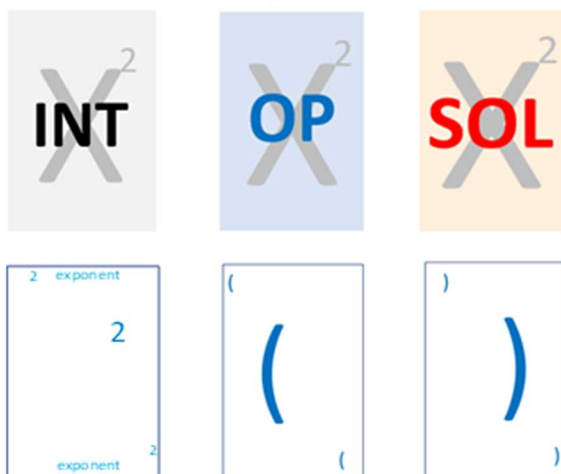




X-Squared Entertainment Card Game Instructions

X²squared



The COMPLETE Order of Operations Card Game

The X-Squared game deck enables limitless possibilities for math card games. The instructions for numerous entertainment games are described here. Feel free to invent your own math games.

The game deck includes 104 total cards. There are 40 Integer cards:

0	1	2	3	4	5	<u>6</u>	7	8	<u>9</u>
0	1	2	3	4	5	<u>6</u>	7	8	<u>9</u>
0	1	2	3	4	5	<u>6</u>	7	8	<u>9</u>
0	1	2	3	4	5	<u>6</u>	7	8	<u>9</u>

Figure 1. Integer Cards



There are 20 Operator cards. Note: a Wild Operator card is included because many of the equations that are formed while playing the games require more than one of a particular operator (e.g. two +’s or two X’s). The Wild card can be used to apply any of the four operators.

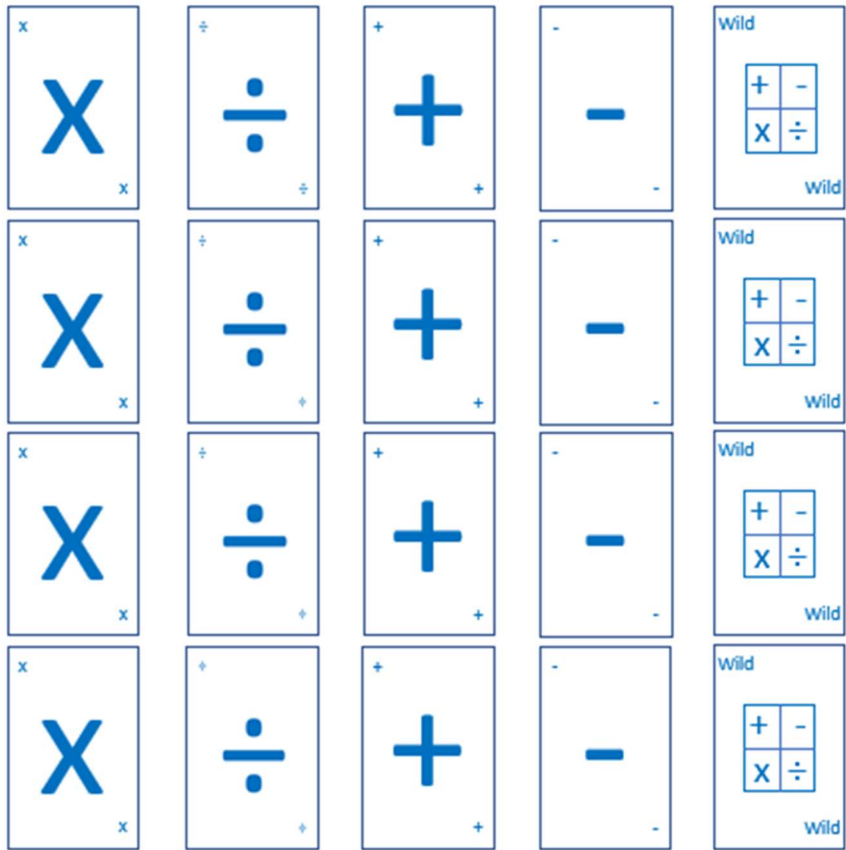


Figure 2. Operator Cards

There are 8 Inside and 4 Outside Parenthesis cards. These cards are transparent to overlay other cards:

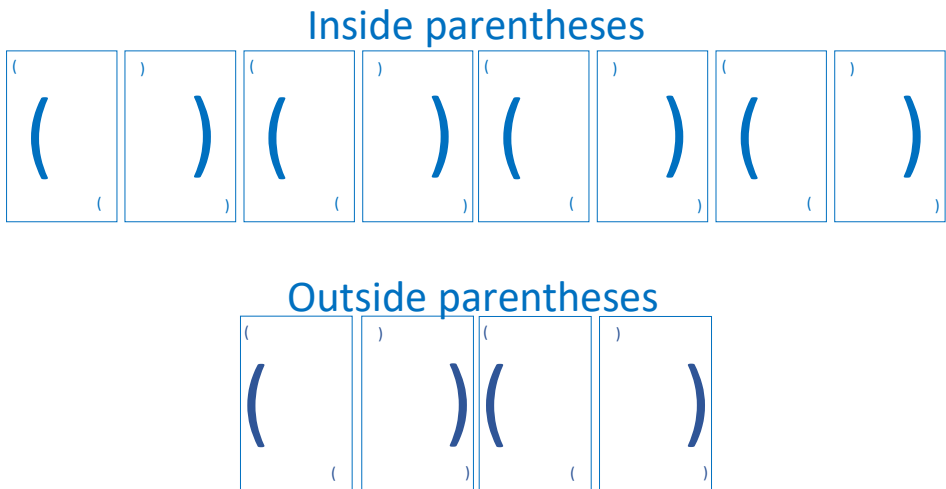


Figure 3. Parentheses Cards



There are 8 Exponent cards. Three types of exponent cards are required. The first exponent card may be applied to an Integer. The second type is applied to expressions with the Inside Parentheses. The third type is applied to expressions with either the Inside Parentheses or Outside Parentheses. The Exponent cards are also transparent to overlay Integer cards.

Exponent (x^2)	Exponent (x^2)	Exponent (x^2)	Exponent (x^2)	Exponent (x^2)	Exponent (x^2)	Exponent ($(x)^2$)	Exponent ($(x)^2$)
2	2	2	2	2	2	2	2
Exponent	Exponent	Exponent	Exponent	Exponent	Exponent	Exponent	Exponent

Figure 4. Exponent Cards

There are 24 Solution cards. Each Solution card is a two-digit number. They include the smallest, largest, all perfect squares and all multiples of 5.

10	15	16	20	25	30	35	36
40	45	49	50	55	60	64	65
70	75	80	81	85	90	95	99

Figure 5. Solution Cards

X-Squared Standard Play

The most basic form of X-Squared involves the creation of equations using Integer cards and Operators to produce a value equal to a Solution card. There are six levels of play, each level associated with the number of Integer cards that are used to produce equations. Levels 1 through 4 are draw games, where players draw cards from the Integer deck until they have a combination of Integers that enable them to generate a correct equation. Levels 5 and 6 are challenge games where players must use the cards they are dealt to produce an equation as quickly as possible. The first to create an equation wins the round. Play multiple rounds and the player who reaches a designated target number first wins the game.



Level 1: Single Integer Card (2 to 4 Players)

In this game only the perfect square Solution cards are used: 16, 25, 36, 49, 64 and 81. Each player holds an Exponent card. Each player is dealt one Integer card. A randomly selected Solution card is placed face up. Players must use an Integer card and the Exponent card to produce the Solution. Players draw cards from the Integer deck until one of them obtains the Solution.

Example Solution:

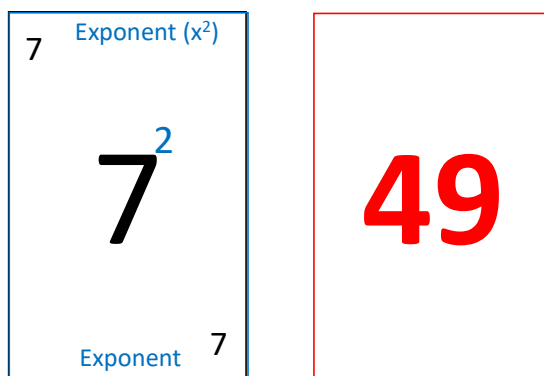


Figure 6. Example Solution for X-Squared Level 1

Level 2: Two Integer Cards (2 to 4 Players)

This game also utilizes just the perfect square Solution Cards: 16, 25, 36, 49, 64 and 81. Each player holds Parentheses and an Exponent card, as well as four Operator cards. Each player is dealt two Integer cards. Players must draw cards from the Integer deck until they can form an equation that is equal to the Solution card. Players must use the Parentheses and Exponent in their equations.

Example Solution:

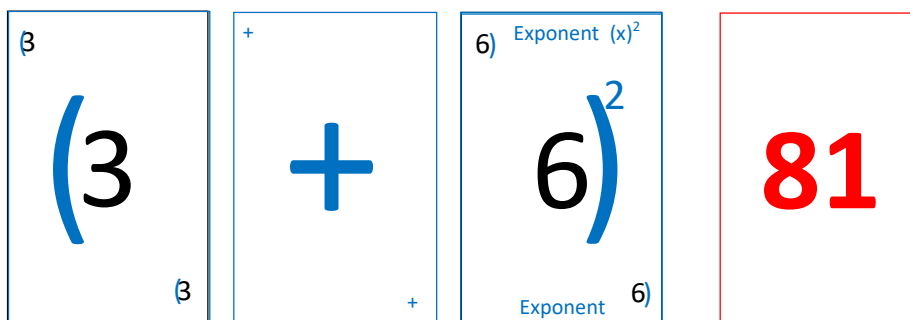


Figure 7. Example Solution for X-Squared Level 2



Level 3: Three Integer Cards (2 to 4 Players)

All of the playing cards are used in this game. Players hold all of the elements of PEMDAS: one each of the five Operator cards, one set of parentheses and one exponent. Each player is dealt three Integer cards. Players must use each of the three Integers and two Operator cards to form an equation equal to a randomly selected Solution card. The Parentheses and Exponent are optional. Players draw cards from the Integer deck until they have the right combination to formulate an equation that produces the value of the Solution card.

Example Solution:

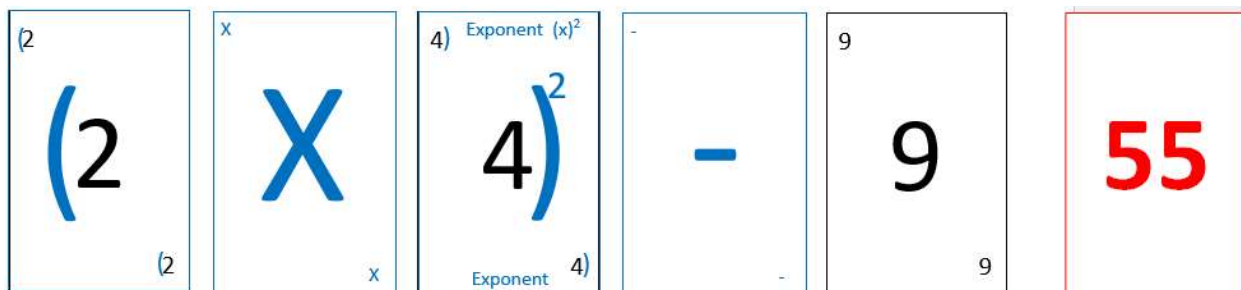


Figure 8. Example Solution for X-Squared Level 3

Level 4: Four Integer Cards (2 to 4 Players)

All of the playing cards are used in this game. Players hold all of the elements of PEMDAS. Each player is dealt four Integer cards. Players must use each of the four Integers and three Operator cards to form an equation equal to a randomly selected Solution card. The Parentheses and Exponent are optional. Players draw cards from the Integer deck until they have the right combination to formulate an equation that produces the value of the Solution card.

Example Solution:



Figure 9. Example Solution for X-Squared Level 4

Challenge Games

Challenge games are more complicated than the lower levels. They are also more exciting. Players must be quick with their mental math to arrange cards as fast as possible to create equations. Most 5 and 6 Integer card combinations are capable of generating equations conforming to the Solution card. Therefore, no cards are drawn in the Challenge games. Instead, two players compete to be the first one to create the correct equation. Whoever gets the answer first is the winner of a round.



There are two methods for dealing cards for the Challenge games.

Level 5: Five Integer Cards (2 Players)

Players hold all of the elements of PEMDAS. Players also hold an additional set of Parentheses and second Exponent card. Each player is dealt five Integer cards. A random Solution card is turned over. Players must use all 5 Integer cards and 4 Operand cards. At the same time, both players try to create a valid equation. The first player to arrange his cards with a correct equation and exclaim "Done Deal!" is the winner. If neither player can create an equation within 1 minute, the players must replace their cards with 5 new Integer cards. Again, the first player to create a correct equation is the winner.

Example Solution:

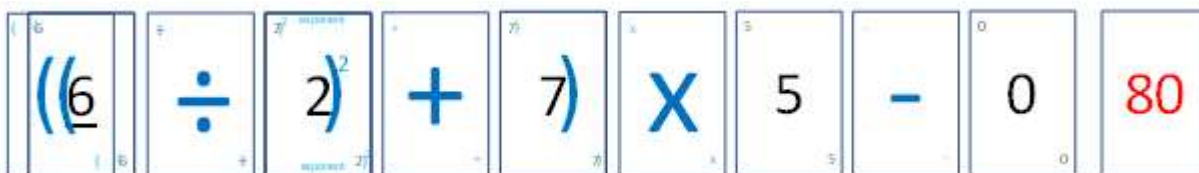


Figure 10. Example Solution for X-Squared Level 5

Level 6: Six Integer Cards (2 Players)

This is also a challenge game. Players hold all of the elements of PEMDAS. Players also hold an additional set of Parentheses and second Exponent card. Each player is dealt six Integer cards. A random Solution card is turned over. Players must use all 6 Integer cards and all 5 Operand cards. At the same time, both players try to create a valid equation. The first player to arrange his cards with a correct equation and exclaim "Done Deal!" is the winner. If neither player can create an equation within 2 minutes, the players must replace their cards with 6 new Integer cards. Again, the first player to create a correct equation is the winner.

Example Solution:



Figure 11. Example Solution for X-Squared Level 6

Versatile Card Combinations

There are certain combinations of Integer cards that are capable of producing every one of the Solutions in the deck. Here we show a combination example for Level 4 of the X-Squared game.

Level 4 Versatile Card Combination: 2, 3, 4, 5

Players must use the 4 Integer cards above and 3 Operand cards to produce a solution. Parentheses and Exponent are optional. Note that in the equations that follow the Wild card is replaced with a second instance of a given Operand, for clarity and simplicity. The equations are shown for all 24 Solution cards.



3^3	$+$	4^4	$+$	5^5	$-$	2^2	10
3^3	$\times$	4^4	$+$	5^5	$-$	2^2	15
$4^{2^{\text{exponent}}}$ 4^2 exponent 4^2	$+$	5^5	$-$	3^3	$-$	2^2	16
4^4	$\times$	5^5	$\times$	(3^3)	$-$	2^2	20
4^4	$\times$	5^5	$+$	3^3	$+$	2^2	25
4^4	$\times$	3^3	$\div$	2^2	$\times$	5^5	30
(3^3)	$\times$	$2^{2^{\text{exponent}}}$ 2^2 exponent 2^2	$+$	4^4	$-$	5^5	35



(4^2) exponent 4²	+	5	-	$3)$	$\times$	2^2	36
(5) (5)	+	3^3	+	$2^2)$	$\times$	4^4	40
(4) (4)	+	3^3	+	$2^2)$	$\times$	5^5	45
5^2 exponent 5²	$\times$	2^2	+	3^3	-	4^4	49
(4) (4)	$\times$	3^3	-	$2^2)$	$\times$	5^5	50
(4) (4)	$\times$	2^2	+	$3^3)$	$\times$	5^5	55
(4) (4)	-	$2^2)$ exponent 2²	$\times$	3^3	$\times$	5^5	60



$$2^2 \times 4 - 3 \times 5 = 65$$

$$4 \times 3 + 2 \times 5 = 70$$

$$5 + 4^2 - 2 \times 3 = 75$$

$$5 + 4^2 + 2 - 3 = 80$$

$$5^2 \times 3 + 2 + 4 = 81$$

$$4^2 + 3 - 2 \times 5 = 85$$

$$5 \times 3 \times 4 + 2 = 90$$



$(2^2)^2$	$\times$	4	+	3^3	$\times$	5	95
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$(5^5)^5$	+	4	+	2^2	$\times$	3^3	99
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