

Hello,

I am so excited that you are downloading and trying out the new version of the Math Running Record. I have spent several years developing and piloting Math Running Records around the country. Today, people around the world are using them! I want to encourage everyone to read the book! You can get it online in several places. Routledge the publisher even has a 20% discount code!

Book Discount Code: IRK69

<https://www.routledge.com/Math-Running-Records-in-Action-A-Framework-for-Assessing-Basic-Fact-Fluency/Newton/p/book/9781138927643>

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It is important to read the book to understand the framework of fluency and the reasoning and research behind Math Running Records. Fluency is a 4-legged stool, including accuracy, flexibility, efficiency and automaticity. Math Running Records helps you to figure out where your students are in terms of learning the basic facts (0-20 for addition and subtraction and 0 - 100 for multiplication and division). It tells you what strategies they know, what strategies they are struggling with and most importantly where to begin instruction. It also tells you what to do once you get the information. Creating activities for purposeful practice in each student's zone of proximal development is extremely important.

I have updated the first version of the Math Running Record based on the input of many different educators. Terri Ruyter, Janice Riggs, Christine Mulgrave King, and Alison Mello have helped me so much during the early pilots and the thinking along the way. Ann Elise Record has done a tremendous amount of work thinking about how to add different parts to the Math Running Record, especially the additions to Part 2, where we now very clearly record whether the student does not have the strategy, is emerging (meaning they are getting it but haven't mastered it) or yes they understand that strategy. I am very thankful and grateful that Ann Elise Record has spent endless hours with me thinking about the additions to Part 2. I have also added a section which is to be filled out at the end (even though it is on the first page to save paper on some records) where everything is summarized. Again, Ann Elise Record helped to put this together.

I want to especially thank Ann Elise for starting a Math Running Records Facebook page, whose community just keeps growing! She is doing great work with videos and helping to organize games and activities that the community is contributing.

(<https://www.facebook.com/search/top/?q=math%20running%20records>) and also there is a padlet! (https://padlet.com/annelise_record17/vtqkwjgjo4zy)

I do *Professional Development on Math Running Records* at schools around the country and at seminars and conferences. Contact us today about coming to your school! We can do district and school level teacher workshops, grade level trainings, train the trainer and more! Here is information to contact me with any questions, comments or suggestions. I will skype in for 45 minutes to any group that is doing a book study on Math Running Records, for free. This offer applies to any of my books.

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I am also an avid pinner with several math fluency boards: <https://www.pinterest.com/drnicki7/>

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We have a Math Running Records Course Online!:

<https://drnickinewton.thinkific.com/courses/math-running-records-in-action> and over 20 other courses as well! For Credit and non-credit: <https://www.drnickinewton.com/classes/>

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Happy Mathing,
Dr. Nicki

Instructions (PLEASE READ BEFORE ADMINISTERING-This is a quick guide).[It is highly recommended to read the book and watch the videos before you start].

When administering part 1 these are the important things:

- 1. Be sure to tell the students that you might not do all the problems. This lowers the anxiety for students who feel bad if they don't get to finish the test.**
- 2. Remember, you are not trying to give the whole test. The point of the assessment is to find out where students are doing well and where they are stuck. You stop when they start struggling. So for instance, if a student misses a problem but self-corrects and they self-correct by counting on their fingers, code it and stop if you feel like that is where they struggle. When they miss a problem, that should raise a question. Was it a silly error, or did they really not know the problem? If they miss the next problem stop the test. If they don't miss the next problem keep going, and at the end if you feel like it was a silly error, go back and ask that question again. If students get a problem correct, but they are using an inefficient strategy (such as counting all or counting on) stop. This lets you know that this is where students need to work towards fluency.**

Updated version of Dr. Nicki Newton's Math Running Records protocol, from *Math Running Records in Action* (Routledge 2016/2019). Teachers have permission to use this with their classroom and the students they work with. Schools, districts and universities have permission to copy these for professional development work. If you are doing other types of training, you must get permission from Dr. Nicki and Routledge (drnicki7@gmail.com).

3. When students get stuck, be sure to ASK them what they do when they get stuck. How do they solve the problem? If they say they solve it with pencil and paper, give it to them. If they say they use counters, give it to them. If they can't do it, just move on. BE SURE to ask students if there is any other problems on the page that they can solve. Sometimes, students know random facts.

4. Remember that you are giving a Math Running Record to find the instructional starting point. You are looking to see where students are struggling. Maybe they got the problems correct, but they are *counting all* or *counting on* to figure out facts within 10. You then know, that they need more efficient strategies. You should start with counting on by 1,2, and 3. Or maybe students did really well and then they started finger counting when they got to doubles plus 1. This should alert you to explore more about doubles plus 1. You will then go to Part 2 and ask questions up to that point. You will see exactly what students are doing and be able to decide on the instructional strategy to work with from that point.

5. After you find the point of instruction, you want to set up a series of experiences for students to work with that strategy. You should make exact notes of what students say when they get something incorrect so that you can analyze the error pattern. You want students to work through concrete, pictorial and abstract activities. This is the key part. The Math Running Record is the assessment that tells you where to start. You must do the work based on the information you get from the assessment. The Record alone is just the indicator of where to do the work.

In summation, Part 1 is a general overview. It allows you to see what students are doing, how they approach the math and what they are doing when they get stuck. Part 2 is the deeper dive. It allows you to ask questions and listen to what students are saying they are doing and what they are actually doing. It allows you to see what strategies students are using. It allows you to listen to what they are saying. It allows you to look for patterns in their mathematical behaviors. What errors are students making? What misunderstandings and misconceptions do students hold? Where are there inconsistencies in student thinking? It is important to record their error patterns, so that you can analyze exactly what they are doing. Part 2 allows you to think about and write about what students are doing. Part 3 gives you a small peak into a student's mathematical disposition. We know from the research that the student's mathematical disposition impacts how they feel about math and how they participate as a mathematician.

A Word about Coding

Coding has been a part of the research on mathematical fluency for a long time. Codes help us to describe what students are doing. Use the codes that are listed. Do not change them. You need consistency across your school and district with the codes. These codes are built based on the historical codes, however adapted to meet the framework for the Math Running Record.

Here is a brief explanation of the codes:

Part 1: In part 1 you are looking at the 4 aspects of fluency: flexibility, efficiency, accuracy and automaticity. So, the first codes give you a general overview of how students are approaching number combinations. You are only getting a preliminary look at how students are approaching problems in part 1. You can go back after you finish part 1 and ask any questions about it that you have. For example, you might ask a student: "I noticed that you were thinking in your head to do $2 + 6$. Can you tell me what that sounded like? Say out loud how you did it." Also, you might have noticed that students counted on their fingers, but you are not sure where they started from. You should definitely ask them, "I noticed that you counted on your fingers, which number did you start with?"

There are the codes:

Codes for Automaticity:

a – Automatic (within 3 seconds)

5s – A bit longer, it is used for students who do not know their facts automatically but only take a few seconds to retrieve facts

pth – Prolonged thinking time is for students who get stuck and/or take a really long time to answer. They might eventually give the correct answer or they might pass or give an incorrect answer. Also, as you are recording, make sure that you note if students say it quickly but incorrectly.

Codes for Flexibility

These codes allow us to describe what students are doing. Remember that when students are stuck, they can ask for counters, number lines, or paper and pencil to do their work. This is completely acceptable because one of the goals of the Math Running Record is to determine whether or not students can solve the problem by any means.

ca – count all with fingers, drawings, manipulatives (i.e. for 3×4 sounds like 1, 2, 3, 4...5, 6, 7, 8.... 9, 10, 11, 12)

fco - finger counted on (i.e. for 6×4 student may say 4×5 is 20... 21, 22, 23, 24 using fingers)

skf - skip counted on fingers (i.e. 4, 8, 12 using fingers)

coh – counted on in head (i.e. for 3×6 student may say 2×6 is 12...13, 14, 15, 16, 17, 18 counting on in their head)

skh – skip counted in head (i.e. 4, 8, 12 in their head)

asc – attempted to self-correct (students tried to fix their thinking but are still incorrect)

sc - self- corrected

dk - didn't know

- For both the automaticity and flexibility codes, you might take notes on these while doing part 2, especially if something stands out for you.

Codes for Efficiency

These codes help us to describe what types of strategies students are using.

- 0 – doesn't know
- 1 – counting strategies by ones or skip counting using fingers, drawings or manipulatives
- 2 - mental math/solving in head
- 3 - using known facts and strategies
- 4M - automatic recall from memory
- 4 – automatic recall and students have number sense

*As you do Part 2, you can also record the automaticity and flexibility codes for anything that stands out for you. This will help in your total analysis.

**The difference between 4M and 4 is that you have some students who can give you the answers to problems but everything is memorized and they have no number sense. You will only be able to figure this out when you get to Part 2 and start asking questions about strategies.

Multiplication Running Record Recording Sheet

Student: _____ Teacher: _____ Date: _____

Part 1: Initial Observations			
Teacher: We are now going to administer Part 1 of the Running Record. I am going to give you a sheet of paper with some problems. I want you to go from the top to the bottom and tell me just the answer. If you get stuck, you can stop and ask for what you need to help you. If you want to pass, you can. We might not do all of the problems. I will be taking notes so that I remember what you did. Let's start.			
Part 1	Codes: What do you notice?	Initial Observations of Strategies	Data Code Names
0 x 4 a 5s pth	ca fco skf coh skh sc asc dk	0 1 2 3 4M 4	M0 -multiplying by 0
1 x 2 a 5s pth	ca fco skf coh skh sc asc dk	0 1 2 3 4M 4	M1-multiplying by 1
10 x 7 a 5s pth	ca fco skf coh skh sc asc dk	0 1 2 3 4M 4	M10-multiplying by 10
5 x 3 a 5s pth	ca fco skf coh skh sc asc dk	0 1 2 3 4M 4	M5-multiplying by 5
2 x 6 a 5s pth	ca fco skf coh skh sc asc dk	0 1 2 3 4M 4	M2-multiplying by 2
4 x 8 a 5s pth	ca fco skf coh skh sc asc dk	0 1 2 3 4M 4	M4-multiplying by 4
8 x 6 a 5s pth	ca fco skf coh skh sc asc dk	0 1 2 3 4M 4	M8-multiplying by 8
3 x 9 a 5s pth	ca fco skf coh skh sc asc dk	0 1 2 3 4M 4	M3-multiplying by 3
6 x 7 a 5s pth	ca fco skf coh skh sc asc dk	0 1 2 3 4M 4	M6-multiplying by 6
9 x 6 a 5s pth	ca fco skf coh skh sc asc dk	0 1 2 3 4M 4	M9-multiplying by 9
7 x 8 a 5s pth	ca fco skf coh skh sc asc dk	0 1 2 3 4M 4	M7-multiplying by 7
4 x 4 a 5s pth	ca fco skf coh skh sc asc dk	0 1 2 3 4M 4	MS-multiplying Square Numbers
Codes a - automatic 5s - 5 seconds pth - prolonged thinking time	Types of Strategies ca – count all with fingers, drawings, manipulatives fco - finger counted on skf - skip counted on fingers coh – counted on in head skh – skip counted in head sc - self- corrected asc – attempted to self-correct dk - didn't know	Strategy Levels 0 – doesn't know 1 – counting strategies by ones or skip counting using fingers, drawings or manipulatives 2 - mental math/solving in head 3- using known facts and strategies 4M- automatic recall from memory 4 – automatic recall and students have number sense	

Part 2: Flexibility/Efficiency			
<p>Teacher: We are now going to administer Part 2 of the Running Record. In this part of the Running Record we are going to talk about what strategies you use when you are solving basic multiplication facts. I am going to tell you a problem and then ask you to tell me how you think about it. I am also going to ask you about some different types of facts. Take your time as you answer and tell me what you are thinking as you see and do the math. I am going to take notes so I can remember everything that happened during this Running Record.</p>			
<p>Multiplying by 0 0 x 4</p> <p>What happens when you multiply by zero?</p> <p>___ product is 0 ___ other ___ can't articulate</p> <p>For example: 0 x 1 5 x 0 0 x 7</p> <p>Do they know this strategy?</p> <p>No/Emerging/Yes M0 Level 0 1 2 3 4M 4</p>	<p>Multiplying by 1 1 x 2</p> <p>What happens when you multiply by 1?</p> <p>___ product is the number being multiplied ___ other ___ can't articulate</p> <p>For example: 1 x 3 10 x 1 1 x 5</p> <p>Do they know this strategy?</p> <p>No/Emerging/Yes M1 Level 0 1 2 3 4M 4</p>	<p>Multiplying by 10 10 x 7</p> <p>What strategy do you use when you multiply by 10?</p> <p>___ understands place value ___ other ___ can't articulate</p> <p>For example: 10 x 8 5 x 10 10 x 3</p> <p>Do they know this strategy?</p> <p>No/Emerging/Yes M10 Level 0 1 2 3 4M 4</p>	<p>Multiplying by 5 5 x 3</p> <p>What strategy do you use when you multiply by 5 ?</p> <p>___ count by 5's ___ other ___ can't articulate</p> <p>For example: 5 x 7 4 x 5 5 x 9</p> <p>Do they know this strategy?</p> <p>No/Emerging/Yes M5 Level 0 1 2 3 4M 4</p>
<p>Multiplying by 2 2 x 6</p> <p>What do you do when you multiply by two?</p> <p>___ double it ___ other ___ can't articulate</p> <p>For example: 2 x 4 2 x 8 2 x 7</p> <p>Do they know this strategy?</p> <p>No/Emerging/Yes M2 Level 0 1 2 3 4M 4</p>	<p>Multiplying by 4 4 x 8</p> <p>What strategy do you use when you multiply by four?</p> <p>___ use doubles (i.e. 2 x 8 doubles) ___ other ___ can't articulate</p> <p>For example: 4 x 2 4 x 6 4 x 7</p> <p>Do they know this strategy?</p> <p>No/Emerging/Yes M4 Level 0 1 2 3 4M 4</p>	<p>Multiplying by 8 8 x 6</p> <p>What strategy do you use when you multiply by eight?</p> <p>___ use doubles (i.e. 4 x 6 doubled) ___ other ___ can't articulate</p> <p>If I didn't know 8 x 3 what is a way that I could solve this problem?</p> <p>How about 8 x 5? How about 8 x 9?</p> <p>Do they know this strategy?</p> <p>No/Emerging/Yes M8 Level 0 1 2 3 4M 4</p>	<p>Multiplying by 3 3 x 9</p> <p>What strategy do you use when you multiply by 3?</p> <p>___ x2 plus the number ___ other ___ can't articulate</p> <p>For example: 3 x 3 3 x 6 3 x 4</p> <p>Do they know this strategy?</p> <p>No/Emerging/Yes M3 Level 0 1 2 3 4M 4</p>

Multiplying by 6 6 x 7	Multiplying by 9 9 x 6	Multiplying by 7 7 x 8	Multiplying Square #'s 4 x 4
<p>What strategy do you use when you multiply by 6?</p> <p>___ use doubles (i.e. 3 x 7 doubled) ___ other ___ can't articulate</p> <p>For example: 6 x 3 6 x 6 6 x 8</p> <p>Do they know this strategy?</p> <p>No/Emerging/Yes M6 Level 0 1 2 3 4M 4</p>	<p>What strategy do you use when you multiply by 9?</p> <p>___ x10 minus the number being multiplied ___ other ___ can't articulate</p> <p>If I didn't know 9 x 4, what is a way I could think about and solve this problem?</p> <p>How would you solve 9 x 7?</p> <p>How about 9 x 5?</p> <p>Do they know this strategy?</p> <p>No/Emerging/Yes M9 Level 0 1 2 3 4M 4</p>	<p>What strategy do you use when you multiply by 7?</p> <p>___ x5 plus x2 ___ other ___ can't articulate</p> <p>If I were stuck on 7 x 6, what would you tell me to do?</p> <p>How about 7 x 4?</p> <p>How about 7 x 3?</p> <p>Do they know this strategy?</p> <p>No/Emerging/Yes M7 Level 0 1 2 3 4M 4</p>	<p>What do you do when you are multiplying a number by itself?</p> <p>___ skip count ___ other ___ can't articulate</p> <p>For example: 5 x 5 8 x 8 9 x 9</p> <p>Do they know this strategy?</p> <p>No/Emerging/Yes MS Level 0 1 2 3 4M 4</p>
<p>Part 3</p> <p>Do you like math?</p> <p>What do you find easy?</p> <p>What do you find tricky?</p> <p>What do you do when you get stuck?</p>		<p>Question Prompts:</p> <p>That's interesting/fascinating: tell me what you did.</p> <p>That's interesting/fascinating: tell me how you solved it.</p> <p>That's interesting/fascinating: tell me what you were thinking.</p> <p>How did you solve this problem?</p> <p>Can you tell me more about how you solve these types of problems?</p> <p>What do you mean when you say _____? (i.e. ten friends/neighbor numbers etc.)</p>	
<p>General Observations (to be filled out after the interview)</p> <p>Instructional Response:</p> <p>Fluency Focus areas (circle all that apply): flexibility efficiency accuracy automaticity</p> <p>What multiplication strategy should the instruction focus on?</p> <p>M0 M1 M10 M5 M2 M4 M8 M3 M6 M9 M7 MS</p> <p>For their current instructional level, what is the predominant way in which students are arriving at the answers?</p> <p>0 1 2 3 4M 4 _____</p> <p>Overall, what is the way in which students calculated the answers?: 0 1 2 3 4M 4</p> <p>Comments/Notes about gestures, behaviors, remarks:</p>			

Student Page

0×4	8×6
1×2	3×9
10×7	6×7
5×3	9×6
2×6	7×8
4×8	4×4

These are cards for Part 2. You can either ask the questions just verbally or show the students the expressions on cards.

0×1	5×0	0×7
1×3	10×1	1×5
10×8	5×10	10×3
5×7	4×5	5×9
2×4	2×8	2×7
4×2	4×6	4×7

8×3	8×5	8×9
3×3	3×6	3×4
6×3	6×6	6×8
9×4	9×7	9×5
7×6	7×4	7×3
5×5	8×8	9×9