

Maths games with dice

1. Build it Big or Build it Small

Trying to make the largest or smallest numbers possible. Make dashes on your paper/whiteboard to indicate the place value of the number.

If you're working on hundreds, make 3 dashes, 4 for thousands, and so on. Take turns rolling dice the same number of times as the dashes. Each time you roll, think logically to place the numbers shown on the dice, on the dashes. Play several rounds making largest numbers possible, then smallest. A point is scored for the player in each round who has the largest or smallest number.

Variation 1: Make this a decimal place value game by drawing a decimal before the dashes.

Variation 2: With playing cards or dice use a "more/less" coin. Attach a sticker on one side with the word "more" and the other side with the word "less". No one knows who has won each round until you flip the more/less coin. If more is shown, the larger number wins and if less is shown, the smaller number wins. This adds suspense to the game.

2. Roll and Round That Number

For this game, you need paper/whiteboard and a set of dice. The number of dice used should match whatever place value you are working on. If you're focusing on hundreds, partners need three, or for ten thousands, partners need five.

The first person rolls all three dice at the same time and builds the largest number possible with it. The second person does the same and then each person rounds his/her number to the highest place value. For example, a roll of 5, 3, 7 could make the number 753, which would be rounded to 800. Compare rounded numbers and the highest correctly rounded number in each round wins (or use the more/less coin to decide).

Variation 1: Using 4 or 5 dice, make the largest number possible and round it to the nearest ten. In the next game round to the nearest hundred. In each round a point is scored for the largest number made.

Variation 2: This can also be a decimal rounding game.

3. Fractions

Partners each roll two dice to make a fraction. The smaller number of the roll should go on top/be the numerator. If the person rolls doubles (same number twice, like two fives), that person automatically wins a point for that round. Once dice are rolled, partners work together to see which fraction is larger. The larger fraction wins.

Variation 1: Once dice are rolled, the person who determines the largest fraction correctly the fastest, wins the point.

Variation 2: Use the more/less coin to determine the winner, once fractions are compared.

Variation 3: Add or multiply the fractions and the person who correctly determines the sum/product first wins.



4. Simplify Fractions

Partners each roll a dice three times to create a fraction. One of the numbers is placed on top (unless it is a one, which means the fraction can't be simplified) and the other two numbers are left side by side to create the denominator.

For example, if the roll is 4, 3, 6...The fraction might be $4/36$, which simplifies to $1/9$ or it could be $6/34$, which simplifies to $3/17$. If the roll does not allow for simplifying, the person automatically loses. The person who has the largest fraction wins.

Variation: Use the more/less coin to determine a winner

6. Improper Fraction Challenge

Each person rolls 3 dice and makes an improper fraction by placing two of the dice side by side as the numerator and the other dice as the denominator, and then simplifies to make a whole number or a mixed number.

For example, a rolled 2, 4, 5...Some possible fractions would be $24/5 = 4\frac{4}{5}$... or $54/2 = 27$... or $45/2 = 22\frac{1}{2}$. The higher-level thinking comes in as each player is trying to make the largest number possible.

Variation: Use the more/less coin to determine a winner.

5. Area and Perimeter

For this game, you need two dice and a piece of grid paper for partners to share. Each player also needs a marker or a crayon/coloured pencil. Partners should have different colours, so if one has red, the other might be blue.

Each person rolls the dice and uses the numbers as the length and width of a rectangle. The person draws the rectangle on the grid paper to scale. For example, if 4 and 6 were rolled, this player would draw a rectangle that is 4 squares wide by 6 squares long.

In the rectangle, that person writes the perimeter or the area (whichever is indicated at the beginning of the game). The other player takes a turn and the winner is the player who has captured the most area on the grid paper, when time is called.