

2 + 2[®]

Introduction

2 + 2[®] is a mathematics operations drill and practice program created by R.J. Cooper. It provides learners with practice in addition, subtraction, multiplication and division of numbers less than 999. It has auditory and visual feedback during the drill and test phases of the practice and each learner can be set up with his or her own settings to customize the learning experience. You enter the math questions yourself, ensuring the practice is at the right level for your learners. The program keeps data on the learners as they complete the questions so you can keep track of their progress. It is a simple to use program with a simple interface and strong auditory feedback.

Case Study

Many different types of students can benefit from using this program. For example, students who:

- are just beginning to practice their math facts and require structured practice with good visual and auditory support
- have difficulty with the concept of regrouping – the program clearly shows the regrouping pattern for each math question that requires it
- have difficulty maintaining attention on math tasks – the use of the learner's recorded name and visual prompts help keep the learner focused
- cannot or have difficulty using pencil and paper or cannot access the computer with a regular keyboard and mouse – the program is switch accessible

“Ryan” is a Grade 3 student who is developmentally delayed. He can use a pencil to write numbers, but his handwriting is very laboured and he has difficulty forming small letters and numbers. He can count to 20 and has been using manipulatives at his desk to add and subtract numbers to 10. His team wanted him to practice his addition and subtraction facts more conventionally and more independently so they set up 2 + 2 by creating eight learners (Ryan One, Ryan Two, Ryan Three and so on) each with a different list of addition and subtraction facts. Because Ryan also has some speech delays, the team chose to have the “Whole fact test” option selected so he is required to say the fact aloud once he has completed the drill. When Ryan starts the program, he has the option of choosing which of the eight “Ryans” he would like to complete first. For the first week his Special Education Assistant worked with him to understand how the program works and what was expected for each task. After that, he became very independent and now starts the program, chooses his list and completes the practice on his own. His team has printed out his data sheets at the end of five practice sessions to track his progress and have followed up with paper and pencil “tests” of the facts. His team anticipates that they will be able to add new facts after about a month and a half of practice.

Strengths of 2 + 2[®]

This customizable math operations program provides students with strong visual and auditory feedback for practicing addition, subtraction, multiplication, and / or division.

- a. It is a fairly simple program to set up and change. Entering new math facts is quick and easy.
- b. It has good auditory feedback and large numbers, features which are particularly helpful for students with visual impairments.
- c. Your learners can access the program with the keyboard, Intellikeys[®], or switch.
- d. It can accommodate up to 10 different learners, each with their own learner preferences.
- e. Because you enter the math facts yourself, you can customize it for the exact level of your learners. You can set the options for more or less drill and test practice so it accommodates developing mastery of the facts.
- f. Data is collected as the student uses the program so you can check on their progress and adjust tasks accordingly. The data charts can be printed out for an ongoing student record.
- g. The learner interface is very clean and visually uncluttered offering less distraction than some other game-like math programs.
- h. Because of the visual and auditory prompting throughout the practice, students can be very independent when working on the program.

Limitations of 2 + 2[®]

As with any program, there are some limitations.

- a. There are only a limited number of learner feedback graphics (3) so students may become tired of the same graphic over the long term.
- b. If you record your learner's name, you will notice that it is repeated frequently for every fact and this can get annoying depending on how you've recorded the voice.
- c. Each time you make any changes to the settings for the learner, the learner data is erased so you must remember to print out any data (if you want a record) before making any setting changes.
- d. The numbers on the number line are displayed according to the fact being drilled so the student does not see the entire number line. For example, if the fact is $2 + 2 = 4$, the number line begins with 1 (not 0) in the left corner.
- e. For switch using students, some screen choices are not available (for example, you must press "Control – Q" on the keyboard to return to the "Start" menu from the activity area)

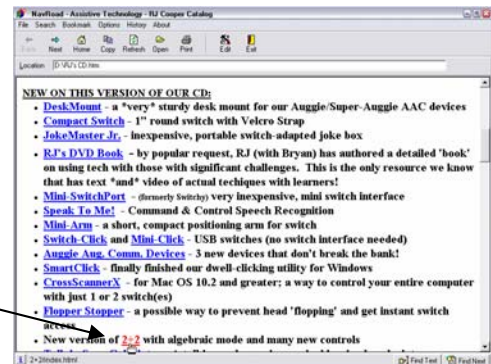
Installing 2 + 2[®]

To install the program:

1. Insert the program CD into the computer's CD drive. A window will open up that lists all the RJ Cooper demonstration programs that are available on the CD. RJ Cooper makes these programs available to you for trial.



2. Scroll down the window until you find the 2 + 2 program in the "New on this version of our CD" area of the window. Click on the "2 + 2" link.



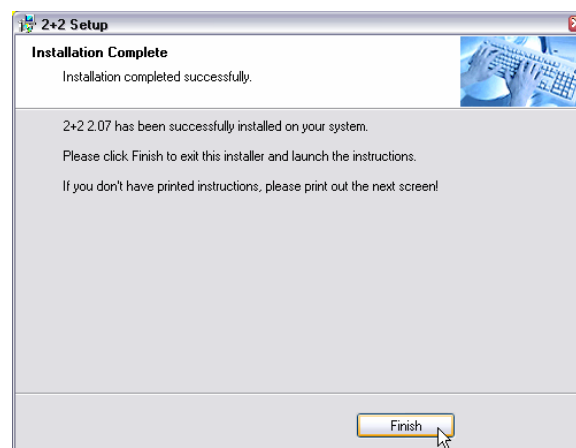
3. The 2 + 2 window will open up. Scroll down the window until you find the "2 + 2 Software Installation Box". In this box, click on the installation link for the Windows version of 2 + 2.

2+2 Software	
1) Install the software. It will let you try it 7 times . You can then...	
2) Purchase a Registration Code at the website (or you can purchase the product/Code at any time by purchase order)	
SM-20 - 2+2 for Mac - \$109	Install
SW-17 - 2+2 for Windows - \$109	Install

4. Follow the prompts to install the 2 + 2 program. When you come to the end of the installation, you will see the following window.

Note that it suggests you print out the next screen – this screen contains the same information as you found on the instruction sheet that came with the software. However, extra copies are always a good idea!

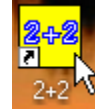
Click the "**Finish**" button to finish the installation.



5. Unless you indicated otherwise during the installation process, a shortcut for the program has been put on your desktop. Under your “Programs” list you will see the 2 + 2 program, the “Read Me” file, and an application to uninstall the program.

Starting the Program

1. Launch 2 + 2[®] by double-clicking the shortcut on your desktop or by clicking on the program from your program list.

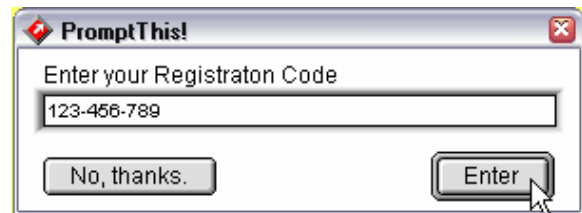


2. The first time you launch the program, you will be required to register it. On the registration window, click “Click here to register now”.



3. You will be asked to enter the registration code for your copy of the program. It can be found on a sticker attached to the outside of the cardboard CD sleeve. Type the registration code **exactly** as it appears on the sticker.

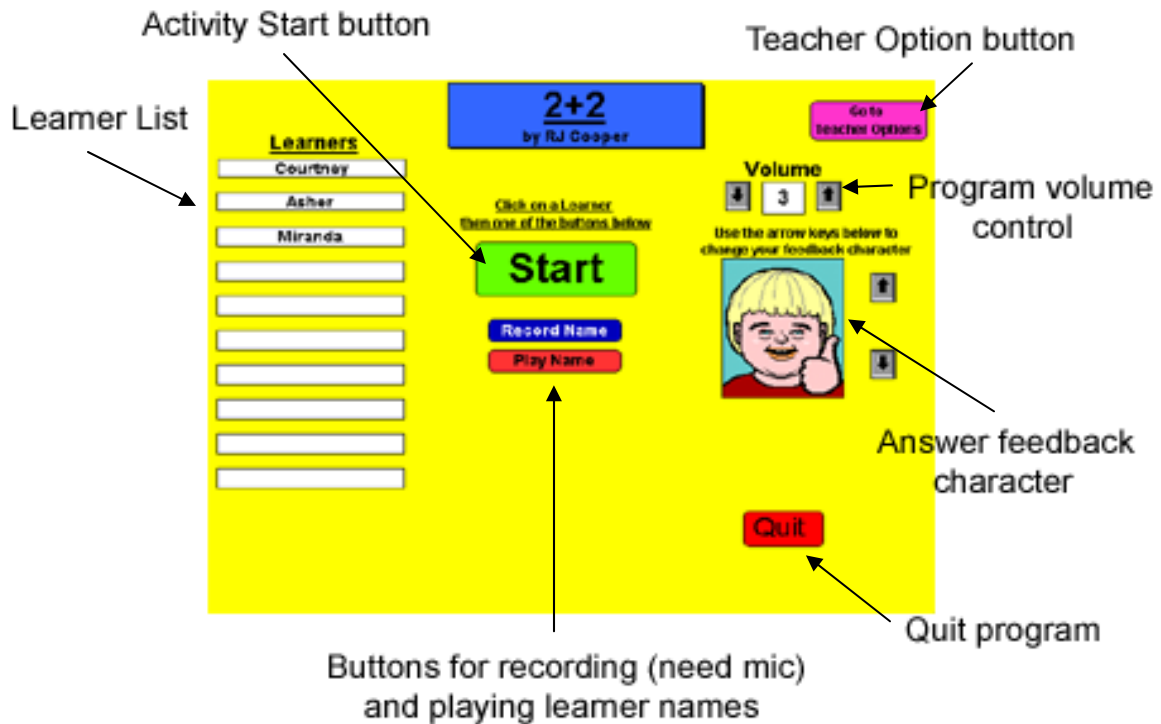
Click “Enter” when you have finished.



The program will now start up.

Navigating the Program

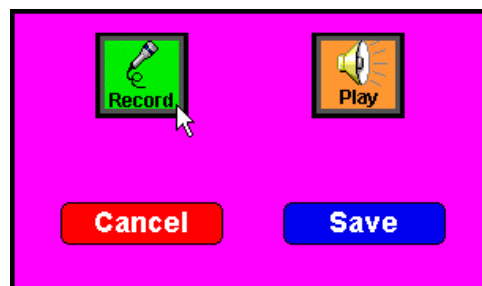
When you first start up 2 + 2 you will see the main navigation screen. This screen has the following areas or features:



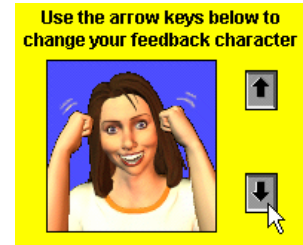
Adding a New Learner

The 2 + 2 program can accommodate up to 10 different learners. To add a new learner:

1. Click on an empty Learner box in the Learner list and type in the new learner's name.
2. In order for the program's auditory feedback to include your learner's name, you will have to record his or her name. This requires a microphone and is optional. If you want to record your learner's name, click on the **"Record name"** button.
3. Click the **"Record"** button and say your learner's name. Click **"Stop"** to stop recording. Once you have recorded the name, you can click the **"Play"** button to hear the recording. If you are happy with it, click **"Save"**. If you want to record it again, click the **"Record"** button.



4. To set the learner feedback character, click the up and down arrows next to the Learner Feedback character picture. You have a choice of three characters. This character will be displayed, with auditory feedback when the learner completes a task correctly.

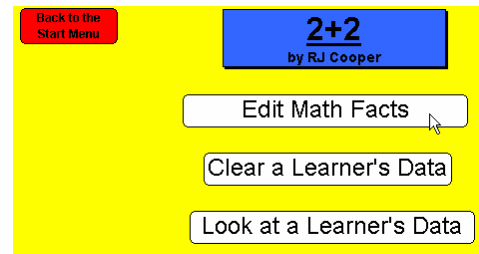


Your new learner is now entered and you can begin adjusting the learner's options and adding math facts for that learner.

Setting the Teacher Options for your Learner

Each student has unique needs and the Teacher Options that are built into the program allow you to customize the learning experience for each learner. To set these options, click on the “**Teacher Options**” button on the main navigation screen.

1. On the “**Teacher Options**” screen, click “**Edit Math Facts**”.



2. You will be asked to click on a learner and then on “**Edit Math Facts**”. The Teacher Options screen has several areas and options that you will need to address to set up the learning experience for your learner.
 - Math Fact List – You can click in this area and add the math facts that you want your learner to practice. Press “**Enter**” on your keyboard to enter each fact and move to a new line.
 - Blind option – click this option if your student is blind so they can receive the program's extra verbal prompting and feedback while completing the tasks.
 - Verbal correction – click this option if you want your learner to hear “*uh uh uh!*” when an incorrect key is pressed. If you deselect this option, your learner will still be prompted by a visual cue.

Back to the Start Menu

2+2
by RJ Cooper

Go to Teacher Options

Samantha

2+2=4
1+2=3
1+1=2
2+2=4
3+2=5
2+3=5
2+1=3
1+3=4
3+1=4
1+4=5
0+1=1

Type your facts/answers in on the left.

Use x or * for times, and X for algebraic variables.

Use Control-/ for + .

You do not need to enter the = or answer.

Question/answer mode (click on a fact, then here (then below, if selected))

Do the whole fact after Tests (FullTest)

Blind (extra verbal prompting/feedback)

Verbal Correction (uh uh uh)

Number Line (for addition/subtraction w/2nd # < 21)

Prompt to say fact

Help (spacebar) Available

of Drills: 1

of Tests: 1

"Say..." Pause: 3

Scan Speed: 0

Pace: 1 (1=fast)

Use arrows to change parameters

Play (click on a fact, then here)

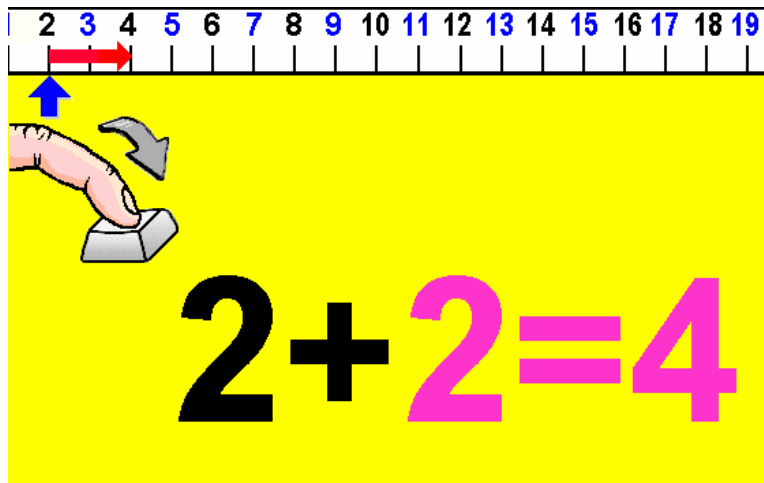
- Number Line – If you choose this option, a number line will be displayed at the top of the screen giving visual reinforcement for the math facts on the learner's list. The number line is limited to addition and subtraction facts where the second number in the fact is less than 21.
- Prompt to say fact – If this option is selected, students will be asked to say the entire fact aloud at the end of each task. Then they will be asked to press the "spacebar" in order to continue. The program does not check to see if they have said the fact correctly even if the learner is wearing a microphone. If this option is NOT selected, the student is directed to press the spacebar immediately after entering the math fact.
- Question / answer mode – This feature allows you to record a specific question or verbal prompt for each math fact. When you select this option, you are taken to a window where you type in your question or prompt and then record it (requires a microphone).
- #Drills – This refers to the number of times the fact (e.g. $2 + 2 = 4$) is drilled for the student. The fact will be repeated for the student to complete as many times as the entered number. You can increase or decrease this number by clicking the up and down arrow keys.
- # of Tests – This refers to the number of times the fact is tested (e.g. $2 + 2 = ?$) after the drill. Again, you can increase or decrease this number by clicking the up and down arrows.
- "Say..." Pause – This number refers to how long after the student is asked to say the fact aloud before they are instructed to press the spacebar. If the number is set to "0", the student will not be asked to say the fact aloud.
- Pace – This refers to the pacing of the program. The lower the number, the faster it goes.

- Scan Speed – This number refers to how fast the choices are scanned if your student is accessing the program with a switch. When it is set to “0” the program is set up for direct access (with mouse and keyboard). When you set this number to “1” or more, the scanning options become available and you can set the parameters for scan selection.
 - Do the Whole Fact after Test – If this feature is selected, the student will be asked to type in the whole fact with only auditory prompting once the drill and test for the fact is complete (e.g. “Listen carefully – $2 + 2 = 4$ – now you do it”) This tests whether or not the student can remember the whole fact.
 - Vertically oriented – This feature, obviously, changes the orientation of the fact on the screen from horizontal to vertical.
3. Once you have set up the options for your learner, click the “**Back to Start Menu**” button to return to the start menu. You will see an alert box informing you that, since you have made changes to the options, the student’s data will be erased. Click “**OK**”.

Using the Program

To have your student use the program...

1. On the “**Start**” menu, click on your learner’s name in the Learner list and then click the green “**Start**” button.
2. Your learner will be prompted through the drill and test sequence. The sequence is as follows:
 - Fact is presented in large numbers on the screen (e.g. $2 + 2 = 4$) and said aloud.
 - Fact is demonstrated on the number line (if this option has been selected).
 - With the fact still visible on the screen, student is prompted to enter the fact. It enters over top of the fact already on the screen changing the colour of the numbers and symbols. (DRILL)
 - Student is asked to say the number aloud (if this option is selected). (e.g. “Say $2 + 2 = 4$)
 - Student is prompted to press the space bar.
 - The fact, without the answer, is presented on the screen and read aloud. Student is prompted to fill in the answer. (TEST)
 - Student is asked to say the number aloud (if this option is selected).
 - Student is prompted to press the space bar.
 - Student is asked to “Listen carefully” and then do the whole fact on their own (if this option is selected). (WHOLE FACT TEST)
 - Program moves to the next fact on the list.



3. At any time, you or your student can return to the “**Start menu**” screen by pressing “**Control – Q**” on the keyboard.

Checking your Learner’s Data

2 + 2 keeps a record of how your students are doing as they use the program. This data is accessible through the “**Teacher Options**”. To view the data...

1. Click on the “**Teacher Options**” button on the “**Start**” screen. On the “**Teacher Options**” screen, click on “**Look at a Learner’s Data**”, highlight your student’s name, and then click on “**Look at Data**”.
2. A screen that looks like the following will open up. On that screen you will be able to see your student’s fact list, how many drills, tests, and full fact tests your student completed and how many misses or requests for help the student had for each fact. This will give you a clear picture of how your student is doing. You can print this information by clicking the “**Print**” button.

3. If you want to clear the data for a particular learner, from the “**Start**” screen, click on “**Teacher Options**”.

On the “**Teacher Options**” screen, click on “**Clear a Learner’s Data**”, highlight your student’s name, and click on “**Clear Data**”. The records from your student’s recent trials will be removed.

Back to the Start Menu		Samantha's Data		8/18/2005		Go to Teacher Options	
	Drills	Misses/Helps*	Tests	Misses/Helps	FullTest	Misses/Helps	
2+2=4	01	00/00	01	00/00	00	00/00	
1+2=3	01	00/00	01	00/00	00	00/00	
1+1=2	01	00/00	01	02/00	00	00/00	
2+2=4	00	00/00	00	00/00	00	00/00	
3+2=5	00	00/00	00	00/00	00	00/00	
2+3=5	00	00/00	00	00/00	00	00/00	
2+1=3	00	00/00	00	00/00	00	00/00	
1+3=4	00	00/00	00	00/00	00	00/00	
3+1=4	00	00/00	00	00/00	00	00/00	
1+4=5	00	00/00	00	00/00	00	00/00	
0+1=1	00	00/00	00	00/00	00	00/00	

Print

* Helps for Drills is only kept for Blind learners, otherwise it's 00.