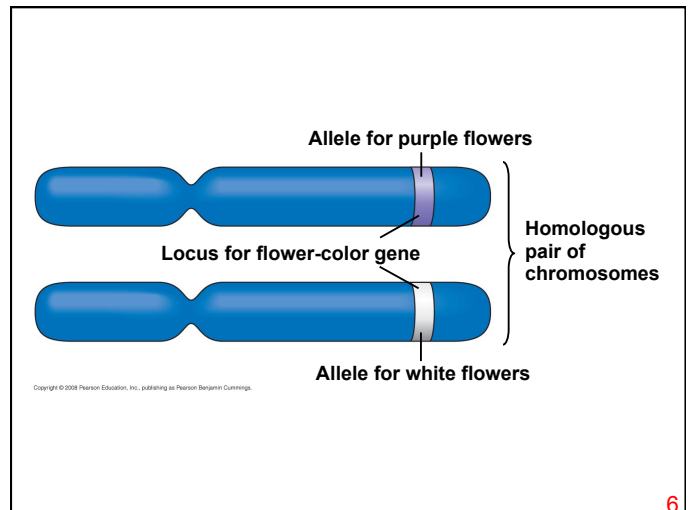
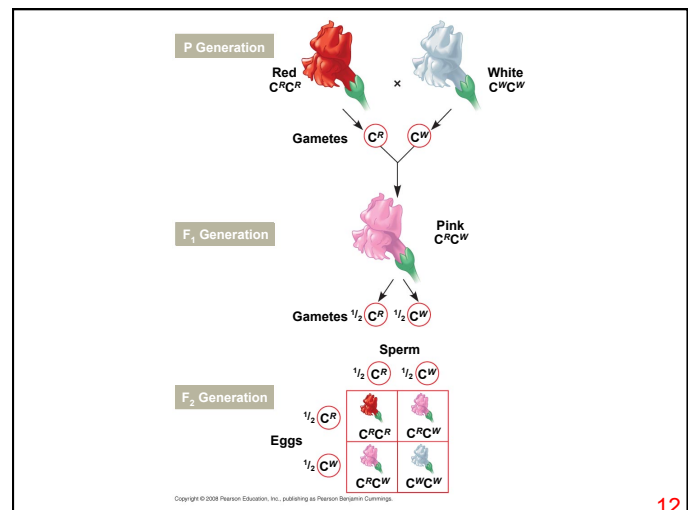
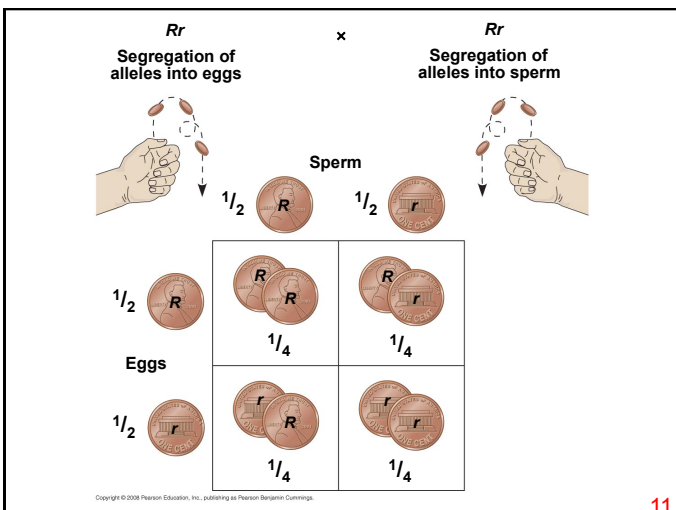
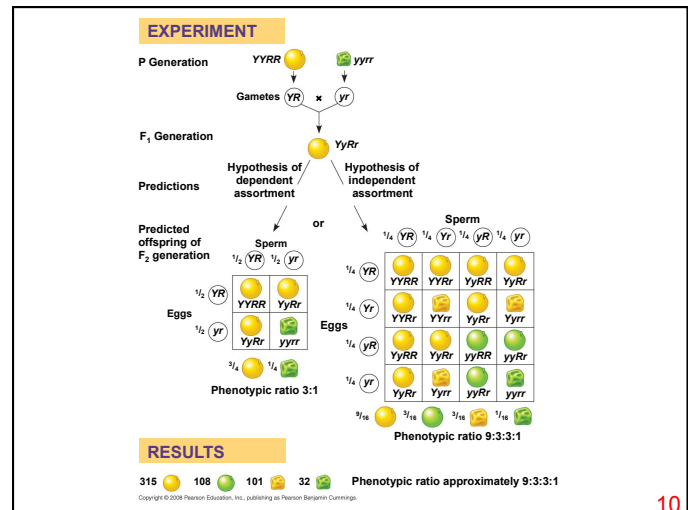
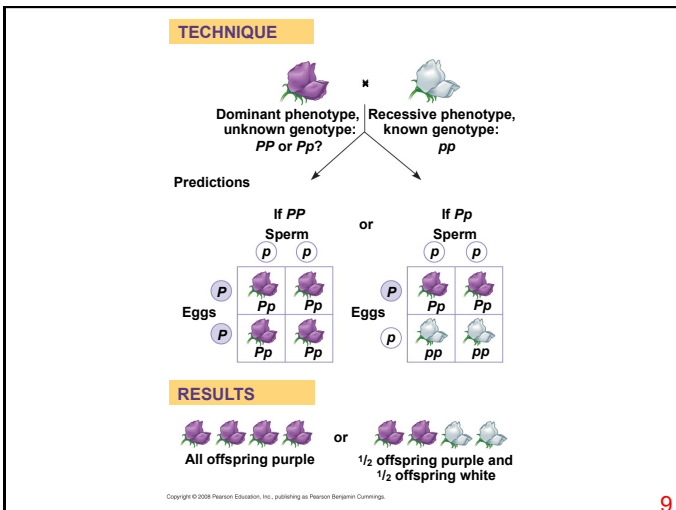
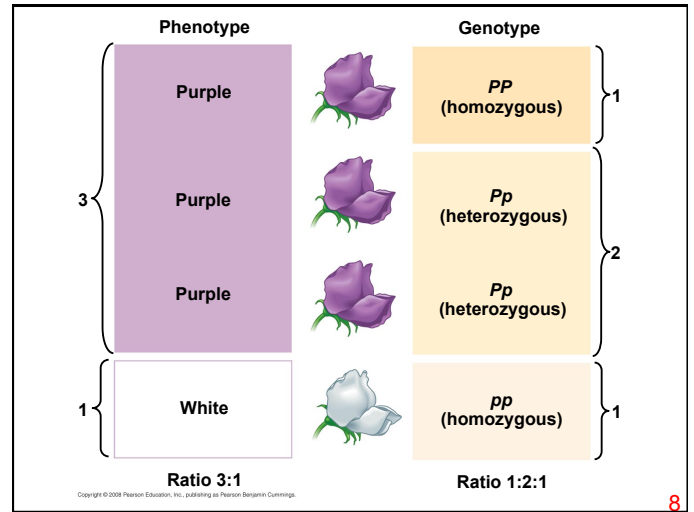
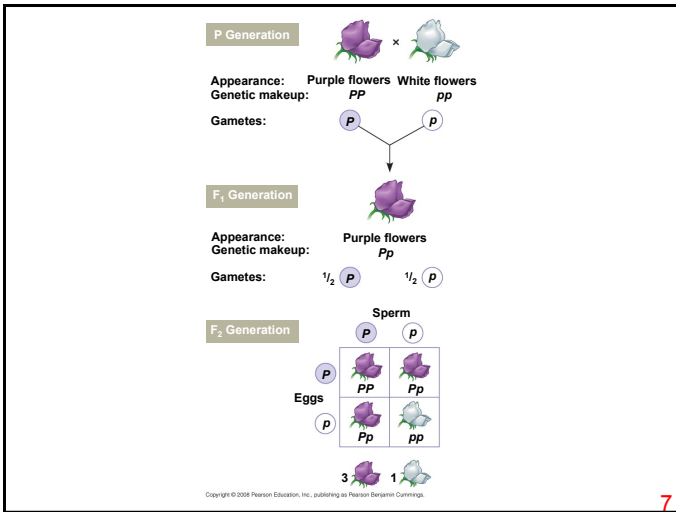


Table 14.1 The Results of Mendel's F₁ Crosses for Seven Characters in Pea Plants

Character	Dominant Trait	×	Recessive Trait	F ₂ Generation Dominant:Recessive	Ratio
Flower color	Purple	×	White	705:224	3.15:1
Flower position	Axial	×	Terminal	651:207	3.14:1
Seed color	Yellow	×	Green	6,022:2,001	3.01:1
Seed shape	Round	×	Wrinkled	5,474:1,850	2.96:1
Pod shape	Inflated	×	Constricted	882:299	2.95:1
Pod color	Green	×	Yellow	428:152	2.82:1
Stem length	Tall	×	Dwarf	787:277	2.84:1

5





Allele	Carbohydrate
I^A	A Δ
I^B	B \circ
i	none

(a) The three alleles for the ABO blood groups and their associated carbohydrates

Genotype	Red blood cell appearance	Phenotype (blood group)
$I^A I^A$ or $I^A i$		A
$I^B I^B$ or $I^B i$		B
$I^A I^B$		AB
ii		O

(b) Blood group genotypes and phenotypes

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$BbCc \times BbCc$

Sperm	$1/4 BC$	$1/4 bC$	$1/4 Bc$	$1/4 bc$
Eggs $1/4 BC$				
$1/4 bC$				
$1/4 Bc$				
$1/4 bc$				

9 : 3 : 4

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$AaBbCc \times AaBbCc$

Sperm	$1/8 ABC$	$1/8 ABc$	$1/8 AbC$	$1/8 abc$	$1/8 aBC$	$1/8 aBc$	$1/8 abC$	$1/8 abc$
Eggs $1/8 ABC$								
$1/8 ABc$								
$1/8 AbC$								
$1/8 abc$								
$1/8 aBC$								
$1/8 aBc$								
$1/8 abC$								
$1/8 abc$								

Phenotypes: $1/64$ $6/64$ $15/64$ $20/64$ $15/64$ $6/64$ $1/64$

Number of dark-skin alleles: 0 1 2 3 4 5 6

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(a) Amniocentesis

Amniotic fluid withdrawn → Centrifugation → Fluid, Fetal cells → Bio-chemical tests (Several hours), Karyotyping (Several weeks)

(b) Chorionic villus sampling (CVS)

Suction tube inserted through cervix → Placenta, Chorionic villi → Fetal cells → Bio-chemical tests (Several hours), Karyotyping (Several weeks)

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