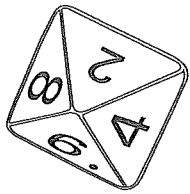
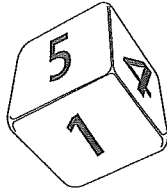


Table Dice



x1



x1



x1

Purpose

- Recall basic multiplication facts.
- Identify multiples of a given number.
- Use the inverse relationship between multiplication and division.
 $20 \div 4 = 5$ $5 \times 4 = 20$.
- Use a strategy to cluster four facts in a row.

Materials

- One six-sided number dice for multiplication facts to six.
- One eight-sided dice for facts to eight.
- One ten-sided dice for facts to 10.
- Table Dice Playing Board.

Organisation

Two players.

Aim

To be the first player to cover four numbers in a row.

Rules

- The first player rolls the dice and notes the number shown. This number indicates the multiplication fact to be used.
For example, if a four is thrown, the player may choose to cover any of the 'x 4' multiplication facts shown in the row containing the multiples of four.
- The chosen multiplication fact must be stated by the player before it is covered. A player wishing to cover 28 would need to state 'seven fours' before covering 28 on the board.
- The second player rolls the dice and covers a different fact.
- The first player to cover four numbers in a row, either horizontally, vertically or diagonally wins.

Teacher notes

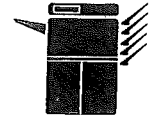
Likewise if an eight-faced dice is used, only the first eight rows of the board are used. A standard ten-faced dice is numbered 0-9 and may be used to highlight the multiplication property of zero. Teachers wishing to do this will need to substitute a playing board that includes a zero row and omits the ten row. Ten-faced dice numbered 1-10 may be purchased. These may be used to highlight the multiplication facts represented on the current playing board.

Alternatively, a standard 0-9 ten-faced dice may be used with the zero representing multiplication by 10.

Variations

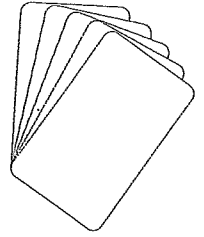
- Allow players to cover two facts per turn.
For example, if a player states 7×4 and covers 28 in the row containing multiples of four, 28 may also be covered in the row containing the multiples of 7 i.e. 4×7 .
- Alter the playing board and include dice such as the twelve-faced dice to highlight multiplication facts beyond ten.

Table Dice Playing Board



1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

Multiple Madness



Purpose

- Identify multiples of counting numbers.
- Use appropriate mental strategies to add numbers to keep a running total.

Materials

- Deck of cards (picture cards removed)

Organisation

A game for 2 – 4 players.

Aim

To collect the most cards.

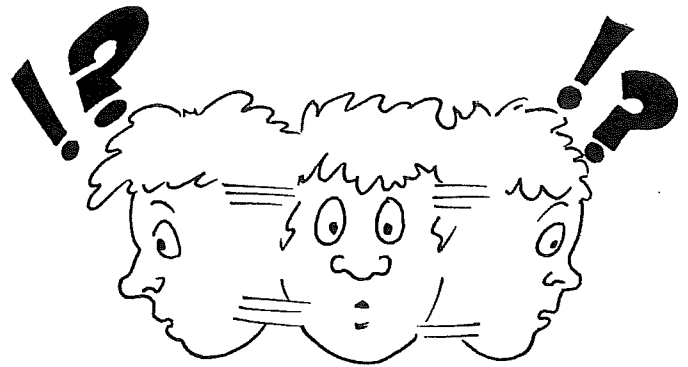
Rules

- All the cards are dealt.
- Players must not look at their cards.
- The dealer chooses a number from one to ten e.g. three. This becomes the multiple for that round.
- The players then take turns to flip over their top card and place it on a pile in the middle.
- Players must keep a mental running total of the cards (i.e. the values of the cards) added to the pile.
- When the total is a multiple of the chosen number – say three – then the first player to call out ‘three three three’ collects the cards.
- Other players may challenge whether the result is really divisible by a that number. A calculator may be used to settle disputes. If the player calling out “three three three” was wrong then he/she must place two of his/her cards in the centre and play continues until the multiple comes up.
- The winner is the person with the most cards in his/her hand after a set time or the only player with cards left in his/her hand.

Variations

- Use different multiples, e.g. 5, 6.
- Use pairs of multiples, e.g. 2 and 3 or 2 or 3.

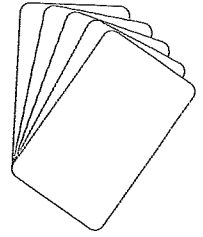
Note: it is easier to find multiples of 2 or 3 rather than both together.



Teacher notes

A multiple of a given counting number is any number into which it will divide without a remainder, eg the multiples of 4 are 0, 4, 8, 12, 16, ...

Getting Closer



Purpose

- Use appropriate strategies to add and subtract two-digit numbers.
- Use place value to write and compare numbers.

Materials

- Deck of cards (picture cards removed).

Organisation

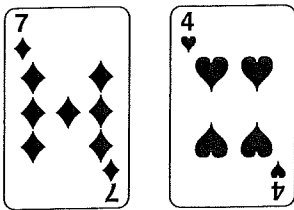
A game for 2 – 4 players.

Aim

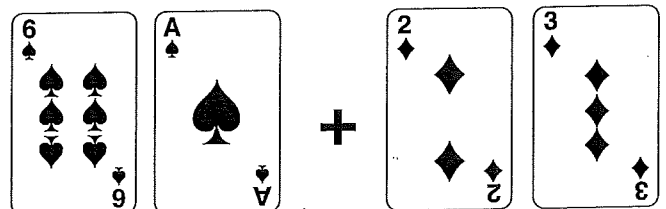
To create two, two-digit numbers to reach a target number.

Rules

- Deal four cards to each player.
- Turn up two cards from the deck. The first represents the tens and the second, the units. This becomes the target number.



- The players now turn over their cards and try to form two, two-digit numbers that when added or subtracted will be as close to the target number as possible.
- Players score by finding the difference between their total and the target number.
- Play continues for several rounds. The winner is the player with the smallest total.

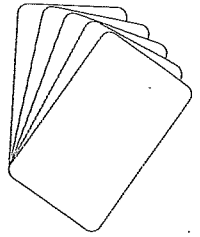


Variation

- Players should try to produce a total as far away from the target as possible.



99 or Bust



Purpose

- Use appropriate strategies to mentally add and subtract a series of numbers.
- Apply strategies and tactics to increase your chances of winning.
- Recognise that some games have an element of chance.

Materials

You will require a deck of cards.

Organisation

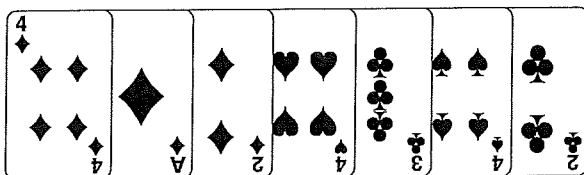
A game for 2 – 4 players.

Aim

To reach 99 or force an opponent to go over 99.

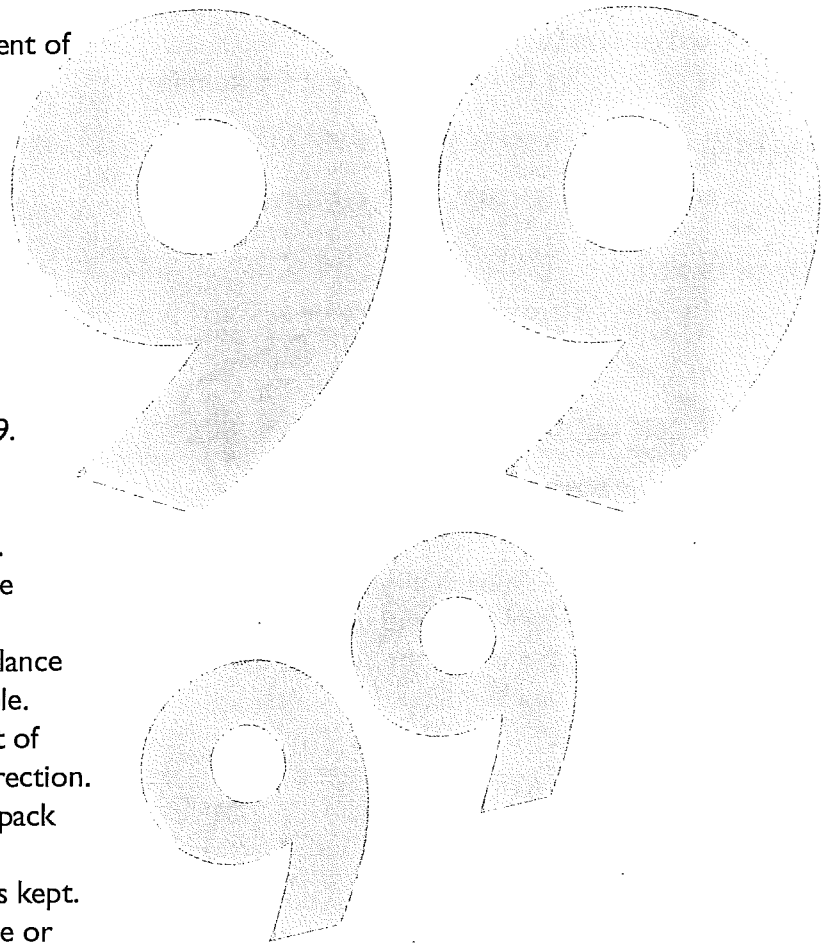
Rules

- Aces = one, Picture cards = minus ten (i.e. subtract 10 from the total), other cards are counted according to their face value.
- Each player is dealt three cards and the balance of the pack is placed face down on the table.
- Play commences with the player to the left of the dealer and continues in a clockwise direction.
- In turn each player draws a card from the pack and then discards one from his/her hand.
- A running total of the cards on the table is kept.
- The aim of the game is to reach ninety-nine or force an opposing player to discard a card which makes the total higher than ninety-nine.

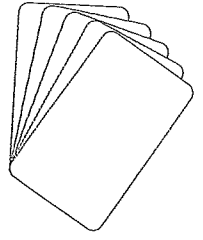


e.g. $(4 + 1 + 2 + 4 + 3 + 4 + 2 = 20)$

- As the total gets closer to ninety-nine the game becomes very exciting and various tactics and strategies come into play.



Hit The Deck



Purpose

- Use appropriate mental strategies to multiply numbers beyond the basic facts.

Materials

- Deck of cards.
- Ace = one
- Picture cards = ten.

Organisation

A game for 2 – 4 players.

Aim

To be the first to multiply three single-digit numbers.

Rules

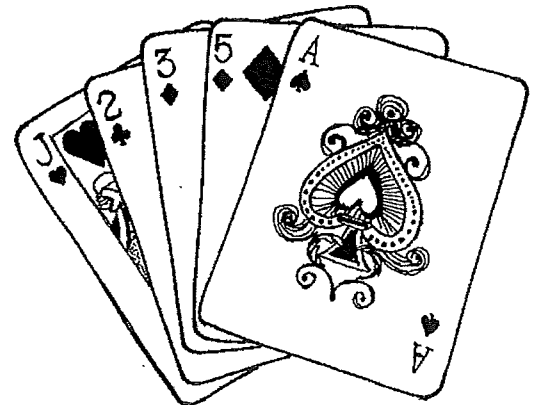
- One player draws three cards from the deck and lays them face up on the table.
- The first player to call the product of the three cards is awarded that number of points.
- No points are awarded for an incorrect answer.
- If three cards of the same suit or three cards of the same value turn up then the first player to call out “HIT THE DECK” and correctly multiply the three numbers receives **double** points.

Variations

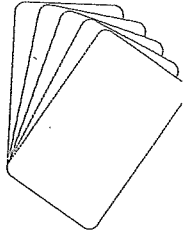
- Draw two, four or five cards.
- Use addition instead of multiplication.

Teacher notes

Allow players to rearrange the order of the cards turned over to make the calculation easier.



On Target



Purpose

- Use appropriate strategies to mentally add a series of numbers.
- Apply strategies and tactics that can increase your chance of winning.

Materials

- Deck of cards (picture cards removed).
- Ace = one.

Organisation

A game for small groups.

Aim

To be the player with the smallest total.

Rules

- The dealer chooses a two digit target number and then deals five cards to each player. Play begins with the first player to the left of the dealer and continues in a clockwise direction. In turn each player lays one card from his/her hand face up on the table.
- A running total of the cards is kept until no player can lay down a card without exceeding the target number.
- Once the game has concluded, the players add the values of the remaining cards in their hands to find their scores.

The winner is the player with the least score after three rounds.

Sample game

A target of **52** was chosen and the four players played the following cards:

Player 1	Player 2	Player 3	Player 4
9	9	10	8
6	5	Ace	2
Ace	Can't go	Ace	- - - - - 52

Cards Remaining in Hand

	Cards Remaining in Hand			Score
Player 1	4	3		7
Player 2	4	3	2	9
Player 3	9	7		16
Player 4	8	6	5	19

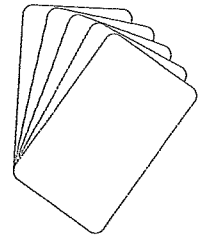
To work out the score for that round simply total the value of the cards left in the player's hand.

Therefore Player 1 is the winner for that round. The winner of the game is the player with the least score after three rounds.

Variations

- Use different target numbers.
- Remove larger cards and reduce target number for younger children.
- Remove the odd or even numbered cards from the pack.

Card Nim



Purpose

- Use appropriate mental strategies to add numbers to keep a running total.
- Apply strategies and tactics that increase the chances of winning.

Materials

- Separate the four aces (Aces = one), four 2s, four 3s and four 4s from a deck of cards.

Aim

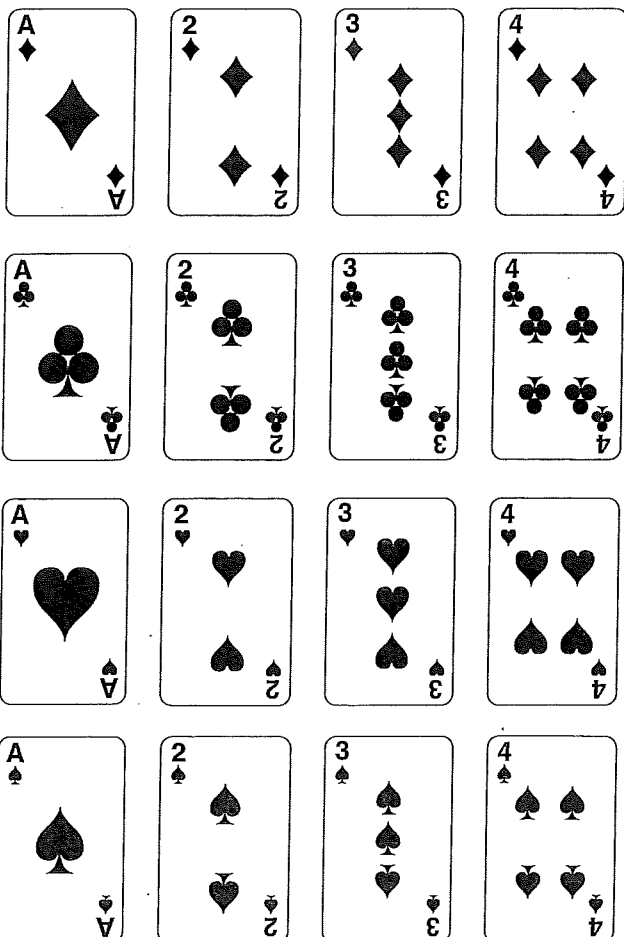
To apply a strategy to win the game.

Organisation

A game for pairs.

Rules

- The dealer lays the cards out in the following manner:



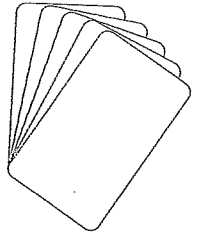
- In turn each player selects a card from the sixteen laid out cards and turns it over. Once it has been turned over it may not be reused. The value is noted and a combined running total is kept. The player who makes the total equal to twenty one is the winner.
- Any player going over twenty one busts and loses the game.

Teacher notes

In order for students to discover useful strategies and tactics to win the game they will need to keep a record of the running total for each game. Encourage students to share any useful strategies they have and try out suggested strategies.



Calculate A Digit



Purpose

- Use place value to read whole numbers into the thousands.
- Represent whole numbers on a calculator.
- Partition (split or break up) whole numbers according to place value. For example, $6937 = 6000 + 900 + 30 + 7$.

Materials

- A calculator
- Deck of cards (tens and picture cards removed)

Organisation

A game for one or two players or whole class.

Aim

Identify the total that needs to be added or subtracted to a number to alter its value.

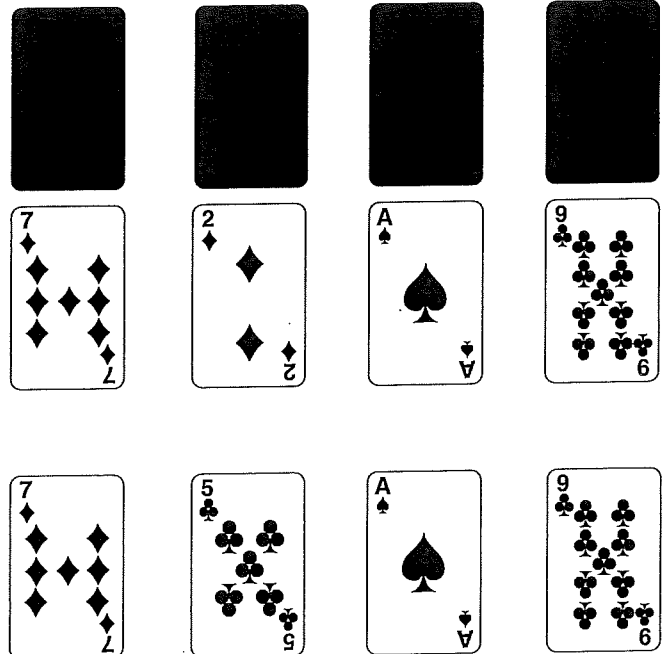
Rules

- Deal the cards face down into four piles. Each pile represents a particular value i.e. thousands, hundreds, tens or units.
- Flip the top card over from each pile and enter the number onto the calculator e.g. 7219.
- One player flips another card over and the second player must change the number on the display of the calculator using addition or subtraction.
- Play continues for five card flips and then players swap roles. Alternatively play can continue until the player with the calculator makes a mistake.

The player would need to add 300 to 7219 to turn it into 7519.

Variations

- Use five or six piles of cards to represent larger numbers. Use decimals.
- Flip more than one card at a time.



Closest to Zero

Purpose

Children will add positive and negative numbers.

Teacher notes

Students will be working with integers, (The name for positive and negative numbers along with zero). Prior to playing the game discuss how adding 3 and -3 will produce a result of 0. Use a number line to demonstrate this.

Materials

A pack of playing cards, Jack = 11, Queen = 12, King = 13, Ace = 1.

Organisation

Two or more players.

Aim

To be the player with the total that is closest to zero.

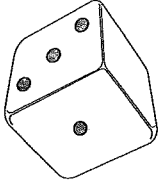
Rules

1. Each black card represents a positive integer and each red card represents a negative integer.
2. The dealer deals two cards to each player.
3. If a player's pair of cards total to zero (eg black 4 and red 4), then that player calls out 'Zero, Zero, Zero'. This player wins that round and records a score of zero.
4. All of the other players calculate their total and write down their score. Note that some scores will be positive, and others negative.
5. If a player does not have a pair that adds to zero, one more card is dealt to each player. At any time, a player whose cards total to zero may call out 'Zero, Zero, Zero'. That player records zero for the round and the other players total their cards. If a player still does not have two cards that add to zero another card is dealt and so on.
6. The dealer may call out 'Total' any time after the fourth card is dealt and all players must total their cards. That is, the dealer has an advantage, because the dealer may call out total when the total of their cards is very close to zero. Once ten cards have been dealt, without a player calling zero or total, then the round ends and all players total their cards.
7. All of the cards are then added to the pack, shuffled and dealt, ready for the next round.
8. Play continues for a set number of rounds (eg 5, determined by the amount of time available to play).
9. The winner for the entire game is the player whose total is *closest to zero*.

Variations

1. Change the winner to the player with the lowest score (negative number).
2. Deal one card face-down at the start of the game to each player, that the player does not pick up or see. This card is added to the player's total when 'Zero, Zero, Zero' or 'Total, Total, Total' is called.
3. Deal three cards to each player face-down that the players cannot see. Allow other players to exchange cards from their hand with other players' face-down cards, throughout the game.

Squares & Primes



x!

Purpose

- Identify prime numbers as having exactly two factors.
- Identify square numbers as the product when a number is multiplied by itself.

E.g. $2 \times 2 = 4$ $3 \times 3 = 9$

Materials

Six-faced dice.
Playing board.

Organisation

Two - four players.

Aim

To be the first player to reach or exceed 100.

Rules

- Players take turns to roll the dice and progress along the game board.
- If a player lands on a square number he/she can move to the next square number.
- If a player lands on a prime number he/she has to move back to the previous prime number.
- The winner is the player to reach or pass 100.

Teacher notes

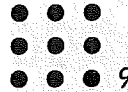
This game focuses on square and prime numbers. The playing board indicates where the square and prime numbers lie. As the players gain confidence in determining square and prime numbers the board may be exchanged for a standard 1-100 grid.

Prime numbers are counting numbers with exactly two factors. E.g. 2, 3, 5, 11, 13... 1 is not a prime number as it only has one factor. It is considered a special number.

Any counting number that divides another without any remainder is a factor of that number.

Square numbers are counting numbers obtained by multiplying a number by itself. E.g. 1, 4, 9 and 16 are square numbers.

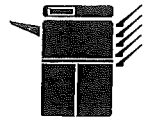
Note: A square number of objects can be placed in a square array diagram.



Variations

- Alter the rules so that players who land on square numbers have to move back to the previous square number and players landing on prime numbers move forward to the next prime number.
- Use an eight, ten, twelve or twenty-faced dice for a faster game.

Squares & Primes Playing Board



100 ^S	99	98	97 ^P	96	95	94	93	92	91
81 ^S	82	83 ^P	84	85	86	87	88	89 ^P	90
80	79 ^P	78	77	76	75	74	73 ^P	72	71 ^P
61 ^P	62	63	64 ^S	65	66	67 ^P	68	69	70
60	59 ^P	58	57	56	55	54	53 ^P	52	51
41 ^P	42	43 ^P	44	45	46	47 ^P	48	49 ^S	50
40	39	38	37 ^P	36 ^S	35	34	33	32	31 ^P
21	22	23 ^P	24	25 ^S	26	27	28	29 ^P	30
20	19 ^P	18	17 ^P	16 ^S	15	14	13 ^P	12	11 ^P
1	2 ^P	3 ^P	4 ^S	5 ^P	6	7 ^P	8	9 ^S	10