

Chapter 7 / Example 23

Finding binomial probabilities

For each situation state if the random variable is distributed binomially. If so, find the probability asked for.

- a** A coin is biased so that the probability of a head is 0.74. The coin is tossed 7 times. A is the number of tails. Find $P(A = 5)$.
- b** A bag contains 10 red dice, 1 blue dice and 7 yellow dice. A die is selected at random and its colour noted and replaced. This is repeated 12 times. C is the number of yellow dice recorded. Find $P(C \leq 6)$.

Assuming $A \sim B(7, 0.26)$

To find $P(A = 5)$

Press **2nd** **vars** (**[distr]**) A:binompdf...

Enter 7 as the number of trials, 0.26 as the probability of success and 5 as the X value.

Navigate down to Paste and press **enter**.

```
binompdf
trials:7
p:0.26
x value:5
Paste
```

Press **enter**.

The GDC displays the solution $P(A = 5) = 0.0137$.

```
binompdf(7,0.26,5)
.....0136631071
```

Assuming $C \sim B\left(12, \frac{7}{18}\right)$

To find $P(C \leq 6)$

Press **2nd** **vars** (**[distr]**) B:Binomial Cdf...

Enter 12 as the number of trials, $\frac{7}{18}$ as the probability of success (type $7 \div 18$) and 6 as the x value.

Navigate down to Paste and press **enter**.

```
binomcdf
trials:12
p:7/18
x value:6
Paste
```

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Press `enter`.

The GDC displays the solution $P(C \leq 6) = 0.861$.

```
binomcdf(12,7,18.6)
.....8606788033
```