Odds or Evens, Who Will Win?

We're going to play a game. You and your partner must decide who will be "Odds" and who will be "Evens". Then you will roll two dice and **multiply** the numbers. If the product is odd, the "Odds" person wins and vice versa for evens. Play the game 20 time and keep track of results.

1. How many times did the "Odds" person win? 6

   Write this as a fraction out of 20 and turn it to a percent. $6/20 = 0.30$ 30%

2. Record your result on the whiteboard. Find the total percent of rolls that were odd products for the whole class. $\frac{78}{300} = 0.26$ 26% ← experimental probability

3. Can we say the percent from the whole class is the **true probability** of "Odds" winning? Explain.

   No. We would need to continue playing the game forever to get to the true probability.

4. To determine the true probability of rolling an odd product, we should list out all possible products that we could get. Complete the table below to show all possible products (multiply).

5. Circle all the products that are odd.

6. Use your table to find the probability of rolling an odd product.

theoretical probability

# of ways to get odd → $\frac{9}{36} = \frac{1}{4} = 0.25$ 25%

total # of outcomes

$P(\text{odd}) = 0.25$

	1	2	3	4	5	6
1	(1)	2	(3)	4	(5)	6
2	2	4	6	8	10	12
3	(3)	6	(9)	12	(15)	18
4	4	8	12	16	20	24
5	(5)	10	(15)	20	(25)	30
6	6	12	18	24	30	36

7. Use the table to find the probability of rolling each of the following products:

a) 12 $4/36$

b) 15 $2/36$

c) 12 or 15 $6/36$

$P(12 \text{ or } 15) = P(12) + P(15)$

b) d) 25 $1/36$

e) not 25 $35/36$

$P(\text{not } 25) = 1 - P(25)$

f) between 1 and 36 $36/36 = 1$