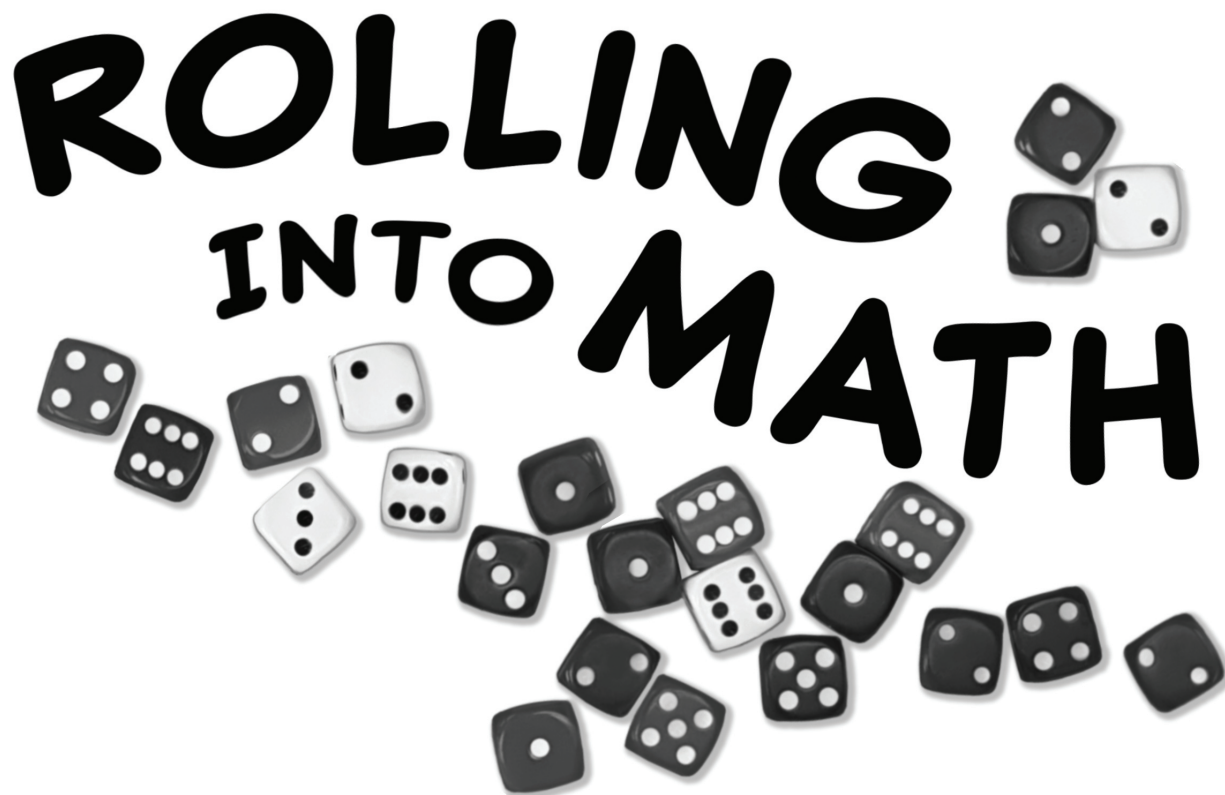


ROLLING INTO MATH

A collection of approximately 25 dice, some black and some white, scattered in a semi-circular arc below the title. The dice are shown from various angles, displaying different faces with dots.

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BOX CARS & ONE-EYED JACKS

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HORSE RACE – PRIMARY ADDITION

LEVEL: K - 2

SKILLS: adding to 12, commutative property of addition, fact families

PLAYERS: 2 (1 vs 1)

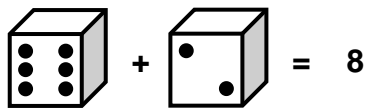
EQUIPMENT: tray of dice (each player needs 18 of their own color), gameboard

GOAL: to have the greatest number of dice on your side of the “racetrack” at the end of the game

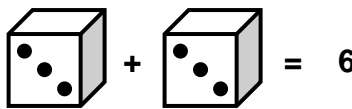
GETTING STARTED:

Each player takes 18 dice of one color and picks a side of the dice tray to be their “racetrack”. Each player picks up a pair of dice, rolls, and calculates their sum. The player with the greatest sum puts their dice into their side of the racetrack. Both players verbalize their sums.

EXAMPLE:



PLAYER ONE



PLAYER TWO

MATH TALK Player One says “8 is a greater sum than 6”

The player with the greatest sum places their dice in their side of the racetrack. The player with the least sum tosses their dice into the lid.

Players each pick up another pair of dice, roll and compare their next sums. In the event of a TIE or EQUAL SUM – both players put their two dice into their side of the racetrack.

Play continues until both players’ 18 dice have been rolled out. The player with the greatest number of dice on their side of the racetrack wins.

MATH JOURNAL WORK AND EXTENSIONS:

This game is full of opportunities to teach basic addition concepts, adding to 12.

1. Have players record a full game on the recording sheet. See example on page 56.
2. Have players highlight or color in examples of doubles, near doubles. Count how many were rolled in your game, and compare with the rest of the class.
3. As students are playing, observe the following:
 - Which students are identifying sums immediately?
 - Which students are counting on from the greatest addend? Least addend?
 - Which students are recognizing the doubles and doubles +1 and using these to add quickly or with immediate recall?

HORSE RACE – PRIMARY ADDITION

- Which students are still at a concrete level of touching the pips on the dice, and will need more practice with immediate recognition of patterns to 6?
4. As a class you can analyze the types of games that happened. When a game is complete, we have students determine if their Horse Race was: (see example on bottom corner of p. 56)
- Dead Heat – both players have the exact same amount of dice on their trays
 - Wipe Out – one player has at least 3 or more pairs greater in their side of the racetrack
 - Too Close to Call – basically the game is close throughout the play and is typically won by one or two pairs, right near the end of the game
5. You can also analyze as a class the following questions:
- How many doubles were rolled in the game? Keep track by tallying or taking counters each time doubles are rolled.
 - How many tie sums were rolled in your game? Compare your total with the rest of the class. How many of your tie sums were identical rolls? For example:

tie sums	4 + 4 = 8	6 + 2 = 8
tie sums with identical rolls	3 + 3 = 6	3 + 3 = 6
	PLAYER ONE	PLAYER TWO

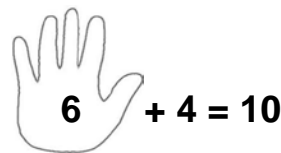
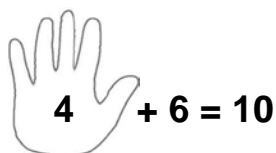
This analysis helps students understand fact families, and that some sums have more than one roll or pair of addends that equal it.

- Which sums often had ties?
6. Have students work with the commutative property of addition which states:
- “The sum stays the same when the order of the addends is changed.”

$$6 + 4 = 4 + 6$$

$$\begin{array}{|c|} \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \end{array} + \begin{array}{|c|} \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \end{array} = \begin{array}{|c|} \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \end{array} + \begin{array}{|c|} \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \end{array}$$

We have the students cover up one addend with their hand and verbalize:



HORSE RACE – PRIMARY ADDITION

PLAYER
ONE

BOTH
PLAYERS

PLAYER
TWO

START

START

HORSE RACE – PRIMARY ADDITION

RECORDING SHEET

10's AND 1's HORSE RACE

LEVEL: K – 2

SKILLS: identifying 10's and 1's, comparing numbers, greatest/least

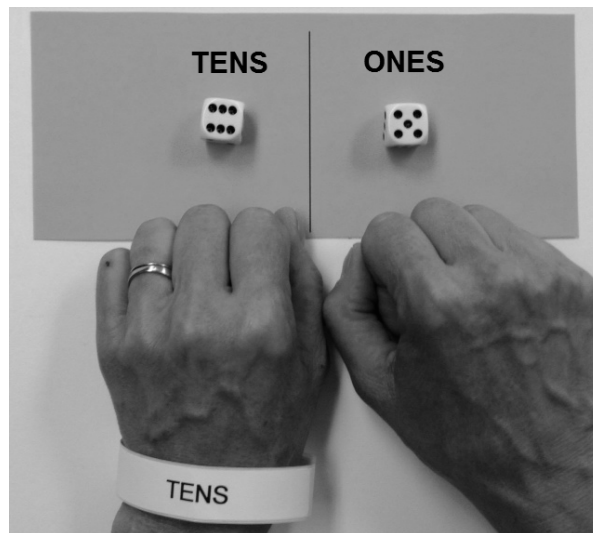
PLAYERS: 2 (1 vs 1)

EQUIPMENT: tray of dice (each player needs 18 of their own color), gameboard, place value mat (optional)

GOAL: to have the greatest number of dice on your side of the “racetrack” at the end of the game

GETTING STARTED:

Each player takes 18 dice of one color and picks a side of the dice tray to be their “racetrack”. Players should be sitting side by side so that they will both see place value correctly, reading numbers from left to right. If possible have students wear an elastic wrist band marked tens “10's” so that they can read their numbers correctly.



Each player picks up two dice, rolls one in their 10's hand, the other in their 1's hand. Players verbalize their numbers out loud.

EXAMPLE:

	T	O	
Player One			4 tens, 2 ones = 42
Player Two			5 tens, 1 one = 51

10's AND 1's HORSE RACE

The player with the greatest number (Player Two) then verbalizes “fifty-one is greater than forty-two because 5 tens are greater than 4 tens”. The player with the greatest number puts their dice into their side of the racetrack. The player with the least number tosses their dice into the lid. Students can record their math as follows in their journals:


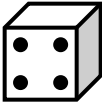
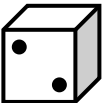

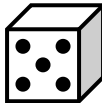
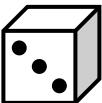
$$51 > 42$$

Players each pick up another pair of dice, roll and compare their next numbers. In the event of a tie or SAME NUMBER – both players put their two dice into their side of the tray. Play continues until both players' 18 dice have been rolled out. The player with the greatest number of dice on their side of the “racetrack” wins.

VARIATIONS:

1. 100's/10's/1's Horse Race (see gameboard on page 27)

The game can be played to the hundreds place value. Players roll three dice as follows

	H	T	O	
Player One				$600 + 40 + 2 = 642$
Player Two				$600 + 50 + 3 = 653$

MATH TALK

$653 > 642$ because 6 hundreds is equal to 6 hundreds, but 5 tens are greater than 4 tens. 653 is greater by about 10.

MATH JOURNAL WORK AND EXTENSIONS:

This game is full of opportunities to explore basic place value concepts.

1. Have players record a full game on the recording sheet
2. Have players take their recorded work and record math sentences as follows:

MATH TALK

$62 > 51$ because 6 tens are greater than 5 tens.

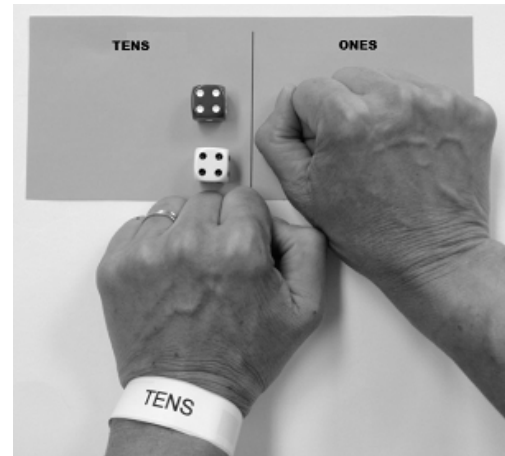
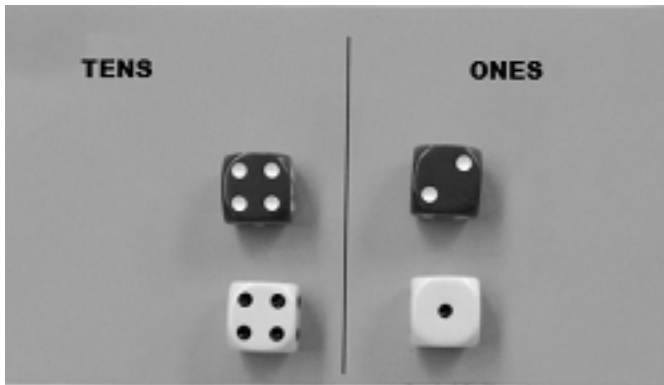
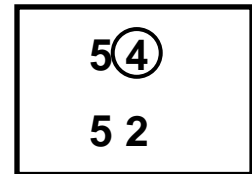
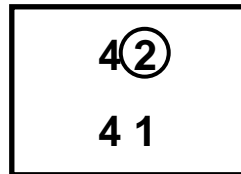
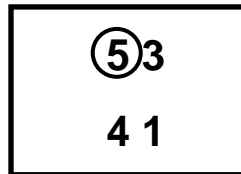
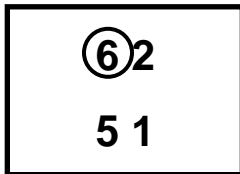
Often what will happen is the following scenario: tens are tied, and students must move to 1's to determine the winner.

MATH TALK

$\underline{6}5 > \underline{6}3$ because 6 tens are equal to 6 tens; but 5 ones are greater than 3 ones.

10's AND 1's HORSE RACE

3. Have students record their two numbers one above the other. Teach them to slide their hands over their numbers moving from the 10's to the 1's values to compare. Circle where the winner was determined.



4. Have students expand their numbers:
 $42 = 40 + 2 = 4 \text{ tens} + 2 \text{ ones}$
5. Have students analyze the following:
- How many ties happened during the game?
 - How many numbers were in sequence (i.e. 62, 63) in a round?
 - Did you roll the greatest possible number? If not, how close were you to it?
 - Did you roll the least possible number? If not, how close were you to it?
6. Have students extend their data in their journals doing number patterns:

My Number: 62

Plus +1 pattern	62, 63, 64, 65
Minus -1 pattern	62, 61, 60, 59
Plus +10 pattern	62, 72, 82, 92
Minus -10 pattern	62, 52, 42, 32

10's AND 1's HORSE RACE

<div>PLAYER ONE</div>	<div>BOTH PLAYERS</div>	<div>PLAYER TWO</div>
-----------------------	-------------------------	-----------------------

TENS	ONES	TENS	ONES	TENS	ONES
------	------	------	------	------	------

FILL ME IN FIRST

FILL ME IN FIRST

100's, 10's AND 1's HORSE RACE

PLAYER
ONE

PLAYER
TWO

HUNDREDS

TENS

ONES

HUNDREDS

TENS

ONES

PRIMARY SUPER MUSH

LEVEL: K – 2

SKILLS: fact fluency, addition facts to 12, number patterns

PLAYERS: 2 (cooperative team)

EQUIPMENT: 1 tray, recording sheet

GOAL: to fill up the tray with 36 dice matching the selected fact family

GETTING STARTED:

The teacher selects a fact family for teams to work on:

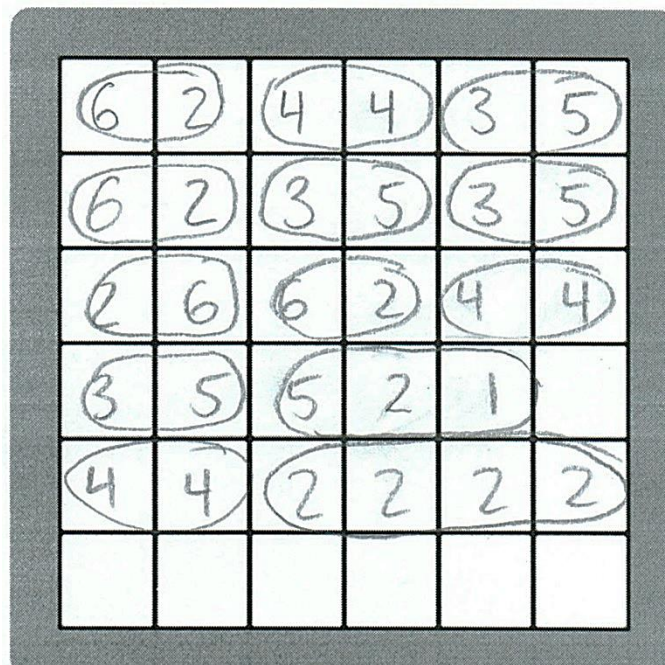
Simple Sixes
Successful Sevens
Easy Eights
Nifty Nines

Terrific Tens
Enormous Elevens
Tremendous Twelves

All dice are removed from the tray and “super mushed” – i.e. scrambled all together and rolled for about 20 – 30 seconds. The teacher calls stop and the dice are then set for the activity. Together both players now hunt for combinations of dice that match the set fact family and place them into the tray.

EXAMPLE:

Round of Easy Eights:



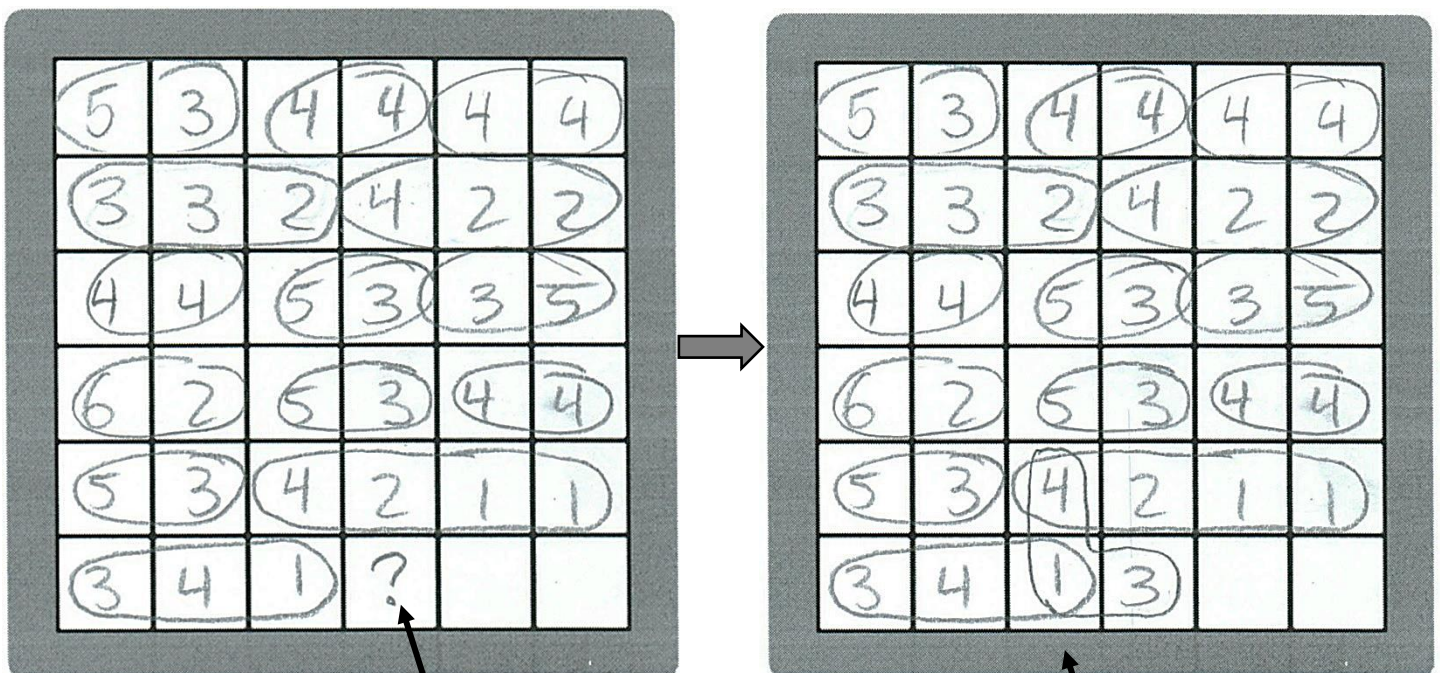
PRIMARY SUPER MUSH

VARIATIONS:

- Once students have developed fluency with patterns 6 – 12, have them try the following activity:
 - Big Sums (p.120)
- In primary grades, we usually focus on 2 and 3 part addition. By the end of grade 2, we also do 3 part mixed operations. Grade 3 and beyond, we increase the complexity to 4 – 6 part mixed operations. Increase the level of difficulty when students are ready.
- For an extra challenge, go beyond Tremendous Twelves. Use the blank board to try numbers like Excellent Eighteens or Tricky Twenties. To encourage subtraction, try lower numbers like Tiny Twos or Fancy Fours.

MATH JOURNAL WORK AND EXTENSIONS:

- Students can be very creative problem solvers as they fill up their tray and have fewer choices and/or spaces left to use. As spaces fill up they may “share” open spaces as follows:



Easy Eights

Players put a 3 in here, and made

4	
1	3

$4+1+3$ in a corner.

Players can share the 4 from the $4+2+1+1$ sentence, and the 1 from the $3+4+1$ sentence, using them to make a new combination for 8.

PRIMARY SUPER MUSH

SIMPLE SIXES

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

SUCCESSFUL SEVENS

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

PRIMARY SUPER MUSH

EASY EIGHTS

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

NIFTY NINES

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____