

Math Dice game

Overview: Did you know I carry a set of dice in my pocket just for this game? It's as old as the hills and just as fun to play now as it was when I was a little math whiz back in second grade. (No kidding – when we had "math races," I was always team captain. Not quite the same thing as captain on the soccer field, though...)

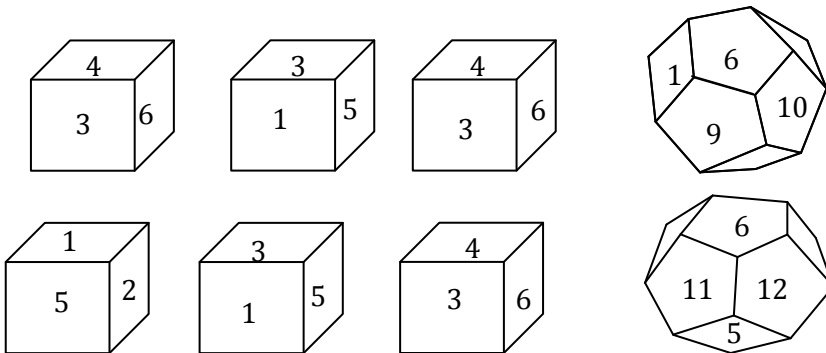
This is one of those quick-yet-satisfying dice games you can play to hone your thinking skills and keep your kids busy until the waiter arrives with your food. All you need are five or six standard 6-sided dice and two 12-sided dice. (Note – if you can't find the 12-sided dice, just skip it for now. You can easily substitute your brain for the 12-sided dice. I'll show you how.)

You need to do two things to play this game. You can use a calculator with this game, but usually the kids *without* the calculator win the round, as it usually takes *longer* to punch in the numbers than figure out the different possibilities in your head (and that's what you're working on, anyway!) If you're a highly visual learner, then use paper and a pencil so you can scribble down stuff as you go.

Materials

- Six 6-sided dice
- Two 12-sided dice
- Pencil (optional)
- Paper (optional)

Activity Lay your dice on the table and take a look at the possibilities. Six of them are numbered 1-6, and two are numbered 1-12. We use them in different ways. Here's how:



First, roll the two 12-sided dice. Multiply the two numbers in your head. If you rolled a 6 and 6, you'd now have 36. That's your target number. If you don't have the 12-sided dice, just think up two numbers, each between 1 and 12 and use those.

Next, roll the 6-sided dice. Now, using your arithmetic skills, figure out a way to add, subtract, multiply or divide those three numbers to get the number you rolled with the first set.



So if you rolled six 6-sided dice and got 4, 5, 2, 1, 1, 5, you could do this:

BOLD numbers are the ones rolled on 6-sided dice:

$$(4 \times 5) - 2 = 18$$

$$18 \times (1 + 1) = 36$$

You don't have to use all the numbers, but you can't double up and use a 4 twice if you only rolled one 4. And that's it! It's loads of fun and engaging, because it's got more than one answer. And sometimes there's *no* answer (although rarely!), which is just as fun to discover as one of the possible answers. As you get faster and better at this game, try taking away one or two of the dice. It's more challenging!



HOT TIP: You can add in the use of exponents when your kids get the hang of the game. An exponent tells you how many times to multiply a number by itself. For example, a 2 with a 3 exponent looks like:

$$2^3 = 2 \times 2 \times 2 = 8$$

To use exponents, simply use one of the numbers as an exponent. For example, if you rolled five 6-sided dice and got 5, 2, 3, 2, 4, you can do this to get 36 (imagine that the "36" came from the two 12-sided dice):

BOLD numbers are the ones rolled on 6-sided dice.

$$(5 \times 2) = 10^2 = 100$$

$$100 - (4^3) = 36$$

When your kids get good, you can up the ante and use a set similar to what I have in my purse: one 20-sided "double die" (which is a clear plastic 20-sided die that encloses a smaller, solid 20-sided die so it's two 20-sided dice in one package) and a handful of 6-sided. Math craze, anyone?



Exercises

No dice? Try these combinations that I rolled and recorded for you. I rolled six 6-sided dice and two 12-sided dice. Can you figure out a combination that would make each target number? Remember that the target number is the product (multiplication) of the two numbers from the 12-sided dice.

6-sided dice 12-sided dice

- | | | | |
|-----|-------------|-----|------|
| 1. | 2,3,5,6,1,3 | --- | 10,2 |
| 2. | 4,3,6,4,5,3 | --- | 12,9 |
| 3. | 1,6,4,4,2,1 | --- | 5,8 |
| 4. | 4,1,1,1,2,3 | --- | 3,9 |
| 5. | 1,6,6,5,5,1 | --- | 9,7 |
| 6. | 2,1,4,5,2,2 | --- | 6,3 |
| 7. | 3,1,6,5,4,1 | --- | 11,4 |
| 8. | 4,3,6,4,5,3 | --- | 12,7 |
| 9. | 2,2,3,3,4,6 | --- | 4,6 |
| 10. | 3,5,6,1,3,3 | --- | 6,9 |

Answers to Exercises: Math dice Game

1. $(6 \times 3) + 2 = 20$
2. $(6 \times 5 \times 4) + (4 \times 3) = 96$
3. $(4 \times 4 \times 2) + 1 + 1 + 6 = 40$
4. $(4 \times 2 \times 3) + 1 + 1 + 1 = 27$
5. $(6 \times 6) + (5 \times 5) + 2 = 63$
6. $4 + 5 + 1 + (2 \times 2 \times 2) = 18$
7. $4 \times (6 + 5) = 44$
8. $(6 \times 5 \times 8) - (4 \times 3 \times 3) = 84$
9. $(2 \times 2 \times 3) + (3 \times 4) = 24$
10. $3 \times (6 + 5 + 3 + 3 + 1) = 54$