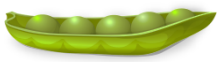
Pea pods can either be green or yellow.
Green is the dominant allele shown as **G**. Yellow is the recessive allele, **g**.



Task

Copy and complete the following tables showing the potential offspring.

1. Female parent has yellow pods (gg), the male parent has green (Gg).

		Female	
		g	g
Male	G		
	g		

Ratio of offspring phenotypes – green: yellow ..... .

2. Female parent has green pods (GG), the male parent has green (Gg)

		Female	
		G	G
Male	G		
	g		

Ratio of offspring phenotypes – green: yellow .....

3. Female parent has green pods (Gg), the male parent has green (Gg)

		Female	
		G	g
Male	G		
	g		

Probability that the offspring will have yellow pods = ...

4. Create your own table for a new cross. Clearly show the parental genotypes and the proportions of offspring.

5. Explain what is meant by the phrases ‘dominant allele’ and ‘recessive allele’.

6. Using these ideas explain how an inherited disease such as cystic fibrosis can be passed to offspring, by parents who don’t have the disease themselves.

Answers

1. Ratio 1:1

		Female	
		g	g
Male	G	Gg	Gg
	g	gg	gg

2. Ratio 1:0

		Female	
		G	G
Male	G	GG	GG
	g	Gg	Gg

3. Probability = 0.25 / ¼ / 1 in 4 / 25% / 1 : 3
(The following are incorrect, 3 : 1 or 1 : 4)

		Female	
		G	G
Male	G	GG	Gg
	g	Gg	Gg

4. -

5. Dominant alleles are always expressed if present in the genotype. A recessive allele is only expressed if there is no dominant allele present in the genotype.

6. If both parents are carriers, they won't have the disease themselves but there is a 25 % chance that their offspring will inherit 2 recessive alleles and suffer from the disease.