



Investigation 2.

In this investigation, you will implement the statistical investigation process to answer the question: is there an association between height and foot length.

Step 1: Identify the problem and pose a statistical question

Is there an association between height and foot length?

Step 2: Collect or obtain data

Survey at least 15 people around you (classmates, friends, family, strangers on the internet). Record your results in the table below:

| Person | Height | Foot length |
|--------|--------|-------------|
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| Person | Height | Foot length |
|--------|--------|-------------|
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Investigation 2 (continued).

Step 3: Organise and analyse the data

Organise your data into the two-way frequency table below.

| | <20cm | 20-25cm | 25-30cm | 30-35cm | 35+cm | TOTALS |
|-----------|-------|---------|---------|---------|-------|--------|
| >150cm | | | | | | |
| 150-160cm | | | | | | |
| 160-170cm | | | | | | |
| 170-180cm | | | | | | |
| 180+cm | | | | | | |
| TOTALS | | | | | | |

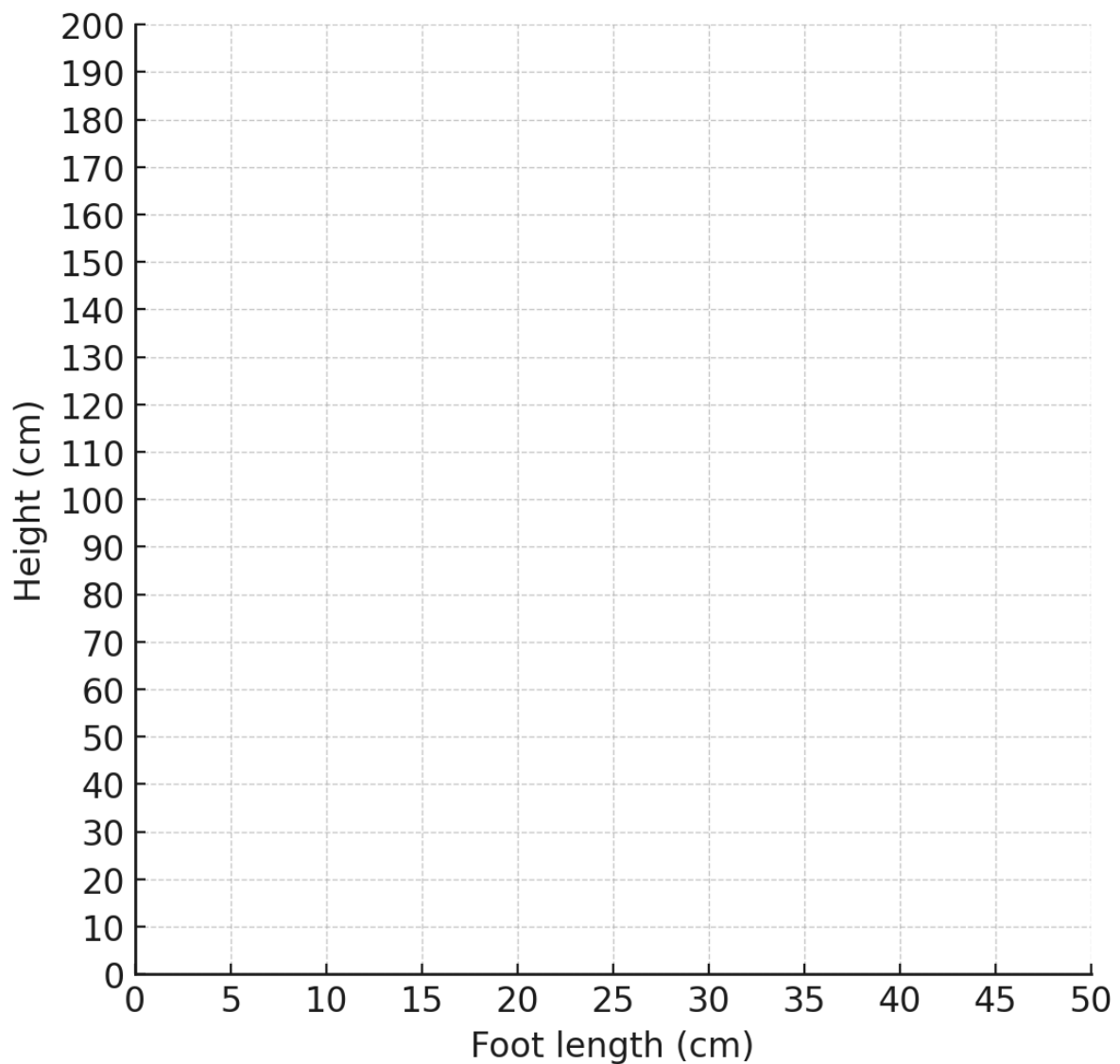
Convert your table from step 3 into overall percentages.

| | <20cm | 20-25cm | 25-30cm | 30-35cm | 35+cm | TOTALS |
|-----------|-------|---------|---------|---------|-------|--------|
| >150cm | | | | | | |
| 150-160cm | | | | | | |
| 160-170cm | | | | | | |
| 170-180cm | | | | | | |
| 180+cm | | | | | | |
| TOTALS | | | | | | |



Investigation 2 (continued).

Plot your original raw data (from step 1) on the scatterplot below.



Use your CAS calculator to find the correlation coefficient (r) using the raw data.

Write the steps you used on the calculator and your result here.



Investigation 2 (continued).

Step 4: Interpret the results

Use the evidence from your two-way table, percentages, scatterplot, and correlation coefficient to comment on your findings.

You might like to consider the following when writing your interpretation.

- The scatterplot shows a _____ (positive / negative / no) association.
- The strength of the association looks _____ (strong / moderate / weak).
- The form of the relationship is _____ (linear / non-linear).
- The two-way table shows that most people with _____ foot lengths also had heights in the range _____.
- The correlation coefficient was $r =$ _____, which suggests a _____ (strength) _____ (direction) association.
- In context, this means that as foot length _____, height tends to _____.



Investigation 2 (continued).

Step 5: Communicate the findings

Write a short conclusion that would sum up your question and findings for someone who doesn't want to read the whole investigation.

In your conclusion you might like to include:

- *A summary of the results*
- *Whether there is evidence of an association.*
- *Whether you think this is a causal relationship, or if another explanation is more likely.*