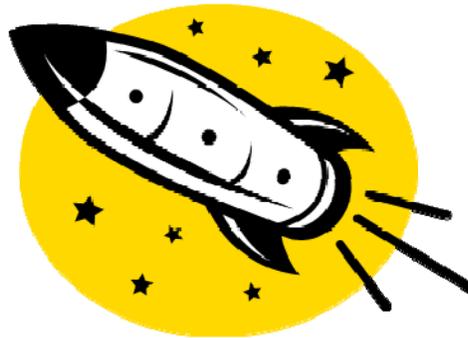
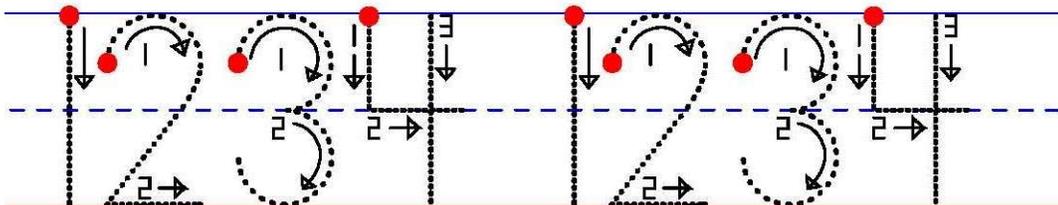


Articulates with *Rocket Math*



Rocket Writing for Numerals

2nd Edition



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*Please note: There are several references to **Rocket Math** and its components in these directions. To learn more about this curriculum, please see the overload of information on our website. www.rocketmath.com.*

The **Rocket Writing for Numerals** curriculum is designed to help you, the teacher, achieve four different goals:

- 1) to teach students how to correctly form numerals by tracing,
- 2) to give students practice writing numerals freehand and smaller,
- 3) to give students practice writing numerals correctly and quickly,
- 4) to assess whether students are fluent enough with writing numerals to participate in the **Rocket Math** curriculum and to manage a mixed class, where some students are practicing numeral writing while others are beginning to practice math facts using the **Rocket Math** curriculum.

These four goals are really steps in a sequence.

The **Rocket Writing for Numerals** curriculum contains four levels of practice for each numeral as well as cumulative review of recently learned numerals. The cumulative review contains 18 pages (A-R) at each level of practice which gradually asks more of the students as they move through it.

Level One (A1-R1): Tracing two rows of extra-large sized, two rows of large sized, three rows of Medium sized.

Level Two (A2-R2): Tracing one row of extra-large sized, three rows of large sized, three rows of medium and one “freehand” row.

Level Three (A3-R3): Tracing two rows of large sized, three rows of medium sized, one “freehand” row and one “freehand” row for timing with a goal of 20 numerals in one minute.

Level Four (A4-R4): Tracing two large sized rows, three medium sized rows, one “freehand” row and two “freehand” rows for timing with a goal of 40 numerals in one minute—which is a good pace for starting **Rocket Math**.

Level 1: Tracing to ensure students form numerals correctly

Why should we want children to form numerals (and letters!) a certain way? If the numerals are legible, isn't that enough? Ummm...NO! Some ways of “drawing” numerals that children invent are very inefficient. This slows down their writing of numerals considerably. The slow rate initially begins to be a problem when students begin to practice math facts fluency. In the later grades students who habitually write numerals too slowly have trouble finishing their math assignments as quickly as they should. We've heard more than one middle grades math teacher, waiting for students to slowly finish math work, lament “Why didn't anyone teach these students how to write

numerals the right way?” That goes for appropriate pencil grip as well, but don’t get us started!

An inescapable fact. To teach students the right way to form the numerals, you’re going to have to talk with them about how to make the numerals before they begin. We know you don’t have much time, especially if you are not a kindergarten teacher, but it is inescapable—you must show and tell your students how to make each numeral. Additionally, you must make sure they know how to do it—in other words, you must see them do it the right way—before you can let them practice. We’ve designed these sheets to make that go as quickly and easily as possible, but you’ll still need to spend a few minutes with students who are learning how to make these numerals the right way. If you are lucky enough to be a kindergarten teacher, you can begin teaching from these sheets on the first day of school, and you’ll have the time to provide the instruction without difficulty.

Demonstrate the number as you use the language consistently. At the top of the practice sheet which introduces the numeral, we’ve provided you with some simple, concise language for describing how to make the numeral. This language is just a simple reminder of the steps, not complete directions, so you can’t just hand it to the students. (Not to mention the fact that few students at this level could read the directions!) The words are only a reminder of what the students are supposed to be doing. Use the language as you demonstrate a big example (B-I-G. Like “on the board” BIG.) of how to make the numeral—say what you’re doing as you’re doing it. Then get the kids to say it as you do it. You want your students to be able to say what they are supposed to do, just as surely as you want them to be able to do it. If your students can say how to make a two, the chances are much greater that they will make a two the right way. You are providing a type of “think aloud” here. Metacognition ... blah ... blah ... blah ... You know the rap! Speaking of “rap,” these short descriptions of how to make the letters lend themselves to a bit of a rhythm when you say them. This often helps students retain and internalize the language. Give it a try!

- Set A—To make a 2: Up, around, down and straight.
- Set B—To make a 3: Up, around, around and stop.
- Set C—To make a 1: Long line down and stop at the bottom.
- Set D—To make a 4: Down, across, long line down.
- Set F—To make a 5: Go down, around, and put a hat on it.
- Set H—To make a 6: Curve around to the dotted line and close it up.
- Set J—To make a 7: Short line across, long and slanty line down.
- Set L—To make an 8: Make an S and cross it closed.
- Set N—To make a 9: Small circle on top and a long line down.
- Set P—To make a 0: Make a circle and that’s a zero.

After the initial BIG demonstration, continue with air writing. Before students practice independently, you need to monitor to see that they know how to make the numeral the right way. What better way to see this, than air writing? (no need for erasing and it doesn't require reams of paper) You begin by modeling with your back to the class while you say the language for how to make the numeral.

“Watch me write a 2 in the air. I go up, around, down and straight. Watch me do it again. Up, around, down and straight. That's pretty tricky. Who thinks they can show me in the air how to make a 2? Miguel? OK everybody, let's say it together as Miguel shows us how to make a 2 in the air. Up, around, down and straight.”

After a few students and you have modeled air writing a few times, have the whole group model the air writing, as you all say the words. If anyone makes an error, jump in and model it again, and give that student a chance to do it the right way. Once everyone can air write the numeral correctly, you are ready to use the sheets in the curriculum. Yea!

Using the worksheets. In Level 1 (Sheets A1 through R1) the children are only tracing the numerals. When you give students the worksheets they are to trace the numerals, starting at the (red) dot. As noted above, numbers are big at the top of the page. This extra-large size makes it easy to see how the students are forming the letters as you walk around and monitor. Yep. Monitor. Please WATCH as your students attempt to trace the numbers. If students are not starting in the right place, are going in the wrong direction or doing anything other than appropriate number formation, you must correct them. This is not mean. It is teaching! Letting students do it incorrectly is mean. Especially the first time students do a numeral, it is critical that you look to see that they are “making the 2 the right way” and PRAISE that. Make it a big deal, with lots of enthusiastic praise that they are “making the 2 the right way.” That's what will prompt them to do it the right way—even if someone else let them get started forming numerals the wrong way.

Remember, any time you see someone doing something that you want to see again, say something nice about it! (This works at home with family members too.)

When you see students tracing the numbers incorrectly, correct them. Be clear about what the error is. There are some options here. Some teachers carry a large eraser with them as they monitor. When teachers see an error, they erase the mistake and assist the student in correcting his/her error and re-write the numeral. As always, the concise verbal prompt for formation is used during the error correction.

Another technique that some teachers employ is to use their big eraser to erase the error numeral and write the numeral with a highlighter as they say the verbal prompt. The student then traces the highlighter numeral. For reasons we have yet to study scientifically, students enjoy this and are very careful to trace carefully. Then the teacher is afforded the opportunity to reinforce the correct numeral formation.

The first level of numeral writing practice does not include timing. These pages are for accuracy only. Give these sheets as many times as you think appropriate.

You'll teach how to make the numerals the first time or two for each numeral. After that the sheets can be assigned as independent seat work.

When to move on to a new sheet. You can have students do sheets more than once, but you don't have to require students to repeat pages. Your main criterion is that the students know how to correctly form the numerals. If they are still struggling with how to write the numeral, by all means, have them repeat the page. On the other hand, if the students are forming the numerals the right way consistently by the bottom of the sheet, they can move on the next day. If this is kindergarten, there's little rush and you could do a sheet for two days in a row without putting the children behind. If you move on and then see something that concerns you on a numeral a student has previously practiced, feel free to go back and practice that numeral again. Just copy the specific practice sheet, review formation with the student, watch the student practice a few times and then let him/her complete the sheet. (Hint: It helps to have a class list with you as you are walking and monitoring. Write anecdotal notes regarding progress of students as you watch them.)

Level 2: Giving students practice writing correctly and smaller freehand

Sheets A2-R2 focus on students continuing to write correctly but also starting to write smaller and freehand (without tracing). We give them review on writing the numerals correctly but they have one row where they write smaller and without tracing. You can still talk students through letter formation with the little chants if you have time. You can also use the sheets as independent work (Centers anyone?) during school. You can use the sheets as homework, because at home students are motivated to get their work done sooner rather than later. [There's better stuff to do at home, hopefully!] Once students have been through the program and know how to make the numerals they can practice on any of the sheets at any time.

The goal: Write one numeral in each of the 20 blanks at the bottom. The goal in this step is to build up student skills until they can write one numeral in each and every blank at the bottom of the page. [Students should write whatever is on the line just above the blanks.] Focusing on the students writing one numeral for each blank will help them with one-to-one correspondence. If you are going to "grade" the sheets, that would be the criterion on which to base your feedback. "A star for this paper because you wrote one numeral in every blank. Excellent work!" If students can put a digit in each blank it will ensure that they are able to write small enough to use the test sheets in **Rocket Math**.

It may take some students a while to get to the point where they can put a numeral on each blank. They'll start out doing that and then lose it with numerals that are getting too big or too small. This is not diagnostic of a big problem—just a clear indication of their skill level. Encourage them and praise the sections of their work where they did have one digit per line. "This line is perfect up to here. Wow, you're really getting good at this! This is hard, but you are getting better!"

Don't rush your students on to the next step, timed tests, until they can fill each blank with one numeral without the pressure of being timed. In other words, make sure they can do it slowly before asking them to do it quickly! ☺ (Anything else is ... you guessed it ... MEAN!)

Level 3: Giving students practice writing correctly and quickly

Sheets A3 through R3 begin timings. At the second level you made sure that the students were able to write the numerals small enough to get 20 on a line. Now we begin to focus on them writing faster. In addition we are going to develop the routine that is followed for **Rocket Math**: a few minutes of practice followed by a timing. Starting with A3 you will be conducting daily timings and so you will need to have everyone doing this at the same time.

You will see that there is a row of practice where students are to write a numeral in each of the 20 blanks. This is the same as in Level 2 so students should be able to do this. Your daily procedure would be for students to work first on the practice part of the sheet as you monitor. Students are only to do that part and stop. Wait until almost all of your class has finished the top part and then have everyone get ready to take the timing. (Don't wait for the last few super slow writers to be done. Students are just practicing and you don't want to make the faster writers sit for too long waiting! That never ends well!)

Regain the class' attention. Make sure they know where the timing part is (at the bottom of the page). Explain they are to write as many of whatever numerals are on the sheet as they can in one minute. There is no passing or not passing.

The goal: Write twenty numerals in one minute. Keep track of how many of your students can write all 20 numerals in a minute. If students cannot write 20 numerals in one minute in the blanks that's OK. Just make a note of how many can. You can still do a sheet a day. By the end of doing R3 we are hoping that most of your students can write 20 numerals in a minute. If less than $\frac{3}{4}$ of the class can do that—go through Level 3 sheets (A3-R3) again with the whole class. If more than $\frac{3}{4}$ can do it, go on to Level 4. Well, that's clear huh?

Level 4: Assessing if students write fluently enough for Rocket Math

The Writing Speed test for **Rocket Math** expects students to be able to copy the numbers in 18 boxes in one minute—which is about 27 digits. Being able to write 27 digits (18 or more boxes) in a minute is the goal to begin Rocket Math. We think that's about the minimum that makes sense to be testing math facts. Any slower and you can't really tell if students "know" the math facts instantly or if they simply need more practice writing quickly.

The timings in Level 4 (Sheets A4-R4) in **Rocket Writing for Numerals** have a total of 40 blank lines on which to write numerals. What a wild coincidence you say? Au contraire! This is a cleverly designed program where every little detail has been carefully crafted to assist you and your students in being successful. You can see that if students can fill all those blanks in one minute they are definitely fast enough to start taking timed tests of the math facts. Of course, you'd want to assess them using the **Rocket Math** Writing Speed test, but being able to fill all the blanks on the last two lines in one minute consistently is a good sign that they are ready.

As in the previous level there is still a practice section at the top, including a row of blanks for freehand numerals. Your daily procedure would be the same as in Level 3. First students do the practice part of the sheet and stop. Wait until most all of the class has finished the top part and then have them get ready to take the timing. (Reminder: Don't wait for the slowest writers to get finished. As much practice as they get done will be enough and you don't want to make the faster writers wait long!)

As in Level 3, first get everyone's attention. Make sure they know where the timing part is. Explain they are to write as many of whatever numerals are on the sheet as they can in one minute. Time for one minute and pencils down!

The goal: Write forty numerals in one minute. Keep track of how many of your students can write all 40 numerals in a minute. If students cannot write 40 numerals in one minute in the blanks that's OK. Just make a note of how many can. You can still do one sheet each day—so they will have 18 opportunities to get to the pace needed. By the end of doing R4 we are hoping that most of your students will be able write 40 numerals in a minute.

After the timing have all the students who could fill in all the blanks raise their hands. Congratulate them. Count the number of students who can write 40 digits in one minute. Keep track of how many pass each day and celebrate when the number goes up. "Yea! We went up by one more person! We are getting to be such good number writers. Soon we can start **Rocket Math!**"

No student should start taking **Rocket Math** written timings if they can't write fast enough to pass the Writing Speed Test. But if you have some students who can start, you can go ahead and have some start memorizing math facts and doing **Rocket Math** written timings while others are still finishing the **Rocket Writing for Numerals** program. Please hold off starting **Rocket Math** until at least 2/3 of your students write fast enough to pass the Writing Speed Test (at least 18 boxes in a minute). If you don't have that many, then do the Level 4 sheets again (Sheets A4 through R4). If you have a kindergarten class you can afford to wait until more than 2/3 of the students are ready. Because they aren't behind yet, you could wait until all, or nearly all of your students are ready to start **Rocket Math**. It will be easier if you don't have to manage a mixed class.

Final step: Managing a mixed class

If you have most of your class ready to begin doing **Rocket Math** because they can pass the Writing Speed Test—filling in 18 or more boxes (about 27 digits) in one minute, you can start **Rocket Math** with the students who are ready, while the others keep practicing their numeral writing skills. During the time students are practicing their math facts with their partners, the others can be practicing numeral writing on the top half of their **Rocket Writing for Numerals** page.

At the end of the practice time all of your students can take a one-minute timing. The **Rocket Math** students will be doing the math facts timings while the others will be doing the Level 4 pages in **Rocket Writing for Numerals**. The goal for the students still in **Rocket Writing for Numerals** will be to write 40 digits in one minute—or fill in the blanks on the bottom of their sheet during the timing.

As your slower writing students become able to write the 40 digits in a minute, say three times in a row, give them the Writing Speed test from ***Rocket Math***. When they pass they can move over into ***Rocket Math***—you can set them up with a practice partner, get them a ***Rocket Math*** folder, and off they go!

Be sure to keep giving your slower writing students lots of opportunities to practice writing numerals both in class and at home. With enough practice (as long as they are forming the numerals in the most efficient manner and doing so consistently) almost all students can develop enough speed to get started with the facts program.

Of course, students with cognitive delays or diagnosed fine motor delays/disorders may be exceptions to the general rule. It may be necessary to test those students orally for math fact mastery. But don't stop giving them practice writing numerals! They need to develop as much skill as possible—as they will need to be as fast as they can possibly become throughout their schooling years.

We hope you find this program useful and that it helps your students become better numeral writers. That skill will stand them in good stead for years to come. Thanks for all you do to help your students.



Name _____

Rocket Chart

R

Q

P

O

N

M

L

K

J

I

H

G

F

E

D

C

B

A



Name _____

Rocket Chart

O4	P4	Q4	R4
K4	L4	M4	N4
G4	H4	I4	J4
C4	D4	E4	F4
Q3	R3	A4	B4
M3	N3	O3	P3
I3	J3	K3	L3
E3	F3	G3	H3
A3	B3	C3	D3
O2	P2	Q2	R2
K2	L2	M2	N2
G2	H2	I2	J2
C2	D2	E2	F2
Q1	R1	A2	B2
M1	N1	O1	P1
I1	J1	K1	L1
E1	F1	G1	H1
A1	B1	C1	D1