Dedicated to Delivery

Nasco's

y = INTERSECT + x

INTRODUCTION

The object of the game is to set two linear equations against each other to compute the value of "x" that satisfies both equations. In doing so, players score points and ultimately one of them becomes the game winner. This game is designed to improve algebraic manipulation skills and give meaning to how algebraic expressions manifest themselves when graphed.

SAMPLE CALCULATION

The sample calculation below shows the theory of setting two equations against each other to compute the value of "x" and the resulting value of "y" for which both equations are satisfied. If the equations had been graphed on fine graph paper, these variable values would represent the points of intersection of the two equations… and hence the name of the game… Intersect. The computed value of "x" in this game is the basis for scoring points during rounds of play.

y = x + 16 **y = 4x - 14**

At what values of **x** and **y** do graphs intersect?

Set equations equal to each other,

x + 16 = 4x - 14

Solve for **x**: **x + 16 = 4x - 14**

30 = 3x

10 = x

when **x = 10**, both equations are now equal and at: **y = x + 16 = 10 + 16 = 26**

y = 4x - 14 = 4(10) - 14 = 26

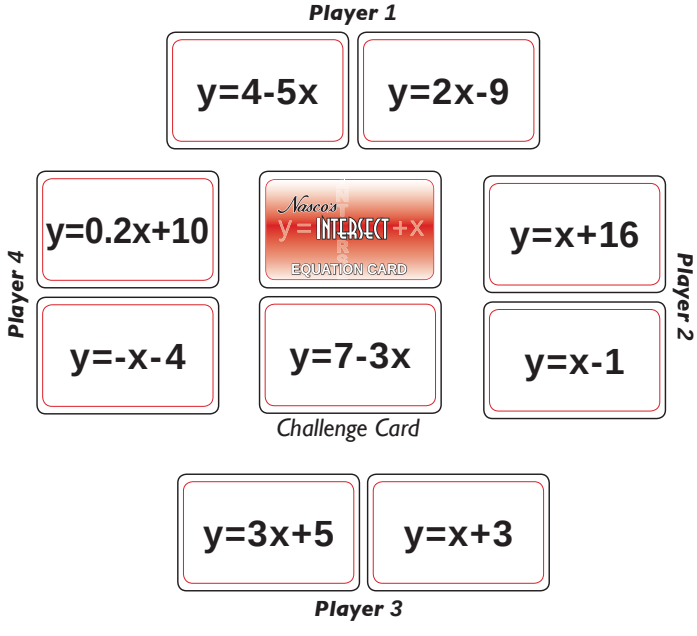
intersect points are therefore: **x = 10**

y = 26

PLAY

The game consists of a single card deck known as the Equation Card Deck. The game can be played with 2-4 players. Each player will start the game with 2 cards drawn or dealt from the Equation Card Deck. After this is done, a single card from the Equation Card Deck will be turned over and a round of play begins. This turned-over card will be designated the Challenge Card. Players must then determine which card in their hand they will pit against the Challenge Card and compute a value for "x" that will bring some points to their score.

Let's examine a round of play. Example round of play is shown to orient one to how this game works. In this example, we see that the challenge card is **y = 7-3x**, and each of the 4 players has 2 cards already dealt. These cards may be placed face down in front of each player. As each player's turn comes (as agreed to before play begins) he turns one of his cards face up to challenge the Challenge Card.



PLAY (CONTINUED)

Below shows the algebraic manipulations and calculations each player goes through to determine how many points their various challenges will yield. Players may make only one choice and set of calculations for each round of play. They must stay with the card they originally selected as the response to the Challenge Card.

Player #1 chooses to respond with **y = 2x - 9**

y = 2x - 9 y = 7 - 3x

2x - 9 = 7 - 3x

5x = 16

x = 3⅕

Player #1 takes **3 points** and ignores remainder.

Player #2 chooses to respond with **y = x + 16**

y = x + 16 y = 7 - 3x

x + 16 = 7 - 3x

4x = -9

x = -2¼

Player #2 takes **-2 points** and ignores remainder.

Player #3 chooses to respond with **y = 3x + 5**

y = 3x + 5 y = 7 - 3x

3x + 5 = 7 - 3x

6x = 2

x = ⅙ = ⅓

Player #3 takes **0 points.**

(any number less than 1 or between 0 and -1 counts as "0" points)

Player #4 chooses to respond with **y = 0.2x + 10**

y = 0.2x + 10 y = 7 - 3x

0.2x + 10 = 7 - 3x

3 = -3.2x

$^{-3}/_{3.2}$ = x

-.09 = x

Player #4 takes **0 points.**

After each player has scored their points, the Challenge Card and the ones that each player pitted against it are discarded. Each player may then take a replacement card from the Equation Deck, and then a new Challenge card is turned over for another round of play to begin. At no time may any player hold more than 2 cards in their hand.

Play proceeds in this manner until one of the players achieves the agreed to number of points to constitute a game victory. Please note that it is possible for players to accumulate negative points and point scores. This is fine and will further enhance improved algebraic manipulation skills. Since this is not likely to be a high scoring game, it is suggested that point levels of 40, 50, 75, and 100 be considered for winning.

If during play, the Equation Card Deck becomes exhausted, it may be replenished from the discarded cards, reshuffled, and play continued.

As this game is played several times, players will naturally develop a strategy for challenging the Challenge Card with an equation card in their hand that results in the most points to be potentially accrued. One strategy would be to try and pit the card in one's hand with the biggest constant value and of opposite sign to the constant in the challenge card. Another strategy would be to choose a card with a coefficient in front of the "x" that is close to that of the challenge card and of like algebraic sign, so a favorable division will result in a larger positive number.

CLASSROOM PLAY

This game may be used in the classroom. Students may breaks into teams of 2 or 3 players, each team receiving 4 cards from the Equation Deck and play continuing as described earlier, with each team acting as though it was a single player.

Another variation is for the teacher to challenge all the teams simultaneously, letting the teams accumulate points as they respond to the teacher's own unique challenge card equation written on the blackboard.

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