**How many children are in your family?**



Count up the number of children in your family (including yourself). Be sure to include all your stepbrothers/stepsisters and half-brothers/half-sisters.

Let *X* = the number of children. Suppose we choose someone from the class at random.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *X* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Probability |   |   |   |   |   |   |  |  |

1. Is this a valid probability model? Explain.
2. Is 5.7167 a possible value for *X*? Explain.
3. Make a histogram to display information with *X* on the horizontal axis, and describe its shape.
4. Describe in words what  and then find .
5. Describe in words what  and then find .
6. Find the average of the *X* values.
7. Does this value tell us the average number of children in the families of students in this class? If yes, explain. If no, why not?

Discrete Random Variables

Important ideas:

Check Your Understanding

Home Alone is a series of American Christmas family comedy films created by John Hughes. There are 5 Home Alone movies. Below is a probability distribution of the number of Home Alone movies watched by a very large sample of high school students.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Number of Home Alone Movies Watched | 0 | 1 | 2 | 3 | 4 | 5 |
| Probability | 0.15 | 0.42 | 0.32 | ? | 0.02 | 0.01 |

1. Write the event “the student has seen 3 Home Alone movies” using probability notation. Then find this probability.
2. Explain in words what *P*(*X* $\geq $ 3) means. What is this probability?
3. Make a histogram of the probability distribution. Describe its shape.
4. Calculate and interpret the expected value of *X*.