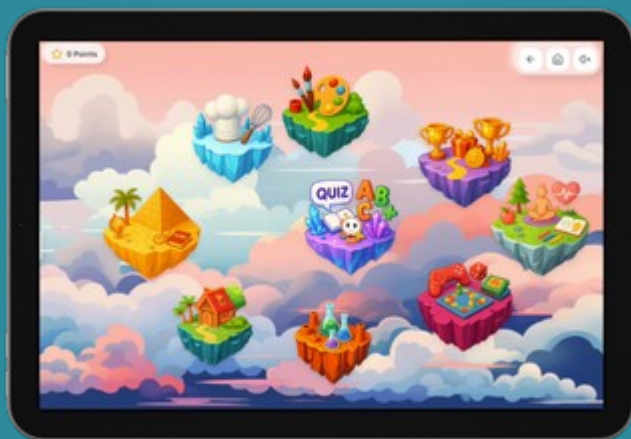




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A Small Data Investigation - Year 3

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Teacher preparation, page 1

A Small Data Investigation

Simple data. Real questions. Confident learners.

Which equipment was loaned most often in this fictional log?

Overview

In this sequence, students use a short set of real-world style transactions to organise data in a spreadsheet, check it for errors, and find how often each item was loaned. They will create a simple frequency summary and then write a short conclusion.

The source data

These are the eight ordered transactions from a fictional log.

Row	Equipment	Quantity
1	ball	2
2	hoop	1
3	ball	1
4	rope	3
5	hoop	2
6	rope	1
7	ball	1
8	rope	2

Equipment



A real classroom spreadsheet software (e.g. the one already available at your school)



A display or learner device



Real data cards (the eight transactions)



Pencils

No account or download required.

Learning sequence

1

Source and columns

Provide the transactions and discuss columns for Equipment and Quantity.

2

Missing and duplicate audit

Check for any missing information or duplicate entries and discuss what to do.

3

Enter A1:B9 in a real spreadsheet

Students enter the data into a spreadsheet on a display or their own device. Teacher demonstrates and students make entry choices.

4

Make D1:E4 transaction frequency summary

Use the data to find how many times each item was loaned.

5

Report a bounded conclusion

Students write a short conclusion that answers the question: Which equipment was loaned most often in this fictional log?

Teacher notes

- Demonstrate using the spreadsheet software you already have.
- Talk through possible entry choices (e.g. text for equipment, numbers for quantity).
- Encourage students to check their data for missing or duplicate entries.
- Guide students to create a simple frequency summary using columns D and E as specified.
- Support students to write a clear, bounded conclusion based on the data.

Purpose

This activity helps students develop practical data skills, careful checking and clear mathematical communication, using a small and meaningful set of information.

Small steps.
Big thinking!

Teacher preparation, page 2

A Small Data Investigation

Use these notes to plan, teach and support the activity.

Small data.
Big thinking.
Real maths.



Observe • Organise • Answer

The data for this investigation

Eight ordered transactions:

1. ball 2
2. hoop 1
3. ball 1
4. rope 3
5. hoop 2
6. rope 1
7. ball 2
8. rope 2



Five quick lesson checks

1

Explain one row

Ask a student to describe what one row tells us.

2

Find a copied row

Show a table with one row copied and ask students to identify which row is the same as another.

3

Enter an accurate record

Dictate a transaction and quantity for students to enter.

4

Count Equipment entries

Ask how many times each piece of equipment appears in the transactions.

5

Support a conclusion

Ask students to say which item or items had the most transactions, and which item had the greatest quantity, using the data.

Materials and support

- Actual objects: a ball, a hoop and a rope (or pictures).
- A partly labelled table for students to complete (see example).
- Paper or AAC may be used to prepare or direct entry while you demonstrate a spreadsheet.
- Encourage students to discuss the data and check their work.

Differentiation

Support

- Use the equipment and read the transactions together.
- Provide a partly labelled table.
- Work with a partner/adult.

Independently check the rows.

- Calculate summary totals.
- Use the data to answer the questions.

Extension

- Audit a table with a missing or copied row.
- Explain what is wrong and correct it.
- Check that the summary totals are still accurate.

Partly labelled table (for support)

No.	Equipment	Quantity
1	ball	2
2	hoop	1
3	ball	1
4	rope	3
5	hoop	2
6	rope	1
7	ball	2
8	rope	2

Answer anchors

Transaction frequencies

Equipment	Number of transactions
ball	3
hoop	2
rope	3
Total	8

Item quantities

Equipment	Total quantity
ball	5
hoop	3
rope	6
Total	14

Bounded report

Ball and rope are tied for the most transactions in this log.

Rope has the greatest quantity.

Using a real spreadsheet



- Demonstrate entering the eight transactions in a real spreadsheet.
- Model checking for missing or copied rows.
- Show how to calculate the two summaries.
- Students may use paper or AAC to prepare or direct entry.

Teaching tips

- Keep the focus on the data in this log.
- Encourage students to explain their thinking using the tables.
- Check that the totals match the answer anchors.
- Avoid making causal claims. Describe only what the data shows.
- Celebrate careful checking!

> A Small Data Investigation <

Fictional equipment loan log

Equipment	Quantity
ball	2
hoop	1
ball	1
rope	3
hoop	2
rope	1
ball	1
rope	2

Which equipment was
> loaned most often? <

One row = one transaction.

ball 2:
one loan, two balls



rope 3:
one loan, three ropes



Count the Equipment entries.
Then compare the Quantity totals.

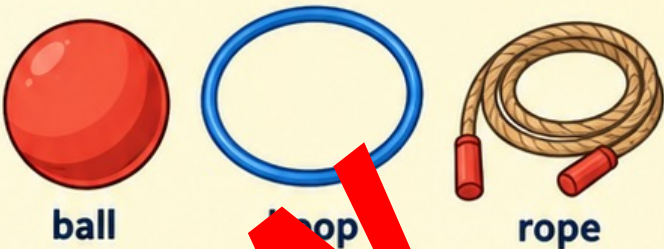
A Small Data Investigation

Look at the information from a classroom equipment loan log.
Use the data to answer the questions.



1 Question and source

Which equipment was loaned most often?



ball

hoop

rope

This table shows a classroom equipment loan log.

Each row shows one loan. Record each loan once.

Use the information from the next two cards to help you answer the question.

2 Source rows 1–4

Row	Equipment	Number loaned
1	ball	2
2	hoop	1
3	ball	1
4	rope	3

What does each row count?



3 Source rows 5–8

Row	Equipment	Number loaned
5	hoop	2
6	rope	1
7	ball	2
8	rope	2

How many rows altogether?



A Small Data Investigation

Our class borrowed some equipment for outdoor play.
Each row shows one transaction from the equipment loan record.
Use the table to answer the questions in the cards below.



Equipment loan record

Row	Item	Quantity	Row	Item	Quantity
1	ball	2	5	hoop	2
2	hoop	1	6	rope	1
3	ball	1	7	ball	2
4	rope	3	8	rope	2

Ball



These rows show the ball transactions:

Row	Quantity
1	2
3	1
7	2

How many ball transactions?

How many balls in total?

Hoop



These rows show the hoop transactions:

Row	Quantity
2	1
5	2

How many hoop transactions?

How many hoops in total?

Rope



These rows show the rope transactions:

Row	Quantity
4	3
6	1
8	2

How many rope transactions?

How many ropes in total?

Look at the data. Count carefully. Two different questions!

A Small Data Investigation

Look at the records carefully, Find and fix any mistakes.

The table shows eight transactions for items being borrowed.

1 Copied row

A draft table has been made from the source records. One row has been copied by mistake.

Is row 9 a new loan?
Use the source records to decide.

Source records (eight transactions)		
No.	Item	Number
1	ball	2
2	hoop	1
3	ball	1
4	rope	3
5	hoop	2
6	rope	1
7	ball	2
8	rope	2

Draft table (with an extra row)		
No.	Item	Number
1	ball	2
2	hoop	1
3	ball	1
4	rope	3
5	hoop	2
6	rope	1
7	ball	2
8	rope	2
9	ball	1

2 Missing row

A draft table has been made from the source records. One row is missing.

Which row should be put back into the draft table?

Write the item and number that are missing.

Source records (eight transactions)		
No.	Item	Number
1	ball	2
2	hoop	1
3	ball	1
4	rope	3
5	hoop	2
6	rope	1
7	ball	2
8	rope	2

Draft table (one row missing)		
No.	Item	Number
1	ball	2
2	hoop	1
3	ball	1
4	rope	3
5	hoop	2
6	ball	2
7	rope	2

3 Blank or zero?

When recording data, a 0 means that no items were borrowed in that observation.

An empty cell means the information is missing and needs to be checked against the source records.

Recorded 0:

the source explicitly says zero items in that observation.

Blank cell:

information is missing; check the source.

The original eight-record source has no zero quantities.



Look carefully.
The data tells the story!

A Small Data Investigation

We can collect, organise and summarise data, then write a careful report.

1 Enter the raw record

This table shows the equipment loaned in each transaction.
Enter the data exactly as it was recorded.

	A	B
1	Equipment	Quantity
2	ball	2
3	hoop	1
4	ball	1
5	rope	3
6	hoop	2
7	rope	1
8	ball	2
9	rope	2



Each row
is one
transaction.



2 Build the summary

Count how many transactions there are for each piece of equipment.
Enter the results in the table.

	D	E
1	Equipment	Transaction frequency
2	ball	3
3	hoop	2
4	rope	3



3 Report carefully

Use your table to write a short report about the data.

- There were 8 transactions in total.
- A total of 14 items were loaned.
- Ball and rope are tied on transaction frequency, with 3 each.
- Rope has the greatest quantity, with 6 items in total.
- These claims describe this fictional log only.



Audit the loan log, guided practice

A Small Data Investigation

Name: _____

Equipment is loaned from the PE cupboard. Here are the eight transactions from the original source.

Source no.	Item	Quantity
1	ball	2
2	hoop	1
3	ball	1
4	rope	3
5	hoop	2
6	rope	1
7	ball	2
8	rope	2



ball



hoop



rope

Check the loan log for errors.

Use the original source to help you decide what to do. Show your thinking and write your reasons.

1 A copied row appears

In the loan log, this row appears again.

Item	Quantity
ball	1

What should you do with this row?

Worked example

This row is a copy, not a new loan, because source number 3 already shows ball 1.

Action: keep one copy and remove the extra row.

2 A missing loan

The loan for rope 1 is not in the loan log.

What should you restore in the log?

Write what you will restore and give a reason.

3 A missing quantity

In the loan log, the quantity is missing beside hoop in source row 5.

Which number from the source belongs in this space?

Write the number and give a reason.

4 A quantity of zero

Someone writes 0 in the blank beside hoop in source row 5.

Why must they check the source before leaving 0 in the log?

Explain your answer.

Audit the loan log, guided practice

A Small Data Investigation

Name: _____

ANSWERS

Equipment is loaned from the PE cupboard. Here are the eight transactions from the original source.

Source no.	Item	Quantity
1	ball	2
2	hoop	1
3	ball	1
4	rope	3
5	hoop	2
6	rope	1
7	ball	2
8	rope	2



ball



hoop



rope

Check the loan log for errors.

Use the original source to help you decide what to do. Show your thinking and write your reasons.

1 A copied row appears

In the loan log, this row appears again.

Item	Quantity
ball	1

What should you do with this row?

Worked example

This row is a copy, not a new loan, because source number 3 already shows ball 1.

Action: keep one copy and remove the extra row.

2 A missing loan

The loan for rope 1 is not in the loan log.

What should you restore in the log?

Write what you will restore and give a reason.

Restore rope 1, source row 6.

3 A missing quantity

In the loan log, the quantity is missing beside hoop in source row 5.

Which number from the source belongs in this space?

Write the number and give a reason.

2, because source row 5 is hoop 2.

4 A quantity of zero

Someone writes 0 in the blank beside hoop in source row 5.

Why must they check the source before leaving 0 in the log?

Explain your answer.

A blank is unknown. The source says hoop 2, so 0 is inaccurate.

Name: _____

A Small Data Investigation

The table shows eight equipment loans from a class. The records are in the order they happened. Use the source data to answer the questions. Think about what happened and whether the frequency of each item would change.

Row	Equipment	Quantity
1	ball	2
2	hoop	1
3	ball	1
4	rope	3
5	hoop	2
6	rope	1
7	ball	2
8	rope	2

For each situation, decide what happened. Check against the source data for the frequency change? Write your thinking in the box.

1. All eight source rows remain, and a ninth row repeats *ball* 2 by copying.

What happened? Repair/check. Does frequency change?

2. The ninth source row is missing.

What happened? Repair/check. Does frequency change?

3. The rope quantity is typed as 2.

What happened? Repair/check. Does frequency change?

4. All eight records remain but their order changes.

What happened? Repair/check. Does frequency change?

5. A new ninth ball 1 loan is confirmed by a new source record.

What happened? Repair/check. Does frequency change?

6. An Equipment cell is blank in a draft.

What happened? Repair/check. Does frequency change?

Name: **ANSWERS**

A Small Data Investigation

The table shows eight equipment loans from a class. The records are in the order they happened. Use the source data to answer the questions. Think about what happened and whether the frequency of each item would change.

Row	Equipment	Quantity
1	ball	2
2	hoop	1
3	ball	1
4	rope	3
5	hoop	2
6	rope	1
7	ball	2
8	rope	2

For each situation, decide what happened. Check against the source data. What is the frequency change? Write your thinking in the box.

1. All eight source rows remain, and a ninth row repeats *ball* 2 by copying.

What happened? Repair/check. Does frequency change?

Copied extra row; remove it. The true ball frequency stays 3.

2. The ninth source row is missing.

What happened? Repair/check. Does frequency change?

Restore hoop 1; true hoop frequency is 2.

3. The rope quantity is typed as 2.

What happened? Repair/check. Does frequency change?

Correct quantity to 3; rope frequency stays 3.

4. All eight records remain but their order changes.

What happened? Repair/check. Does frequency change?

Reordering alone changes no frequency.

5. A new ninth ball 1 loan is confirmed by a new source record.

What happened? Repair/check. Does frequency change?

Confirmed new loan: ball frequency becomes 4.

6. An Equipment cell is blank in a draft.

What happened? Repair/check. Does frequency change?

Check source and fill Equipment; do not treat blank as a category.

Name: _____

Date: _____

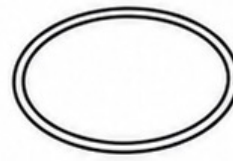
A Small Data Investigation

Two sets of transactions show items taken from equipment kits.
Use the information to answer the questions.

Sports Kit Transactions (Source)		
Transaction	Item	Quantity
1	ball	2
2	hoop	1
3	ball	1
4	rope	3
5	hoop	2
6	rope	1
7	ball	2
8	rope	2



ball



hoop



rope

The table shows eight transactions in order.
Each transaction records the item taken and the quantity.

Game Kit Transactions (New)		
Transaction	Item	Quantity
1	books	2
2	cards	1
3	books	1
4	dice	3
5	cards	
6	books	2



books



cards



dice

The table shows six transactions in order.
Each transaction records the item taken and the quantity.

Use the game kit transactions to answer the questions. Give the source evidence and your reason.

- 1** A row for books with quantity 1 is missing from the game kit table.
How does the frequency for books change?
Give the source evidence and your reason.

Evidence: _____
Reason: _____

- 2** A row with dice and quantity 3 has been copied so it appears twice.
Why is the frequency for dice misleading?
Give the source evidence and your reason.

Evidence: _____
Reason: _____

- 3** In the game kit table, the quantity for cards in transaction 5 is left blank.
What should be checked, and why is a blank not the same as zero?
Give the source evidence and your reason.

Evidence: _____
Reason: _____

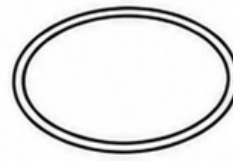
A Small Data Investigation

Two sets of transactions show items taken from equipment kits.
Use the information to answer the questions.

Sports Kit Transactions (Source)		
Transaction	Item	Quantity
1	ball	2
2	hoop	1
3	ball	1
4	rope	3
5	hoop	2
6	rope	1
7	ball	2
8	rope	2



ball



hoop



rope

The table shows eight transactions in order.
Each transaction records the item taken and the quantity.

Game Kit Transactions (New)		
Transaction	Item	Quantity
1	books	2
2	cards	1
3	books	1
4	dice	3
5	cards	2
6	books	2



books



cards



dice

The table shows six transactions in order.
Each transaction records the item taken and the quantity.

Use the game kit transactions to answer the questions. Give the source evidence and your reason.

- 1** A row for books with quantity 1 is missing from the game kit table.
How does the frequency for books change?
Give the source evidence and your reason.

Evidence: **Restore book 1, source row 3.**

Reason: **Without it, books frequency falls from 3 to 2.**

- 2** A row with dice and quantity 3 has been copied so it appears twice.
Why is the frequency for dice misleading?
Give the source evidence and your reason.

Evidence: **Remove copied dice 3.**

Reason: **Source row 4 is the only dice transaction; true frequency is 1.**

- 3** In the game kit table, the quantity for cards in transaction 5 is left blank.
What should be checked, and why is a blank not the same as zero?
Give the source evidence and your reason.

Evidence: **Check source row 5: cards 2.**

Reason: **Blank is unknown, not zero.**

Enter eight loan records

We are collecting information about equipment that has been loaned out.
Type the eight transactions into a spreadsheet.



Source: Eight transactions (in order)

1. ball 2
2. hoop 1
3. ball 1
4. rope 3
5. hoop 2
6. rope 1
7. ball 2
8. rope 2

1

Open a spreadsheet

Open the spreadsheet program on your device (such as Excel or Google Sheets) and create a new, blank spreadsheet.



2

Type the headings

In cell A1 type Equipment.
In cell B1 type Quantity.

	A	B
	Equipment	Quantity

3

Enter the eight transactions

Type the source data into cells A2 to B9, in the same order as shown.

4

Compare with the source

Check each row carefully to make sure it matches the source.



5

Save your work

Save your spreadsheet in your classroom folder.



	A	B
1	Equipment	Quantity
2		
3		
4		
5		
6		
7		
8		
9		

You make the entries.
Your teacher will demonstrate the software.



☐ I entered eight transactions.

Count each category

The table below shows eight equipment transactions in the order they happened.

	A	B
1	Equipment	Quantity
2	ball	2
3	hoop	1
4	ball	1
5	rope	3
6	hoop	2
7	rope	1
8	ball	2
9	rope	2

Count how many times each equipment appears in cells **A2:A9**.

Write the totals in the summary table.

	D	E
1	Equipment	Transaction frequency
2	ball	3
3	hoop	2
4	rope	3

Check your work

Compare the summary table with the source table.

- Have you included every equipment type that appears in A2:A9?
- Have you copied the correct totals?
- Are any rows missing or copied twice?

If something does not match, go back to the source table and check again.



Remember

- A recorded zero is a number. It means the equipment did not appear in the table.
- A blank cell is not a number. A blank needs to be checked.

Check, compare, report

A Small Data Investigation

Work together for accurate results!

1 Read the source

Reader: read the eight source rows aloud to your partner.

1. ball 2
2. hoop 1
3. ball 1
4. rope 3
5. hoop 2
6. rope 1
7. ball 2
8. rope 2



2 Check your spreadsheet

Recorder: check each matching row in your real classroom spreadsheet.

Check the eight source rows against your real classroom spreadsheet in A2:B9.



3 Use this checklist

Tick each box when you are sure it's correct.

- ☐ All eight source rows are represented once each.
- ☐ Transaction frequency: ball 2, hoop 2, rope 3.
- ☐ Item quantities: ball 2, hoop 2, rope 6.
- ☐ Total number of transactions: 8.
- ☐ Total number of items: 14.

4 Compare and report

Discuss your checklist. If everything matches, write a conclusion.



5 Switch roles

After you have checked all eight rows, switch roles and try again.



Now you be the Recorder, and I'll be the Reader!

6 Write a conclusion

Use this model to help you.

Ball and rope were loaned in three transactions each in this fictional log. Rope had the greatest item quantity, six.

Check.
Compare.
Report!

Same data. A clearer answer. Together!

Name: _____

Game-kit loans: rehearsal

Six transactions show equipment items borrowed from the game kit.

Source records

Transaction	Equipment	Quantity
1	books	2
2	cards	1
3	books	1
4	dice	3
5	cards	2
6	books	2

1. Enter the six records into a real classroom spreadsheet.
2. Use your spreadsheet to make a separate summary table showing how many transactions included each type of equipment.

Equipment/Transaction frequency summary

Equipment	Number of transactions
books	
cards	
dice	

3. Which equipment appeared most often in the six transactions?

4. Write a conclusion using evidence from your spreadsheet.

5. Explain the difference between the six observations (transactions) and the total number of items borrowed.

Game-kit loans: rehearsal

Six transactions show equipment items borrowed from the game kit.

Source records

Transaction	Equipment	Quantity
1	books	2
2	cards	1
3	books	1
4	dice	3
5	cards	2
6	books	2

1. Enter the six records into a real classroom spreadsheet.
2. Use your spreadsheet to make a separate summary table showing how many transactions included each type of equipment.

Equipment/Transaction frequency summary

Equipment	Number of transactions
books	3
cards	2
dice	1

3. Which equipment appeared most often in the six transactions?
Books, in 3 of the 6 transactions.
4. Write a conclusion using evidence from your spreadsheet.
In this nation's game kit log, books appeared most often, in three transactions.
5. Explain the difference between the six observations (transactions) and the total number of items borrowed.
There are six loan records, but quantities 2+1+1+3+2+2 total 11 items.

Name: _____ Date: _____

Explain and reflect

A small data investigation

Six transactions were recorded for the game kit. Here is the log.

Loan number	Item	Number borrowed
1	Books	2
2	Cards	1
3	Books	1
4	Dice	3
5	Cards	2
6	Books	2



"Books were borrowed five times because five books were borrowed."

1. Correct the statement.

Write two counts from the log to show the correct information.

Number of times books were borrowed: _____

Total number of books borrowed: _____

2. Explain why the two counts are different.

3. If one row from the log was missing, how could this affect the frequency information?

4. Write a conclusion about what the log tells us. Use only the information from this log.

Name: _____ **ANSWERS** _____ Date: _____

Explain and reflect

A small data investigation

Six transactions were recorded for the game kit. Here is the log.

Loan number	Item	Number borrowed
1	Books	2
2	Cards	1
3	Books	1
4	Dice	3
5	Cards	2
6	Books	2



"Books were borrowed five times because five books were borrowed."

1. **Correct the statement.**

Write two counts from the log to show the correct information.

Number of times books were borrowed: 3

Total number of books borrowed: 5

2. **Explain why the two counts are different.**

Three book transactions recorded quantities 2, 1 and 2, totalling five books.

3. **If one row from the log was missing, how could this affect the frequency information?**

Its category frequency would be one too low until the source row is restored.

4. **Write a conclusion about what the log tells us. Use only the information from this log.**

Books appeared in three of the six transactions in this fictional log.

Name: _____

Date: _____

My small data investigation

A class is loaning out some play equipment. The table below shows the order of eight transactions in a fictional log.

Transaction	Equipment	Quantity
1	ball	2
2	hoop	1
3	ball	1
4	rope	3
5	hoop	2
6	rope	1
7	ball	2
8	rope	2

Your task

1. Create a spreadsheet in the classroom using the data from the log.
2. Enter the information exactly as shown.
3. Count how many times each equipment name appears in the raw record. Enter each count in the frequency summary.
4. Use your results to answer the questions below.

Set up your spreadsheet like this.

	A	B
1	Equipment	Quantity
2	ball	2
3	hoop	1
4	ball	1
5	rope	3
6	hoop	2
7	rope	1
8	ball	
9	rope	

	D	E
1	Equipment	Transaction frequency
2	ball	
3	hoop	
4	rope	

1. Which equipment was loaned most often in this fictional log?

2. Write a conclusion using evidence from your spreadsheet. Keep your answer about the data.

3. Explain why there are 8 observations (transactions) but 14 items in total.

Teacher observation (evidence of real spreadsheet use)

Student created and used a spreadsheet, or used an accessible method to enter the data while the teacher demonstrated the software.

☐ Observed

☐ Not yet observed

Comments: _____

Name: **ANSWERS**

Date: _____

My small data investigation

A class is loaning out some play equipment. The table below shows the order of eight transactions in a fictional log.

Transaction	Equipment	Quantity
1	ball	2
2	hoop	1
3	ball	1
4	rope	3
5	hoop	2
6	rope	1
7	ball	2
8	rope	2

Your task

1. Create a spreadsheet in the classroom using the data from the log.
2. Enter the information exactly as shown.
3. Count how many times each equipment name appears in the raw record. Enter each count in the frequency summary.
4. Use your results to answer the questions below.

Set up your spreadsheet like this.

	A	B
1	Equipment	Quantity
2	ball	2
3	hoop	1
4	ball	1
5	rope	3
6	hoop	2
7	rope	1
8	ball	
9	rope	

	D	E
1	Equipment	Transaction frequency
2	ball	3
3	hoop	2
4	rope	3

1. Which equipment was loaned most often in this fictional log?

Ball and rope were loaned three transactions each.

2. Write a conclusion using evidence from your spreadsheet. Keep your answer about the data.

This fictional log has three ball loans and three rope loans; hoop has two.

3. Explain why there are 8 observations (transactions) but 14 items in total.

Eight rows are eight observations. Quantities 5 balls + 3 hoops + 6 ropes = 14 items.

Teacher observation (evidence of real spreadsheet use)

Student created and used a spreadsheet, or used an accessible method to enter the data while the teacher demonstrated the software.

☐ Observed

☐ Not yet observed

Comments: _____

Learning evidence rubric

Year 3 – A Small Data Investigation

Criterion	Needs teaching	Developing with support	Target met independently
1. Concept / accuracy Understand what the data shows and use correct categories.	Confuses transaction count and item quantity (for example, thinks there are 14 transactions instead of 8, or counts total items as the number of transactions).	Distinguishes between transaction count and item quantity with a prompt.	Accurately distinguishes eight transaction rows from 14 items and uses the correct categories (ball, hoop, rope).
2. Application / procedure Collect and organise the data using a suitable method.	Cannot yet make an accurate record of the supplied transactions (e.g. missing rows, errors in entries or categories).	Completes an accurate record of the supplied transactions with step prompts.	Independently records eight supplied transactions in a real spreadsheet and makes a frequency summary: ball 2, hoop 2, rope 3.
3. Reason / evidence Use the data to find an answer and support it with evidence.	Gives an unsupported guess or a statement without evidence from the data.	Gives a relevant detail from the data with prompting, but the conclusion may be incomplete or not clearly bounded.	Gives a clear, bounded conclusion supported by exact source rows from the transactions (e.g. "Rows 1, 4 and 7 show ball, so 3 transactions").
4. Transfer / communication Apply the method to a new but similar case and explain the findings clearly.	Application to a new matched case is unclear or incorrect and the explanation is difficult to follow.	Applies the method to a new matched dataset with support and communicates the findings with prompting.	Independently applies the method to a fresh matched dataset and communicates the findings clearly (e.g. table, chart or written explanation).

Evidence observed:

Next step:

Name: _____

Date: _____

Unit: A Small Data Investigation

A Smart Data Investigation



Our question

Which equipment was loaned most often in this region?

I can enter every source row once, count categories, and support a conclusion.

Before we start: What does a row show? What does quantity 2 show?



Words for this investigation

Categorical: an equipment name. Discrete: whole number quantity.

Observation: one transaction row. Frequency: how many rows show a category.

A table organises data. Some tables which log our claim describes.



A first record

This fictional log has eight loans. One source row means one transaction.

Source row 1 is ball, quantity 2. Ent ball in B2 and in B2.

That is one ball transaction and two balls



A useful contrast

Source row 4 is rope, quantity 3.

It is still one transaction, even though three ropes were loaned.

Frequency counts rows. Quantity counts items.



Pause and audit

Source rows 1–3 are ball 2, hoop 1, ball 1.

A draft repeats ball 1 as an extra row. Is there a new source loan?

Explain how you would check.



Audit answer

The extra ball 1 is a copy, not a new loan.

Compare the draft with the eight source records. Keep source row 3 once.

Remove only the copied extra row.



A missing record

A draft omits the source rope 1 row.

Restore rope 1. Now rope appears three transactions.

A blank value also needs a source check, blank does not mean zero.



Enter the raw data

In a real spreadsheet, type A1 Equipment and B1 Amount

Enter the eight source transactions in A2:B9 in order

Check each spreadsheet row against the source log.



Count the categories

In D1 type Equipment. In E1 type Transaction frequency

Write ball, hoop and rope in D2:D4.

Count Equipment entries in A2:A9 and record 2, 3 in E2:E4.



Check independently

Does your raw record contain eight transactions?

Is any source row missing or copied twice?

Can you explain each frequency using the source rows?



Two different totals

Rope appears in three transactions, but six ropes were used.

The eight rows contain 14 items altogether.

These numbers answer different questions.



A fresh case

Game-kit loans: books 2, cards 1, books 1, dice 3, cards 1, books 2.

There are six transactions and 11 items.

Use the same method to find which item appears most often.



Choose an access route

Support: use objects and a partly labelled table.

Core: enter and check the rows independently.

Extension: audit a missing or copied row. Each route uses the real spreadsheet.



Your assessment

Enter the eight source loans in A2:B9 and make a VE frequency summary.

Answer which equipment appeared most often, using table evidence.

Explain eight observations versus 14 items.



Reflect on the evidence

Which source row helped you check the summary?

What would you do if one row were missing or copied twice?

What will you check first next time?



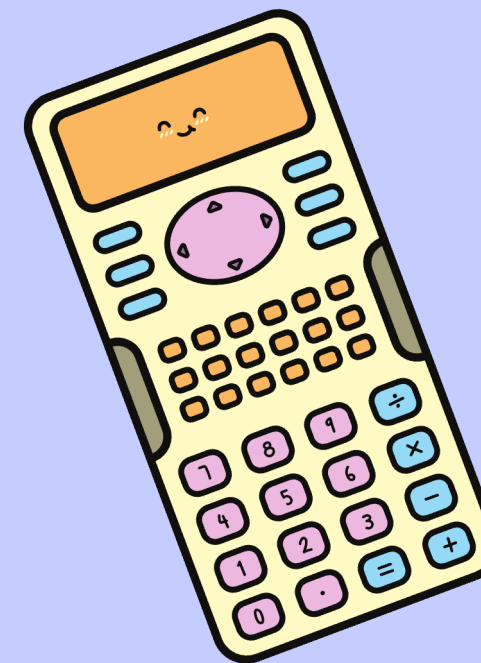
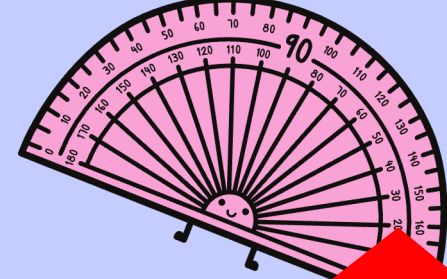
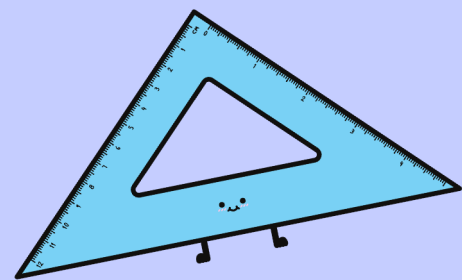
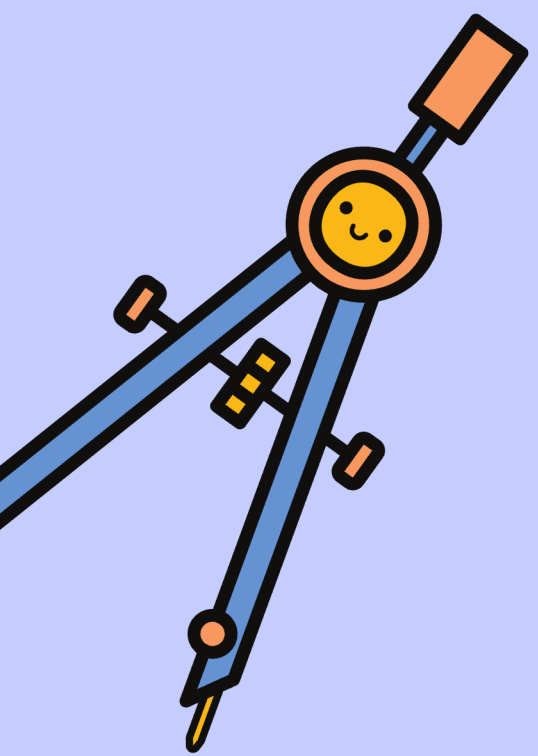
What we learned

Raw rows preserve each observation.

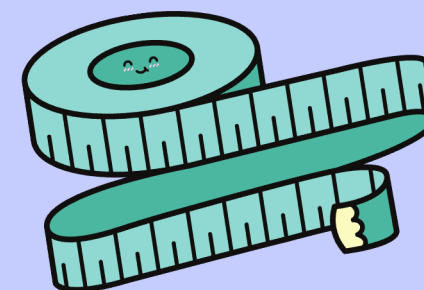
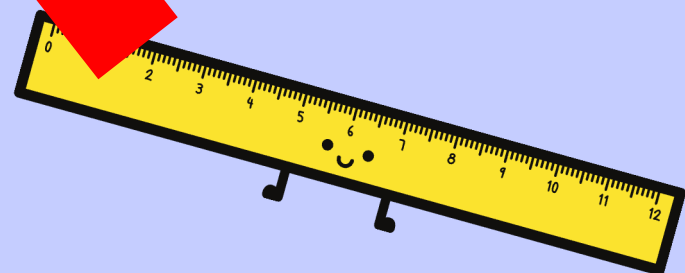
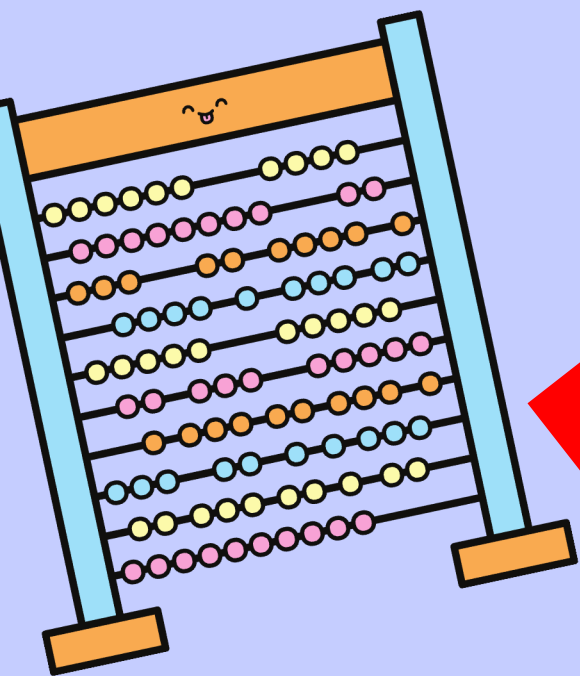
Frequency counts category occurrences. Quantity totals count items.

Our conclusion describes only the records of financial loans.





Well Done!



A Smart Data Investigation Quiz



Question 1

Which equipment has the greatest total quantity?
Pause and explain your reasoning.



Answer 1

Rope. Its quantities 3, 1 and 2 total 6.



Question 2

Which categories have equal transaction requirements?
Pause and explain your reasoning.



Answer 2

Ball and rope. Each appears in 3 transactions row



Question 3

Can frequency and quantity totals be exchanged?

Pause and explain your reasoning



Answer 3

No. Frequency totals 8 transactions; quantities total 14 items.



Question 4

A ninth row copies ball 1. What should the auditor do?
Pause and explain your reasoning.



Answer U

Remove the copied row. It is not a new source transaction. All frequency stays

3.



Question 5

A confirmed new ninth ball 1 loan arrives. What change
Pause and explain your reasoning



Answer 5

It is a genuine new transaction. Ball frequently received from 4.



Question 6

Someone says rope frequency is 6. Repair the circuit.
Pause and explain your reasoning.



Answer 6

Rope frequency is 3 transactions. Six is the quantity of rows across those rows.



Question 7

From A2:A9, fill the ball, hoop and rope frequency.
Pause and explain your reasoning.



Answer 7

Ball 3, hoop 2, rope 3. Count category names in the row equipment column.



Question 8

Compare hoop 2 and rope 3 source rows.
Pause and explain your reasoning.



Answer 8

Each row is one transaction. Their item quantities differ. Hoops and three ropes.



Question a

In the six game-kit loans, how often do boots appear?

Pause and explain your reasoning



Answer d

Books appear in 3 transactions.



Question 10

Which game-kit source rows support that answer?
Pause and explain your reasoning.



Answer 10

Rows 1, 3 and 6 contain books. They support frequency



Question 11

“The most frequent item has the greatest count.” Is this true here?
Pause and explain your reasoning.



Answer II

No. Ball and rope tie at frequency 3, while rope has the greatest quantity, 6.



Question 12

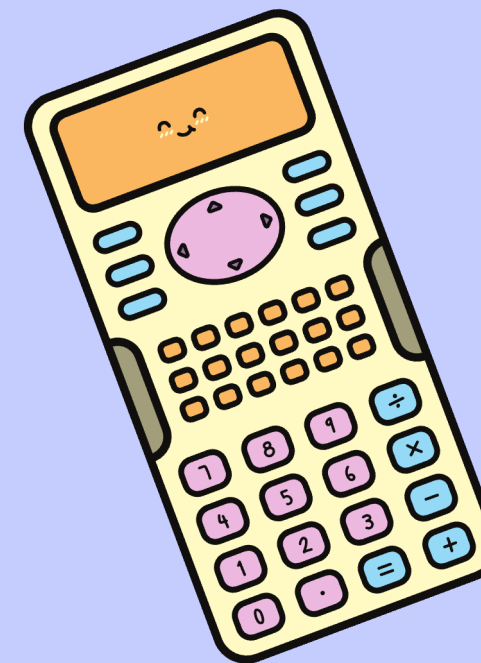
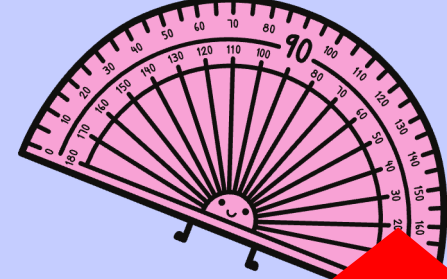
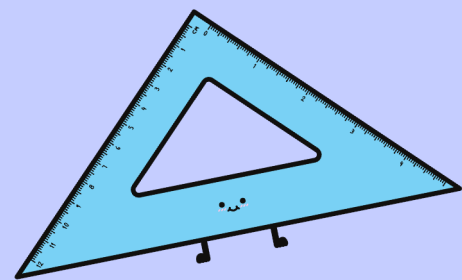
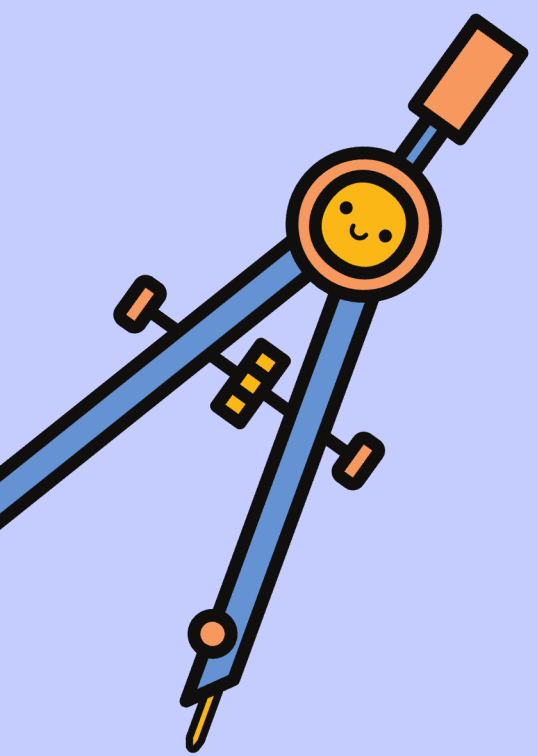
Give a bounded conclusion and one next credit question.
Pause and explain your reasoning.



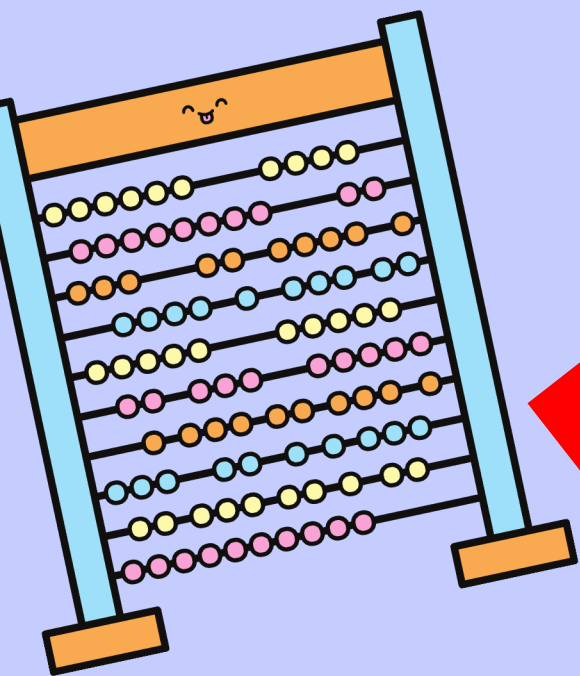
Answer 12

Sample: Ball and rope each appear in three boards in this set. Check all eight source rows for missing or copied entries.





Well Done!



PREVIEW

