High Yield Routines and Resources and RtI to Support Math Instruction

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Teaching and Learning. An excellent mathematics program requires effective teaching that engages students in meaningful learning through individual and collaborative experiences that promote their ability to make sense of mathematical ideas and reason mathematically.

The first Guiding Principle of NCTM’s Principles to Actions
AGENDA

● Introductions
● PtA Math Teaching Practices
● Routines
● Resources
● Wrap-up
Introductions
INTRODUCTIONS

● Gina Kilday
  ○ Math Interventionist Grades 2–6, Exeter, RI
  ○ NCTM Board of Directors
  ○ RIMTA Past President, RIMTA & ATMNE Boards

● You
  ○ Grade Level: K–2, 3–5, 6+
  ○ Role: Classroom Teacher, Coach/Interventionist, Administrator
  ○ NCTM Member
Principles to Actions
Establish mathematics goals to focus learning.

Implement tasks that promote reasoning and problem solving.

Use and connect mathematical representations.

Facilitate meaningful mathematical discourse.

Pose purposeful questions.

Build procedural fluency from conceptual understanding.

Support productive struggle in learning mathematics.

Elicit and use evidence of student thinking.
Routines
ROUTINES

- Number Talks/Number Strings
- 3-Act Tasks
- Notice and Wonder
- WODB/Eliminate It
- Data Day
- Puzzles: Kakooma and KenKen
Number Talks/Number Strings

- Short daily routines that help students develop computational fluency
- Not intended to replace curriculum or take up majority of time
- Takes 5 to 15 minutes and most effective 3-5 days per week
When you have a strategy for solving, put up your pointer finger. For each additional strategy you think of, put up another finger. We will focus on the strategy and talking about the numbers, not the answer.

- **24 + 10** (entry problem)
- **24 + 9** (helper problem)
- **36 + 19** (more advanced helper problem)
- **48 + 29** (challenge problem)
3-Act Tasks

Engage students at various entry points and create a deep need for the math!

**Act 1:** Introduces the central conflict and hooks the participant

What do you notice? What do you wonder? What do you think/estimate?

**Act 2:** The participant overcomes obstacles, looks for resources and develops tools

What do you need to know in order to answer your question? *(image)*

**Act 3:** Resolve the conflict

*Thanks to Dan Meyer and Graham Fletcher for their inspiration***!!!
Noticing and wondering is a tool to help students:

- Understand the story, the quantities, and the relationships in the problem.
- Understand what the problem is asking and what the answer will look like.
- Have some ideas to begin to solve the problem.
The farmer shaved off 89 pounds of wool, leaving a sheep that weighed 94 pounds. How much did the fluffy sheep weigh with all of it’s wool?

The farmer shaved 534 pounds of fleece. If he shaved 6 sheep and they all had about the same amount of fleece, about how much wool was sheared from each sheep?

When a sheep that is this fluffy gets sheared, the farmer will shear off about 89 pounds of fleece. If the farmer shears sheep that are all fluffy like this one and she gets about 1068 pounds of fleece, how many sheep did she likely shear?
NOTICE/WONDER activities

Some activities with noticing and wondering:

- **Basic Brainstorm** - Promote deeper understanding of problems
- **Forget the Question** - Allow access for all
- **Think Pair Share** - Increase engagement and accountability
WODB/Eliminate It

- Four math concepts
- Identify which one doesn't belong and justify why.
- Typically have more than one correct answer - emphasize justification and reasoning

http://wodb.ca/ or https://hcpss.instructure.com/courses/107/pages/eliminate-it

Examples from www.wodb.ca
DATA DAY

Who Scares Us The Most

Marc Brown
ARTHUR'S TEACHER TROUBLE

My 50-Facts Test Scores continued

What is your favorite Thanksgiving food?

- Turkey
- Pie
- Sweet potatoes
- Green beans
- Pumpkin pie

Scary people in our lives:

- Dentist
- Teacher
- Doctor
- Nobody
Data Day, cont.
Data Day, cont.
Resources
RESOURCES

- #mtbos - Math Twitter Blogosphere
- Professional organizations
- NCTM.org
#mtbos - The Math Twitter Blogosphere

- A community of math teachers on the internet
- No membership required
- Twitter exchanges, resources, websites, articles
- It is what you make of it: PD, mentoring, idea exchange
- Opportunities for reflection
- Other Twitter Chats: #tcmchat #edchatri #mathtalkchat #mtmschat #ElemMathChat
PROFESSIONAL ORGANIZATIONS

● Resources, networking, professionalism, support
● Local Regional Affiliate: i.e., RIMTA, etc.
● Affiliates at Large: i.e., TODOS, WME
● NCTM – National Council of Teachers of Mathematics
  ○ World’s largest mathematics education professional organization
  ○ 60,000 members and more than 230 Affiliates in the USA and Canada
  ○ Support * Thrive * Give Back * Belong
Getting the Most Out of Your NCTM Membership

PUBLICATIONS and RESOURCES
- Journals - monthly featured articles, with twitter chats
- Classroom Resources -
  - PoWs, Illuminations, Calculation Nation
  - ARCs, Student Explorations in Mathematics

PROFESSIONAL DEVELOPMENT
- Conferences, Webinars and Twitter Chats

COMMUNITY
- MyNCTM.org - Online Community
- MET Grants
- AND SO MUCH MORE!!!!

Essential - Premium - K8 School Membership:
Just ask what works best for you!
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- **Price**: $89/year
- **Special Offer**: $59 special price for the first two years for first-time members to show the benefits of NCTM membership

## Premium Membership
- **Price**: $139/year
- **Student Discount**: $49 for student members (digital only) to assist in your education

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## For K-8 School Membership
- **Price**: $165
- **5 e-memberships**: $10 each additional
Discount Code

BOARD18

This code will provide a $20 discount for everyone in this room who:

- Joins NCTM as a Premium Member
- or -
- Renews
Which routines supported which practices? How?

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Questions?

Thanks!

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