An Interplanetary Currency

go figure

In the year 3187, space traveler Alex Ng stops to withdraw some money from her bank account in the standard interplanetary currency. Since extraterrestrials don't have five fingers, doing business in multiples of one, five, and ten Earth dollars doesn't really make sense, and neither does doing business in multiples of one, 17, and 68 Yrxiggian knuggyts. Instead, the interplanetary currency is called a blyp, and it comes in multiples of 1, 2, 4, 8, and so on: the powers of 2.

The small-scale space ATM that Alex is visiting only deals in 1, 2, 4, and 8 blyp coins. Depending on the coins currently contained inside, the ATM doesn't always give out the same mix of coins for the same overall value. For instance, to give Alex 6 blyps, the terminal might give her a 4-blip coin and a 2-blyp coin, or it might give her a 2-blyp coin and four 1-blyp coins, or it might give her six 1-blyp coins, or it might give her something else entirely.

How many different sets of coins could the exchange terminal give Alex for a total of 6 blyps? (It doesn't matter what order the ATM dispenses the coins.) What about for 42 blyps?