

Review question:

A bag contains 4 red, 3 green, 5 blue and 6 yellow Legos(TM). One at a time a Lego is removed, observed and replaced. This experiment is repeated 5 times and the number of blue Legos is counted.

Is this an example of Bernoulli trials? (Recall: 2 outcomes and results must be independent).

Find a probability distribution for this experiment.

If the Legos are not replaced, and 5 are removed at once and the number of blue Legos is counted, how does the answer to this problem change?

1. If you take out a \$5000 IRA at age 22 and it earns 8% annual interest compounded monthly, what will you have for retirement at age 62?

If you don't save the \$5000 until age 42, now how much will you have at retirement at age 62?

2. If you have accumulated \$10,000 in credit card debt on a card with a 20% annual interest rate, compounded monthly, how much interest do you accumulate that first month?

If you make a \$25 monthly payment what happens?

3. What is the doubling time for money earning 8% annual interest compounded quarterly?

What is the tripling time?

4. If you earn 10% compounded quarterly, what is the effective annual rate?
5. If you deposit \$100/month into a savings account every month for 5 years, earning 4% per year compounded monthly, what will you have at the end of 5 years? Note that you make  $60=5*12$  payments so you put \$6000 into savings during this time.

6. If you need to have \$150,000 for when your newborn goes to college in 18 years, how much do you need to save every month if you can get a 6% annual return compounded monthly?

How much interest do you earn over the entire 18 years?

How much interest do you earn during the 10th year?

7. If you purchase an ordinary annuity for \$100,000 at 7% per year compounded quarterly for 20 years, what is the monthly payment you will receive over the 20 year period?

What is the interest earned during the first quarter of the fifth year?

8. You have a choice between taking a lump-sum payment of \$500,000 or being paid \$50,000 per year for 15 years. Assuming you can make 8.3% annual interest compounded annually, which of these is the better deal?