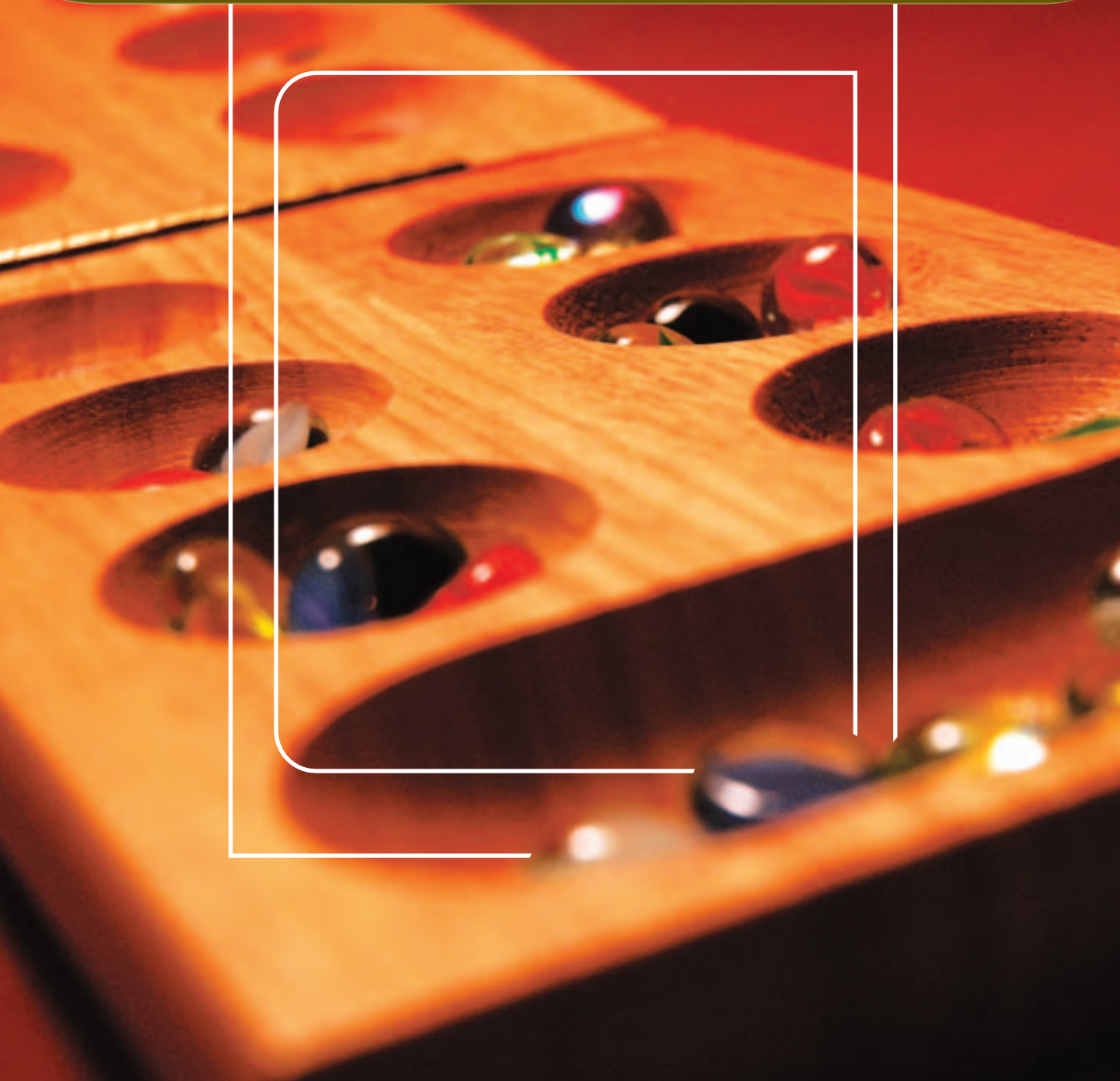


Games



Games

Throughout the year, you will play games that help you practice important math skills. Playing mathematics games gives you a chance to practice math skills in a way that is different and enjoyable. In this section of your *Student Reference Book*, you will find the directions for many games.



Materials

You need a deck of number cards for many of the games. You can use an Everything Math Deck, a deck of regular playing cards, or make your own deck out of index cards.

An Everything Math Deck includes 54 cards. There are 4 cards each for the numbers 0–10. And there is 1 card for each of the numbers 11–20.

You can also use a deck of regular playing cards after making a few changes. A deck of playing cards includes 54 cards (52 regular cards, plus 2 jokers). To create a deck of number cards, use a permanent marker to mark the cards in the following way:

- ◆ Mark each of the 4 aces with the number 1.
- ◆ Mark each of the 4 queens with the number 0.
- ◆ Mark the 4 jacks and 4 kings with the numbers 11 through 18.
- ◆ Mark the 2 jokers with the numbers 19 and 20.

For some games you will have to make a gameboard, a score sheet, or a set of cards that are not number cards. The instructions for doing this are included with the game directions. More complicated gameboards and card decks are available from your teacher.



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Addition Top-It

Materials □ number cards 0–10 (4 of each)

Players 2 to 4

Skill Addition facts 0 to 10

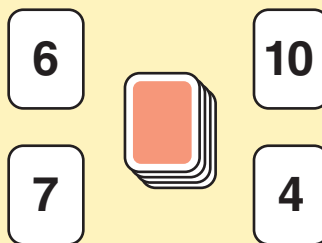
Object of the game To collect the most cards.

Directions

1. Shuffle the cards. Place the deck number-side down on the table.
2. Each player turns over 2 cards and calls out the sum of the numbers.
3. The player with the largest sum wins the round and takes all the cards.
4. In case of a tie for the largest sum, each tied player turns over 2 more cards and calls out the sum of the numbers. The player with the largest sum then takes all the cards from both plays.
5. The game ends when not enough cards are left for each player to have another turn.
6. The player with the most cards wins.

Example

Ann turns over a 6 and a 7. She calls out 13. Joe turns over a 10 and a 4. He calls out 14. Joe has the larger sum. He takes all 4 cards.



Angle Race

- Materials**
- 24-pin circular geoboard or a sheet of Circular-Geoboard Paper (*Math Masters*, p. 430)
 - 15 rubber bands, or a straightedge and a pencil
 - deck of *Angle Race Degree-Measure Cards* (*Math Masters*, p. 441)

Players 2

Skill Recognizing angle measures

Object of the game To complete an angle exactly at the 360° mark on a circular geoboard.

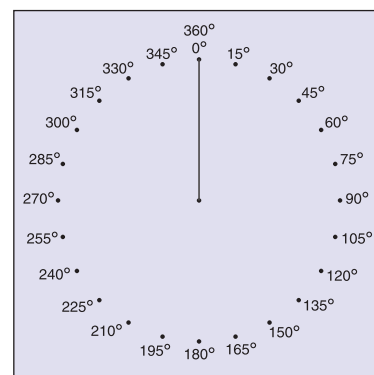
Directions

1. Shuffle the cards. Place the deck number-side down on the table.
2. If you have a circular geoboard, stretch a rubber band from the center peg to the 0° peg.

If you do *not* have a circular geoboard, use a sheet of Circular-Geoboard Paper. Draw a line segment from the center dot to the 0° dot. Instead of stretching rubber bands, you will draw line segments.



circular geoboard



Circular-Geoboard Paper

3. Players take turns. Both players use the same geoboard (or Circular-Geoboard Paper).
4. When it is your turn, select the top degree-measure card. Make an angle on the geoboard that has the same degree measure as shown on the card. Use the last rubber band placed on the geoboard as one side of your angle. Make the second side of your angle by stretching another rubber band from the center peg to a peg on the circle, going *clockwise*.
5. Rubber bands may not go past the 360° (or 0°) peg. If you must go past the 360° peg to make an angle, you lose your turn.
6. The first player to complete an angle exactly on the 360° peg wins.

Example

The first player draws a 30° card. The player makes a 30° angle by stretching a rubber band from the center peg to the 30° peg. The second player draws a 75° card. This player makes a 75° angle by stretching a rubber band from the center peg to the 105° peg. Players continue to take turns, stretching rubber bands clockwise around the circle, until one player exactly reaches the 360° peg.



Array Bingo

Materials ☐ 1 set of *Array Bingo Cards* for each player (*Math Masters*, p. 442)

☐ number cards 1–20 (1 of each)

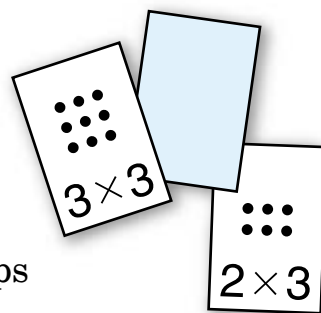
Players 2 or 3

Skill Multiplication for arrays and equal groups

Object of the game To have a row, column, or diagonal of cards facedown.

Directions

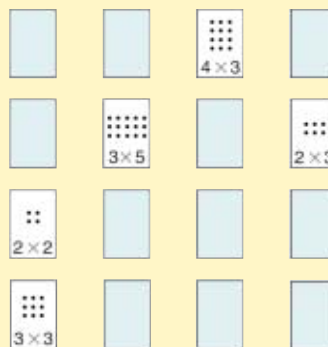
1. Each player arranges his or her array cards faceup in a 4-by-4 array.
2. Shuffle the number cards. Place them number-side down.
3. Players take turns. When it is your turn, draw a number card. Look for any one of your array cards with that number of dots and turn it facedown. If there is no matching array card, your turn ends. Place your number card in a discard pile.
4. The first player to turn a card facedown so that a row, column, or diagonal of cards is all facedown, calls out “Bingo!”
5. If all the number cards are used before someone wins, shuffle the deck and continue playing.



Example

Mary draws the number card 4.

She turns over the card with the 2×2 array and calls out “Bingo.”



Baseball Multiplication

- Materials**
- ☐ 1 *Baseball Multiplication* game mat (*Math Masters*, p. 443)
 - ☐ 2 six-sided dice
 - ☐ 4 counters

Players 2 teams of one or more players each

Skill Multiplication facts 1 to 6

Object of the game To score more runs in a 3-inning game.

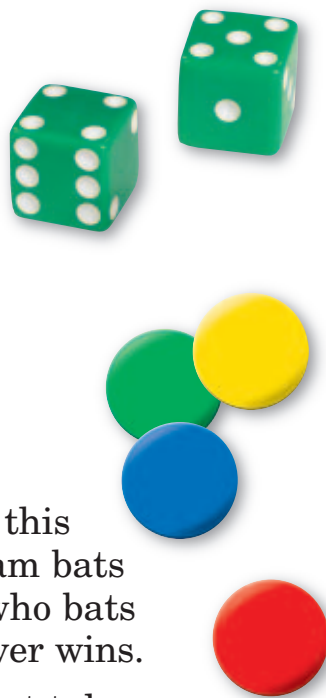
Directions

The rules are similar to the rules for baseball, but this game lasts only 3 innings. In each inning, each team bats until it makes 3 outs. Teams flip a coin to decide who bats first. The team with more runs when the game is over wins.

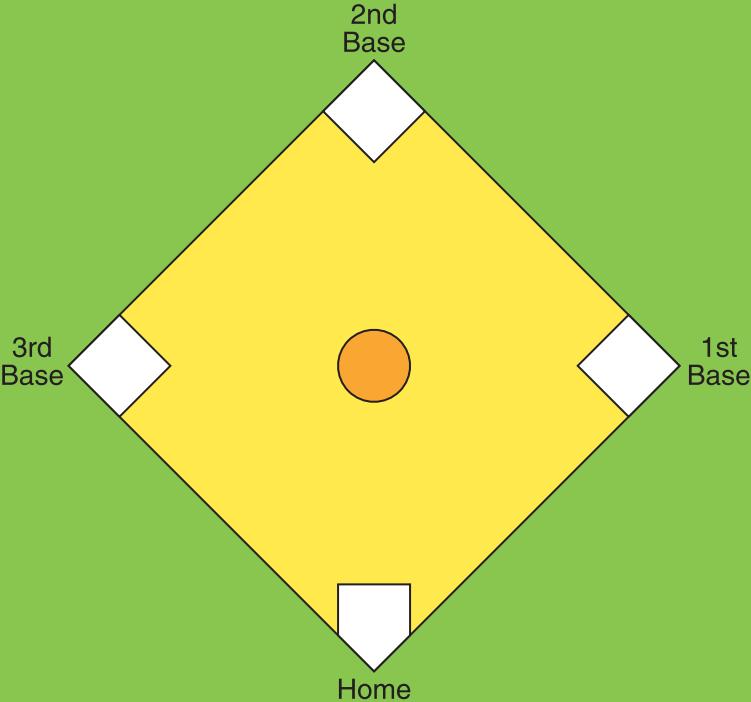
Pitching and batting: Members of the team not at bat take turns “pitching.” They roll the two dice to get 2 factors. Players on the “batting” team take turns multiplying the 2 factors and saying the product.

The pitching team checks the product. (Use a calculator or the Multiplication/Division Facts Table on page 52.) An incorrect answer is a strike, and another pitch (dice roll) is thrown. Three strikes make an out.

Hits and runs: If the answer is correct, the batter checks the Scoring Chart on the game mat. If the chart shows a hit, the batter moves a counter to a base as shown in the Scoring Chart. Runners already on base are moved ahead of the batter by the same number of bases. A run is scored every time a runner crosses home plate.



Keeping score: For each inning, keep a tally of runs scored and outs made. Use the Runs and Outs Tally on the game mat. At the end of the inning, record the number of runs on the Scoreboard.



Scoreboard				
Inning	1	2	3	Total
Team 1				
Team 2				

Runs and Outs Tally			
Team 1		Team 2	
Runs	Outs	Runs	Outs

Scoring Chart (for two 6-sided dice)	
36 = Home run (score a run)	6 to 15 = Single (go to 1st base)
25 to 35 = Triple (go to 3rd base)	5 or less = Out (record an out)
16 to 24 = Double (go to 2nd base)	

Baseball Multiplication (Advanced Version)

- Materials**
- ☐ 1 *Baseball Multiplication* (Advanced) game mat (*Math Masters*, p. 444)
 - ☐ 1 twelve-sided die
 - ☐ 4 counters

Players 2 teams of one or more players each

Skill Multiplication facts through 12s

Object of the game To score more runs in a 3-inning game.

Directions

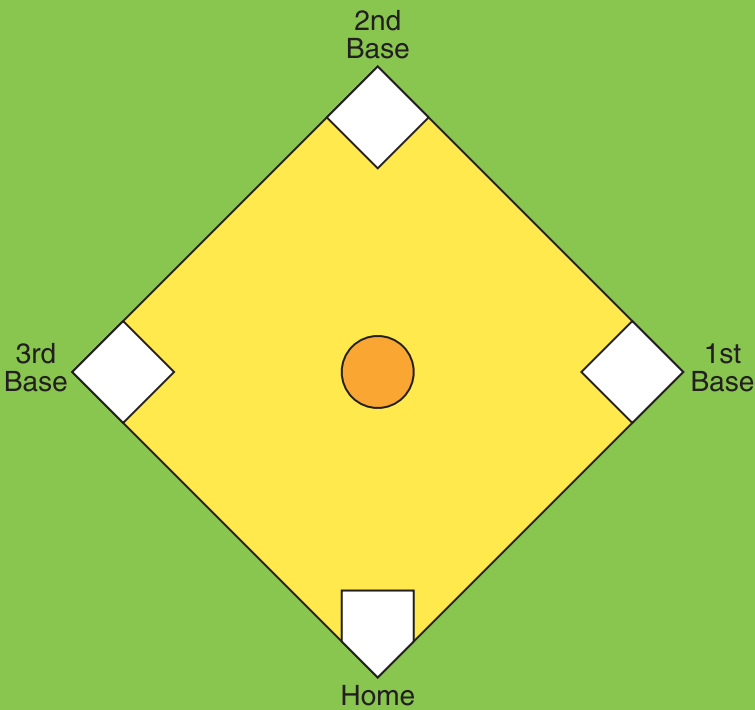
Members of one team take turns “pitching.” They roll the die twice to get 2 factors. Players on the “batting” team take turns multiplying the 2 factors and giving the product. When a correct product is given, the batter checks the Scoring Chart on the game mat.

The rest of the game is the same as a regular game of *Baseball Multiplication*.

You can make the Advanced Version of this game a bit easier with this rule:

If the die comes up as “11” or “12” on a roll, pretend that the die came up as “10.”





Scoreboard				
Inning	1	2	3	Total
Team 1				
Team 2				

Runs and Outs Tally			
Team 1		Team 2	
Runs	Outs	Runs	Outs

Scoring Chart (for 2 rolls of a 12-sided die)	
91 or more = Home run (score a run)	21 to 50 = Single (go to 1st base)
76 to 90 = Triple (go to 3rd base)	20 or less = Out (record an out)
51 to 75 = Double (go to 2nd base)	

Beat the Calculator (Addition)

Materials ☐ number cards 0–9 (4 of each)
 ☐ 1 calculator

Players 3

Skill Mental addition skills

Object of the game To add numbers without a calculator faster than a player using one.

Directions

1. One player is the “Caller.” A second player is the “Calculator.” The third player is the “Brain.”
2. Shuffle the cards and place them number-side down on the table.
3. The Caller draws 2 cards from the number deck and asks for the sum of the numbers.
4. The Calculator solves the problem *with* a calculator. The Brain solves it *without* a calculator. The Caller decides who got the answer first.
5. The caller continues to draw 2 cards at a time from the number deck and to ask for the sum of the numbers.
6. Players trade roles every 10 turns or so.



Example

The Caller draws a 7 and a 9. The Caller says, “7 plus 9.” The Brain and the Calculator each solve the problem. The Caller decides who got the answer first.



Beat the Calculator (Multiplication)

Materials ☐ number cards 1–10 (4 of each)
 ☐ 1 calculator

Players 3

Skill Mental multiplication skills

Object of the game To multiply numbers without a calculator faster than a player using one.

Directions

1. One player is the “Caller.” A second player is the “Calculator.” The third player is the “Brain.”
2. Shuffle the cards and place them number-side down on the table.
3. The Caller draws 2 cards from the number deck and asks for the product of the numbers.
4. The Calculator solves the problem *with* a calculator. The Brain solves it *without* a calculator. The Caller decides who got the answer first.
5. The Caller continues to draw 2 cards at a time from the number deck and ask for the product of the numbers.
6. Players trade roles every 10 turns or so.

Example

The Caller draws a 10 and a 7. The Caller says, “10 times 7.” The Brain and the Calculator each solve the problem. The Caller decides who got the answer first.



The Block-Drawing Game

- Materials**
- ☐ 1 paper bag
 - ☐ 7 blocks (all the same size and shape) in 2 or 3 different colors

Players 3 or more

Skill Using chance data to estimate



Object of the game To correctly guess how many blocks of each color are in a bag.

Directions

1. Choose one player to be the “Director.”
2. The Director secretly puts 3, 4, or 5 blocks (not all the same color) into a paper bag. The Director tells the other players *how many blocks* are in the bag, *but not their colors*.
3. Players take turns taking 1 block out of the bag, showing it, and replacing it.
4. After each draw, the Director records the color and keeps a tally on a slate or piece of paper.
5. A player may try to guess the colors of the blocks and the number of blocks of each color at any time.
6. If a player guesses incorrectly, that player is out of the game.
7. The first player to guess correctly wins the game.

Example The Director tells the players that there are 5 blocks in the bag.



green //
red //
blue /

tally after 5 draws

After 5 draws, Player 1 guesses 2 green, 2 red, and 1 blue. This guess is incorrect. Player 1 is out of the game.

green ///
red //
blue //

tally after 7 draws

After 7 draws, Player 2 guesses 2 green, 1 red, and 2 blue. This guess is incorrect. Player 2 is out of the game.

Player 3 then guesses 3 green, 1 red, and 1 blue. This guess is correct, and Player 3 wins the game.

Division Arrays

Materials ☐ number cards 6–18 (1 of each)
☐ 1 six-sided die
☐ 18 counters

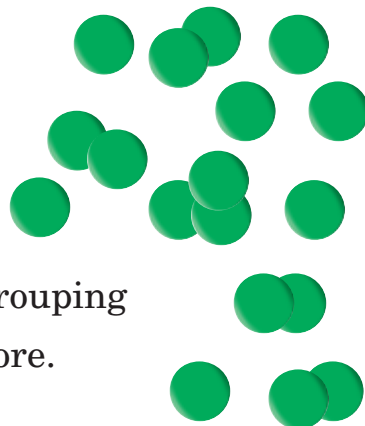
Players 2 to 4

Skill Division (with remainder) for equal grouping

Object of the game To have the highest total score.

Directions

1. Shuffle the cards. Place the deck number-side down on the table.
2. Players take turns. When it is your turn, draw a card and take the number of counters shown on the card. You will use the counters to make an array.
 - ◆ Now roll the die. The number on the die is the number of equal rows you must have in your array.
 - ◆ Make an array with the counters.
 - ◆ Your score is the number of counters in one row. If there are no leftover counters, your score is double the number of counters in one row.
3. Players keep track of their scores. The player with the highest total score at the end of 5 rounds wins.



Example

Number card	Die	Array formed	Leftovers?	Score
10	2		no	10
9	2		• yes	4
14	3		• yes	4

Equivalent Fractions Game

Materials □ 1 deck of Fraction Cards (*Math Journal* 2, Activity Sheets 5–8)

Players 2

Skill Recognizing fractions that are equivalent

Object of the game To collect more Fraction Cards.

Directions

1. Shuffle the Fraction Cards and place the deck picture-side down on the table.
2. Turn the top card over near the deck of cards.
3. Players take turns. When it is your turn, turn over the top card from the deck. Try to match this card with a picture-side up card on the table.
 - ◆ If you find a match, take the 2 matching cards. Then, if there are no cards left picture-side up, turn the top card over near the deck.
 - ◆ If you cannot find a match, place your card picture-side up next to the other cards. Your turn is over.
4. The game ends when all cards have been matched. The player with more cards wins.

Example The top card is turned over and put on the table. The picture shows $\frac{4}{6}$.

Player 1 turns over the $\frac{2}{3}$ card. This card matches $\frac{4}{6}$.

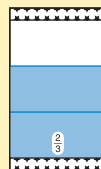
Player 1 takes both cards. There are no cards left picture-side up. So Player 1 turns over the top card and puts it near the deck. The picture shows $\frac{6}{8}$.

Player 2 turns over the $\frac{0}{4}$ card. There is no match.

This card is placed next to $\frac{6}{8}$. It is Player 1's turn again.



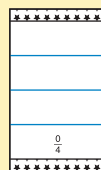
$\frac{4}{6}$



$\frac{2}{3}$



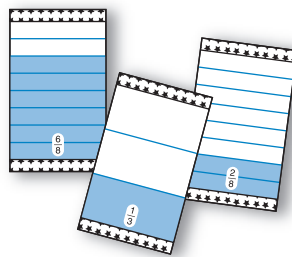
$\frac{6}{8}$



$\frac{0}{4}$

Equivalent Fractions Game (Advanced Version)

Materials ☐ 1 deck of Fraction Cards
(*Math Journal 2*,
Activity Sheets 5–8)



Players 2

Skill Recognizing fractions that are equivalent

Object of the game To collect more Fraction Cards.

Directions

1. Shuffle the Fraction Cards and place the deck picture-side down on the table.
2. Turn the top card over near the deck of cards.
3. Players take turns. When it is your turn, take the top card from the deck, **but do not turn it over** (keep the picture side down). Try to match the fraction with one of the picture-side up cards on the table.
 - ◆ If you find a match, turn the card over to see if you matched the cards correctly. If you did, take both cards. Then, if there are no cards left picture-side up, turn the top card over.
 - ◆ If there is no match, place your card next to the other cards, picture-side up. Your turn is over.
 - ◆ If there is a match but you did not find it, the other player can take the matching cards.
4. The game ends when all cards have been matched. The player with more cards wins.

Factor Bingo

- Materials**
- ☐ number cards 2–9 (4 of each)
 - ☐ 1 *Factor Bingo* game mat for each player
(*Math Masters*, p. 448)
 - ☐ 12 counters for each player

Players 2 to 4

Skill Finding factors of a number

Object of the game To get 5 counters in a row, column, or diagonal; or to get 12 counters anywhere on the game mat.

Directions

1. Fill in your own game mat. Choose 25 different numbers from the numbers 2 through 90.
2. Write each number you choose in exactly 1 square on your game mat grid. Be sure to mix the numbers up as you write them on the grid; they should not all be in order. To help you keep track of the numbers you use, circle them in the list below the game mat.
3. Shuffle the number cards and place them number-side down on the table. Any player can turn over the top card. This top card is the “factor.”
4. Players check their grids for a number that has the card number as a factor. Players who find such a number cover the number with a counter. A player may place only 1 counter on the grid for each card that is turned over.
5. Turn over the next top card and continue in the same way. You call out “Bingo!” and win the game if you are the first player to get 5 counters in a row, column, or diagonal. You also win if you get 12 counters anywhere on the game mat.
6. If all the cards are used before someone wins, shuffle the cards again and continue playing.

Example A 5-card is turned over. So the number 5 is the “factor.” Any player may place one counter on a number for which 5 is a factor, such as 5, 10, 15, 20, or 25. A player may place only one counter on the game mat for each card that is turned over.

Sample Factor Bingo Game Mat

Choose any 25 *different* numbers from the numbers 2 through 90. Write each number you choose in exactly 1 square on your game mat page. To help you keep track of the numbers you use, circle them in the list on your game mat page.

	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
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90

Factor Bingo Game Mat

Fraction Top-It

Materials □ 1 deck of Fraction Cards (*Math Journal 2*, Activity Sheets 5–8)

Players 2

Skill Comparing fractions

Object of the game To collect more cards.

Directions

1. Shuffle the Fraction Cards and place the deck picture-side down on the table.
2. Each player turns over a card from the top of the deck. Players compare the shaded parts of the cards. The player with the larger fraction shaded takes both cards.
3. If the shaded parts are equal, the fractions are equivalent. Each player then turns over another card. The player with the larger fraction shaded takes all the cards from both plays.
4. The game is over when all cards have been taken from the deck. The player with more cards wins.

Examples Players turn over a $\frac{3}{4}$ card and a $\frac{4}{6}$ card.

The $\frac{3}{4}$ card has a larger shaded area. The player holding the $\frac{3}{4}$ card takes both cards.



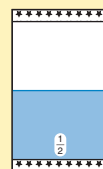
$$\frac{3}{4}$$



$$\frac{4}{6}$$

Players turn over a $\frac{1}{2}$ card and a $\frac{4}{8}$ card.

The shaded parts are equal. Each player turns over another card. The player with the larger Fraction Card takes all the cards.



$$\frac{1}{2}$$



$$\frac{4}{8}$$

Fraction Top-It (Advanced Version)

Materials  1 deck of Fraction Cards (*Math Journal 2*, Activity Sheets 5–8)

Players 2

Skill Comparing fractions

Object of the game To collect more cards.

Directions

1. Shuffle the Fraction Cards and place the deck picture-side down on the table.
2. Each player takes a card from the top of the deck **but does not turn it over**. The cards remain picture-side down.
3. Players take turns. When it is your turn:
 - ◆ Say whether you think your fraction is greater than, less than, or equivalent to the other player's fraction.
 - ◆ Turn the cards over and compare the shaded parts. If you were correct, take both cards. If you were wrong, the other player takes both cards.
4. The game is over when all cards have been taken from the deck. The player with more cards wins.

Example

Joel draws a $\frac{2}{8}$ card. Sue draws a $\frac{1}{4}$ card. It is Sue's turn, and she says that her fraction is less than Joel's. They turn their cards over and find that the shaded areas are equal. The fractions are equivalent. Sue was wrong, so Joel takes both cards.



Less Than You!

Materials  number cards 0–10 (4 of each)

Players 2

Skill Mental addition skills; developing a winning game strategy

Object of the game To say “Less than you!” and to have a sum that is less than the other player’s.

Directions

Shuffle the cards. Deal 2 cards to each player, number-side down. Place the remaining deck of cards number-side down on the table. Players take turns. When it is your turn:

1. Take the top card from the deck. You now have 3 cards in your hand.
2. Discard the card in your hand with the largest number. Place this card *faceup* in a discard pile. (Discard means “take out of your hand and put aside.”)
3. Add the 2 numbers on the cards left in your hand.
4. If you think that your sum is less than the other player’s sum, say “Less than you!” If your sum *is* less, you win. If your sum is *not* less, you lose. The game is over.
5. If you don’t say “Less than you!,” your turn is over. The game is not over until one of the players says “Less than you!”

Advanced Version

Deal 3 cards to each player instead of 2.

Memory Addition/Subtraction

Materials □ 1 calculator

Players 2

Skill Mental addition and subtraction skills;
using a calculator's memory keys

Object of the game To make the number in the memory of a calculator match a target number.

Directions

1. Players agree on a target number less than 50.
2. Either player clears the calculator's memory. (See **Using the Memory Keys** on the next page.) Both players must be able to see the calculator at all times.
3. Players take turns adding 1, 2, 3, 4, or 5 to the calculator's memory using the $\text{M}+$ key, or subtracting 1, 2, 3, 4, or 5 from the memory using the $\text{M}-$ key. They keep track of the results in their heads. A player cannot use the number that was just used by the other player.
4. The goal is to make the number in memory match the target number. When it is a player's turn and he or she thinks the number in memory is the same as the target number, the player says "same." Then he or she presses MR or MRC to display the number in memory.
A player can say "same" and press MR or MRC before or after adding or subtracting a number.
5. If the number in the display matches the target number, the player who said "same" wins. If the number does not match the target number, the other player wins.

Using the Memory Keys

- ◆ Press **AC** or **MRC** **MRC** to clear the memory.
- ◆ Press **M+** to add the number in the display to memory.
- ◆ Press **M-** to subtract the number in the display from memory.
- ◆ Press **MR** or **MRC** once to display the number in memory.
- ◆ Change the directions if your calculator works differently.

Example Target number: 19

Winnie presses	Display shows	Maria presses	Display shows
4 M+	M 4	5 M+	M 5
3 M+	M 3	1 M+	M 1
2 M-	M 2	3 M+	M 3
5 M+ MR OR	M 19		
5 M+ MRC			

Winnie says “same” after pressing 5 **M+**. Then she presses **MR** or **MRC** and the display shows the target number 19. Winnie wins. Either player presses **AC** or **MRC** **MRC** to clear the memory before starting a new game. Then, if the display shows a number that is different from 0, press **ON/C** to clear the display.

Missing Terms

Materials ☐ 1 calculator for each player

Players 2

Skill Mental addition and subtraction skills

Object of the game To say how one number was changed to obtain a second number.

Directions

1. Players enter the same number into their calculators.
2. One player secretly changes this number by adding or subtracting a number.
3. The other player is shown the new number that appears in the calculator display. He or she guesses what was done to the original number to get the new number.

Example Both calculators are set to 7.

Joyce secretly changes the display by pressing \oplus 9 $=$. The display now shows the number 16.

Joyce shows the display number 16 to Al.
Al says, "You added 9." He is correct.

Multiplication Bingo (Easy Facts)

- Materials**
- ☐ number cards 1–6 and 10 (4 of each)
 - ☐ 1 *Multiplication Bingo* game mat for each player (*Math Masters*, p. 449)
 - ☐ 8 counters for each player

Players 2 or 3

Skill Mental multiplication skills

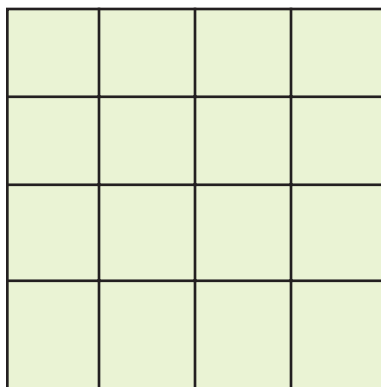
Object of the game To get 4 counters in a row, column, or diagonal; or 8 counters anywhere on the game mat.

Directions

- The game mat is shown below. You can make your own game mat on a piece of paper. Write each of the numbers in the list in one of the squares on the grid. Don't write the numbers in order. Mix them up.

List of Numbers	
1	18
4	20
6	24
8	25
9	30
12	36
15	50
16	100

**Multiplication Bingo
Game Mat**



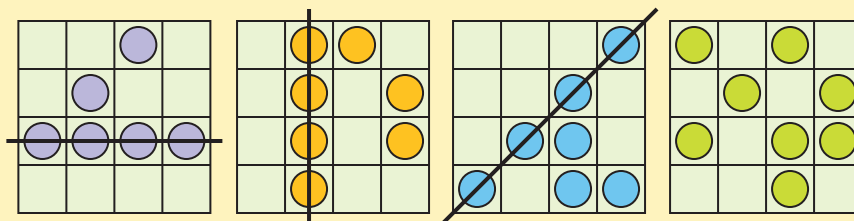
- Shuffle the number cards and place the deck number-side down on the table.

3. Players take turns. When it is your turn, take the top 2 cards and call out the product of the 2 numbers. If someone does not agree with your answer, check it by using the Multiplication/Division Facts Table on page 52 in your *Student Reference Book* or the inside front cover of your journal.
 - ◆ If your answer is incorrect, you lose your turn.
 - ◆ If your answer is correct and the product is a number on your game mat, place a counter on that number. You may only place a counter on your game mat when it is your turn.
4. If you are the first player to get 4 counters in a row, column, or diagonal, call out “Bingo!” and win the game! You can also call “Bingo!” and win if you get 8 counters anywhere on your game mat.

If all the cards are used before someone wins, shuffle the cards again and keep playing.

Example

A player could call out “Bingo!” with any of these game mats:



4 counters in a row, column, or diagonal

8 counters anywhere

Multiplication Bingo (All Facts)

- Materials**
- ☐ number cards 2–9 (4 of each)
 - ☐ 1 *Multiplication Bingo* Game Mat for each player (*Math Masters*, p. 449)
 - ☐ 8 counters for each player

Players 2 or 3

Skill Mental multiplication skills

Object of the game To get 4 counters in a row, column, or diagonal; or 8 counters anywhere on the game mat.

Directions

- The game mat is shown below. You can make your own game mat on a piece of paper. Write each of the numbers in the list in one of the squares on the grid. Don't write the numbers in order. Mix them up.

List of Numbers	
24	48
27	49
28	54
32	56
35	63
36	64
42	72
45	81

**Multiplication Bingo
Game Mat**

- Follow the directions for playing *Multiplication Bingo* (Easy Facts).

Multiplication Draw

Materials ☐ number cards 1–5 and 10 (4 of each)
☐ 1 *Multiplication Draw* Record Sheet
(Math Masters, p. 450)

Players 2 or 3

Skill Multiplication facts

Object of the game To have the largest sum.

Directions

1. Shuffle the cards and place the deck number-side down.
2. Players take turns. When it is your turn, draw 2 cards from the deck to get 2 multiplication factors. Record both factors and their product on your Record Sheet.
3. After 5 turns, each player finds the sum of their 5 products.
4. The player with the largest sum wins the round.

Advanced Version

Include cards with numbers 6–9 in the number deck.

Example Alex draws a 3 card and a 10 card. He records
 $3 \times 10 = 30$ on his Record Sheet.

Alex	Round 1	Round 2	Round 3
1st draw:	$3 \times 10 = 30$	$_ \times _ = _$	$_ \times _ = _$
2nd draw:	$_ \times _ = _$	$_ \times _ = _$	$_ \times _ = _$
3rd draw:	$_ \times _ = _$	$_ \times _ = _$	$_ \times _ = _$
4th draw:	$_ \times _ = _$	$_ \times _ = _$	$_ \times _ = _$
5th draw:	$_ \times _ = _$	$_ \times _ = _$	$_ \times _ = _$
Sum of products:	$_$	$_$	$_$

Multiplication Top-It

Materials ☐ number cards 0–10 (4 of each)

Players 2 to 4

Skill Multiplication facts 0 to 10

Object of the game To collect the most cards.

Directions

1. Shuffle the cards. Place the deck number-side down on the table.
2. Each player turns over 2 cards and calls out the product of the numbers.
3. The player with the largest product wins the round and takes all the cards.
4. In case of a tie for the largest product, each tied player turns over 2 more cards and calls out the product of the numbers. The player with the largest product then takes all the cards from both plays.
5. The game ends when there are not enough cards left for each player to have another turn.
6. The player with the most cards wins.

Example

Ann turns over a 2 and a 6. She calls out 12.
Beth turns over a 6 and a 0. She calls out 0.
Joe turns over a 10 and a 4. He calls out 40.
Joe has the largest product. He takes all 6 cards.



Example

Ann turns over a 3 and an 8.

3 8

She multiplies 3×8 and calls out 24.

Beth turns over a 4 and a 6.

4 6

She multiplies 4×6 and calls out 24.

Joe turns over a 9 and a 2.

9 2

He multiplies 9×2 and calls out 18.

Ann and Beth are tied with 24.

So they each turn over 2 more cards.

Ann turns over a 3 and a 7.

3 7

She multiplies 3×7 and calls out 21.

Beth turns over an 8 and a 4.

8 4

She multiplies 8×4 and calls out 32.

Beth wins and takes all 10 cards.

Name That Number

Materials □ number cards 0–20 (4 of each card 0–10, and 1 of each card 11–20)

Players 2 to 4 (the game is more interesting when played by 3 or 4 players)

Skill Naming numbers with expressions

Object of the game To collect the most cards.

Directions

1. Shuffle the deck and place 5 cards number-side up on the table. Leave the rest of the deck number-side down. Then turn over the top card of the deck and lay it down next to the deck. The number on this card is the number to be named. Call this number the **target number**.
2. Players take turns. When it is your turn:
 - ◆ Try to name the target number. You can name the target number by adding, subtracting, multiplying, or dividing the numbers on 2 or more of the 5 cards that are number-side up. A card may be used only once for each turn.
 - ◆ If you can name the target number, take the cards you used to name it. Also take the target-number card. Then replace all the cards you took by drawing from the top of the deck.
 - ◆ If you cannot name the target number, your turn is over. Turn over the top card of the deck and lay it down on the target-number pile. The number on this card becomes the new target number to be named.
3. Play continues until all of the cards in the deck have been turned over. The player who has taken the most cards wins.

Example

Mae and Mike take turns.



It is Mae's turn. The target number is 6. Mae names the number with $4 + 2$. She also could have said $8 - 2$ or $10 - 4$.

Mae takes the 4, 2, and 6 cards. Then she replaces them by drawing cards from the deck.



It is Mike's turn. The new target number is 16. Mike sees two ways to name the target number.

◆ He can use 3 cards and name the target number like this:

$$\boxed{7} + \boxed{8} + \boxed{1} = 16$$

◆ He can use 4 cards and name the target number like this:

$$\begin{array}{rcl} \boxed{12} - \boxed{10} & = & 2 \\ & \downarrow & \\ & 2 \times \boxed{8} & = 16 \\ & & \downarrow \\ & & 16 \div \boxed{1} = 16 \end{array}$$

Mike chooses the 4-card solution because he takes more cards that way. He takes the 12, 10, 8, and 1 cards. He also takes the target-number card 16. Then he replaces all 5 cards by drawing cards from the deck.

Number-Grid Difference

- Materials**
- ☐ 0–9 number cards (4 of each)
 - ☐ 1 Completed Number Grid
(*Math Masters*, p. 396)
 - ☐ 1 *Number-Grid Difference Record Sheet*
(*Math Masters*, p. 452)
 - ☐ 2 counters
 - ☐ 1 calculator

Players 2

Skill Mental subtraction of 2-digit numbers

Object of the game To have the lower sum.

Directions

1. Shuffle the cards. Place the deck number-side down on the table.
2. Players take turns. When it is your turn:
 - ◆ Each player takes 2 cards from the deck and uses their cards to make a 2-digit number. Players then place counters on the grid to mark their numbers.
 - ◆ Find the difference between the 2 marked numbers.
 - ◆ This difference is your score for the turn. Record the 2 numbers and your score on the record sheet.
3. Continue playing until each player has taken 5 turns and recorded 5 scores.
4. Each player finds the sum of their 5 scores. Players may use a calculator to add.
5. The player with the lower sum wins the game.

Number-Grid Difference Record Sheet

Round	My Number	My Partner's Number	Difference (Score)
1			
2			
3			
4			
5			
Total:			

452

Number Top-It (5-Digit Numbers)

Materials ☐ number cards 0–9 (4 of each)
 ☐ 1 7-Digit Place-Value Mat
 (Math Masters, pp. 423 and 424)

Players 2 or more

Skill Place value for whole numbers

Object of the game To make the largest 5-digit numbers.

Directions

1. Shuffle the cards. Place the deck number-side down on the table.
2. Each player uses 1 row of boxes on the Place-Value Mat. Do not use the Millions box or the Hundred-Thousands box.
3. In each round, players take turns turning over the top card from the deck and placing it on any one of their empty boxes. Each player takes 5 turns and places 5 cards on his or her row of the Place-Value Mat.
4. At the end of each round, players read their numbers aloud and compare them. The player with the largest number for the round scores 1 point; the player with the next-largest number scores 2 points; and so on. All cards are then removed from the Place-Value Mat and placed in a discard pile before the next round begins.
5. Players play 5 rounds per game. When all of the cards in the deck have been used, one player shuffles the discarded cards to make a new deck to finish the game. The player with the smallest total number of points at the end of 5 rounds wins the game.

Example

The Place-Value Mat below shows the results for one complete round of play with 4 players.

7-Digit Place-Value Mat

	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
John			4	8	6	2	1
Doug			9	3	5	2	0
Sara			4	7	2	0	4
Anju			7	6	6	3	4

Here are the numbers listed from largest to smallest:

Doug 93,520 largest

Anju 76,634

John 48,621

Sara 47,204 smallest

Doug scores 1 point for this round. Anju scores 2 points. John scores 3 points. And Sara scores 4 points.

Number Top-It (7-Digit Numbers)

Materials ☐ number cards 0–9 (4 of each)
☐ 1 7-Digit Place-Value Mat
 (Math Masters, pp. 423 and 424)

Players 2 or more

Skill Place value for whole numbers

Object of the game To make the largest 7-digit numbers.

Directions

This game is played in the same way as *Number Top-It* (5-Digit Numbers). The only difference is that each player uses all 7 boxes in one row of the Place-Value Mat.

In each round, Players take turns turning over the top card from the deck and placing it on any one of their empty boxes. Each player takes 7 turns and places 7 cards on his or her row of the game mat.

Example Andy and Barb played 7-digit *Number Top-It*.
 Here is the result for one complete round of play:

7-Digit Place-Value Mat

	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
Andy	7	6	4	5	2	0	1
Barb	4	9	7	3	5	2	4

Andy's number is larger than Barb's number. Andy scores 1 point for the round. Barb scores 2 points.

Number Top-It (Decimals)

Materials ☐ number cards 0–9 (4 of each)
☐ 1 *Number Top-It* Mat (Decimals) (*Math Masters*, pp. 453 or 454)

Players 2 or more

Skill Place value for decimals

Object of the game To make the largest 2-digit decimal numbers.

Directions

This game is played in the same way as *Number Top-It* (5-Digit Numbers). The only difference is that players use a *Number Top-It* Mat for decimals.

In each round, players take turns turning over the top card from the deck and placing it on any one of their empty boxes. Each player takes 2 turns and places 2 cards on his or her row of the game mat.

Example Andy and Barb played *Number Top-It* using the *Number Top-It* Mat (2-Place Decimals). Here is the result:

Number Top-It Mat (2-Place Decimals)

Barb's number is larger than Andy's number. Barb scores 1 point for the round. Andy scores 2 points.

Andy

Barb

Ones	.	Tenths	Hundredths
0	.	3	5
0	.	6	4

You may also use a *Number Top-It* Mat that has empty boxes in the tenths, hundredths, and thousandths places. Each player takes 3 turns and places 3 cards.

Pick-a-Coin

Materials

- ☐ 1 six-sided die
- ☐ 1 calculator for each player
- ☐ 1 *Pick-a-Coin* Record Table
(*Math Masters*, p. 455)



Players 2 or 3

Skill Place value for decimals

Object of the game To make the largest dollar-and-cents amounts.

Directions

Each player uses a different Record Table. Players take turns.
When it is your turn:

1. Roll the die 5 times. After each roll, write the number that comes up in any one of the empty cells on a line of your Record Table.
2. Use a calculator to find the total amount for that turn.
3. Record the total for that turn on your Record Table.
4. After 4 turns, use your calculator to add the 4 totals. The player with the largest sum wins.

Example

On his first turn, Brian rolled 4, 2, 4, 6, and 1.
He filled in his Record Table like this.

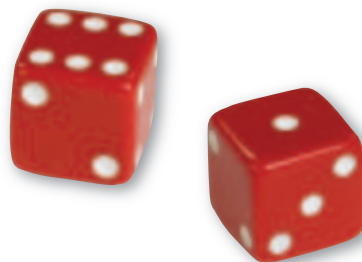
Pick-a-Coin Record Table

Brian	Ⓟ	Ⓝ	Ⓣ	Ⓠ	\$1	Total
1st turn	2	1	4	4	6	\$ 7.47
2nd turn						\$ ____.
3rd turn						\$ ____.
4th turn						\$ ____.
Total						\$ ____.

Roll to 100

Materials ☐ 1 *Roll to 100* Record Sheet
(*Math Masters*, p. 456)

☐ 2 six-sided dice



Players 2 to 4

Skill Mental addition skills; developing a winning game strategy

Object of the game To score at least 100.

Directions

Players take turns.



1. When it is your first turn, roll the dice any number of times.
 - ◆ Mentally add all of the numbers rolled for all your dice rolls. Enter this as your score for Turn 1.
 - ◆ If you roll a 1 at any time, your turn is over. Enter 0 as your score for Turn 1.
2. When you take another turn, roll the dice any number of times.
 - ◆ Start with your score from the last turn and keep mentally adding on all of the numbers you roll. Do this until you stop rolling the dice. Enter your final sum as your score for this turn.
 - ◆ If you roll a 1 at any time, your turn is over. The score you enter for this turn is the same as your score on the previous turn.
3. The first player to score 100 or more wins the game.

Variations

Double the Doubles: Whenever a player rolls doubles, the numbers rolled are each added twice.

Double Ones: A player who rolls double 1s enters a score of 0 for that turn. On that player's next turn, he or she starts with a score of 0.

Back to Zero: A player who scores 100 or more continues to take turns, but subtracts the numbers rolled each time instead of adding them. The first player to score 100 or more and then get back to 0 or less wins.

Name	Date	Time		
Roll to 100 Record Sheet			 	
Write your score at the end of each turn. The first player to reach or pass 100 wins.				
Turn	Player 1	Player 2	Player 3	Player 4
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Continue recording scores on the back of this page.

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Spinning to Win

Materials ☐ 1 paper clip—preferably large size (2 in.)
☐ 50 counters
☐ 1 spinner (*Math Masters*, p. 464)

Players 2 to 4

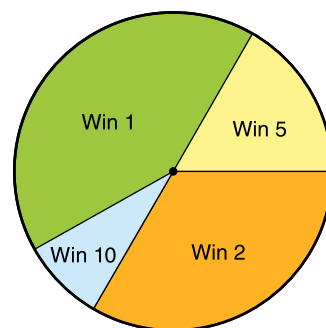
Skill Using chance data to develop a winning game strategy

Object of the game To collect the most counters in 12 spins.

Directions

1. Put the counters in a pile on the table between the players.
2. For each game, draw a tally chart like the one at the right.
3. Each player claims one section of the spinner—1, 2, 5, or 10. Each player must choose a different section.
4. Players take turns spinning the paper clip. One game consists of a total of 12 spins.
5. When the paper clip lands on a section of the spinner that has been claimed, the player that claimed the section takes the number of counters printed there. Make a tally mark in the chart to show the winning number for that spin. Do this to keep track of the number of spins.
6. The winner is the player with the most counters after 12 spins.

Win 1	Win 2	Win 5	Win 10



Subtraction Top-It

Materials □ number cards 0–20 (4 of each card 0–10, and 1 of each card 11–20)

Players 2 to 4

Skill Subtraction facts

Object of the game To collect the most cards.

Directions

1. Shuffle the cards. Place the deck number-side down on the table.
2. Each player turns over 2 cards and subtracts the smaller number from the larger number.
3. The player with the largest difference wins the round and takes all the cards.
4. In case of a tie for the largest difference, each tied player turns over 2 more cards and calls out the difference of the numbers. The player with the largest difference then takes all the cards from both plays.
5. The game ends when not enough cards are left for each player to have another turn.
6. The player with the most cards wins.

Example Ann turns over a 2 and a 14.

She subtracts 2 from 14 and calls out 12.

2

14

Joe turns over a 10 and a 4.

He subtracts 4 from 10 and calls out 6.

10

4

Ann has the larger difference. She takes all 4 cards.

Example Ann turns over a 12 and a 6.

12 6

She subtracts $12 - 6$ and calls out 6.

Joe turns over a 9 and a 3.

9 3

He subtracts $9 - 3$ and calls out 6.

There is a tie. So both players turn over 2 more cards.

Ann turns over a 10 and an 8.

10 8

She subtracts $10 - 8$ and calls out 2.

Joe turns over a 7 and a 3.

7 3

He subtracts $7 - 3$ and calls out 4.

Joe takes all 8 cards.

Target 50

- Materials**
- ☐ number cards 0–9 (4 of each)
 - ☐ base-10 blocks (30 longs and 30 cubes)
 - ☐ 1 Place-Value Mat for each player (*Math Masters*, p. 411)
 - ☐ 1 *Target 50* Record Sheet (*Math Masters*, p. 465)

Players 2

Skill Place value for whole numbers

Object of the game To have 5 longs on the Place-Value Mat.

Directions

1. Shuffle the number cards. Place the deck number-side down on the table.
2. Players take turns. When it is your turn:
 - ◆ Turn over 2 cards. You may use either card to make a 1-digit number. Or, you may use both cards to make a 2-digit number.
 - ◆ Use base-10 blocks to model your number. Put these blocks just beneath your Place-Value Mat, but not on the mat.
 - ◆ You now have 2 choices:

Addition: You can add all of the base-10 blocks beneath the mat to the blocks already on your Place-Value Mat.

Subtraction: You can subtract blocks equal in value to the base-10 blocks beneath the mat from the blocks already on your Place-Value Mat. If you decide to subtract, you may have to make exchanges on the Place-Value Mat first.

- 3. Players can make exchanges on their Place-Value Mats at any time.
- 4. Play continues until the blocks on one player’s mat have a value of 50 and show 5 longs. That player is the winner.

Example Alex was able to reach the target value of 50 in three turns:

Turns	Cards	Number Made	Addition or Subtraction on Place-Value Mat	Value on Mat
1	6, 5	56	Add 5 longs and 6 cubes.	56
2	8, 9	8	Exchange 1 long for 10 cubes Subtract 8 cubes.	48
3	5, 2	2	Add 2 cubes. Exchange 10 cubes for 1 long.	50

Name _____ Date _____ Time _____

Target: 50 Record Sheet

For each of your turns, record the number you make and the value you show with base-10 blocks on the Place-Value Mat.

Turns	Number You Made	Value on Place-Value Mat
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

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Three Addends

- Materials**
- number cards 0–20 (4 of each card 0–10, and 1 of each card 11–20)
 - 1 *Three Addends* Record Sheet for each player (*Math Masters*, p. 466, optional)

Players 2

Skill Addition of three 1- and 2-digit numbers

Object of the game To find easy combinations when adding three numbers.

Directions

1. Shuffle the cards and place the deck number-side down on the table.
2. One player draws 3 cards from the top of the deck and turns them over.
3. Each player writes an addition number model using the 3 numbers.
4. You can write your addition number model on your Record Sheet or on a separate sheet of paper.
5. You may list the numbers in any order you wish. But try to list the numbers so that it is easy for you to add them.
6. Then add the numbers and compare your answer to the other player's answer.



$$\underline{2} + \underline{8} + \underline{7} = \underline{17}$$

Variations

- ◆ Give the sum of the 3 card numbers without writing down a number model.
- ◆ Draw 4 cards from the deck. Turn them over and find the sum of the 4 numbers.