

## Intervention Name: Math Peer-Assisted Learning Strategies (PALS)

**Common Core State Standards Domain Areas:** (check all that apply)

Counting and Cardinality (K)	Operations and Algebraic Thinking (K-5)	Numbers and Operations in Base Ten (K-5)	Numbers and Operations – Fractions (3-5)	Measurement and Data (K-5)	Geometry (K-HS)	Ratios and Proportional Relationships (6-7)	The Number System (6-8)	Expressions and Equations (6-8)	Statistics and Probability (6-HS)	Functions (8-HS)	Number and Quantity (HS)	Algebra (HS)	Modeling (HS)
X	X	X	X	X	X		X	X					

**Setting:** (check all that apply)

**Focus Area:** (check all that apply)

Whole-class	Small-group	Individual	Acquisition	Fluency	Generalization
X			X	X	X

**Function of Intervention:** Math PALS is a whole-class peer-tutoring program that can be used with students across grades K-6. With PALS, students work step-by-step on grade-level mathematics skills. The PALS model allows for students to practice mathematics skills with immediate feedback and to engage in discussion about mathematics.

**Brief Description:** Typically, a higher-performing mathematics student is paired with a lower-performing mathematics student. The pair works together as a Coach and Player to answer grade-level mathematics problems.

At grades K-1, the teacher always conducts a brief lesson to demonstrate the lesson’s pair work. The students then break into pairs and work together for 15-20 minutes. Students work on a “game board” with the Coach’s prompts on the left side and the Player’s mathematics problems on the right.

**What number?**

**Draw how many.**

Example:

13	III
Tens	Ones

17	5	8
Tens	Ones	Tens
Ones	Ones	Ones
12	4	15
Tens	Tens	Tens
Ones	Ones	Ones

**Write the number.**

**Read it and break it down.**

13	10	2
Tens	Tens	Tens
Ones	Ones	Ones
19	6	8
Tens	Tens	Tens
Ones	Ones	Ones

**Lesson 12**  
**Day 1B**

(Fuchs, Fuchs, Yazdian, & Powell, 2002)

At grades 2-6, students start each lesson by working in pairs (without a teacher lesson). The pairs work together for 15-20 minutes, and then the students work individually to review the lesson's skill.

4Me Days 3 & 4

**Measurement**  
Coach's Question Sheet

1. Read the problem aloud.
2. What are you trying to find out?
3. Are you counting time forward or backward? Do it.
4. Which is the correct answer?
5. Write the letter of the correct answer in the blank. (Use the hint below if you need help.)

HINT: a.m. - midnight to noon (morning)  
p.m. - noon to midnight (afternoon or evening)

During Coaching (i.e., when the pair works together), the Coach reads prompts to the Player.

4Me Day 3

**Measurement**  
Coaching Sheet

Player's Name \_\_\_\_\_ Date \_\_\_\_\_  
Coach's Name \_\_\_\_\_

Write a letter in each blank. (3 points each)

Susie ate breakfast at 7:00. She ate lunch 6 hours later. What time was lunch?  
(A) 1:00 a.m. (B) 12:00 p.m. (C) 5:00 p.m. (D) 11:00 p.m.

Roseanne went to bed at 9:00. She woke up 8 hours later. What time did Roseanne wake up?  
(A) 5:00 a.m. (B) 1:00 a.m. (C) 1:00 p.m. (D) 5:00 p.m.

School is out at 3:00. P.E. starts 4 hours before the end of school. What time does P.E. start?  
(A) 7:00 p.m. (B) 11:00 p.m. (C) 11:00 a.m. (D) 7:00 a.m.

Dennis has guitar lessons each Tuesday 5 hours after school is out. School is out at 3:00. What time are guitar lessons?  
(A) 10:00 p.m. (B) 8:00 a.m. (C) 8:00 p.m. (D) 10:00 a.m.

It is now 8:00. Dinner was 3:00 hours ago. What time was dinner?  
(A) 5:00 p.m. (B) 11:00 p.m. (C) 5:00 a.m. (D) 11:00 a.m.

At 9:00 in the morning, Terrance looked at his watch. He has an appointment in 4 hours. When is Terrance's appointment?  
(A) 1:00 a.m. (B) 5:00 a.m. (C) 5:00 p.m. (D) 1:00 p.m.

Soccer practice starts at 3:00 in the afternoon. It lasts for 2 hours. What time does soccer practice finish?  
(A) 1:00 p.m. (B) 5:00 p.m. (C) 1:00 a.m. (D) 5:00 a.m.

Paul played baseball after school at 4:00. His sister had a game 4 hours later. What time was his sister's game?  
(A) 12:00 a.m. (B) 8:00 p.m. (C) 8:00 a.m. (D) 12:00 p.m.

The Player answers the Coach's questions and works step-by-step through each problem. If the Player makes a mistake, the Coach provides feedback to the Player.

At the stop sign, the Coach stops asking questions to the Player, and the Player begins self-talk (i.e., talking aloud through the problem's steps). At the flag, the pair switches roles: the Coach becomes the Player and the Player becomes the Coach

4GR Day 2

**Grid Reading**  
Practice Sheet

Name \_\_\_\_\_ Date \_\_\_\_\_  
Scored by \_\_\_\_\_

Write the letter of the point that goes with each number pair. (2 points each)

A. _____ (3, 4)	B. _____ (2, 1)	C. _____ (6, 2)
D. _____ (2, 3)	E. _____ (1, 3)	F. _____ (4, 1)
G. _____ (5, 1)	H. _____ (4, 3)	I. _____ (3, 3)
J. _____ (5, 4)	K. _____ (4, 2)	L. _____ (6, 5)

Solve. (1 point each)

M. $\begin{array}{r} 23 \\ + 17 \\ \hline \end{array}$	N. $\begin{array}{r} 547 \\ - 96 \\ \hline \end{array}$	O. $\begin{array}{r} 305 \\ - 287 \\ \hline \end{array}$	P. $\begin{array}{r} 8 \\ \times 4 \\ \hline \end{array}$	Q. $\begin{array}{r} 599 \\ + 411 \\ \hline \end{array}$
R. $\begin{array}{r} 72 \\ \times 8 \\ \hline \end{array}$	S. $4 \overline{) 8}$	T. $\begin{array}{r} 54 \\ \times 37 \\ \hline \end{array}$	U. $\begin{array}{r} 812 \\ + 29 \\ \hline \end{array}$	V. $\begin{array}{r} 23 \\ \times 2 \\ \hline \end{array}$
W. $3 \overline{) 18}$	X. $\begin{array}{r} 2 \\ \times 3 \\ \hline \end{array}$	Y. $\begin{array}{r} 57 \\ \times 4 \\ \hline \end{array}$		

During Practice (i.e., when the students work independently), each student completes problems related to the lesson as well as review problems. Students work together to check Practice work.

**Procedures:**

- **Duration:** Kindergarten Math PALS runs for 16 weeks, 2 sessions each week, 15-20 minutes each session. Grade 1 Math PALS runs for 18 weeks, 3 sessions each week, 15-20 minutes each session. Grades 2-6 Math PALS runs for a minimum of 24 weeks, 2 sessions each week, 30 minutes each session.
- **Teacher training:** Teachers must read and become familiar with the Math PALS training materials. Training lasts 3 sessions 4 hours for K-1 Math PALS and 4 sessions for 2-6 Math PALS. Teachers can attend a formal Math PALS training or read the teacher manual to learn about PALS training.
- **Instructional practices:** Teachers pair students (i.e., students do not get to choose their partner), and teachers switch pairs periodically throughout the program. When students work in pairs, teachers constantly monitor and provide feedback, when necessary.
- **Monitoring system:** With K-1 Math PALS, students have an opportunity to earn smiley faces throughout the lesson for completing mathematics problems and working well in pairs. The smiley faces are not tied to any tangible reward. With 2-6 Math PALS, students earn points throughout the lesson for finishing problems and working well in pairs. The pair with the highest number of points during the lesson wins the opportunity to collect PALS folders at the end of the session.

**Critical Components (i.e., that must be implemented for intervention to be successful):** Teachers must successfully train students on the Math PALS strategies. Teachers must prepare materials for each one- or two-week lesson. Teachers must implement lessons with high levels of fidelity, and students should work in pairs with high levels of fidelity.

**Critical Assumptions (i.e., with respect to prerequisite skills):** Teachers choose Math PALS lessons about mathematics skills that have already been introduced to the students. Teachers use Math PALS as a way to practice, extend, or remediate mathematics learning.

**Materials:** Teachers must purchase the appropriate Math PALS manual from <http://kc.vanderbilt.edu/pals/>

Costs are as follows:

- Kindergarten Teacher/Student Manual: \$40
- Grade 1 Teacher/Student Manual: \$40
- Grades 2-6 Teacher Manual: \$40
- Grade 2, 3, 4, 5, 6 Student Manual: \$30

Note: Grade 2-6 teachers buy one Teacher Manual (that can be used across grades 2-6) and one Student Manual for their appropriate grade level for a total of \$70.

**References:**

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