



ANSTRIX

The Anstrix Maths Application is designed to fill a gap between the learning advantages of paper based mathematic exercises and the convenience of computer-based learning products.

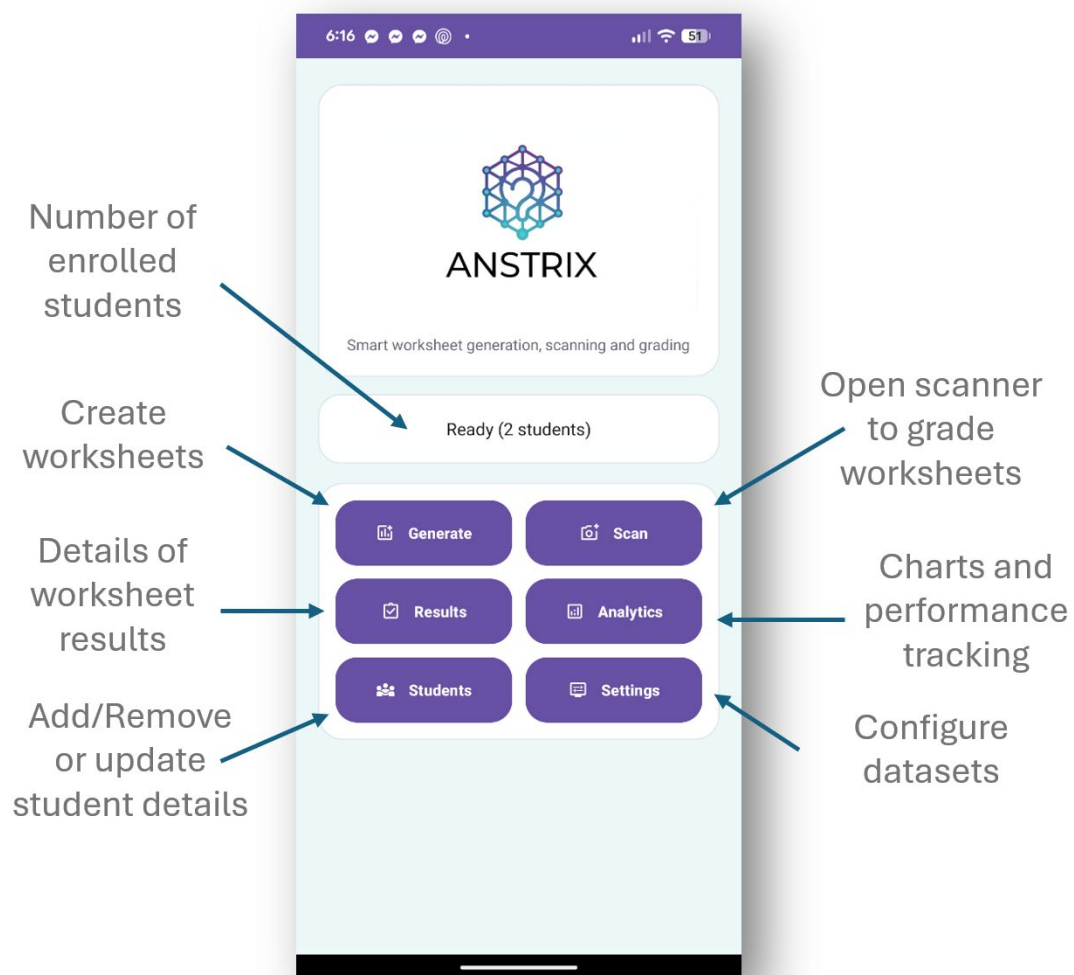
Research has shown students learn and recall procedures around 30% faster when using pencil and paper compared to using a purely computer-based system. It can be used for one student at home, or in a home-school with a few students all the way theoretically up to school of hundreds of students.

Anstrix generates mathematic practice sheets in PDF format which are printed and filled out by students after which they are scanned and graded by a parent or teacher using a smart phone.

Although this product was initially developed for home use, it is possible in a school scenario to create individually focused worksheets for 100 students in seconds and afterwards grade them all in less than 10 minutes with the results being automatically collated, stored and analysed.

Results can be downloaded as an Excel file or viewed on the phone.

Student data is never exported by this application to third parties such app developers, government or educational authorities. Addition, subtraction and multiplication are currently the only operations available. However, we are working on questions for division, geometry, trigonometry, basic algebra, decimals, fractions, patterns, ratios and logic too. When the beta testing is complete and we have incorporated user suggestions we will implement more question options.



Enter student data

- Click “Students” bottom left.
- Click “Add Student”
- Enter name. For a home user this can be initials, full name, nickname a number etc. For school and more formal applications a name that will help the teacher identify the correct student when distributing worksheets will probably be a better option. Examples: John Smith, J Smith, Smith J, J Smith6 etc.
- Birth year (optional) allows the app to estimate a student’s age to the nearest year and in future updates will suggest tasks of appropriate difficulty for their age group.
- Class, School and Teacher are optional they can be left blank if being used in home environment or enter “Home” or “Family” or similar.

A mobile application interface for entering student information. The screen has a light blue background. At the top, a purple status bar shows the time 2:52, signal strength, and battery level at 93%. Below the status bar is a white rounded rectangle titled 'Student Details' with the subtitle 'Add or edit student information'. Inside this rectangle are five text input fields: 'Student name', 'Birth year', 'Class (optional)', 'School (optional)', and 'Teacher (optional)'. At the bottom of the screen, there is a purple navigation bar with a left arrow button and a 'Save' button with a right arrow.

2:52 93%

Student Details

Add or edit student information

Student name

Birth year

Class (optional)

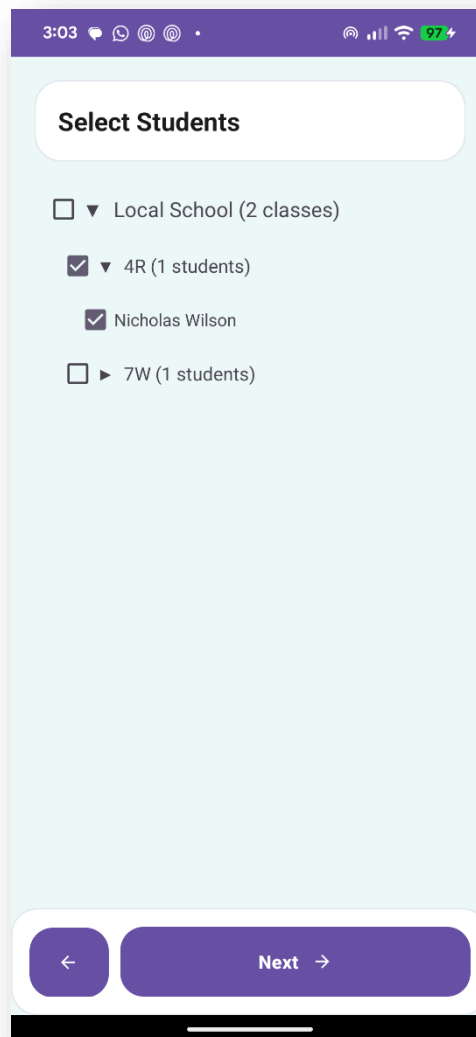
School (optional)

Teacher (optional)

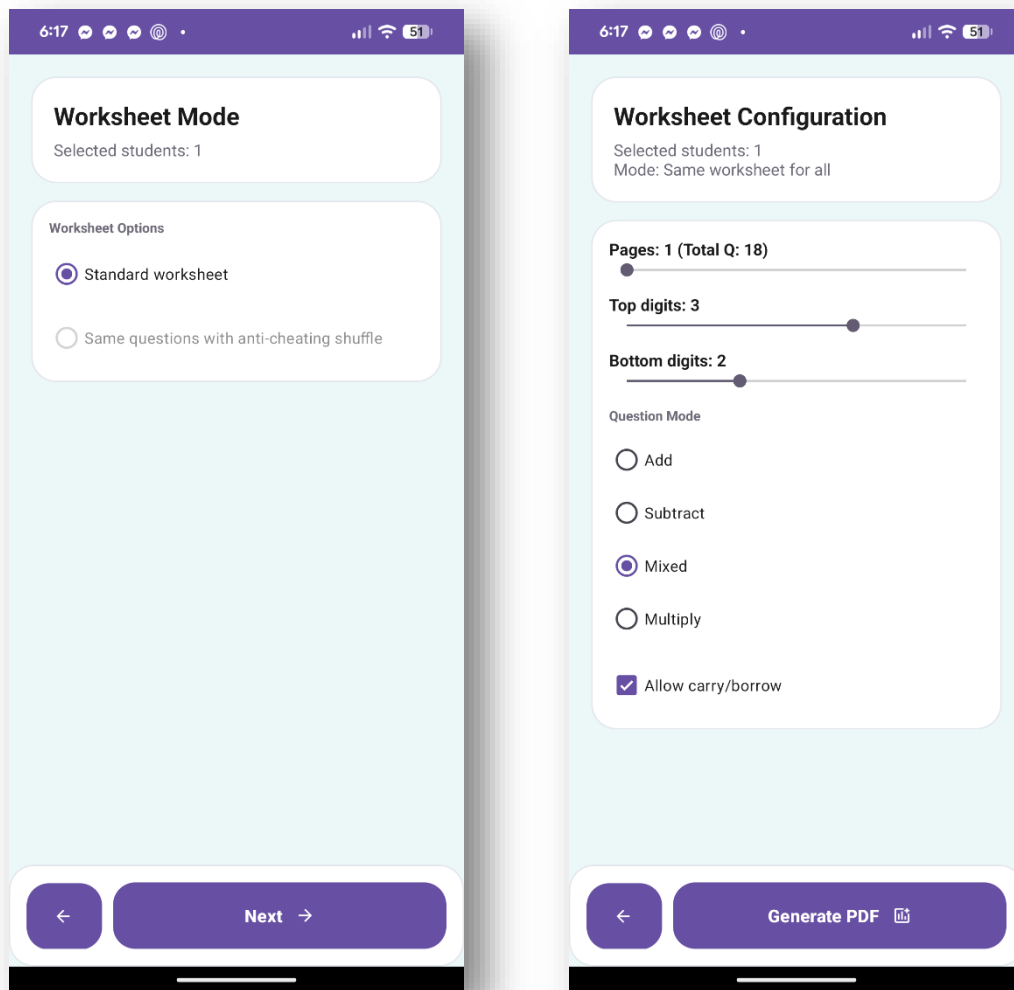
← Save →

Generate Worksheets

- Click “Generate” top left button
- Select a student or students. Rows can be expanded downwards to show students within that group. They can all be selected by clicking the box next to the group name or selected individually.



- When only one student is selected, “Standard worksheet” is the only option.



- Click Next and choose the math exercise worksheet to be created.
- The options currently are a page of addition and/or subtraction questions, with or without carry/borrow and multiplication.
- Users can choose the number of digits for the top and bottom rows in all three math operations
- Multiplication offers additional help for younger students by limiting numbers in the questions from 1 to 5 if they are not strong on higher times tables questions yet. Otherwise questions will include number from 1 to 9.
- If sheets are being prepared for more than one student, the option exists to discourage cheating by offering the same questions but with their locations randomly mixed up and a different set of decoy answers being presented. This would greatly increase the difficulty of looking at the sheet of the next student. This is activated by clicking on “same questions with anti-cheating shuffle”.

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Summary

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Student: Nicholas Wilson
Date: 17 Apr 2026
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☐	201	☐	203	☐	210	☐	214	☐	218	☐	276	☐	293	☐	313
☐	319	☐	321	☐	327	☐	355	☐	381	☐	389	☐	444	☐	462
☐	479	☐	493	☐	507	☐	517	☐	523	☐	534	☐	539	☐	546
☐	549	☐	564	☐	568	☐	586	☐	603	☐	608	☐	652	☐	655
☐	680	☐	719	☐	734	☐	750	☐	756	☐	780	☐	784	☐	798
☐	811	☐	820	☐	821	☐	837	☐	844	☐	851	☐	879	☐	880
☐	881	☐	886	☐	955	☐	974	☐	993	☐	996	☐	1004	☐	1011
☐	1020	☐	1021	☐	1028	☐	1047	☐	1048	☐	1049	☐	1067	☐	1072

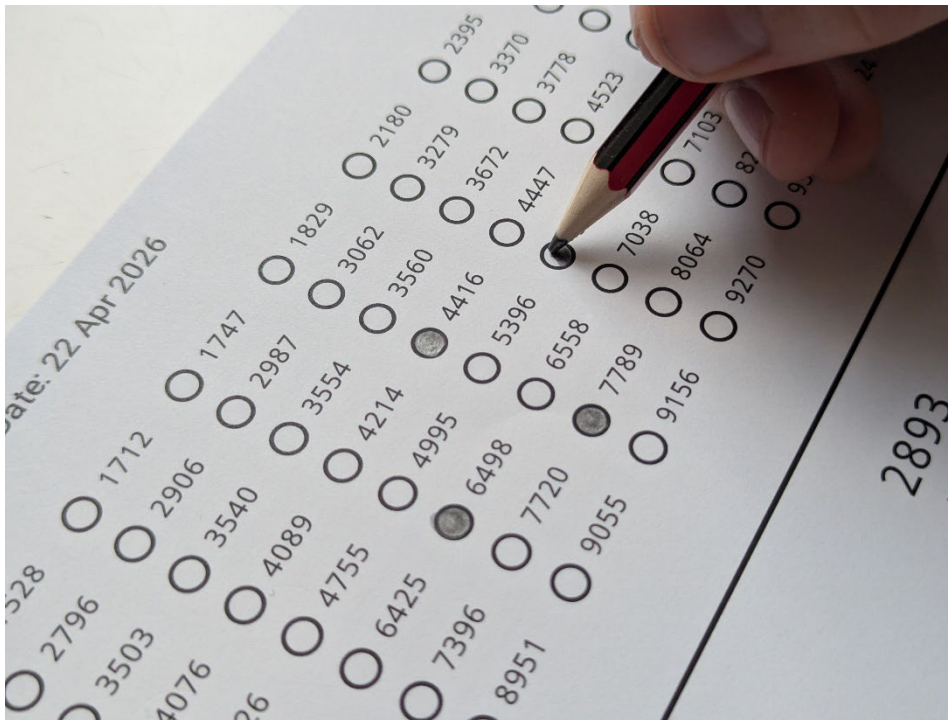
1. $\begin{array}{r} 409 \\ + 53 \\ \hline \end{array}$	7. $\begin{array}{r} 959 \\ + 69 \\ \hline \end{array}$	13. $\begin{array}{r} 274 \\ + 81 \\ \hline \end{array}$
2. $\begin{array}{r} 622 \\ - 88 \\ \hline \end{array}$	8. $\begin{array}{r} 295 \\ - 81 \\ \hline \end{array}$	14. $\begin{array}{r} 884 \\ - 47 \\ \hline \end{array}$
3. $\begin{array}{r} 487 \\ + 20 \\ \hline \end{array}$	9. $\begin{array}{r} 764 \\ + 57 \\ \hline \end{array}$	15. $\begin{array}{r} 980 \\ + 87 \\ \hline \end{array}$
4. $\begin{array}{r} 335 \\ - 59 \\ \hline \end{array}$	10. $\begin{array}{r} 407 \\ - 26 \\ \hline \end{array}$	16. $\begin{array}{r} 420 \\ - 31 \\ \hline \end{array}$
5. $\begin{array}{r} 685 \\ + 49 \\ \hline \end{array}$	11. $\begin{array}{r} 859 \\ + 96 \\ \hline \end{array}$	17. $\begin{array}{r} 125 \\ + 78 \\ \hline \end{array}$
6. $\begin{array}{r} 953 \\ - 74 \\ \hline \end{array}$	12. $\begin{array}{r} 604 \\ - 65 \\ \hline \end{array}$	18. $\begin{array}{r} 735 \\ - 83 \\ \hline \end{array}$

ANSTRIX

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Edit PDF
 Comment
 Highlight
 Draw
 Fill & Sign
 More tools



Fill in circles corresponding to the answers from the questions below the grid

Doing the math!

- There are between 16 to 18 questions per sheet to be answered depending on question type. This will vary as new question types become available.
- The name of the student is shown at top left. It is important the worksheet is completed by the **named student**, or their results will be recorded against another student's results history.
- Calculate the answer for a question and look for the corresponding answer in the grid at the top of the page.
- The correct and false decoy answers are arranged in ascending order.
- If the answer calculated by the student is not preset in the grid, their answer is incorrect and they should try again.
- If a number matching their answer is found, the student fills in the circle nearest to that number.
- Pencil is recommended for changing answers if required later.
- Fill in the circle fully and without marking outside the circle

- There is a penalty of one mark for each circle filled in greater than the total number of questions. This should reduce the temptation a student may have to randomly fill in many circles in the hope of improving their result. If a student correctly answered 18 questions but actually filled in 24 circles, they would be penalised six marks and receive a total of $(18 - 6)$ 12 marks for the worksheet.
- Don't mark or alter the QR code or the four dark squares around the answer grid.

☐ 4989	☐ 5065	☐ 5204	☐ 5221	☐ 5494	☐ 5794
☐ 5959	☐ 6000	☐ 6252	☐ 6299	☐ 6391	☐ 6498
☐ 7036	☐ 7075	☐ 7133	☐ 7152	☐ 7385	☐ 7630
☐ 7815	☐ 7939	☐ 8215	☐ 8354	☐ 8369	☐ 8519
☒ 8944	☒ 9020	☒ 9024	☒ 9309	☒ 9319	☒ 9518
✓	✗	✗	✗	✗	✗

Correct & Incorrect ways to fill in circles

QR Code for scanning
to grade results

Answer circles to be filled in

Student: Nicholas Wilson

Date: 17 Apr 2026

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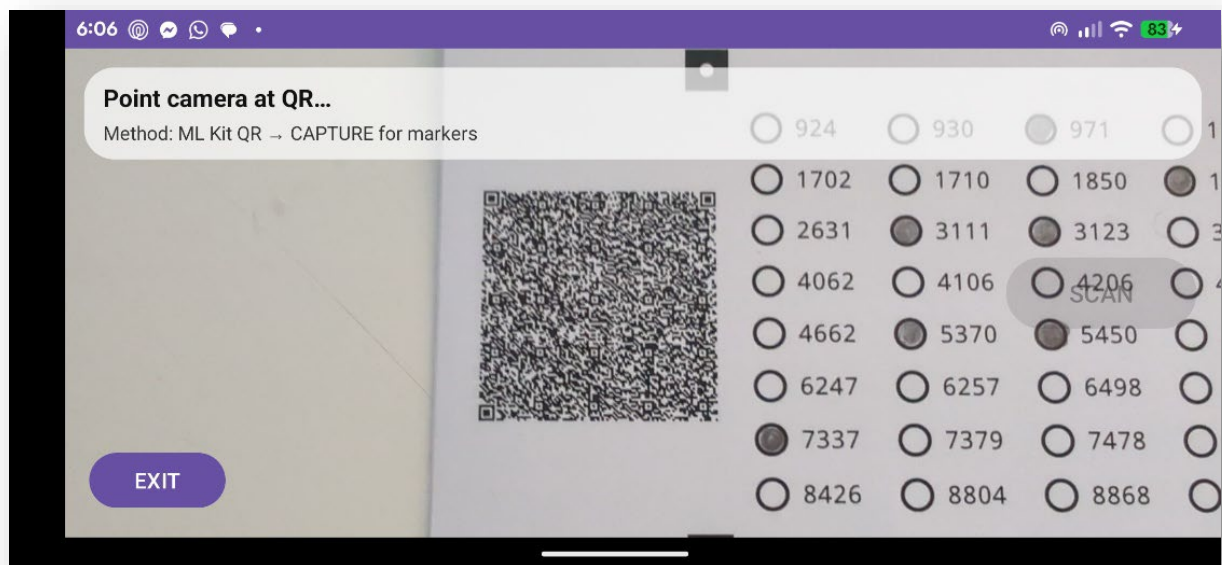
☐ 201	☐ 203	☐ 210	☐ 214	☐ 218	☐ 276	☐ 293	☐ 313
☐ 319	☐ 321	☐ 327	☐ 355	☐ 381	☐ 389	☐ 444	☐ 462
☐ 479	☐ 493	☐ 507	☐ 517	☐ 523	☐ 534	☐ 539	☐ 546
☐ 549	☐ 564	☐ 568	☐ 586	☐ 603	☐ 608	☐ 652	☐ 655
☐ 680	☐ 719	☐ 734	☐ 750	☐ 756	☐ 780	☐ 784	☐ 798
☐ 811	☐ 820	☐ 821	☐ 837	☐ 844	☐ 851	☐ 879	☐ 880
☐ 881	☐ 886	☐ 955	☐ 974	☐ 993	☐ 996	☐ 1004	☐ 1011
☐ 1020	☐ 1021	☐ 1028	☐ 1047	☐ 1048	☐ 1049	☐ 1067	☐ 1072

Scanning & Grading

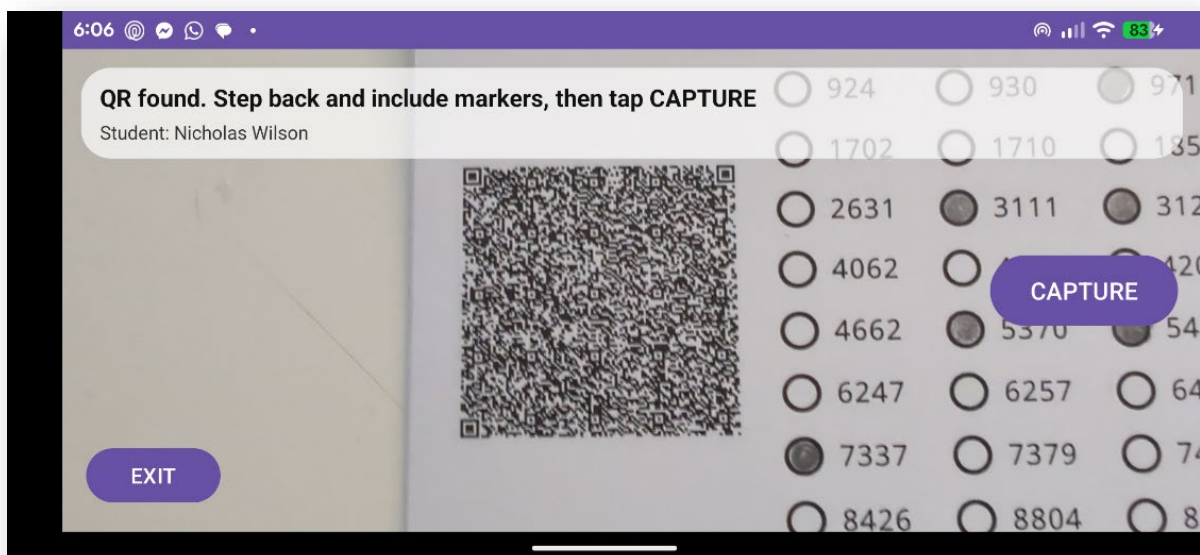
Another strength of the Anstrix application is the automatic grading with a smart phone. A teacher or parent can instantly grade a worksheet, store the result for the student then access historical results, analytics and information on subject areas requiring more attention.

- To scan and grade a completed worksheet press Scan on the main menu screen.
- Place the worksheet on a flat surface. If the worksheet is one of many being scanned make sure markers from other sheets aren't visible, this may confuse the scanning software.
- Lighting is very important. Soft diffuse lighting will make scanning far easier. Hard lighting that casts shadows on the paper creating uneven illumination will almost always result in a failed scan. Crumpled or creased paper can also cause shadows and should be avoided. In the case of an unscannable worksheet, print a new one and copy the filled circles to the new sheet. No need to recalculate the answers. NB: this must be the exact same sheet – check the ws number
- Scanning on a bench or table near a window often creates usable lighting
- Low light levels will make the scan much harder to achieve. Erratic results are almost always a result of low or uneven lighting.
- After pressing Scan the phone's view will change to landscape format and ask for the QR code to be scanned. Place the code in the centre of the camera's view.
- When the QR code is recognised a confirmation message will show and the Capture button becomes pressable. Reading the QR code is necessary to identify the student and access information about the worksheet being graded.

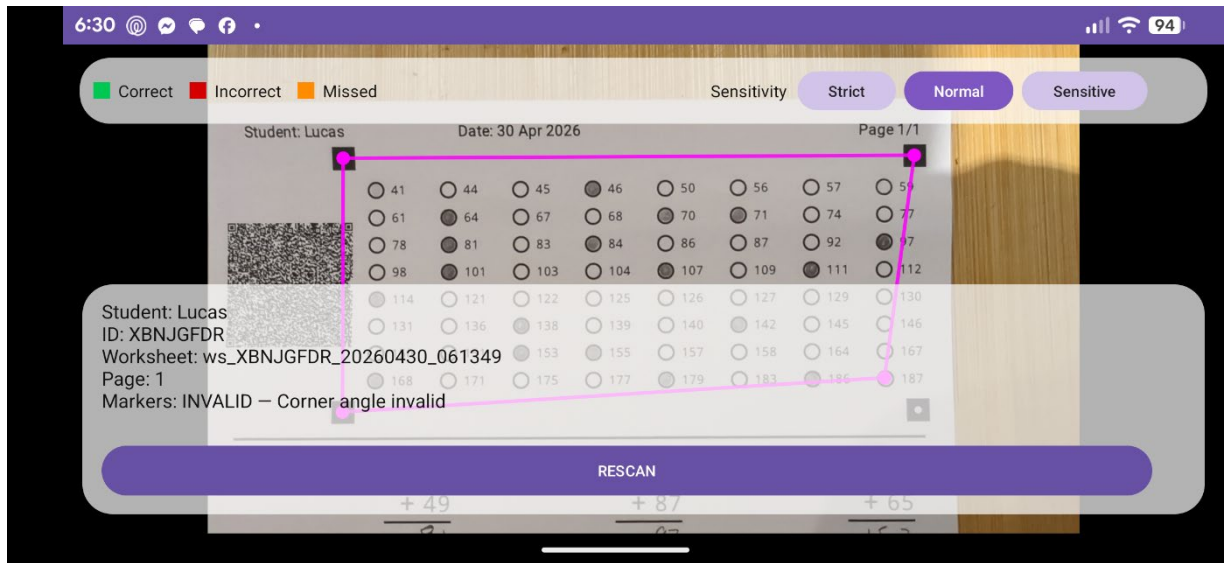
Searching for QR code. Place the QR code in the middle of the frame and move closer and further from the paper unit it reads the code. Under good lighting the QR code will read quickly



QR code found, ready to scan answers CAPTURE button now visible



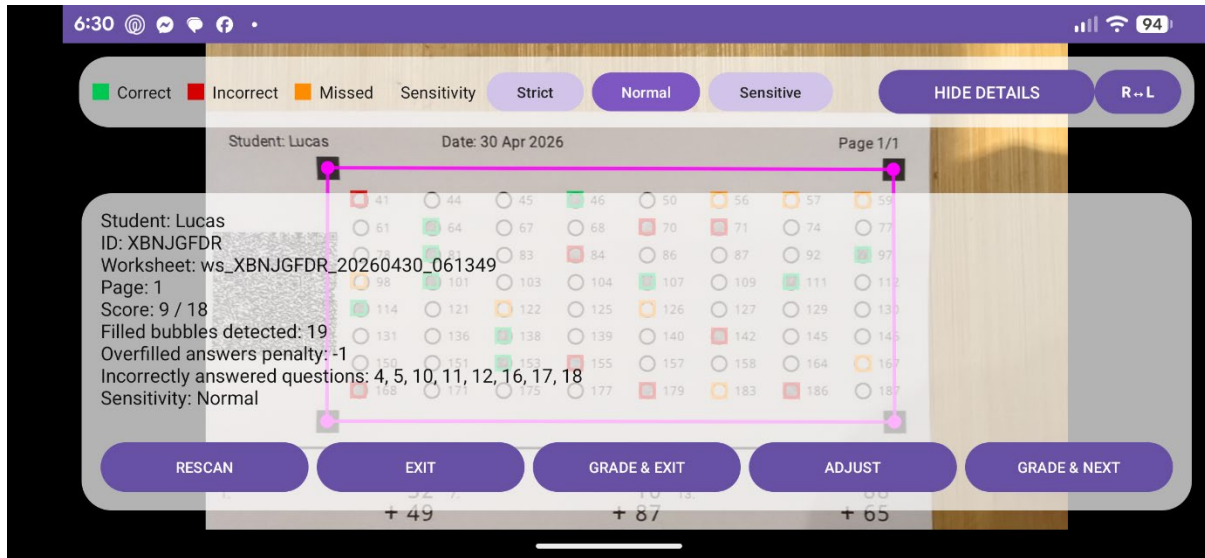
- Align the phone to place the answer grid within the camera's field of view. Reliable results are generally arrived at when the grid fills around two thirds of the screen.
- The phone should be level too (or on the same plane as the worksheet) to avoid distortions of the image. The app will tolerate some distortion, but results will be more reliable if the phone and paper are both aligned.
- Press Capture and see results.



Unsuccessful scan. Grade buttons hidden. Try again.

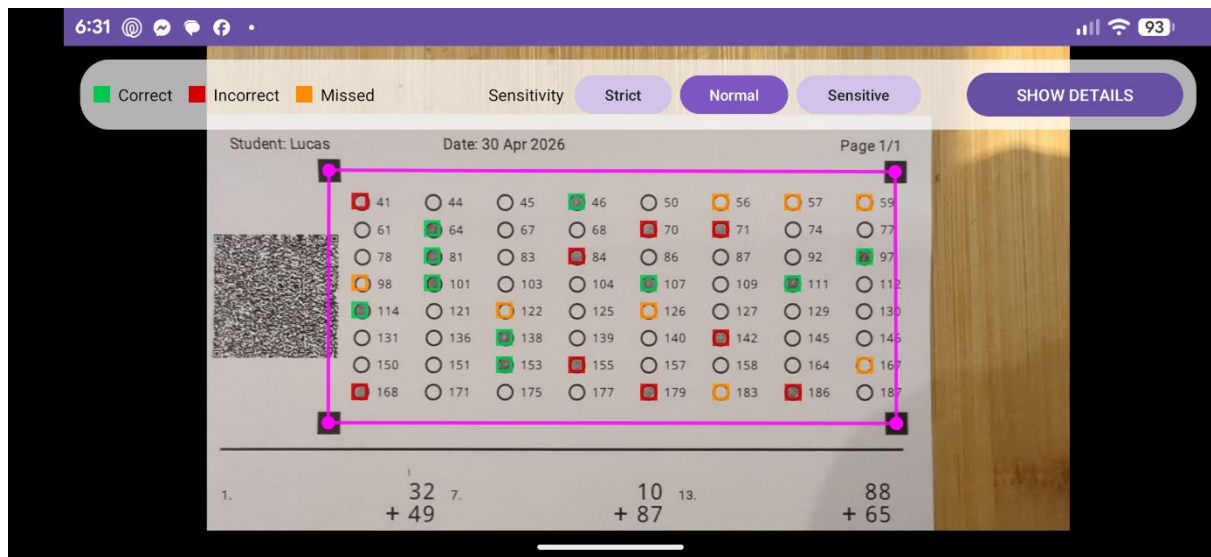
- If the scan is unsuccessful, only the rescan button will be visible.
- Try again but adjust camera angle or move to a location with more even lighting.
- Don't allow shadows to make darker and lighter areas on the grid.
- Creased or crumpled paper can also leave shadows.

Scan success!



If an image is successfully scanned the following details will be shown

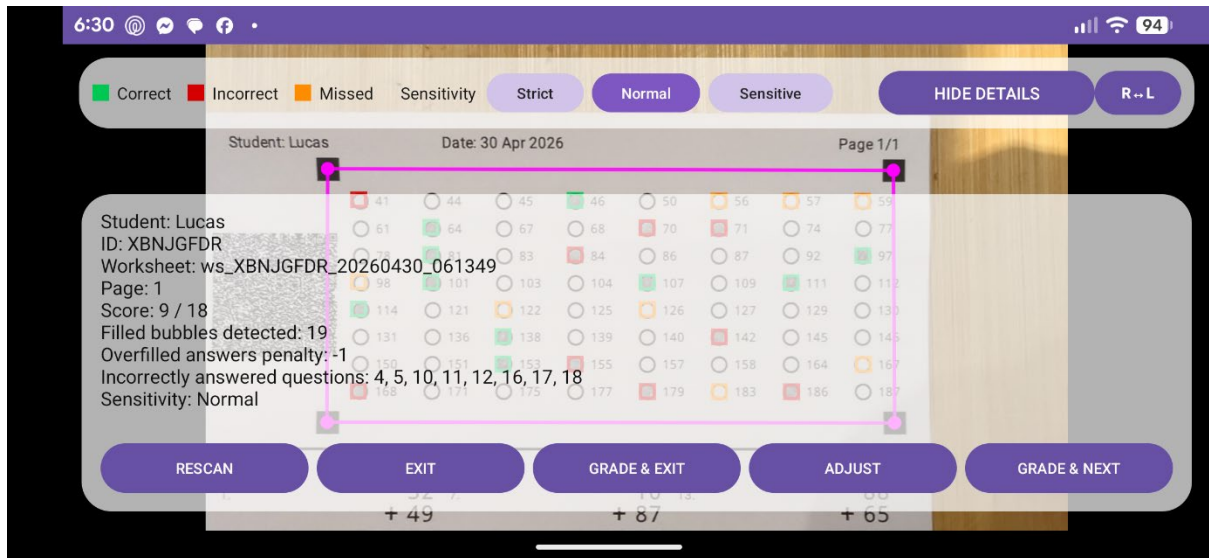
- The student's name and Anstrix student number
- The unique worksheet ID (also printed at bottom of worksheet)
- The score and the number of filled bubbles detected
- Overfill penalty if applicable
- Incorrectly answered questions listed
- Buttons to Rescan, Exit, Grade & Exit, Grade & Next.
- Hide Details button to show the scanned image without overlaid information.
- The sensitivity setting to improve marginal scan results.
- The purple square confirming the markers used for alignment
- Red, green and orange answer markers (to be discussed below)
- R-L button swaps the position of the GRADE & NEXT button to the left to help left-handed users



Hide/Show Details shows the scanned image for QC checks.

Pinch-Zoom function is available for closer inspection

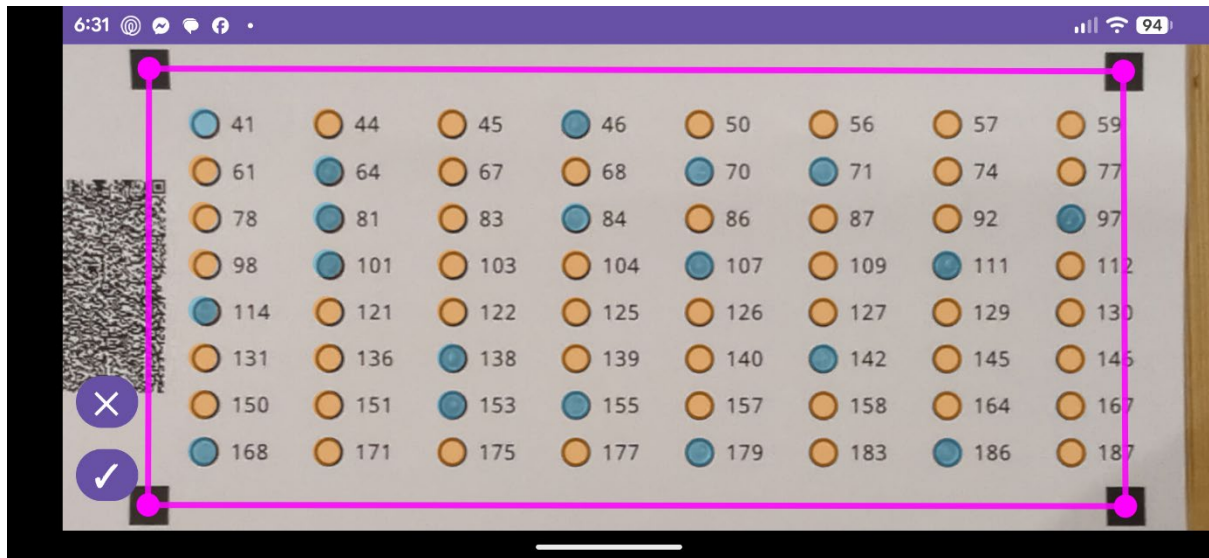
- With practice users will determine what position provides the most consistent results. With correct lighting and some experience it is easily possible to grade a worksheet every ten seconds.
- The purple rectangle shows the corner markers that were detected and used by the app to locate the answer grid and correct for misalignment.
- Red squares show the locations of incorrect answers. A red square must have a filled-in circle under it. The app may consider an empty circle as filled in, in cases such as mixed, shaded or poor lighting. Rescan with better lighting or test the Sensitivity options to achieve the correct result or use the Adjust option to manually override the detected value.
- Green squares are the locations of correctly answered questions. Likewise this assumes the circle has been filled intentionally. Rescan or adjust sensitivity if the green square is above an empty circle
- Orange squares are the empty locations of correct answers. The orange squares must be empty.
- Simple rule: Red and green squares – must be filled in, orange ones must be empty. Note in the image above top-left value “41” was detected as filled but was partially rubbed out by the student, hence it is red but clearly was no longer an intentional selection. Below we discuss how to correct this.



- RESCAN returns to the scanning screen, the QR is remembered, this is only to rescan the same worksheet after the initial scan was not accepted.
- EXIT returns to the main menu and forgets the QR code.
- GRADE & EXIT stores the scanned worksheet result as a graded record in the database and returns to the main menu. Use this button when scanning only one worksheet.
- GRADE & NEXT stores the scanned result as a graded entry in the results database and jumps back to the scanning screen for a new sheet to be scanned. This workflow is designed to make scanning of multiple worksheets efficient for example in a school environment.
- With details hidden or shown it is possible to zoom the image with the standard pinch-zoom finger movement used on most phone apps.

Manually correcting a false positive or false negative detection

- The app may determine a filled bubble is not filled or an empty one is filled.
- This may be caused by uneven lighting, stains or marks on the paper or erased marks still being partially visible.
- Press ADJUST bottom right.



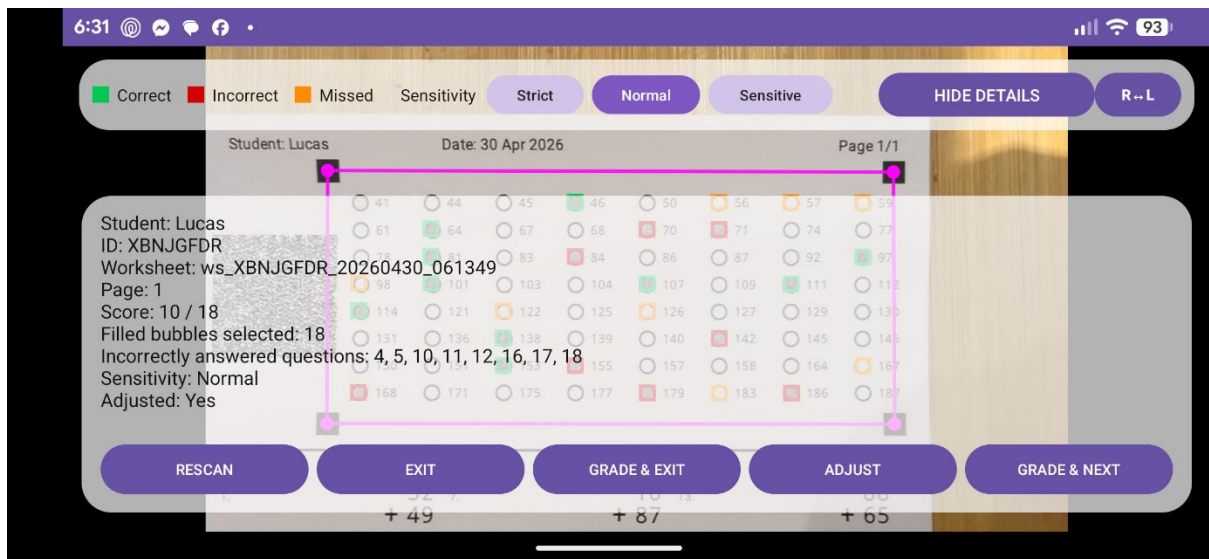
ADJUST screen. Top left “41” was partially erased by the student but it was incorrectly detected (blue) as filled because some pencil mark remained.

- A view of the grid with yellow and blue circles will appear
- Blue marks are bubbles the app believes are filled, conversely the yellow circles it considers to be non-filled bubbles.
- Pressing any coloured circle will flip its colour from blue to yellow or vice-versa.



ADJUST screen. Top left “41” is now showing yellow (not filled)

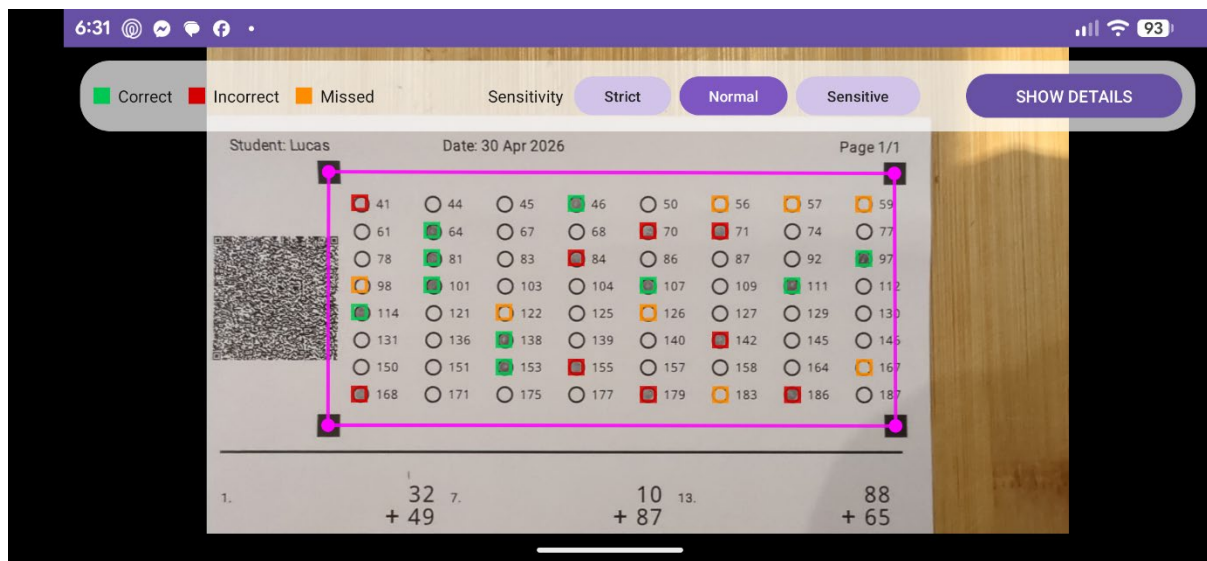
- When corrections are made press the tick symbol and return to scan screen and worksheet grade will reflect the correction



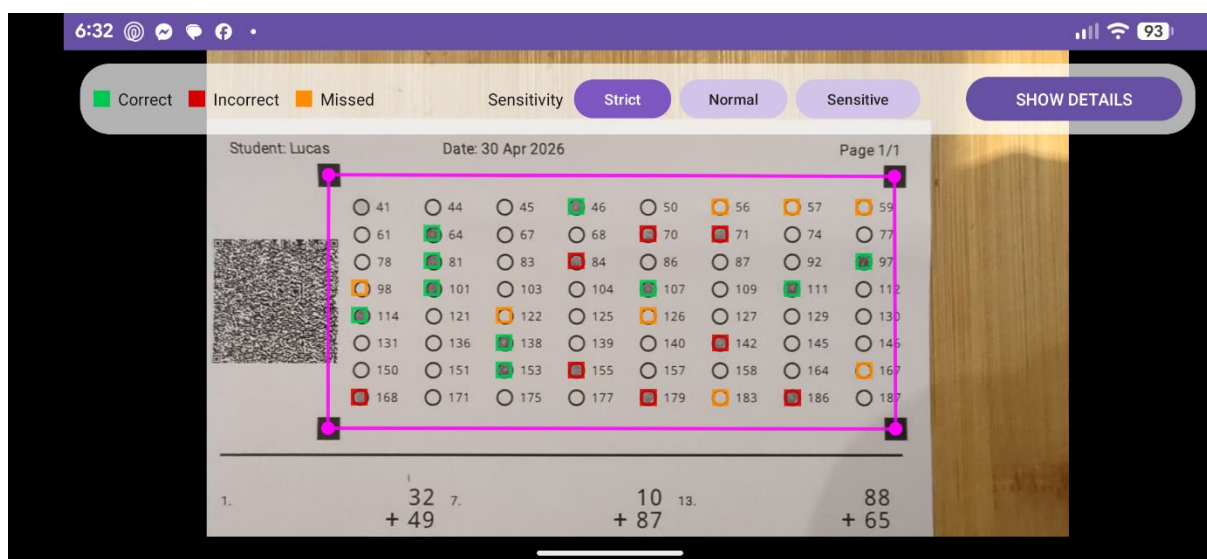
Scanned result screen. Top left “41” is now shown as not answered and filled bubble count has dropped from 19 to 18.

Correcting a false positive or false negative detection with sensitivity controls

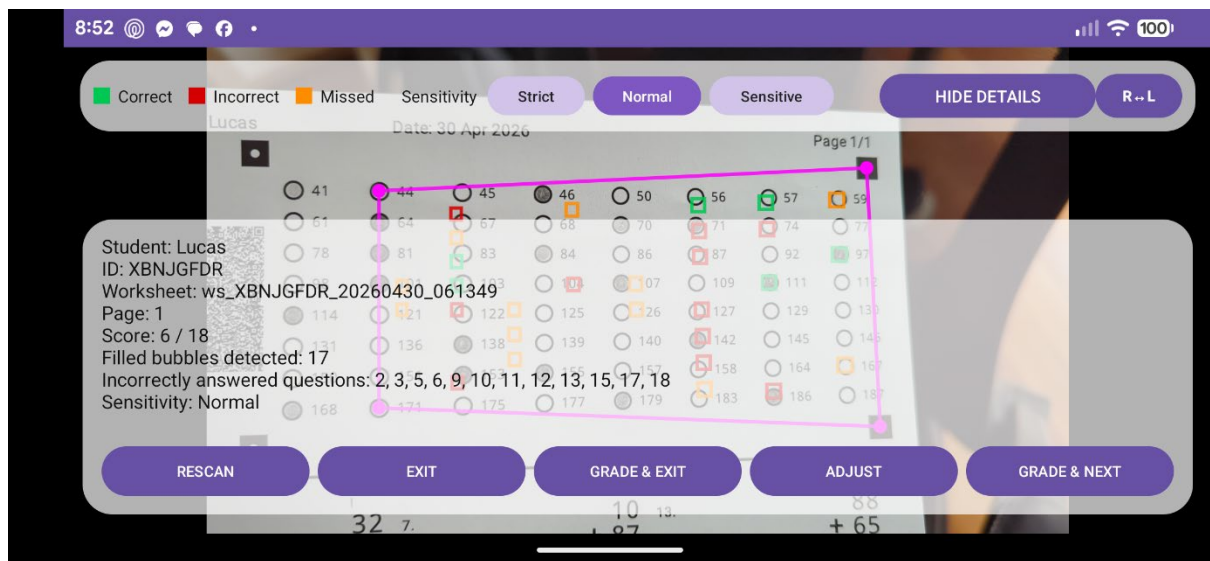
- The sensitivity controls allow the user to adjust the thresholds for filled/not filled detection.
- If the app is detecting empty circles as filled or vice-versa, try selecting Strict or Sensitive on the top bar. Normal is the default.
- You will probably see some changes. Be careful, it will often cause invalid detections but can also help correct a marginal case.
- After changing sensitivity setting all red and green bubbles must have been intentionally filled. Orange bubbles must all be empty.
- If sensitivity settings do not resolve an incorrect detection use the manual method by pressing ADJUST.



(Above) top left bubble “41” was detected as filled, after changing sensitivity to Strict (Below) the circle is now considered by the app to be unfilled. Grading will be based on this new detection.



The application may occasionally decide the scan is acceptable when it clearly is not.

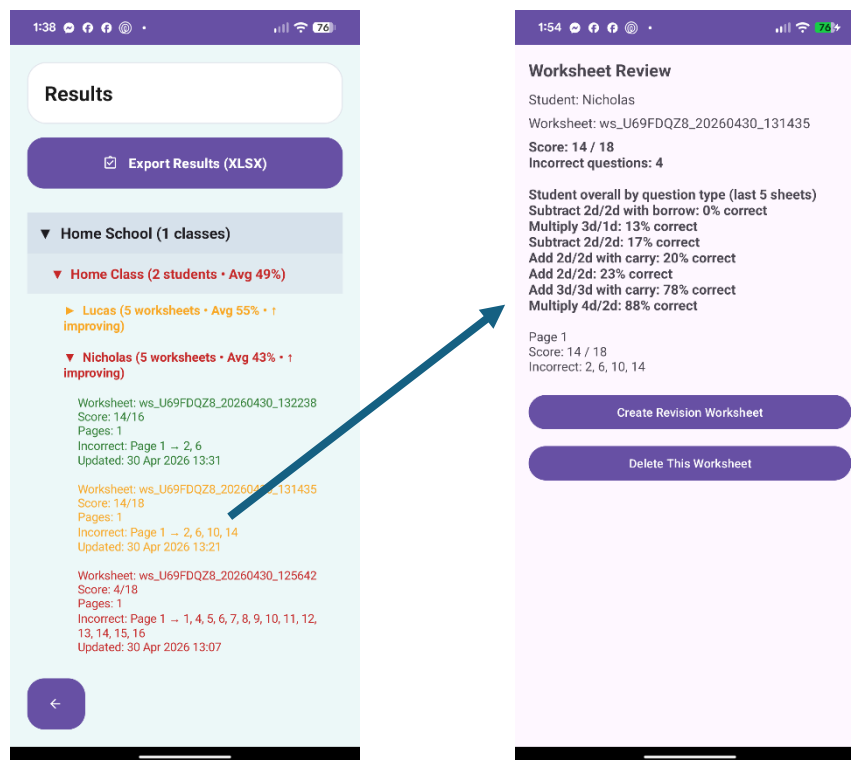


This image shows the result. It has accepted two bubbles as the corner markers and then searched for filled bubbles in the expected locations. It will calculate an incorrect score. Simply press rescan and consider changing lighting or location.

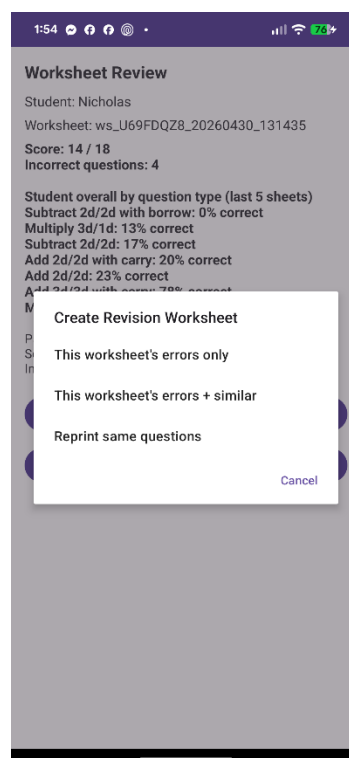
- Look for the purple rectangle having sides that are not parallel.
- Unusually high number of incorrect answers
- Green or red circles over empty locations
- If the sheet is accidentally graded it can be rescanned and the new result will overwrite the previous erroneous scan and the grades updated.

Results

After scanning and grading worksheets the results can be viewed by pressing the Results button on the main screen.

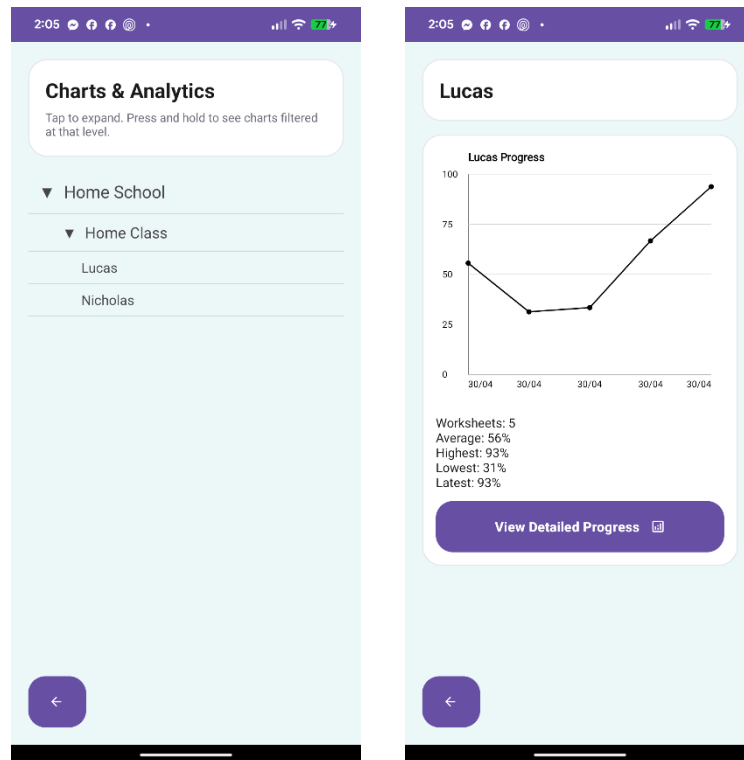


- Expand rows by touching on a single row.
- Clicking on an individual worksheet's results shows the details
- The sheet can be deleted if required (rescanning overwrites the result too).

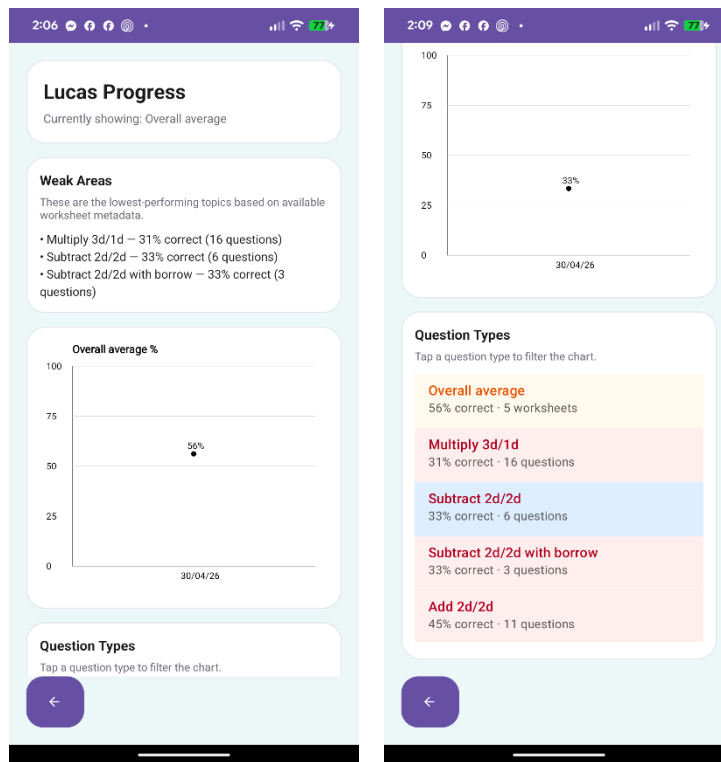


- Create Revision Worksheet will give three options:
- Create a worksheet with only the questions that were incorrectly answered
- Create a worksheet with the errors and the remainder of the sheet filled with similar questions
- Create a worksheet with the same questions as on the original sheet
- Results for all students can be downloaded (MS Excel format) by pressing Export Results (XLSX).

Analytics



- Click on Charts & Analytics.
- Expand down to any level of the school/class/student hierarchy.
- When at the desired level press and hold to see a chart and basic stats.
- This allows for viewing of data and analytics for a school, class or student.



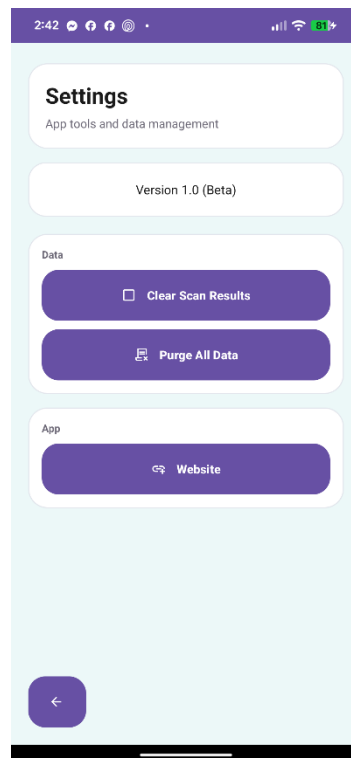
- Press View Detailed Progress.
- The top three weak areas are listed, how many questions of that type have been attempted and the correct percentage.
- The chart shows the average of all results by day (example image shows one date but additional data points will be shown as more sheets are completed).
- Scrolling down shows colour coded rows per question type and the student's average score for that type of question.
- If a row is pressed the chart will show results over time for that question type.

Importing Students

- Anstrix allows teachers to do a bulk import of students saving time.
- Press Students on the main screen.
- Press Download Template. Copy student data into the template (remember to delete example data in top row)
- External ID (optional) is if the students have existing student ID's. This can be very helpful later when linking results data with an existing school system
- Name, enter names by any schema, example: John Smith, J Smith, Smith J, JSMITH6 etc as long as they are unique. This name appears on the printed sheets and simplifies the distribution of worksheets in class.
- Birth year is optional but in the future will allow the application to suggest age-suitable exercises and compare a student's results against benchmarks.

- Name is the only data that is mandatory but empty columns must still have a column header (provided in the template) even if there is no data entered.
- When ready save the .xlsx file to a location on the phone.
- Press Import Students and the new students should appear listed on the student page.

Settings Screen



- Clear Scan Results will remove only the scanned worksheet results. These can be rescanned. This feature is useful when learning how to use Anstrix but be careful after many sheets have been scanned deleting this data may be an inconvenient loss!
- Purge All Data is effectively a new installation of the application. Only do this when you are certain you want a full clean start. Previously printed sheets cannot be rescanned as the student data in the QR codes is also lost.
- Website opens www.anstrix.com