



# PROGRESSION OF MULTIPLICATION

## CHALLENGES

EFFICIENCY

ACCURACY

FLEXIBILITY



# COMPONENTS OF FLUENCY

MULTIPLYING BY SQUARES  
8 X 8    2X2    6 X 6

MULTIPLYING BY 7  
7 X 6    7 X 4    7 X 2

MULTIPLYING BY 9  
9 X 2    9 X 5    9 X 3

MULTIPLYING BY 6  
6 X 3    6 X 7    6 X 5

MULTIPLYING BY 3  
3 X 9    3 X 5    3 X 0

MULTIPLYING BY 8  
8 X 1    8 X 3    8 X 6

MULTIPLYING BY 4  
4 X 8    4 X 5    4 X 0

MULTIPLYING BY 2  
2 X 4    2 X 2    2 X 8

MULTIPLYING BY 5  
5 X 10    5 X 7    5 X 5

MULTIPLYING BY 10  
10 X 5    10 X 8    10 X 3

MULTIPLYING BY 1  
1 X 8    1 X 2    1 X 5

MULTIPLYING BY 0  
0 X 5    0 X 2    0 X 8

## RESEARCH NOTES

COUNTING ALL

additive calculation

count by

Pattern based

hybrids

Learned Products

(Sherin and Fuson, 2005)

SET A GOAL. MAKE A PLAN. ACHIEVE YOUR GOAL!

# PROGRESSION OF MULTIPLICATION

# JOURNEY TO FLUENCY

- FLUENCY IS**
- 1 EFFICIENCY
  - 2 ACCURACY
  - 3 FLEXIBILITY

(NRC; Kilpatrick et al., 2001; NCTM 2000; NCTM, 2014).



## RESEARCH NOTES

- 1 COUNTING ALL
- 2 additive calculation
- 3 count by
- 4 pattern based
- 5 learned products
- 6 hybrids

-Sherin and Fuson 2000

MULTIPLYING BY 0  
**0 x 1**

MULTIPLYING BY 1  
**1 x 5**

MULTIPLYING BY 10  
**10 x 5**

MULTIPLYING BY 5  
**5 x 6**

MULTIPLYING BY 2  
**2 x 7**

MULTIPLYING BY 4  
**4 x 3**

MULTIPLYING BY 8  
**8 x 6**

MULTIPLYING BY 3  
**3 x 9**

MULTIPLYING BY 6  
**6 x 5**

MULTIPLYING BY 9  
**9 x 2**

MULTIPLYING BY 7  
**7 x 6**

MULTIPLYING BY SQUARES  
**8 x 8**

# PROGRESSION OF MULTIPLICATION

## FLUENCY IS

1 EFFICIENCY

2 ACCURACY

3 FLEXIBILITY

(ERIC; Kilpatrick et al., 2001; NCTM 2000; NCTM, 2014).



# ACCOMPLISH THE JOURNEY TO FLUENCY

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- 2 ACCURACY
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(NRC; Kilpatrick et al., 2001; NCTM 2000; NCTM, 2014).



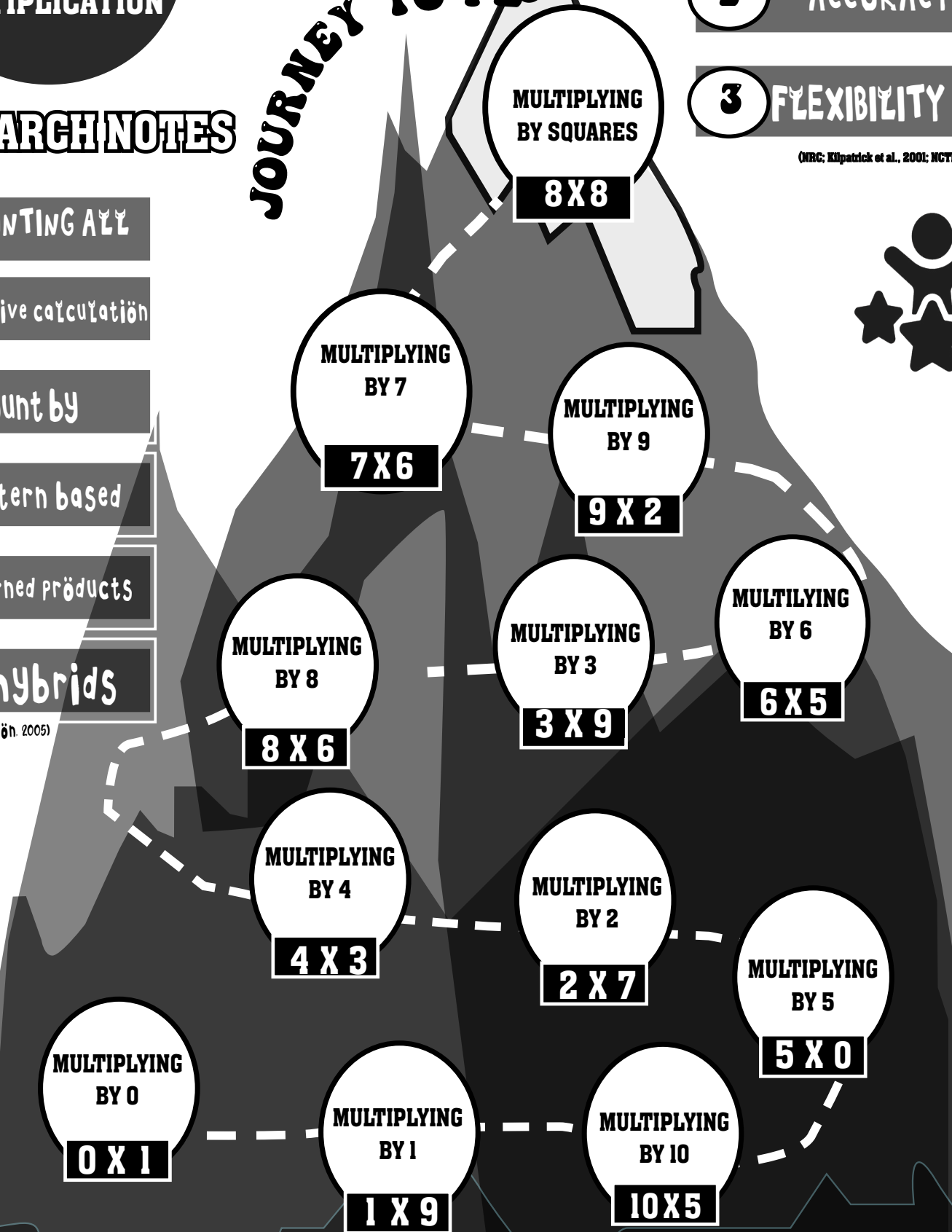
## PROGRESSION OF MULTIPLICATION

# JOURNEY TO FLUENCY

## RESEARCH NOTES

- 1 COUNTING ALL
- 2 Alternative calculation
- 3 Count by
- 4 Pattern based
- 5 Memorised products
- 6 Hybrids

(Sherin and Fusöh, 2005)



### SET A GOAL. MAKE A PLAN. ACHIEVE YOUR GOAL!

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## About the Dr. Nicki Newton



Dr. Nicki Newton is an education consultant who works with schools and districts around the country and Canada on k-8 math curriculum. She has taught elementary school, middle school, and graduate school. Dr Nicki has an Ed.M. and an Ed.D from Teachers, College Columbia University. She is greatly interested in teaching and learning practices around the world and has researched education in Denmark, Guatemala and India. She has written several books, including being a part of the curriculum team for the new McGraw Hill Reveal Math series. She is currently working on a book about counting.

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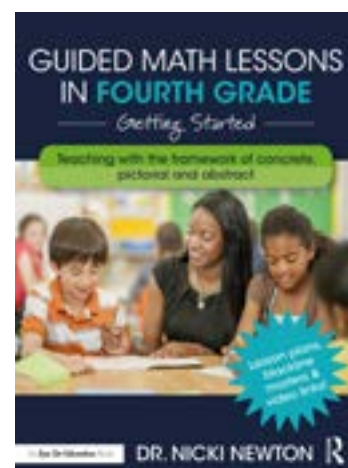
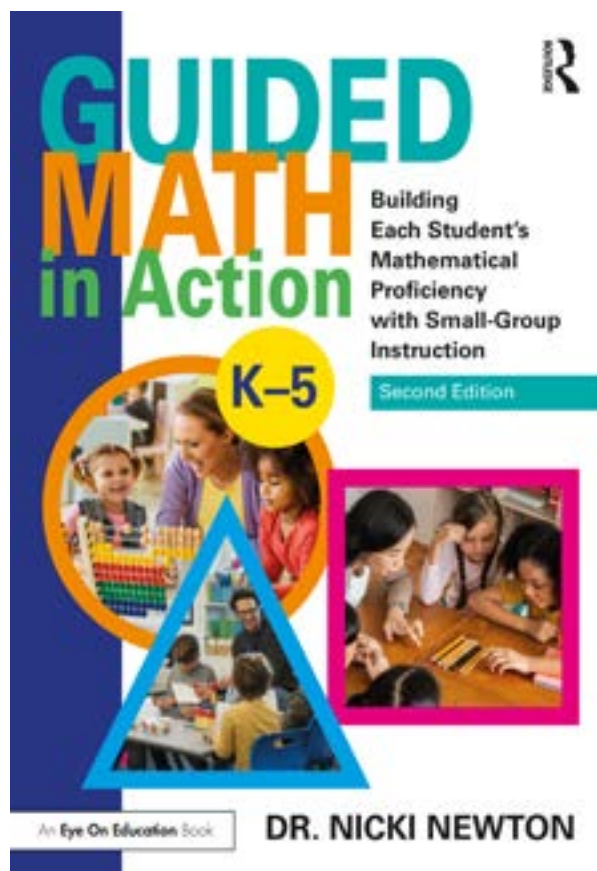
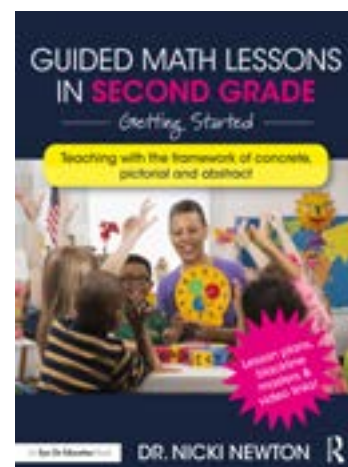
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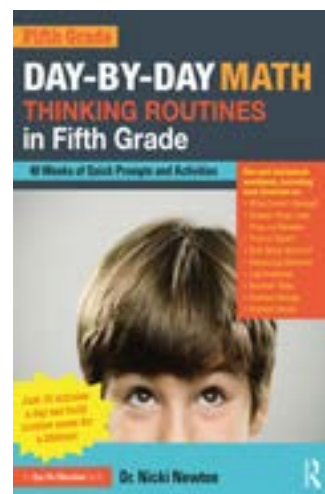
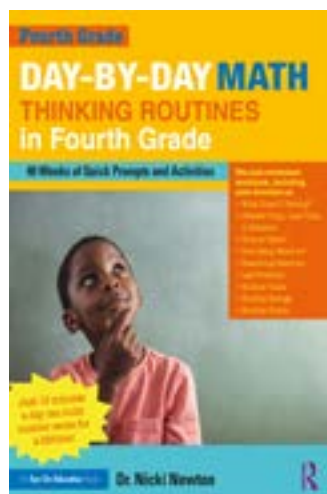
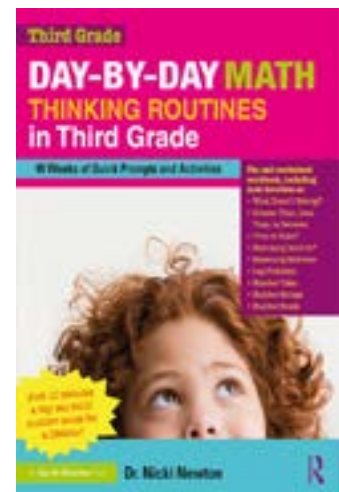
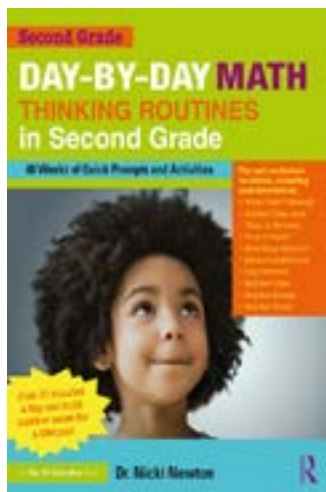
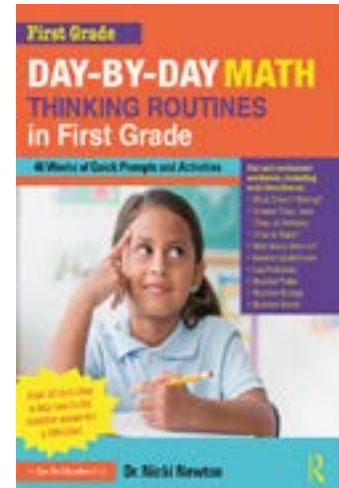
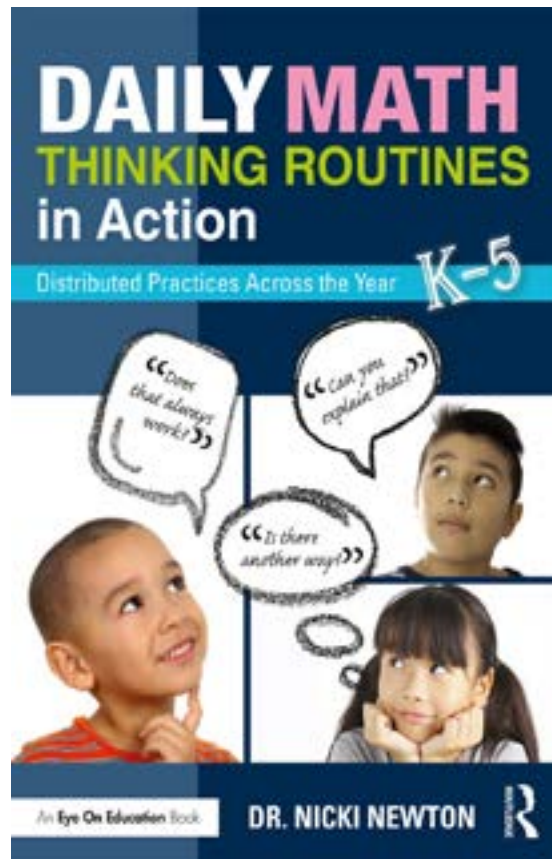
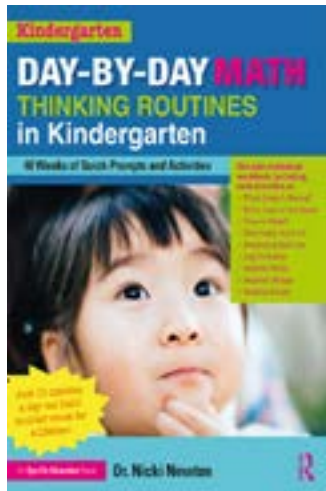
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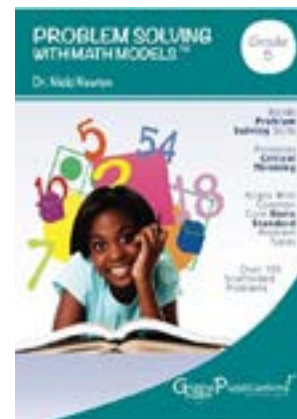
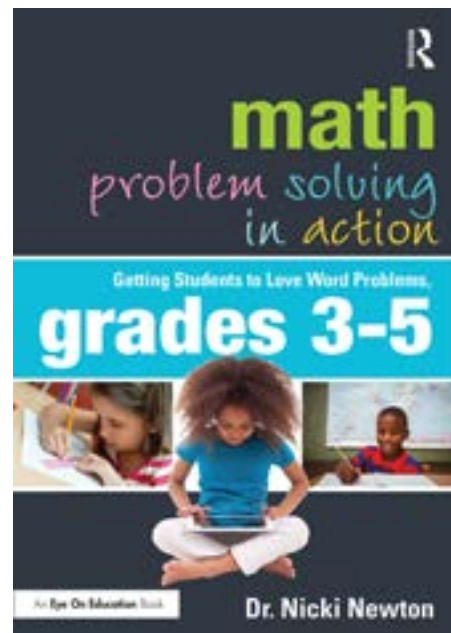
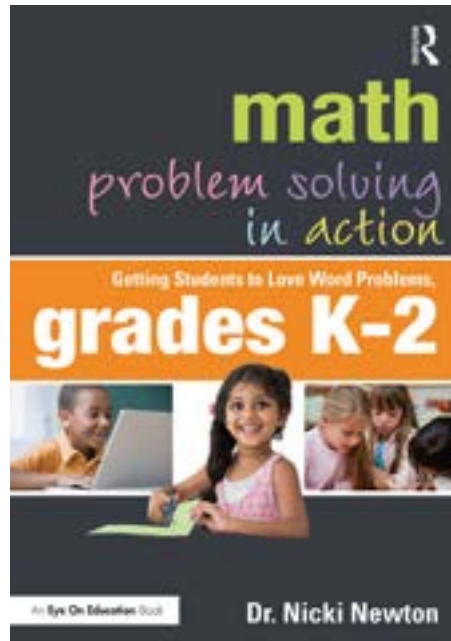
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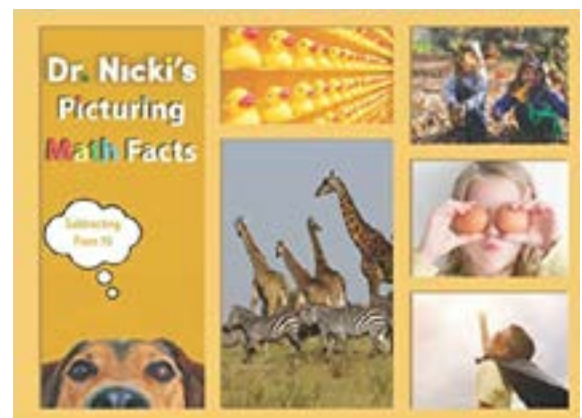
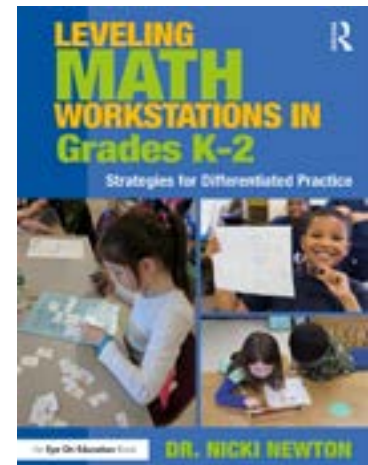
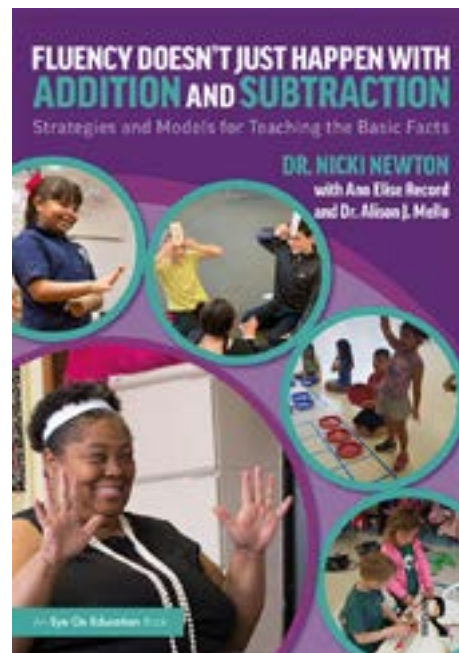
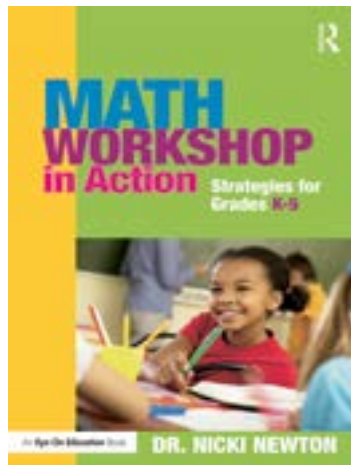
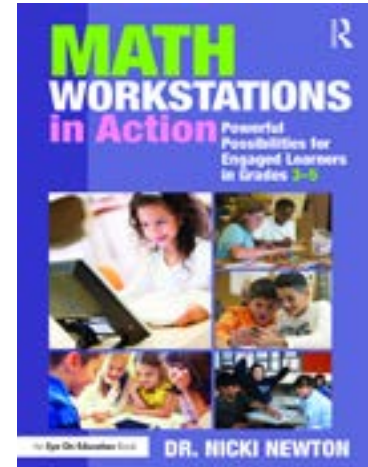
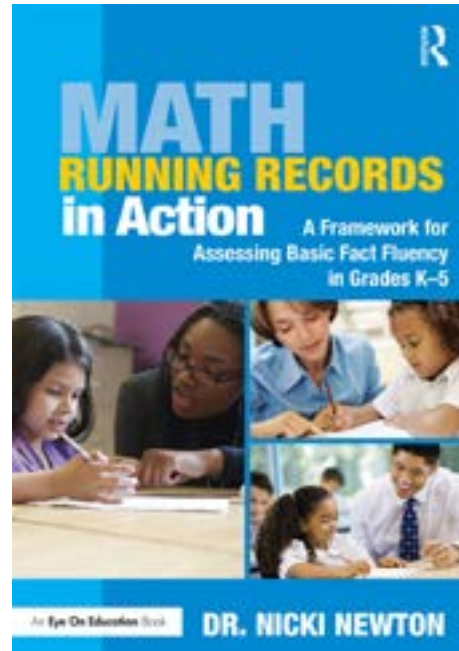
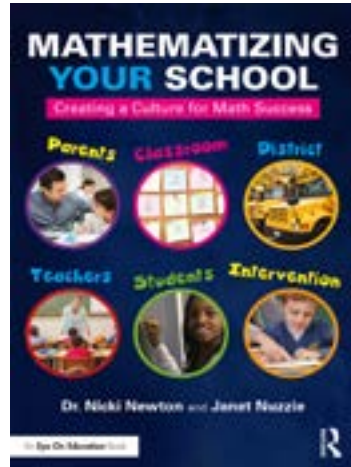




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