

AIMING HIGH

SPIN HIGH SPIN LOW

PLAY FOR FUN - THINK AND WIN - PLAY AND LEARN

This game can be played by any number of players and it is a good game for a family



or 2 players.

The game helps you to understand place value and helps you to think about probability.

The game can easily be adapted to 2-digit or 3-digit numbers or to include decimals. All versions of the game can be played with any number of players, by a whole class as a lesson starter, or in pairs.

You will need a set of 10 cards numbered 0 to 9 or a 0-9 spinner like the one in the picture. Before you start decide if you are going to play Spin High where the highest number wins or Spin Low where the lowest number wins.

Each player must draw a grid. The one shown is for the 4-digit game. In the Spin High



game the players aim to make the largest possible 4-digit number. As a whole class game one person draws a card at random, or spins the spinner, and calls out the digit (for example, 6 as shown in the picture) and the players

must choose which of the 4 squares to place the digit in.

Spin again and call out the digit three more times and each time the players must write the digit called in one of their boxes. Players with the highest number win a point. The game is repeated and the first player to get 5 points wins the match.

In the **Spin Low version** of the game the players with the lowest 4-digit number win a point.

As a **variation of the game**, other targets can be set, for example the target could be to get as close as possible to 25. The players can take turns to choose the target.



The grid shown is for the decimal version.

If you use a decimal comma in your country then make your grid with a comma.

Again, this game can be played with a spin high target or a spin low target.

HELP

If you are a bit uncertain you could start to play the game with 2-digit numbers and then progress to 3-digit numbers and then to 4-digit numbers

With the 4-digit game, if you want to win 'Spin High' you need a high number in the thousands place. When for example a 6 comes up you have to think about the chance of one of the spins yet to come giving an even higher number, and you have to act accordingly.

As there are 6 digits less than 6 (0, 1, 2, 3, 4 and 5) and 3 digits greater than 6 (7, 8 and 9) the probability of getting lower numbers is double the probability of getting higher numbers.

NEXT

There are many ways to vary this game and you might like to make up your own rules.

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



NOTES FOR TEACHERS

Why do this activity?

These games help to deepen learners' understanding of place value. They also develop an appreciation of probability as they require judgement about where to place the numbers in the grid and whether a 'better' number for that position is likely to come up.

Intended learning outcomes

- To deepen understanding of place value.
- To develop number sense and awareness of how chance affects outcomes of an event.

Generic competences

In doing this activity students will have an opportunity to:

- think mathematically and flexibly, reason logically;
- **apply knowledge** from one topic to a situation based around a different topic;
- develop life skills as many decisions in life depend on probability.

Suggestions for teaching



RESOURCES The spinners can be made without pins. Using the instructions on page 3 you can make a set of spinners, ideally on card, with one for each pair of learners and collect them in at the end of lessons so they can be used many times. Alternatively learners can make their own spinners. You will need a paper clip for each spinner with one end opened out as shown

You could start by playing the spin high game as a whole class. First ask the learners to copy the grid into their workbooks. Then tell them that the player who gets the highest number wins. Spin the spinner, call out the number and tell the learners to choose one of the boxes in the grid and write the number in it. Repeat this 3 times and the learners should all have a 4-digit number in their grid.

Then find out who has the highest number. There may be more than one winner of the first round and all players with the highest number win a point. After 5 rounds check who has the most points.

Ask the class if anyone could have got closer to the target if they had known all four numbers before filling any numbers in. Start a game where everyone in the class is able to join in the discussion of where to put each of the four numbers as they come up. Ask questions similar to the key questions below to encourage discussion of probability. For example, if the first number to come up is 3 then next time you are more likely to throw a higher number (4, 5, 6, 7, 8, or 9) than a lower or equal number (0, 1, 2 or 3) so it is not a good idea to put 3 in the thousands box. Probably the best place for a 3 in the tens box.

Key questions

- If the first number to come up is 3 would you place it in the thousands box? Why or why not?
- If the second number is 8 and your thousands box is empty would you place the 8 there? Why or why not?

Follow Up

These are a few examples and there are more on the AIMING HIGH website. Target 100 <u>https://aiminghigh.aimssec.ac.za/years-4-5-target-100/</u> Target 10 Thousand <u>https://aiminghigh.aimssec.ac.za/years-5-7-target-10-thousand/</u> Target Subtraction <u>https://aiminghigh.aimssec.ac.za/years-4-7-target-subtraction/</u> Target Multiplications

<u>https://aiminghigh.aimssec.ac.za/years-4-7-target-multiplication/</u> Target Division <u>https://aiminghigh.aimssec.ac.za/years-5-7-target-division/</u>

MAKE YOUR SPINNER

Use thick card for the spinner. Prick through this template to make marks on your card. Hold it still. Make an EXACT copy of the spinner shown here. Cut it out. With a little practice your spinner will work beautifully



Now you are ready to play the games.

You will need a paper clip opened out as shown and a pencil.



Put the pencil tip in the centre of the template to hold the paper clip so that it can spin freely.

You can use a pin so that you do not need to hold the paperclip in place.

