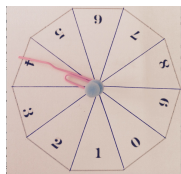


TARGET MULTIPLICATION

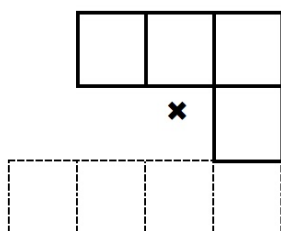


PLAY FOR FUN - THINK AND WIN - PLAY AND LEARN
A GAME FOR ANY NUMBER OF PLAYERS

The TARGET is 1000

You will need a set of 10 cards numbered 0 to 9 or a 0-9 spinner like the one in the picture.

Each player draws a grid like the one shown.



Draw a card randomly or spin the spinner and call out the digit. All the players must write the digit in one of the top four boxes. Once a number is written its position cannot be changed.

Repeat three more times. Then the players multiply the 3-digit number by the 1-digit number and write the answer on the bottom line.

The player (or players) with the answer closest to 1000 wins. Score 1 point for a win.

ALTERNATIVE VERSION OF THE MULTIPLICATION GAME. The players write down all 4 numbers and then at the end decide where to place them. This is a game of skill that involves mathematical thinking and not luck.

GAME FOR 2 PLAYERS Each player draws a grid like the one shown. They take turns to draw a card or spin the spinner and each player decides which of their cells to fill in. They can't change the position of the digit once it is written in. After 4 digits have been randomly chosen, each player multiplies their 3-digit number by their 1-digit number and writes the answer on the bottom line.

The players check each other's answers and agree on who has won that round. They need to understand that they must each find the difference (positive or negative) between their answer and 1000 and compare their difference with the other player's difference.

HELP

When deciding where to write the digits it's a good idea to estimate the answer by rounding the 3-digit number to the nearest hundred and choosing a 1-digit number that will get your answer as close as possible to 1000.

For example if your 3-digit number is between 150 and 250 you would want to multiply 4, 5 or 6;
for 3-digit numbers between 250 and 350 you would want to multiply by 3 or 4;
for 3-digit numbers 350 and 450 you would multiply by 2 or 3;
and for numbers between 450 and 550 you would want to multiply by 2.

You might play these games first:

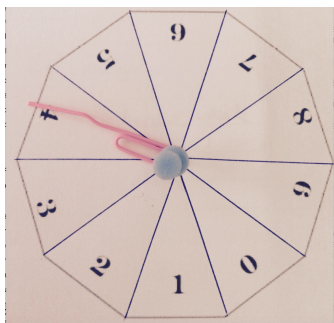
Target 100 <https://aiminghigh.aimssec.ac.za/years-4-5-target-100/> and

Target 1000 <https://aiminghigh.aimssec.ac.za/years-4-7-target-1000/>

NEXT

You might organise a knockout competition where everyone in the class plays another learner in Round 1. Then the losers drop out and the winners of Round 1 compete in pairs in Round 2, the winners of Round 2 compete in Round 3 and so on until the Final is played between the last 2 players.

MAKE A 0 – 9 SPINNER

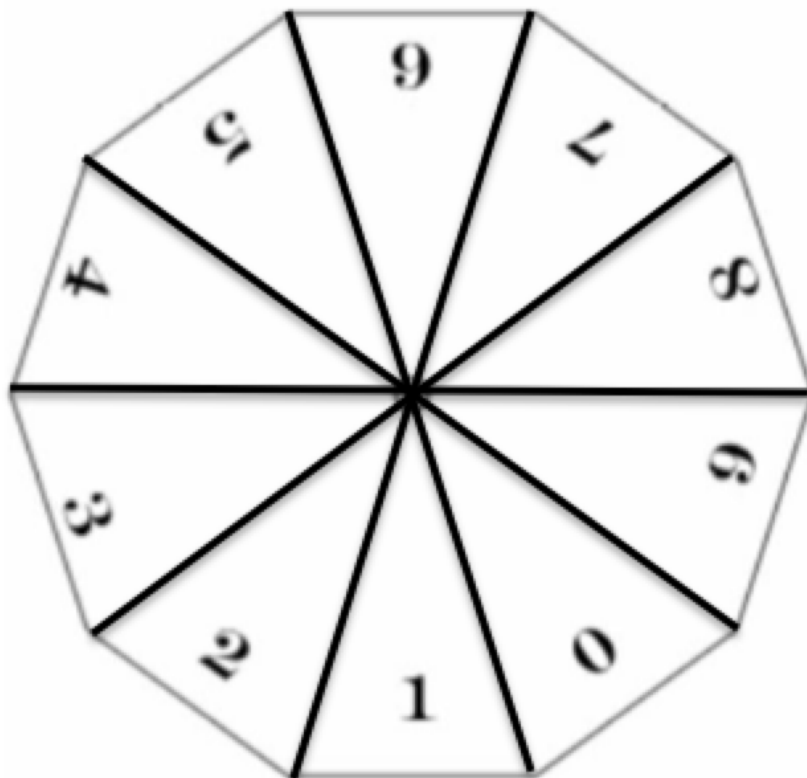


To make your own spinner you will need a paper clip, a pin and some card.

Prick through the template to mark the 10 outer vertices and the centre on the card. Then draw the spinner as in the diagram and cut it out.

Open up the paper clip and pin the paper clip and the template down on a flat surface so that the paper clip spins easily.

If you want to make a spinner without using a pin you can hold down the template and the paper clip with the point of a pencil.



Alternatively make 10 cards so that you can draw one randomly from a box.

1

2

3

4

5

6

7

8

9

0

HOME LEARNING AND INCLUSION GUIDE

PLAY FOR FUN – THINK AND WIN – PLAY TO LEARN

Encourage the students not just to fill the boxes without thinking but to think about their best choices in order to win.

Why do this activity?

The game develops the learners' number sense and gives practice in estimating the results of calculations. Understanding how and why the algorithm works, and the skill of rounding numbers and getting a good estimate of the answers to calculations, are more important life skills than actually doing calculations.

Doing well in this game depends on an understanding of place value and how and why the multiplication algorithm works. The game can be used at different times, the more often the better if the learners enjoy it. When learning how to do such calculations the game will help to deepen the learners' understanding of the method as well as giving practice. Subsequently the game can be used from time to time to give learners practice in estimating products and then doing calculations. Players should check their own and each others' calculations without using a calculator.

The game also develops an appreciation of probability as it requires judgement about where to place the numbers in the grid and whether a 'better' number for that position is likely to come up.

Learning objectives

In doing this activity students will have an opportunity to:

- develop numeracy and skills of calculating multiplication of 3-digit numbers by 1-digit numbers;
- develop a better understanding of place value and methods of calculation;
- develop skills of rounding numbers and estimating the answers to calculations.

Generic competences

In doing this activity students will have an opportunity to:

- **think mathematically** and reason logically;
- **think flexibly**, be creative and innovative and apply knowledge and skills.

Suggestions for teaching

Start with the diagnostic quiz. Give the learners time to work out their answers. As usual ask for votes as to which is the correct answer and then ask for explanations of how they decided on their answers. Finally encourage learners to break the calculation into four parts as above.

To play the game as a whole class, first ask the learners to copy the grid into their workbooks. Then the draw a card randomly or spin the spinner and call out the digit. The learners fill in the numbers in their grids. When they have filled in 4 digits they must multiply their 3-digit number by their 1-digit number. Ask learners to find out how close their answer is to 1000. They must work out the difference between their answer and 1000.

Ask learners who have got an answer near the target number to come to the board and write up their answer. If anyone has got closer to the target they should show their working on the board. After deciding on the winner ask the class if anyone could have got closer to the target if they had known all the digits **before** filling in any of the cells in the grid.

You might vary the game by making the target smaller, for example 600, or larger for example 2000.

Learners could make their own sets of number cards or spinners and play the game in pairs. In this case the first player to get 5 points is the winner. The learners could use a different way of scoring. They could get penalty points for the difference between their total and the target number and add up their penalty points. They should play a few games until one of the players gets 1000 penalty points and loses the match. Use the Diagnostic Quiz at the end of the session.

Key questions

How will you choose your hundreds digit and the single digit to get an answer near 1000?

Diagnostic Assessment


This should take about 5–10 minutes.

1. Write the question on the board, say to the class:


“Put up 1 finger if you think the answer is A, 2 fingers for B, 3 fingers for C and 4 fingers for D”.

Which digit should go in the box?


$$2276 \times 4 = 91\boxed{}4$$




2



1



0



6

2. Notice how the learners respond. Ask them to explain why they gave their answers and DO NOT say whether it is right or wrong but simply thank the learner for giving the answer.

3. It is important for learners to explain the reason for their answer because putting thoughts into words helps them to clarify their thinking and to develop communication skills.

4. Ask the learners again to vote for the right answer by putting up 1, 2, 3 or 4 fingers. Notice if there is a change and who gave right and wrong answers.

The correct answer is C

Discuss the solution as

$$\begin{aligned}
 2276 \times 4 &= 2000 \times 4 + 200 \times 4 + 70 \times 4 + 6 \times 4 \\
 &= 8000 + 800 + 280 + 24 \\
 &= 8000 + 800 + 200 + 80 + 24 \\
 &= 9104
 \end{aligned}$$

<https://diagnosticquestions.com>

Follow up

Target 10 Thousand <https://aiminghigh.aimssec.ac.za/years-5-7-target-10-thousand/>

Note: The Grades or School Years specified on the AIMING HIGH Website correspond to Grades 4 to 12 in South Africa and the USA, to Years 4 to 12 in the UK and up to Secondary 5 in East Africa. New material will be added for Secondary 6. The mathematics taught in Year 13 (UK) and Secondary 6 (East Africa) is beyond the school curriculum for Grade 12 SA.

For resources for teaching A level mathematics see <https://nrich.maths.org/12339>

	Lower Primary Age 5 to 9	Upper Primar Age 9 to 11	Lower Secondary Age 11 to 14	Upper Secondary Age 15+
South Africa	Grades R and 1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
USA	Kindergarten and G1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
UK	Reception and Years 1 to 3	Years 4 to 6	Years 7 to 9	Years 10 to 13
East Africa	Nursery and Primary 1 to 3	Primary 4 to 6	Secondary 1 to 3	Secondary 4 to 6