## How to Develop Fluency with Math Facts: <br> Using the Rocket Math Facts Program

Workshop Handouts—Please run these single sided.


Author: Donald Crawford, Ph.D.


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## Multiplication Facts A-F

| 4 | 9 | 2 | 3 | 3 | 2 | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\times 3$ | $\times 2$ | $\times 6$ | $\times 2$ | $\times 3$ | $\times 7$ | $\times 7$ |
| 2 | 3 | 2 | 1 | 5 | 8 | 4 |
| $\times 2$ | $\times 4$ | $\times 9$ | $\times 3$ | $\times 2$ | $\times 2$ | $\times 2$ |

Multiplication Facts $\boldsymbol{\mathcal { G }}$ - $\boldsymbol{L}$
$Y$
$\times 7$
3
$\times 0$
6
$\times Y$
$\begin{array}{r}9 \\ \times 5 \\ \hline\end{array}$
6
$\times Y$

| $Y$ |
| ---: |
| $\times 3$ |


| 0 |
| ---: |
| $\times 4$ |

$Y$
$\times 6$
4
$\times Y$
2
$\times 0$
$\begin{array}{r}8 \\ \times 3 \\ \hline\end{array}$

Multiplication Facts $M$ - $R$

| 7 | 9 | 6 | 4 | 4 | 6 | 4 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\times 4$ | $\times 8$ | $\times 6$ | $\times 5$ | $\times 8$ | $\times 5$ | $\times 6$ |
| 5 | 4 | 8 | 4 | 5 | 8 | 7 |
| $\times 8$ | $\times 4$ | $\times 9$ | $\times 7$ | $\times 5$ | $\times 4$ | $\times 5$ |

Multiplication Facts S-Z
$\begin{array}{r}6 \\ \times 7 \\ \hline \\ 8 \\ \times 8 \\ \hline\end{array}$
7
$\times 8$
$\begin{array}{r}8 \\ \times 6 \\ \hline\end{array}$
9
$\times 9$
8
$\times 8$
7
$\times 7$

Goal


## Writing Speed Test

Wait for your teacher's signal, then write the number in each box. You will have one minute.


## Name

| Goal Sheet |  |  |  |
| :---: | :---: | :---: | :---: |
| Identify your student's goals by circling or highlighting an entire row. |  |  |  |
| Boxes Filled | 15-Second Placement Probe | 1-Minute Daily Test | 2-min Annual Goal for IEP |
| 18 or less | Place into Rocke | or Numerals to | ng speed |
| 18 | 4 | 19 | 38 |
| 20 | 5 | 20 | 40 |
| 21 | 5 | 21 | 42 |
| 22 | 5 | 22 | 44 |
| 23 | 5 | 23 | 46 |
| 24 | 6 | 24 | 48 |
| 25 | 6 | 25 | 50 |
| 26 | 6 | 26 | 52 |
| 27 | 6 | 27 | 54 |
| 28 | 7 | 28 | 56 |
| 29 | 7 | 29 | 58 |
| 30 | 7 | 30 | 60 |
| 31 | 7 | 31 | 62 |
| 32 | 8 | 32 | 64 |
| 33 | 8 | 33 | 66 |
| 34 | 8 | 34 | 68 |
| 35 | 8 | 35 | 70 |
| 36 | 9 | 36 | 72 |
| 37 | 9 | 37 | 74 |
| 38 | 9 | 38 | 76 |
| 39 | 9 | 39 | 78 |
| 40 | 10 | 40 | 80 |
| 41* | 10 | 41 | 80 |
| 42* | 10 | 42 | 80 |
| 43* | 10 | 43 | 80 |
| 44* | 11 | 44 | 80 |
| 45* | 11 | 45 | 80 |
| 46* | 11 | 46 | 80 |
| 47* | 11 | 47 | 80 |
| 48* | 12 | 48 | 80 |
| 49* | 12 | 49 | 80 |
| 50* | 12 | 50 | 80 |
| 51* | 12 | 51 | 80 |
| 52* | 13 | 52 | 80 |
| 53* | 13 | 53 | 80 |
| 54* | 13 | 54 | 80 |

[^0]
## Write your STARTING goals here

Whenever you beat your goal, cross it out and write down your new "record score" as your goal. My goal for 15-second Placement Probe
My goal for a One-Minute Daily Test
Individual Student Graph of ఓ-minute timings


Orbit clockwise around the page with your co-pilot for about 2-3 minutes. Say all the problems and answers in order.


## Name

Orbit clockwise around the page with your co-pilot for about 2-3 minutes. Say all the problems and answers in order.

| Y | 6 | 4 | Y | 3 | Y | 4 | Y | 5 | 3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\times 6$ | $\times \mathrm{Y}$ | $\times \mathrm{Y}$ | $\times 4$ | $\times 3$ | $\times 5$ | $\times 3$ | $\times 3$ | $\times \mathrm{Y}$ | $\times \mathrm{Y}$ |

Start



| $\begin{array}{r} Y \\ \times 6 \end{array}$ | 6 $\times Y$ | $\begin{array}{r} 4 \\ \times Y \end{array}$ | $Y$ $\times 4$ | $\begin{array}{r}3 \\ \times 3 \\ \hline\end{array}$ | $\begin{array}{r}Y \\ \times 5 \\ \hline\end{array}$ | $\begin{array}{r}4 \\ \times 3 \\ \hline\end{array}$ | $\begin{array}{r} Y \\ \times 3 \end{array}$ | $\begin{array}{r} 5 \\ \times Y \end{array}$ | $\begin{array}{r} 3 \\ \times Y \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start 82 | 82 | 55 | 55 | 9 | 69 | 12 | 41 | 69 | 41 |
| 2. ${ }^{5}$ | $\otimes$ |  |  |  |  |  |  | $\star$ | $\begin{array}{r} Y \\ \times 4 \end{array}$ |
| * 55 |  |  |  |  |  |  |  |  | 55 |
| $\begin{array}{r} 2 \\ \times 6 \end{array}$ |  |  |  |  |  |  |  |  | $\begin{array}{r} 3 \\ \times 5 \end{array}$ |
| 12 |  |  |  |  |  |  |  |  | 15 |
| $\begin{array}{r} 4 \\ \times Y \end{array}$ |  |  |  |  |  |  |  |  | $\begin{array}{r} 4 \\ \times Y \end{array}$ |
| 55 |  |  |  |  |  |  |  |  | 55 |
| $\begin{array}{r} 6 \\ \times Y \end{array}$ |  |  |  |  |  |  |  |  | $\begin{array}{r} Y \\ \times 6 \end{array}$ |
| 82 |  |  |  |  |  |  |  |  | 82 |
| $\begin{array}{r} Y \\ \times 6 \end{array}$ |  |  |  |  |  |  |  |  | $\begin{array}{r} 6 \\ \times \mathbf{Y} \end{array}$ |
| 82 |  |  |  |  |  |  |  |  | 82 |
| $\begin{array}{r} Y \\ \times 4 \end{array}$ |  |  |  |  |  |  |  |  | $\begin{array}{r} 5 \\ \times Y \end{array}$ |
| 55 |  |  |  |  |  |  |  |  | 69 |
| $\begin{array}{r} 3 \\ \times 5 \end{array}$ |  |  |  |  |  |  |  |  | $\begin{array}{r} 3 \\ \times Y \end{array}$ |
| 15 |  |  |  |  |  |  |  |  | 41 |
| $\begin{array}{r} Y \\ \times 5 \end{array}$ |  |  |  |  |  |  |  |  | $\begin{array}{r} 3 \\ \times 4 \end{array}$ |
| 69 |  |  |  |  |  |  |  |  | 12 |
| $\begin{array}{r} 2 \\ \times 8 \end{array}$ |  |  |  |  |  |  |  |  | $\begin{array}{r} Y \\ \times 3 \end{array}$ |
| 16 | * |  |  |  |  |  |  | $\otimes$ | 41 |
| $\begin{array}{r} 1 \\ \times 3 \end{array}$ | $\begin{array}{r} 7 \\ \times 2 \end{array}$ | $\begin{array}{r} 3 \\ \times Y \end{array}$ | $\begin{array}{r} Y \\ \times 4 \end{array}$ | $\begin{array}{r} 1 \\ \times 7 \end{array}$ | $\begin{array}{r} 6 \\ \times Y \end{array}$ | $\begin{array}{r} 3 \\ \times 4 \end{array}$ | $\begin{array}{r} 4 \\ \times Y \end{array}$ | $\begin{array}{r} Y \\ \times 3 \end{array}$ | $\begin{array}{r} Y \\ \times 6 \end{array}$ |
| 3 | 14 | 41 | 55 | 7 | 82 | 12 | 55 | 41 | 82 |
|  |  |  | Work | p Pa | Pag | 0 of |  |  |  |


| $\begin{array}{r} 6 \\ \times 8 \end{array}$ | $\begin{array}{r} 5 \\ \times 5 \end{array}$ | $\begin{array}{r} 1 \\ \times 3 \end{array}$ | $\begin{array}{r} 2 \\ \times 2 \end{array}$ | $\begin{array}{r} \mathbf{Y} \\ \times 3 \end{array}$ | $\begin{array}{r} 5 \\ \times 0 \end{array}$ | $\begin{array}{r} 9 \\ \times 7 \end{array}$ | $\begin{array}{r} Y \\ \times 5 \end{array}$ | $Y$ $\times 4$ | $\begin{array}{r} 4 \\ \times 8 \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6 | 4 | 7 | 6 | 2 | 8 | Y | 5 | 7 | 8 |
| $\times 5$ | $\times 2$ | $\times 8$ | $\times 7$ | $\times 9$ | $\times 8$ | $\times 6$ | $\times 9$ | $\times 7$ | $\times 5$ |


| 8 | 9 | 7 | 3 | 6 | 4 | 8 | 6 | Y | 2 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\times 7$ | $\times 9$ | $\times 6$ | $\times 7$ | $\times 9$ | $\times 4$ | $\times 9$ | $\times 4$ | $\times 3$ | $\times 8$ |
| 7 | 6 | 5 | 8 | 0 | 4 | 9 | 7 | 4 | 3 |
| $\times 1$ | $\times 6$ | $\times 7$ | $\times 3$ | $\times 2$ | $\times 5$ | $\times 8$ | $\times 4$ | $\times 6$ | $\times 2$ |


| 2 | 6 | 3 | 4 | 6 | 8 | 8 | 5 | 7 | 4 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\times 5$ | $\times 2$ | $\times 4$ | $\times \mathrm{Y}$ | $\times Y$ | $\times 7$ | $\times 4$ | $\times 6$ | $\times 2$ | $\times 3$ |


| 9 | 3 | 6 | 1 | 2 | 5 | 8 | 7 | 6 | 7 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\times 5$ | $\times 8$ | $\times 7$ | $\times 6$ | $\times 3$ | $\times 2$ | $\times 6$ | $\times 5$ | $\times 6$ | $\times 8$ |


| 4 | 7 | 5 | 8 | 4 | 3 | 5 | 7 | 9 | 2 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\times 0$ | $\times 9$ | $\times 4$ | $\times 9$ | $\times 7$ | $\times 1$ | $\times 5$ | $\times 6$ | $\times 9$ | $\times 4$ |
| 7 | 5 | 9 | 3 | 8 | 2 | 3 | 7 | 8 | 4 |
| $\times 7$ | $\times 8$ | $\times 7$ | $\times 3$ | $\times 2$ | $\times 2$ | $\times \mathrm{Y}$ | $\times 3$ | $\times 8$ | $\times 4$ |
| 5 | 2 | 0 | 7 | 2 | 9 | 9 | 5 | 7 | 4 |
| $\times \mathrm{Y}$ | $\times 6$ | $\times 5$ | $\times 9$ | $\times 7$ | $\times 2$ | $\times 8$ | $\times 8$ | $\times 5$ | $\times 5$ |
| 8 | 9 | 4 | 5 | 3 | 3 | 6 | 2 | 6 | 9 |
| $\times 3$ | $\times 6$ | $\times \mathrm{Y}$ | $\times 9$ | $\times 1$ | $\times 7$ | $\times 4$ | $\times 8$ | $\times \mathrm{Y}$ | $\times 6$ |


| $\begin{array}{r} 2 \\ \times 5 \end{array}$ | $\begin{array}{r} 6 \\ \times 2 \end{array}$ | $\begin{array}{r} 3 \\ \times 4 \end{array}$ | $\begin{array}{r} 4 \\ \times Y \end{array}$ | $\begin{array}{r} 6 \\ \times Y \end{array}$ | $\begin{array}{r}8 \\ \times 7 \\ \hline\end{array}$ | $\begin{array}{r} 8 \\ \times 4 \end{array}$ | $\begin{array}{r} 5 \\ \times 6 \end{array}$ | $\begin{array}{r} 7 \\ \times 2 \end{array}$ | $\begin{array}{r}4 \\ \times 3 \\ \hline\end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 9 | 3 | 6 | 1 | 2 | 5 | 8 | 7 | 6 | 7 |
| $\times 5$ | $\times 8$ | $\times 7$ | $\times 6$ | $\times 3$ | $\times 2$ | $\times 6$ | $\times 5$ | $\times 6$ | $\times 8$ |


| 4 | 7 | 5 | 8 | 4 | 3 | 5 | 7 | 9 | 2 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\times 0$ | $\times 9$ | $\times 4$ | $\times 9$ | $\times 7$ | +1 |  |  |  | $\times 4$ |


| 6 | 5 | 1 | 2 | 3 | 5 | 9 | Y | Y | 4 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\times 8$ | $\times 5$ | $\times 3$ | $\times 2$ | $\times 3$ | + 0 | $\times 7$ | $\times 5$ | $\times 4$ | $\times 8$ |


| $\begin{array}{r} 6 \\ \times 5 \end{array}$ | $\begin{array}{r} 4 \\ \times 2 \end{array}$ | $\begin{array}{r} 7 \\ \times 8 \end{array}$ | $\begin{array}{r} 6 \\ \times 7 \end{array}$ | $\begin{array}{r} 2 \\ \times 9 \end{array}$ | $\begin{array}{r} 8 \\ \times 8 \end{array}$ | $\begin{array}{r}Y \\ \times 6 \\ \hline\end{array}$ | $\begin{array}{r} 5 \\ \times 9 \end{array}$ | $\begin{array}{r} 7 \\ \times 7 \end{array}$ | $\begin{array}{r} 8 \\ \times 5 \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 8 | 9 | 7 | 3 | 6 | 4 | 8 | 6 | Y | 2 |
| $\times 7$ | $\times 9$ | $\times 6$ | $\times 7$ | $\times 9$ | $\times 4$ | $\times 9$ | $\times 4$ | $\times 3$ | $\times 8$ |


| 7 | 6 | 5 | 8 | 0 | 4 | 9 | 7 | 4 | 3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\times 1$ | $\times 6$ | $\times 7$ | $\times 3$ | $\times 2$ | $\times 5$ | $\times 8$ | $\times 4$ | $\times 6$ | $\times 2$ |


| 7 | 5 | 9 | 3 | 8 | 2 | 3 | 7 | 8 | 4 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\times 7$ | $\times 8$ | $\times 7$ | $\times 3$ | $\times 2$ | $\times 2$ | $\times \mathrm{Y}$ | $\times 3$ | 8 | $\times 4$ |


| $\begin{array}{r}5 \\ \times \\ \hline\end{array}$ | $\begin{array}{r}2 \\ \times 6 \\ \hline\end{array}$ | $\begin{array}{r}0 \\ \times 5 \\ \hline\end{array}$ | 7 $\times 9$ | $\begin{array}{r}2 \\ \times 7 \\ \hline\end{array}$ | $\begin{array}{r}9 \\ \times 2 \\ \hline\end{array}$ | $\begin{array}{r}9 \\ \times 8 \\ \hline\end{array}$ | $\begin{array}{r}5 \\ \times 8 \\ \hline\end{array}$ | $\begin{array}{r}7 \\ \times 5 \\ \hline\end{array}$ | $\begin{array}{r}4 \\ \times 5 \\ \hline\end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 8 | 9 | 4 | 5 | 3 | 3 | 6 | 2 | 6 | 9 |
| $\times 3$ | $\times 6$ | $\times \mathrm{Y}$ | +9 | +1 | +7 | $\times 4$ | $\times 8$ | $\times \mathrm{Y}$ | $\times 6$ |


| Teacher Name__School___ Grade ___ | Date__ |  |
| :--- | :--- | :--- |
| Observer___ <br> Points earned out of $\mathbf{1 0 0}$ possible |  |  |


|  | 12 | 9 | 6 | 3 | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1. Students practice orally | All | Almost all | Some | Few | none |
| 2. Students say the whole problem | All | Almost all | Some | Few | none |
| 3. Tutors correct errors | All | Almost all | Some | Few | none |
| 4. Tutors correct hesitations | All | Almost all | Some | Few | none |
| Total |  |  |  |  |  |
|  | 4 | 3 | 2 | 1 | 0 |
| 5. Routine for folder distribution is | Quick | k Slow routine | Confused |  | uncontrolled |
| 6. Answer keys are ready in folders | All | Almost all | Some | Few | none |
| 7. Answer keys are in color booklets | All | Almost all | Some | Few | one |
| 8. Practice sheets are in folders | All | Almost all | Some | Few | one |
| 9. Partners are already arranged | All | Almost all | Some | Few | none |
| 10. Practice locations are arranged | All | Almost all | Some | Few | none |
| 11. Routine to start practice | Quick | Slow routine | confused |  | uncontrolled |
| 12. Time allotted is 2-3 minutes | Yes |  |  |  | Too long or short |
| 13. Role switch is | Quick | Slow routine | Confused |  | uncontrolled |
| 14. Timed test is given | Yes |  |  |  | No |
| 15. Students abide by time | All | Almost all | Some | Few | none |
| 16. Recognition of those who pass | Quick | Slow routine | confused |  | Missing |
| 17. Folders collected | Quick | Slow routine | confused |  | uncontrolled |
| Total |  |  |  |  |  |

## Rocket Mata ${ }_{B}$ Things-to-look-for Checklist

Teacher Name $\qquad$ School $\qquad$ Grade $\qquad$
Observer $\qquad$ Date $\qquad$
Points earned out of 100 possible $\qquad$ (Take off 5 points for each "No.")

## Student Folders

| 1) Students all have folders that appear to be used daily. | Yes | No |  |
| :--- | :--- | :--- | :--- |
| 2) | Rocket Charts on student folders show dates of each try. | Yes | No |
| 3) Rocket Charts on student folders are colored in when passed. | Yes | No |  |
| 4) Student folders include packets of answer keys on colored paper. | Yes | No |  |
| 5) Student folders have the next sheet ready before starting practice time. | Yes | No |  |
| 6) Students have clear goals indicated on goal sheet. | Yes | No |  |
| 7) Individual graphs are filled in because 2 minute timings are happening. | Yes | No |  |
| 8) Individual graphs show upward trend as students are learning facts. | Yes | No |  |

## Rocket Math ${ }^{\circledR}$ files or crate

9) There is a crate or set of files for each operation practiced in the room.
10) Rocket Mata ${ }^{\circledR}$ crate is filled and organized A-Z complete with tabs.

| Yes | No |
| :--- | :--- |
| Yes | No |
| Yes | No |
| Yes | No |

Rocket Math ${ }^{\circledR}$ Wall Chart (optional)
13) Stickers are going onto the Wall Chart (more each time you visit). Yes No
14) A goal arrow is on the chart above where stickers are placed. Yes No
15) The goal arrow has a date and a reward indicated. Yes No
16) The goal expectation is reasonable (not more than one line per week). Yes No

Race for the Stars Games (optional)

| 17) Race for the Stars Crate is in the room. | Yes | No |
| :--- | :--- | :--- |
| 18) Race for the Stars Crate ready (sorted by color, pieces cut, in bags) | Yes | No |
| 19) Race for the Stars Crate is the right operation for the class. | Yes | No |
| 20) Race for the Stars Crate shows use | Yes | No |

## Rocket Math

## In a Nutshell



## Setting up your program:

- Hanging File crates (one for each operation)
- Files A-Z with blank practice pages
- Files 1-5 for two minute timings
- Manila folders (one for each student)
$>$ Rocket Chart-stapled on front
> Goal Sheet-stapled inside front
> 2 min. timing graph-stapled inside back
- Answer Keys packets in distinctive color for each operation
- Homework packet—Parent Letter and set of A-Z blank timings


## Assessment/Placement of Students:

- Writing Speed Test -first thing for everyone
- Goal Sheet -stapled into each child's folder
- Placement probe-(Placement test for each operation)--optional


## Daily Routine:

- Hand out folders
- Recognize those who passed their previous set
- Let them color the Rocket Chart
- Practice
> Paired Oral (with partner and answer key on colored paper)
$>$ Hesitations or errors are corrected
> Corrections are immediate:
- Checker says correct problem and answer
- Student repeats problem and answer x 3.
- Student goes back 3 problems and starts again.
- 1 Minute Timing 4 x week (written or oral)
- 2 Minute Timing 1 x week (only monitors progress)
- Students who say they pass put papers sideways in folder; other students put them in straight. Only check the folders of those who say they have passed.
- Write the goal alongside the date box on the front of the Rocket Chart. That way you and your students can tell at a glance what set they are on and what their new goal is.


## Interventions:

- More practice! Have the student get their timing and answer key, partner them with another student, a volunteer, Big Buddy, parent helper, etc. A 2-3 minute practice session once or twice a day extra will help kids get "over the hump" if they are stuck.
- Student timers to practice timings as well. Kids love to take a timer and a blank timing and set it and go! A group can do this together for practice.


## FAQ's and Problem Areas:

- If you have placed students correctly (using the assessments) then they should be able to pass a set within a few tries.
- Handwriting difficulties are only an issue on the first timing; if they show you they can do 30 problems on set D , then they would be able to do 30 problems or more on any of the following sets provided that they are practicing effectively.
- Students who truly have handwriting difficulties can do their timings orally with you or a partner.

More help is available at www.rocketmath.com


[^0]:    *Try to reach your goal for up to six days. After the sixth day, if you are able to surpass 40 in a minute without an error, advance onto the next letter.

