

## TARGET for the TI-73/83/84

Target is a two-person game. A Start Number ( $N_1$ ) is selected randomly. Also a Target Range ( $T \pm R$ ) is randomly determined. The object of the game is to estimate a factor by which to multiply  $N$  so that the product falls within the target range. If the factor the first player selects does not result in a product that falls in the given range, the **calculated product** becomes the new Start Number ( $N_2$ ). The Target Range remains the same. It is now the second player's turn to estimate a factor by which to multiply the new Start Number ( $N_2$ ). The game continues with players taking turns until the product falls within the given range.

The TI-73 or 83 can be used to help select  $N$ ,  $T$  and  $R$  using the `randInt()` function which is accessed by pressing:  $\square \sim \sim [\text{PRB}] 2 : (\text{randInt}) \square$

```
MATH NUM PRB LOG
1:rand
2:randInt(
3:nPr
4:nCr
5:!
6:coin(
7:dice(
```

```
randInt(50,1000)
895
```

```
randInt(50,1000)
895
randInt(99,1000)
424
randInt(3,10)
4
```

`randInt(50,1000)=N` \_\_\_\_\_

`randInt(99,1000)=T` \_\_\_\_\_

`randInt(3,10)=R` \_\_\_\_\_

Target Range:  $(T-R) - (T+R)$ : \_\_\_\_\_ - \_\_\_\_\_

### Seeding the Random Number Generator

The variable **rand** (found in the PRB menu of the  $\square$  key) may need to be seeded so that every calculator is not generating the same random number sequence. To do this, have each student enter their own "favorite" six digit number and store it into **rand**, which is item #1 on the same menu as `randInt()`.

```
847716→rand
847716
```

### Program

A programmed version of Target exists which automates selecting the target range and the beginning number. The directions to operate the program appear on the screen. Any number may be entered when asked, "What problem do you want?" This feature allows for a classroom competition where all students are attempting the same problems. On the TI-73 and TI-83, only the number keys and the negative and decimal keys are operable when entering a response. The operation keys and arrow keys will not work. If an input error is made, press  $\cdot$ .

At the end of the game the students may elect to review all the rounds by viewing the problems and responses stored in the calculator lists. Following the instructions on the screen to access the following lists:

- TURN ( $L_1$ ): Round
- LBND ( $L_2$ ): Lower boundary of Target Range
- UBND ( $L_3$ ): Upper boundary of Target Range
- NUMBR ( $L_4$ ): Start Number
- FACTR ( $L_5$ ): Estimated Factor
- PROD ( $L_6$ ): Product of Start Number and Estimated Factor which becomes the Start Number in the next round

### **IMPORTANT NOTE**

On the TI-73 and TI-83 the program DEFAULT should be executed when done using the TARGET program to restore default lists  $L_1$  through  $L_6$ .

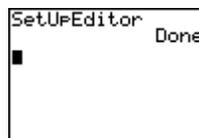
If you do not have this program, do the following:

**TI-73:** press  $\psi$  [CATALOG], scroll to select the SetUpEditor command,  $\subseteq \subseteq$ . A shortcut for scrolling through the lengthy catalog is the following:

$\psi$ [CATALOG]  $\psi$ [TEXT] || $\square$ [S] $\subseteq$   $\square\square\square\square\square\square$  [SetUpEditor]  $\subseteq \subseteq$

**TI-83:** press  $\square$  Edit #5: SetUpEditor  $\subseteq$

If done correctly the home screen will appear as follows:



YOU CAN PRESS THE  
ON KEY ANY TIME  
TO STOP THE PROGRAM

PRESS ENTER TO CONTINUE

PRESS CLEAR  
TO ERASE A MISTAKE

PRESS ENTER TO CONTINUE

-GOAL-  
TO MULTIPLY THE GIVEN  
NUMBER BY A FACTOR SO THAT  
THE PRODUCT IS WITHIN THE  
TARGET RANGE OF...

\* 158-164 \*

(PRESS ENTER)

TARGET RANGE 158-164  
HERE IS THE START NUMBER  
777

ENTER A FACTOR  
(PRESS ENTER FIRST)

ENTER -1 TO GO  
BACK TO THE LAST  
SCREEN OR ENTER  
YOUR FACTOR.

? .95

777 \* .22 = 170.9

OOOPS, YOU MISSED  
THE TARGET!

THIS PRODUCT NOW BECOMES  
THE NEW START NUMBER

PRESS ENTER

TARGET RANGE 158-164  
HERE IS THE START NUMBER  
170.9

ENTER A FACTOR  
(PRESS ENTER FIRST)

ENTER -1 TO GO  
BACK TO THE LAST  
SCREEN OR ENTER  
YOUR FACTOR.

? .22

CONGRATULATIONS!  
YOU HIT THE TARGET.

162.4  
IS BETWEEN  
158 AND 164

NUMBER OF ATTEMPTS - 2

TO REVIEW PRESS  
ENTER-LIST

TO STOP PRESS  
ENTER-2ND-QUIT

TO START OVER PRESS  
ENTER-2ND-QUIT-ENTER

TURN	LBND	UBND	1
1	158	164	
2	158	164	
-----	-----	-----	
TURN() = 1			

NUMBR	FACTR	PRD	6
777	.22	170.9	
170.9	.95	162.4	
-----	-----	-----	
PRD() = 170.9			

## TARGET GAMESHEET

PLAYER #1 \_\_\_\_\_

PLAYER #2 \_\_\_\_\_

TARGET RANGE: \_\_\_\_\_ - \_\_\_\_\_

ROUND	NUMBER	FACTOR	PRODUCT
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

What was difficult about estimating a good factor?

What strategies seemed to be helpful? Describe the conditions when each strategy worked best.

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