

Times Targets

Multiplying whole numbers

2 or 4 players

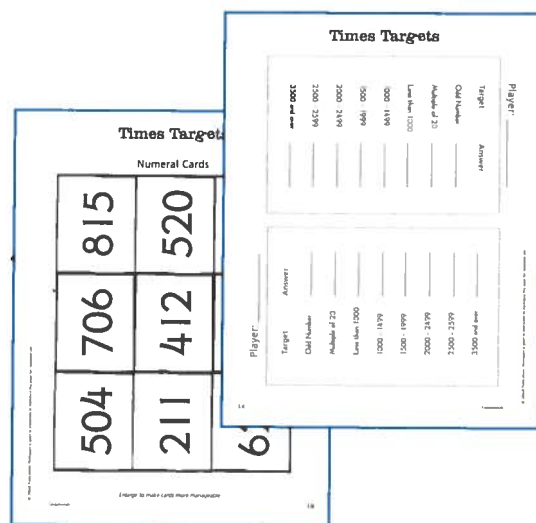
Purpose

In this game, the students use various mental strategies to multiply a three-digit number by a single-digit number.

Materials

Each group of players will need

- A 'Times Targets' score sheet (page 14) as shown below.
- Two (2) number cubes made from blank wooden cubes. One cube should show the numerals 2, 2, 3, 3, 4, and 5. The second cube should show the numerals 2, 3, 4, 4, 5, and 5.
- One (1) set of numeral cards. Make two copies of page 15 (shown below). Cut out and laminate the cards to make one set.



How to Play

The aim is to achieve all eight targets on the score sheet.

- The cards are shuffled and placed face down in a stack.
- The first player draws two cards and rolls the two number cubes.
- After considering all possible combinations, the player multiplies one of the numbers on the cards by one of the numbers rolled to make a product that matches one of the targets on his or her score sheet. A calculator can be used if an answer is disputed.
- The player records the product beside one of the targets. Once a decision has been made, it cannot be changed. Targets do not have to be reached in the order in which they appear on the score sheet and only one target may be recorded for each turn. If a player cannot achieve any target, he or she misses a turn.

Example: Brooke draws 504 and 211 and rolls 2 and 5. She chooses to multiply 504 x 5 and records her answer as a multiple of 20.

- The two cards are discarded to one side. These are reshuffled and used again as needed.
- The other player(s) has a turn.
- The first player to write a correct answer beside all eight targets is the winner.

Reading the Research

Sharing alternative strategies with students and encouraging them to share their own strategies will help to expand their thinking repertoire (McIntosh, Reys & Reys, 1997).

Before the Game

Use a transparency of the score sheet on the overhead projector to demonstrate how the game is played. Make sure the students understand that if they have two numeral cards and two different numbers on the cubes, they can generate four different answers. For example, if a student draws cards that show 412 and 822, and rolls 3 and 4, he or she could make 1236 (412 x 3), 1648 (412 x 4), 2466 (822 x 3), or 3288 (822 x 4).

During the Game

Encourage the players to explain the strategies they use to calculate the products. Different players will use different strategies. For example, here are just three ways that students may figure out 412 x 5:

Britney: I double 5 and halve 412. Five times 412 is the same as 10 times 206. That's 2060.

Brent: I multiply 400 by 5 then 12 by 5. That's 2000 plus 60 or 2060.

Belinda: I multiply 412 by 10 then halve my answer. $412 \times 10 = 4120$, so the answer is 2060.

After the Game

Ask the students to investigate which targets are easiest to achieve. The table below shows that there are only three ways to achieve a target in the '3500 and over' category. By completing a table such as this, the students may also notice that there are only six odd products. These are only possible when two odd numbers are multiplied together. Can the students see that multiples of 20 are easier to achieve than targets within a certain range? Allow time for them to play the game again. An investigation such as this may influence the students' choices.

	504	706	815	211	412	520	621	822	330
x2	1008	1412	1630	422	824	1040	1242	1644	660
x3	1512	2118	2445	633	1236	1560	1863	2466	990
x4	2032	2824	3260	844	1648	2080	2484	3288	1320
x5	2520	3530	4075	1055	2060	2600	3105	4110	1650

Beyond the Game

Vary the rules. The students can use a calculator to find the sum of all their answers. If a player cannot achieve a target in any one round, he or she misses a turn and must cross out one of the target options. The player with the greater grand total at the end of the game is the winner.