

NCTM 2017

# I'm Game, Are YOU?

Sandra Coulson

Diane Reynolds

Lori Ramsey



Math Solutions®  
FOUNDED BY MARILYN BURNS

# Outcomes

- Understand how research supports the effectiveness of games as an avenue for practice and application of skills.
- Experience math games modeled with intentional, explicit questioning strategies focused on maximizing learning opportunities.
- Learn how games can be a tool to assess students' understanding of concepts and skills.

# Four Strikes and You're Out!

*“Games can provide an environment for experiencing incorrect solutions not as mistakes but as steps in constructing pieces of mathematical knowledge.”*

*-Shaftel, Pass, Schnabel (2005)*

# What makes a highly effective game?

- Connects deeply to the math content
- Includes clearly defined instructional objectives
- Elicits higher level thinking and discourse
- Helps students develop strategies
- Develops computation & problem solving
- Focuses on the learning

Swan, P. & Marshall, L. (2009a). Mathematical games as a pedagogical tool. CoSMEd 2009 3rd International Conference on Science and Mathematics Education Proceedings, 402-406, Penang, Malaysia.

# Math Games

- Step by Step Instructions
- Teaching Tips
- Key Questions
- Differentiation Guides
- Reproducibles
- Game Directions

Math Games for Number and Operations and Algebraic Thinking  
by Jamee Peterson

# Anything But Ten!

# Combinations of 10

$$5 + 5$$

$$4 + 6$$

$$6 + 4$$

$$3 + 7$$

$$7 + 3$$

$$2 + 8$$

$$8 + 2$$

$$1 + 9$$

$$9 + 1$$

$$0 + 10$$

$$10 + 0$$





1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

3

8

0

6

4

6

# Processing the Game

- How does *Anything but Ten* help students develop and practice strategies for ten?

# Target 300

## (A Multiplication Game)

# Multiplier Options

x 10

x 20

x 30

x 40

x 50

S  
a  
n  
d  
r  
a

Round	Player 1	Player 2
1	3 x 20 60	4 x 20 80
2	4 x 10 40	5 x 10 50
3	1 x 50 50	2 x 30 60
4	3 x 30 90	1 x 50 50
5	5 x 10 50	4 x 20 80
Total	290	320

D  
i  
a  
n  
e

Round	Player 1	Player 2
1	3 x 20 60	4 x 20 80
2	4 x 10 40	5 x 10 50
3	1 x 50 50	2 x 30 60
4	3 x 30 90	1 x 50 50
5	5 x 10 50	4 x 20 80
Total	290	320

# Multiplier Options

x 10

x 20

x 30

x 40

x 50

# Processing the Game

- How does *Target 300* help students develop and practice multiplication strategies?
- What characteristics of highly effective games are evident in the games we have played today?



# What makes a highly effective game?

- Connects deeply to the math content
- Includes clearly defined instructional objectives
- Elicits higher level thinking and discourse
- Helps students develop strategies
- Develops computation & problem solving
- Focuses on the learning

Swan, P. & Marshall, L. (2009a). Mathematical games as a pedagogical tool. CoSMEd 2009 3rd International Conference on Science and Mathematics Education Proceedings, 402-406, Penang, Malaysia.

“Although assessment is done for a variety of reasons, its main goal is to advance students’ learning and inform teachers as they make instructional decisions.”

*Assessment Standards for School Mathematics (NCTM, 1995, 13)*

# Using Games as Assessment

1. What understandings does the student's work reveal?
2. What does the student need to learn?

# Math Game Tips

- Choose games that are accessible to all students.
- Play cooperatively and competitively.
- Choose games that require reasoning and chance.
- Teach the game to the entire class at the same time.
- Start a math games chart.

*Burns, Marilyn (2009). Win-Win Math Games: Instructor Magazine.*

# Quiet Write

- 3 Points that resonated with you
- 2 Ideas you want to implement
- 1 Question you still have

[scoulson@mathsolutions.com](mailto:scoulson@mathsolutions.com)

[dreynolds@mathsolutions.com](mailto:dreynolds@mathsolutions.com)

[lr Ramsey@mathsolutions.com](mailto:lr Ramsey@mathsolutions.com)

# Thank You!

Presentation at:

<http://mathsolutions.com/contact-us/speaker-presentations/>

Website: [www.mathsolutions.com](http://www.mathsolutions.com)

Connect with us on social media:



@Math\_Solutions

Rate this presentation on the conference app!

Search “**NCTM**” in your app store or follow the link at [nctm.org/confapp](http://nctm.org/confapp) to download

