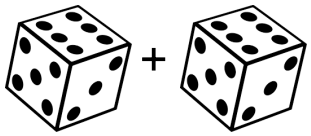 Does X + X = 2X? 2 * 

1. Write out all 36 possible outcomes for two die rolls.

(1,1) (1,2) (1,3) (1,4) (1,5) (1,6)
(2,1) (2,2) (2,3) (2,4) (2,5) (2,6)
(3,1) (3,2) (3,3) (3,4) (3,5) (3,6)
(4,1) (4,2) (4,3) (4,4) (4,5) (4,6)
(5,1) (5,2) (5,3) (5,4) (5,5) (5,6)
(6,1) (6,2) (6,3) (6,4) (6,5) (6,6)

Let X = value of a single die roll. Let X + X = sum of two die rolls.

2. Create a probability distribution for the sum of X + X.

Value	2	3	4	5	6	7	8	9	10	11	12
Probability	1/36	2/36	3/36	4/36	5/36	6/36	5/36	4/36	3/36	2/36	1/36

3. Use the Discrete Random Variables applet at www.stapplet.com or your calculator.

Mean (X + X) = 7 Interpret: After many, many rolls of two dice, the average sum is about 7.

SD (X + X) = 2.42 Interpret: The sum of the two dice will typically vary by about 2.42 from the mean of 7.

Let X = value of a single die roll. Let 2X = doubling a single die roll.

4. Create a probability distribution for 2X.

Value	2	4	6	8	10	12
Probability	1/6	1/6	1/6	1/6	1/6	1/6

Mean (2X) = 7 Interpret: After many, many times doubling a single die roll, the average is about 7.

SD (2X) = 3.42 Interpret: The doubling of a single die will typically vary by about 3.42 from the mean of 7.

5. Does X + X = 2X? Explain. No!

Mean(X+X) = Mean(2X)
SD=(X+X) ≠ SD=(2X) No, this distribution of X+X is less variable than the distribution of 2X. less likely to get 2 or 12

6. If you were told you would win the number of dollars of your score, would you rather get the sum of rolling two dice or doubling a single die roll? Explain.

Same expected value (mean) for each, so choose the one that is less variable. students who are big risktakers might choose option 2.