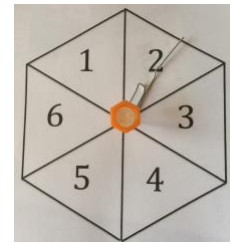


## SUM DIFFERENCE GAMES



Roll the dice, add up the numbers on the two GOLD dice and then subtract the number on the WHITE.

If the numbers on the gold dice are 6 and 1, and the number on the white is 4, the result is 3.



If you use a spinner then spin 3 times, add the first two scores and subtract the third.

Play a game against a friend. In the **Zero-Six game** you win if the final score is zero and she wins if the score is 6. Do this many times and score a point each time you win a round. Is this a fair game? How do you know?

Try it out. Play the game, roll these dice many times and see what numbers you make each time by doing the addition and subtraction.

Work in pairs and talk about what to do and how to record your results when you throw the dice. You will need two dice of one colour and one of another colour, or a 1-to-6 spinner. After experimenting, try to predict totals that will NOT be possible and those that will. Check these predictions. Can you decide whether the game is fair or not?

What about the **Even-Odd game** where you win if the final score is odd and your friend wins if it is even?

For an even more challenging game, decide on two operations then allow players, on their turn, to choose which to apply to the gold dice and which to the white.

Make up your own games with different rules and decide whether your game is fair or not.

## HELP

You could use a number line and count to the right and to the left to help you to work with the negative numbers.

If you want an easier challenge that does not involve negative numbers you can do a similar activity where you find the results for adding the scores on the 3 dice.

You will need two dice of one colour and one of another colour. Work in pairs and talk about what to do and how to record your results when you throw the dice.

## NEXT

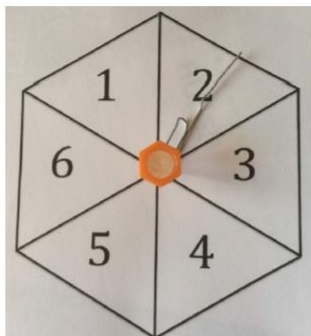
If you want a bigger challenge, use two dice only and multiplication, or three dice as in the Zero-Six and Even-Odd games using two operations of the four: addition, subtraction, multiplication and division. After experimentating, try to predict totals that will NOT be possible, then check these predictions, and decide if the game is fair.

For an even more challenging game, decide on two operations then allow players to choose which applies to the gold dice and which to the white.

Use the probability scale from 0 to 1 and quantify the probability of getting particular results.

As a follow-up, create your own variations of the activity.

Ask and investigate 'What if ...?' questions.



To make your own spinner as shown in the picture you will need a paper clip and a pin. Straighten out one end of the paper clip, cut out the template and then pin the paper clip and the hexagon on a flat surface so that the spinner spins freely. Now you are ready to play the game.

