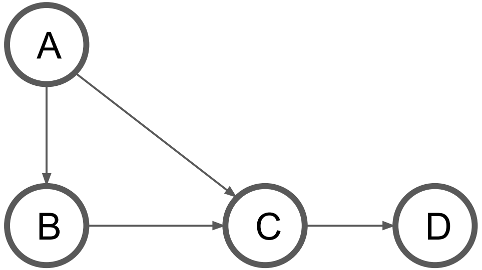

P(A)	
a=0	0.5
a=1	0.5

P(B|A)		
a=0	b=0	0.5
a=0	b=1	0.5
a=1	b=0	0.2
a=1	b=1	0.8

P(C|A, B)			
a=0	b=0	c=0	0.8
a=0	b=0	c=1	0.2
a=0	b=1	c=0	0.6
a=0	b=1	c=1	0.4
a=1	b=0	c=0	0.2
a=1	b=0	c=1	0.8
a=1	b=1	c=0	0.1
a=1	b=1	c=1	0.9

P(D|C)		
c=0	d=0	0.4
c=0	d=1	0.6
c=1	d=0	0.2
c=1	d=1	0.8

Answer the question based on the given Bayes Net. All variables have domains of {0, 1}

(1) Before eliminating any variables or including any evidence, how many entries does the factor f(C,A,B) have?

(2) Now to answer the query P(B|d=1), you pick C as the first variable to be eliminated. How many entries does the factor have if we eliminate C?

(3) Compute the result of joining P(B|A) and P(C|A, B)? And the result if we further marginalize over B?

(1) The factor is P(C|A, B). Because none of the variable elimination is done, we have $2^3 = 8$ entries.

(2) $f(A, B, d) = \Sigma_{c \in \{-0, 1\}} p(B|A)p(c|A, B)p(d|c)$. So the factor as $2^2=4$ entries.

(3) By joining P(B|A) and P(C|A, B), we have P(C, B|A). And its corresponding distribution table is as follows:

Each entry is computed by: p(c, b|a) = p(b|a)p(c|a, b).

P(C, B|A)			
a=0	b=0	c=0	0.4
a=0	b=0	c=1	0.1
a=0	b=1	c=0	0.3
a=0	b=1	c=1	0.2
a=1	b=0	c=0	0.04
a=1	b=0	c=1	0.16
a=1	b=1	c=0	0.08
a=1	b=1	c=1	0.72

(continuing) And we further marginalize P(C, B|A) over B, and we can obtain the distribution p(C|A):

P(C|A)		
a=0	c=0	0.7
a=0	c=1	0.3
a=1	c=0	0.12
a=1	c=1	0.88

Each entry is computed by: $p(c|a) = \Sigma_b\, p(c, b|a)$.