole set of data.

SEVEN SCORES, IN ORDER

3 5 5 6 8 9 13

MODE

5

turns up most often

MEDIAN

6

the middle one

MEAN

7

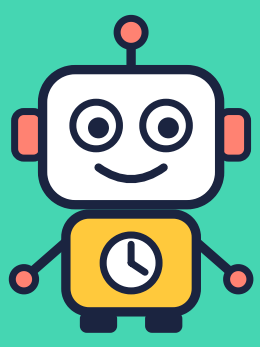
49 ÷ 7, the fair share

RANGE

10

13 – 3, the spread

TIP Always put the numbers in order before you look for the median.



ASK YOURSELF

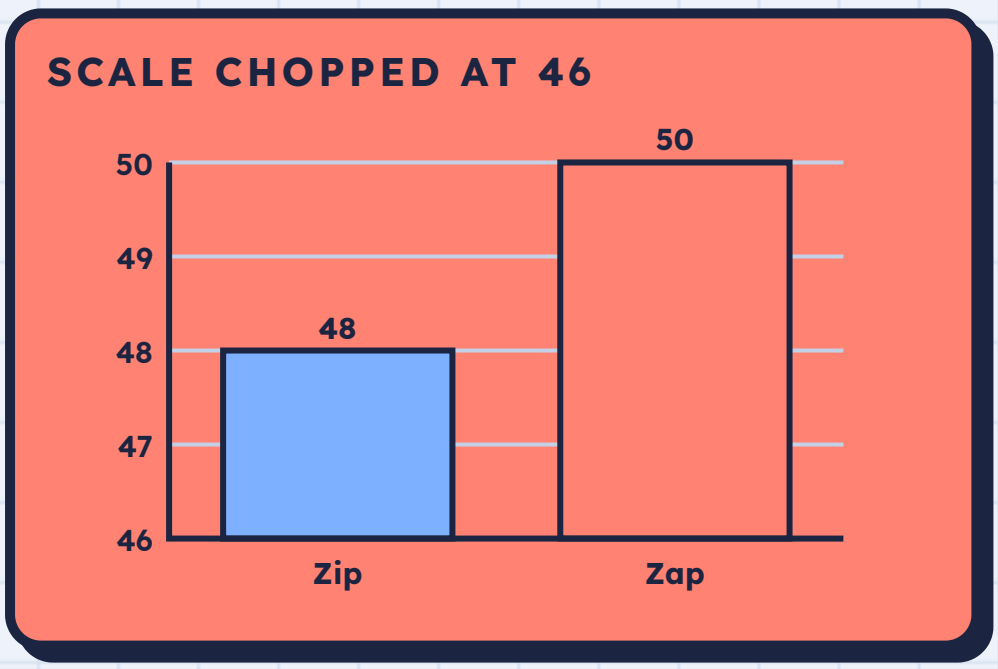
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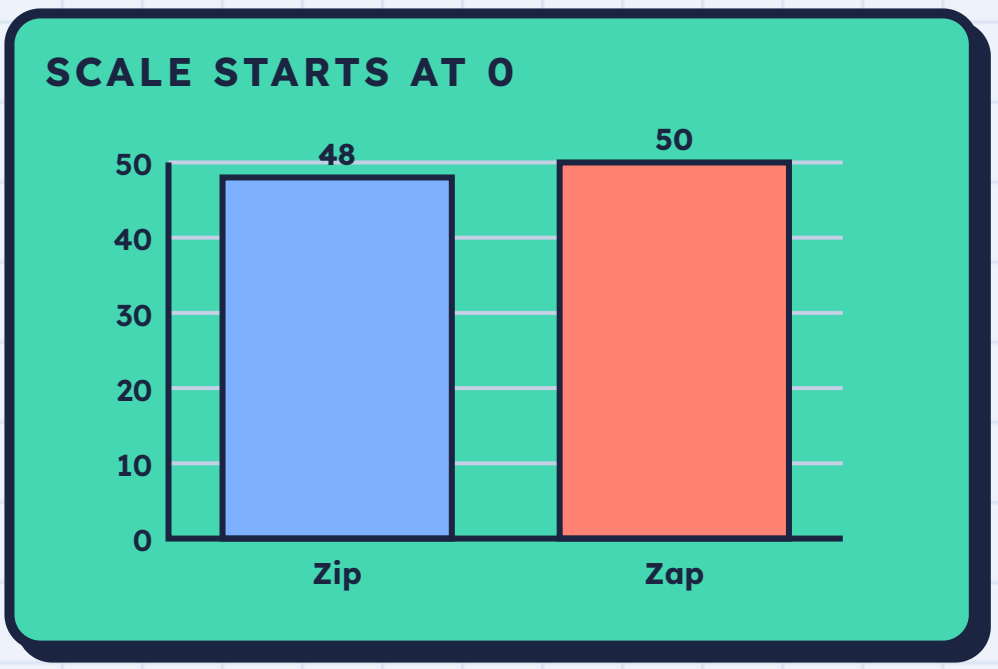
7 DATA SKILL SEVEN

Don't be fooled

Misleading say: mis-LEED-ing
Giving the wrong idea, even when the numbers are true.

Same batteries. Same numbers. Different story.

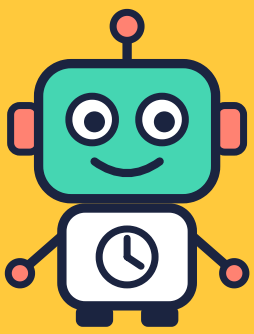




Where does the scale start?

How many were asked?

Who was asked?



ASK YOURSELF

Is this graph playing a trick?

8 DATA SKILL EIGHT

What's the chance?

Probability say: prob-uh-BIL-uh-tee
How likely something is to happen.

THE CHANCE LINE, USING ONE ORDINARY DICE

Impossible	Unlikely	Even chance	Likely	Certain
0 in 6	**1 in 6**	**3 in 6**	**5 in 6**	**6 in 6**
Roll a 7	Roll a 6	Roll an even number	Roll 2 or more	Roll under 7

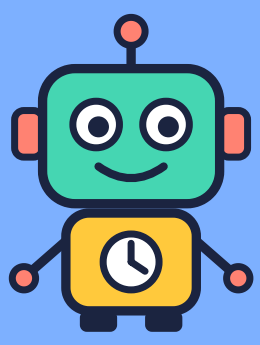
IN MATHS

Chance = the ways to win, out of everything that can happen.

One 6 on six faces: 1 out of 6

MORE DATA

Ten coin flips can be lopsided. A thousand flips land close to half heads.



ASK YOURSELF

How likely is it?