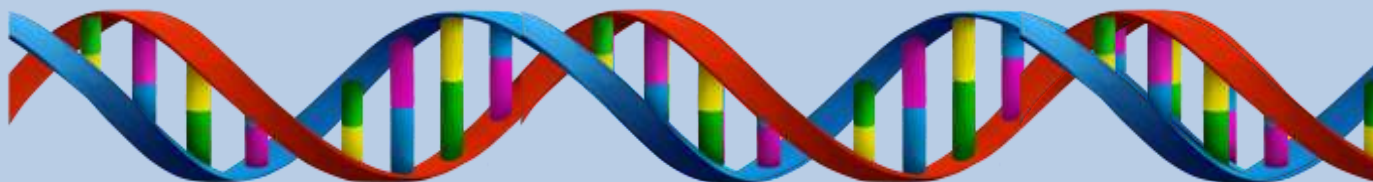
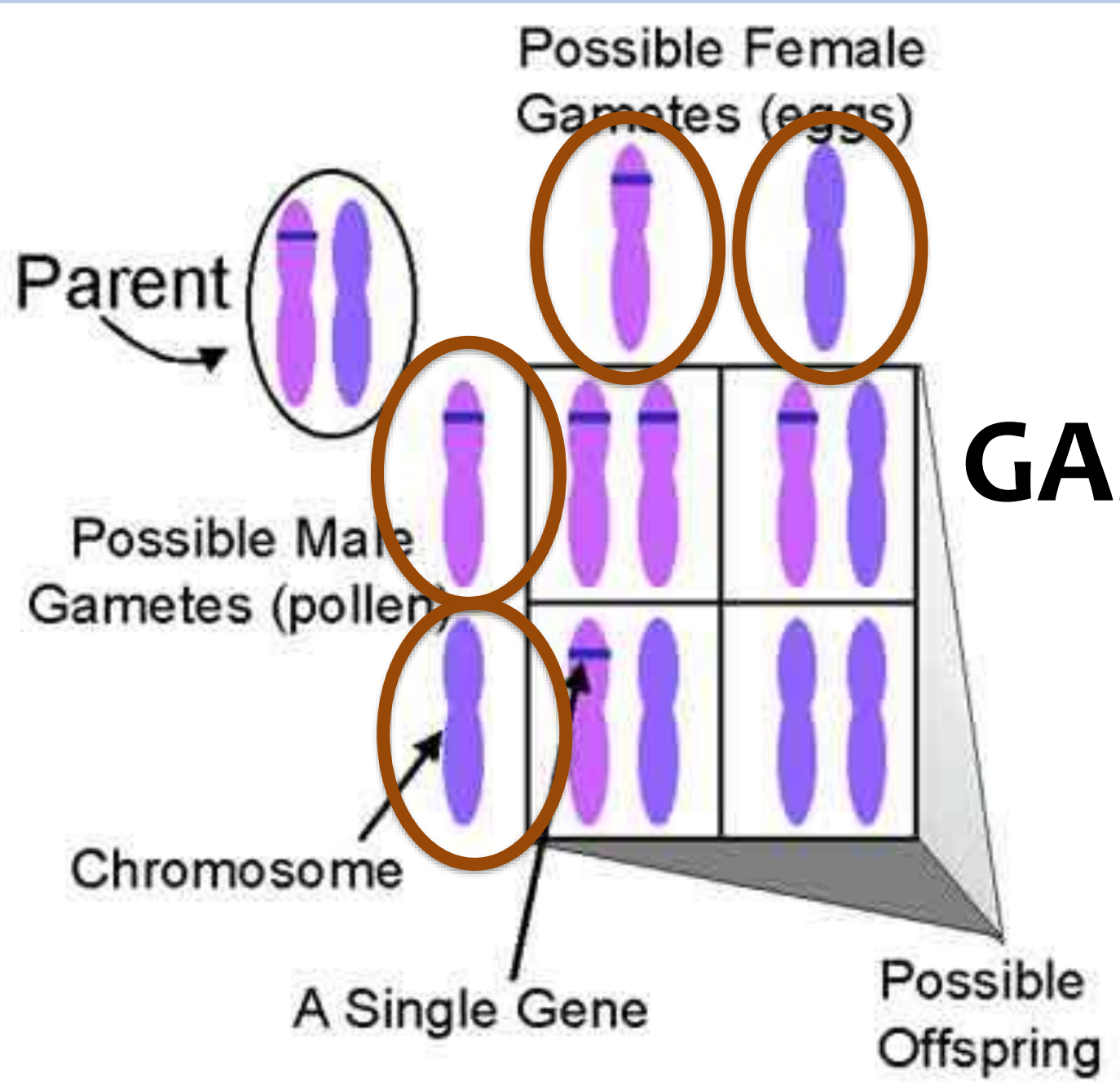




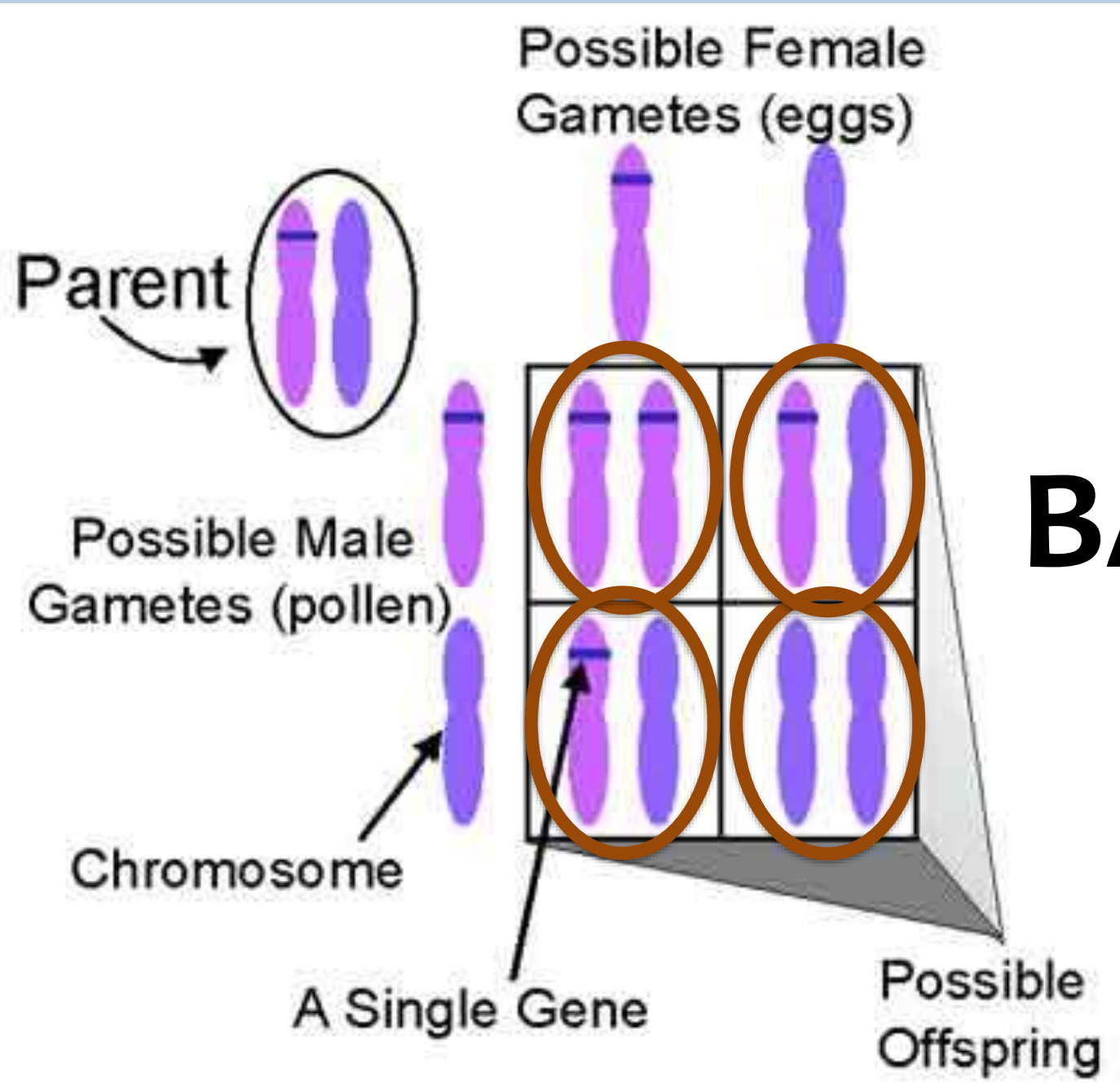
1. What do the letters on top of a Punnett Square represent?
2. What do the letters inside a Punnett Square represent?
3. What types of gametes can an individual heterozygous for eye color make?
4. What is the probability that this couple will have a blue-eyed baby?



		Father's Genes	
		B	b
Mother's Genes	B	BB	Bb
	b	Bb	bb



GAMETES



BABIES

Father's Genes

B

b

**M
O
T
H
E
R
S
G
E
N
E
S**

b

Bb

bb

b

Bb

bb

Mendel is the Father of _____



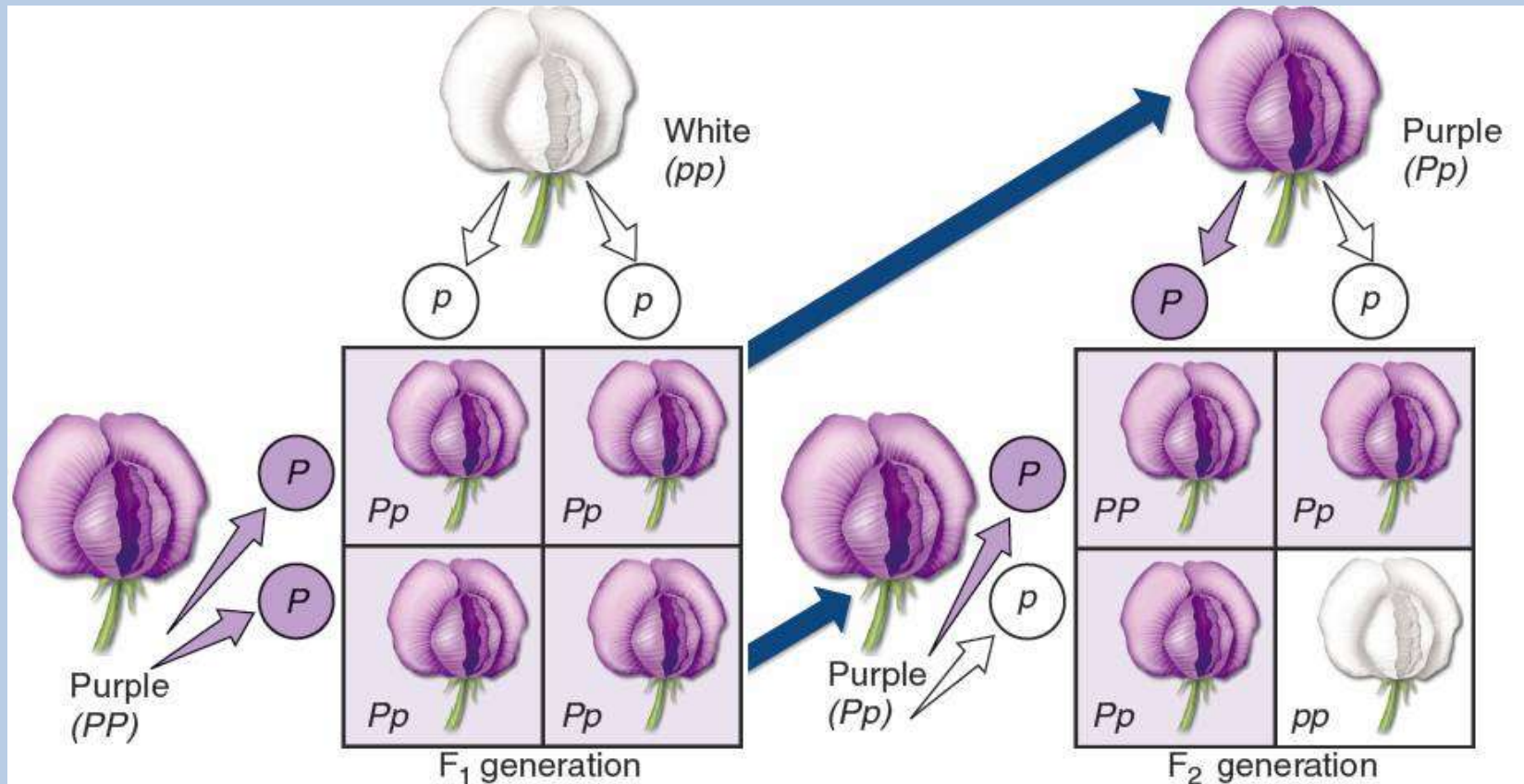
**Take out the Cross Application
Packet.**

**How many traits do
monohybrid crosses examine?**

**How many traits do
monohybrid crosses examine?**

1

Example: Flower color



Phenotypic Ratios:

- Used to compare the number of **dominant phenotype** offspring to the number of **recessive phenotype** offspring

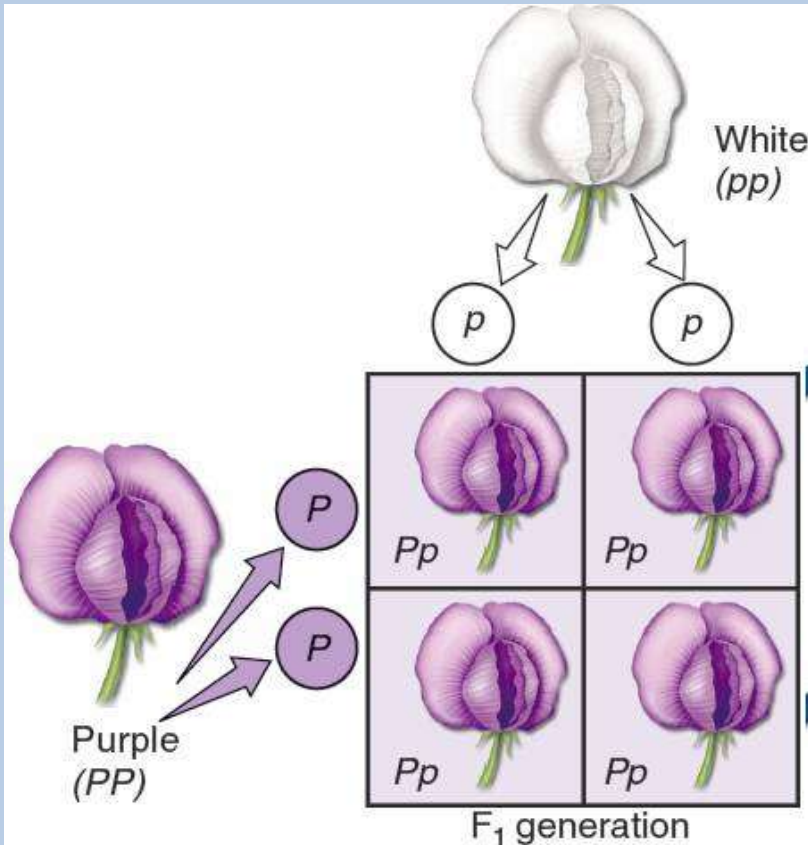
Phenotypic Ratio:

- Always write the dominant trait first:

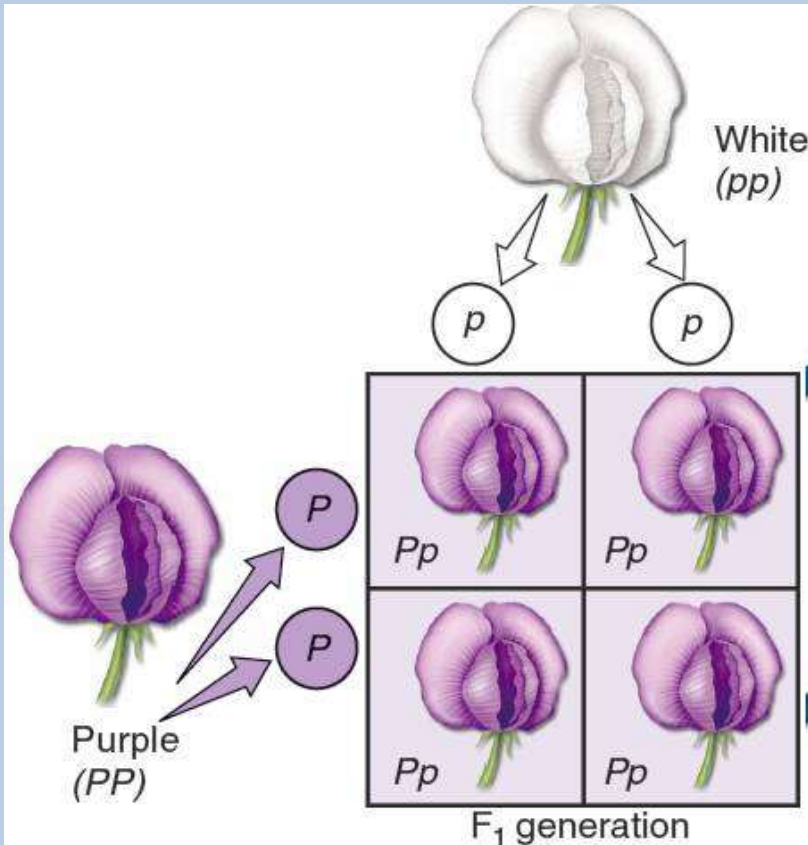
#DOM : **#rec**

Example: Flower color

What is the phenotypic ratio of this cross?



Example: Flower color

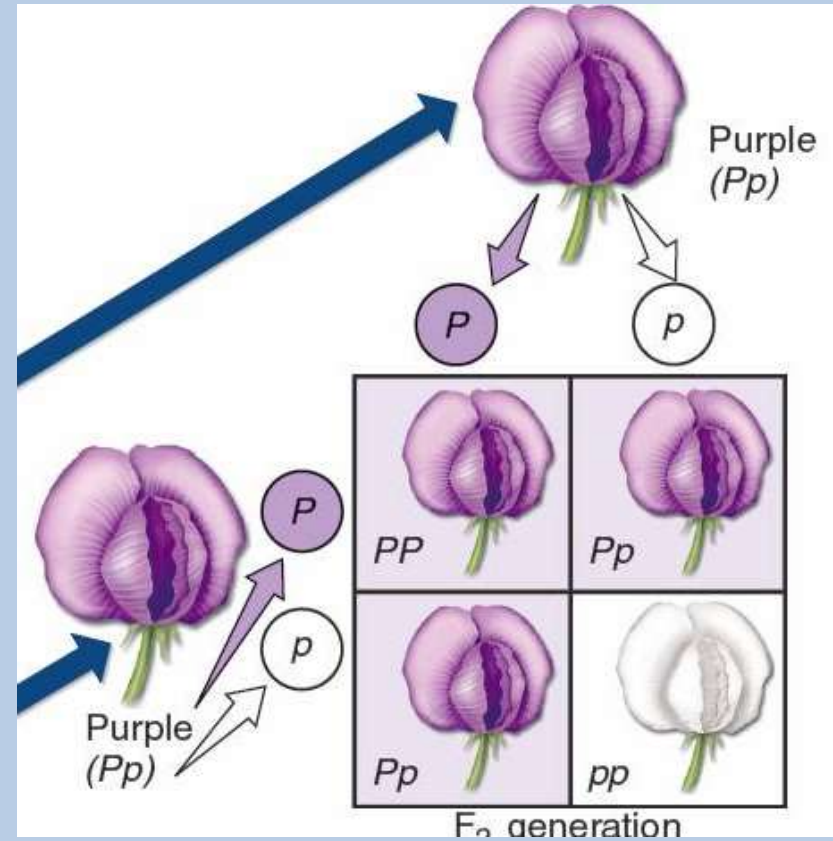


What is the phenotypic ratio of this cross?

4 : 0

Example: Flower color

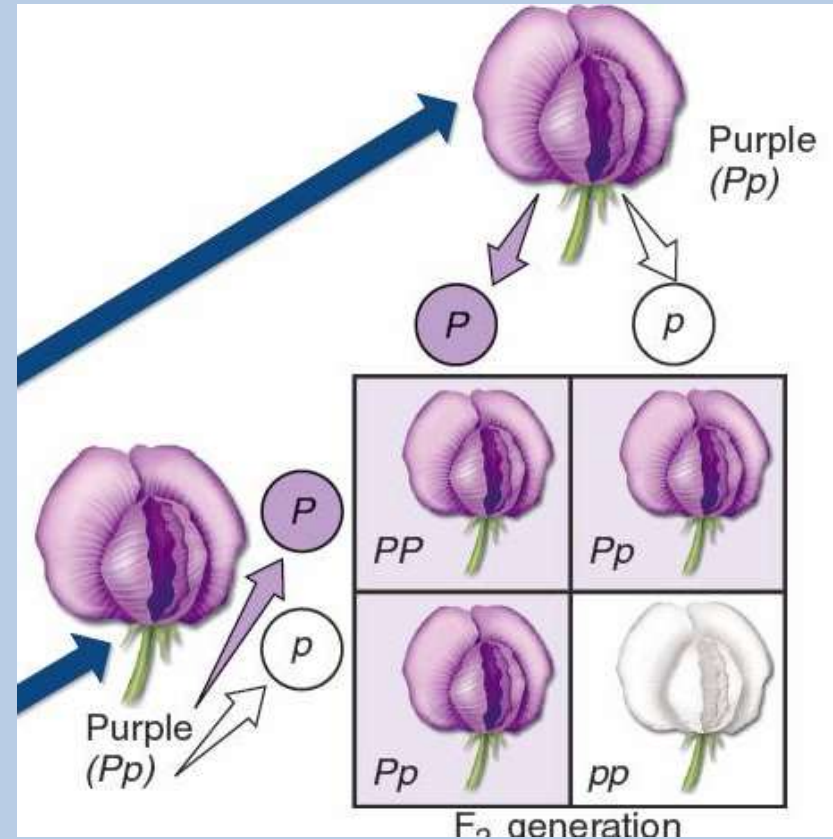
What is the phenotypic ratio of this cross?



Example: Flower color

What is the phenotypic ratio of this cross?

3 : 1



Genotypic Ratios:

- Used to compare the number of **dominant genotype** offspring to the number of **recessive genotype** offspring

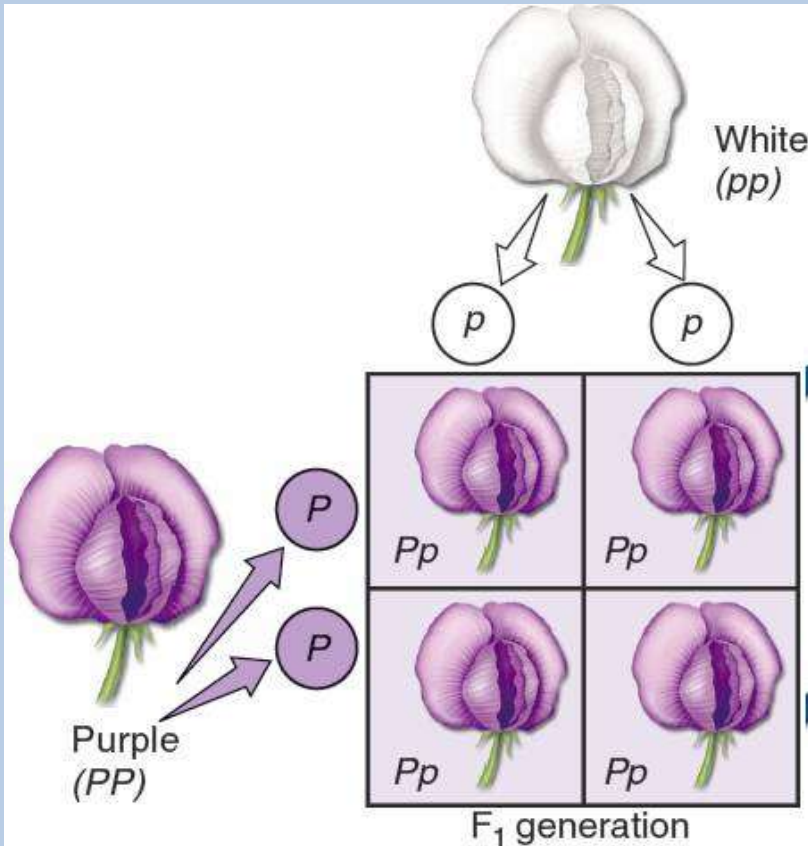
Genotypic Ratio:

- Always write in this order:

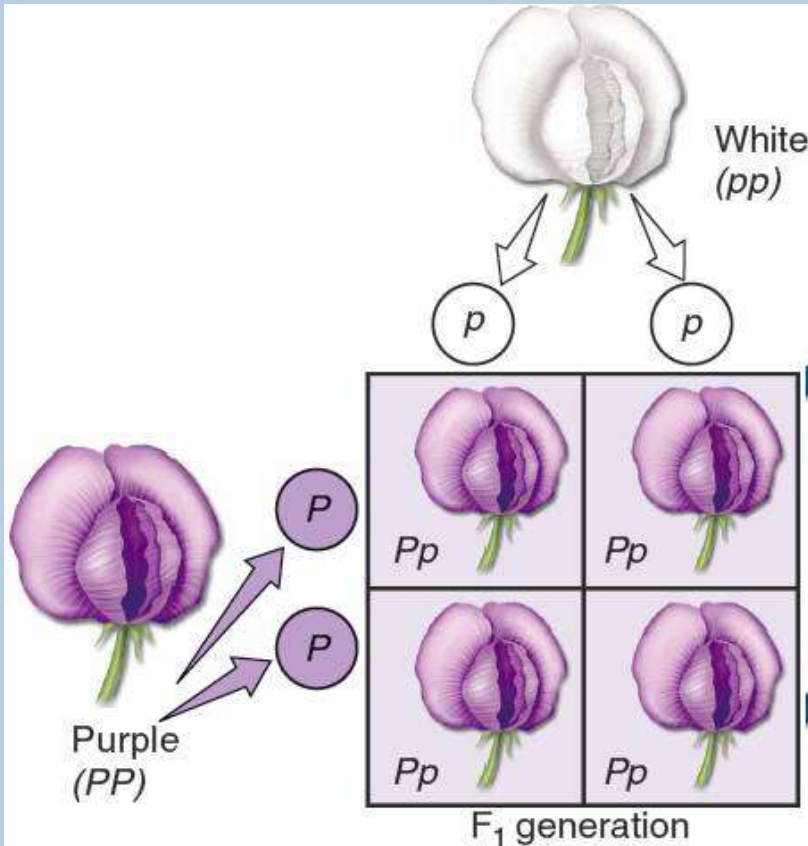
HD: Ht :hr

Example: Flower color

What is the genotypic ratio of this cross?



Example: Flower color

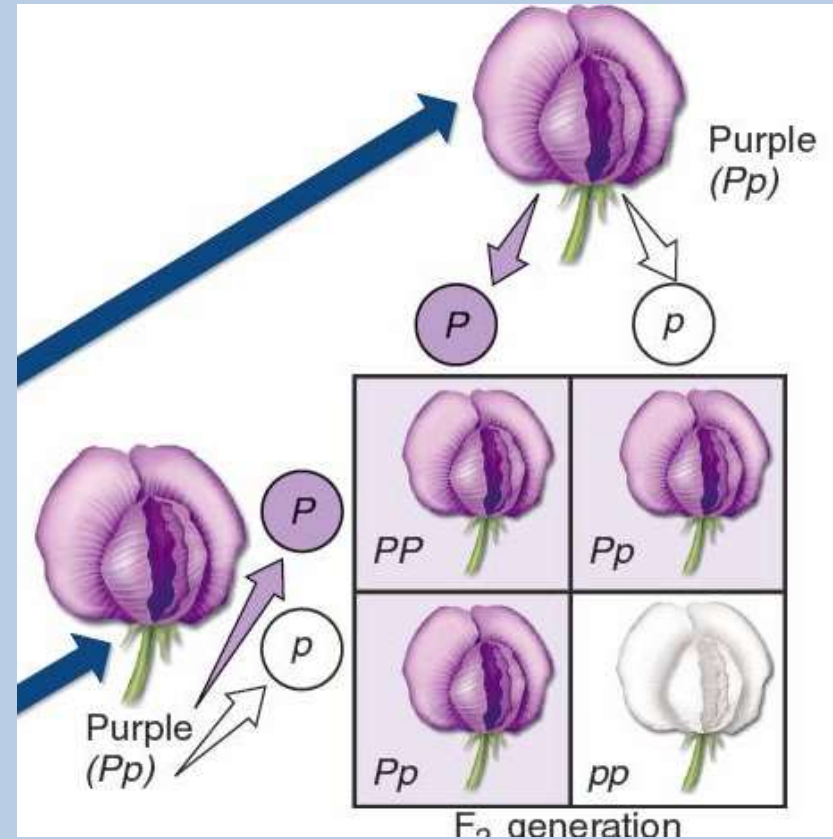


What is the
genotypic ratio of
this cross?

0 : 4 : 0

Example: Flower color

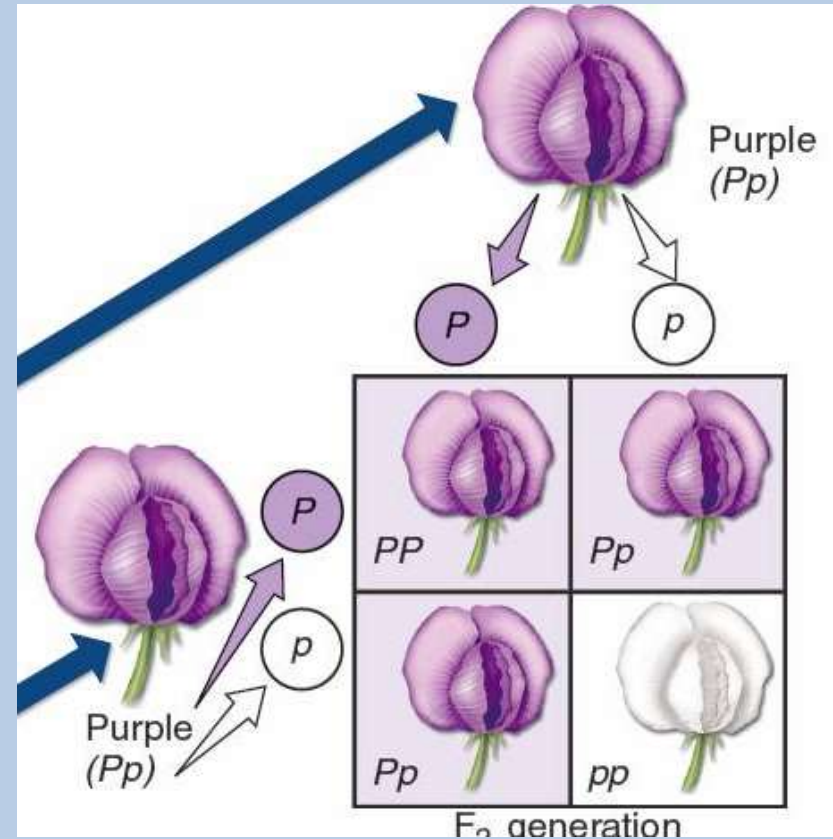
What is the genotypic ratio of this cross?



Example: Flower color

What is the phenotypic ratio of this cross?

1 : 2 : 1



Poker Chip Lab

To practice monohybrid crosses you will perform crosses and record your data.

Poker Chip Lab

**You will be crossing “Poker
Chip Organisms”.**

**Before you do this you will
need to understand the laws
of probability.**

***REMEMBER: a LAW is important**

- 1. Separate events will not affect the outcome of each other.**

1. Separate events will not affect the outcome of each other.

Example:

The probability of having a boy is 50% for every conception. Just because parents may already have a boy does not mean that they have a greater chance of a boy next time.

2. The chance of two independent events happening at the **SAME TIME** is equal to the **product** of those two events.

2. The chance of two independent events happening at the *SAME TIME* is equal to the product of those two events.

Example: If a couple has two sons the probability of them having those two sons was 50% X 50% (0.5 X 0.5 = 0.25) = 25%

Example:

What is the probability that this couple will have a **blue eyed** baby?

Bb **x** **bb**

Example:

What is the probability that this couple will have a **blue eyed** baby?

Bb x bb

50% = 0.5

Example:

What is the probability that this same couple has a **blue eyed** child and a **brown eyed** child?

Bb x **bb**

$$50\% \times 50\% (0.5 \times 0.5 = 0.25) = 25\%$$

Poker Chip Lab

- Part III Data Table: there are 4 possible combinations based on Which PARENT the genes come from

Possible Combinations	Expected Percentages	Your Average	Class Average
RR (Color)			
Rr (Color)			
Rr (Color)			
rr (White)			

Poker Chip Lab

- *Follow instructions carefully*
- **TAKE YOUR TIME**
- **Calculate carefully**
- **BEFORE YOU START:** make sure your female beaker has 8 white chips and 8 red chips, the male beaker has 8 white chips and 8 blue chips

Genotypic Ratio: HD: Ht :hr

Phenotypic Ratio: #DOM : #rec

Laws of Probability

- 1. Separate events will not affect the outcome of each other.**
- 2. The chance of two independent events happening at the SAME TIME is equal to the product of those two events.**

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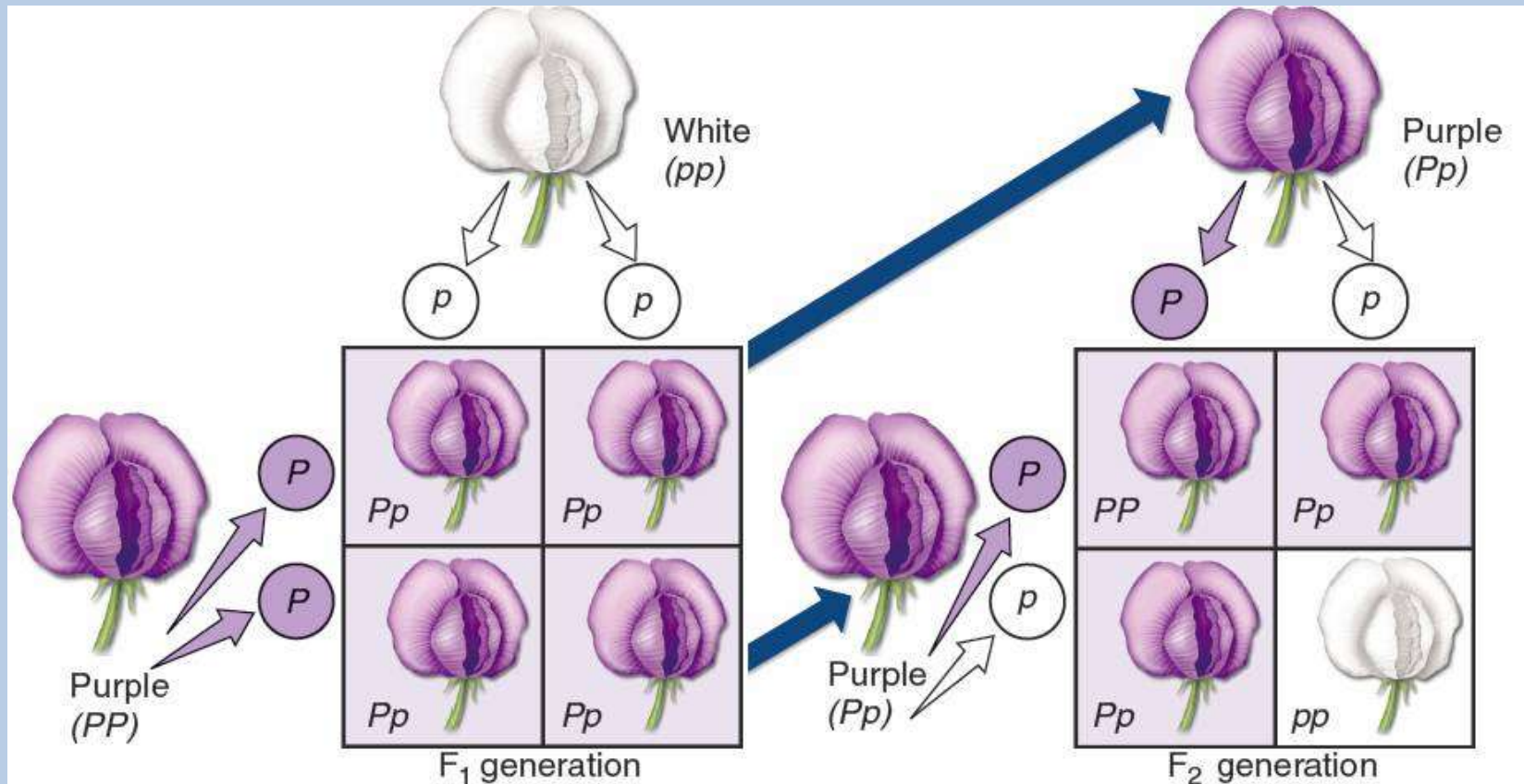
Page	Title of Page	Check	Page	Title of Page	Check
52	Mitosis Notes		53	Cancer and Cell Cycle	
54	Stem Cells		55	Unit 5 Cover Sheet	
56	Meiosis Notes		57	Genetics Background and Gene Map	
58	Guinea Pig Genetics		59	Poker Chip Lab	
60			61		

**How many traits do
monohybrid crosses examine?**

**How many traits do
monohybrid crosses examine?**

1

Example: Flower color



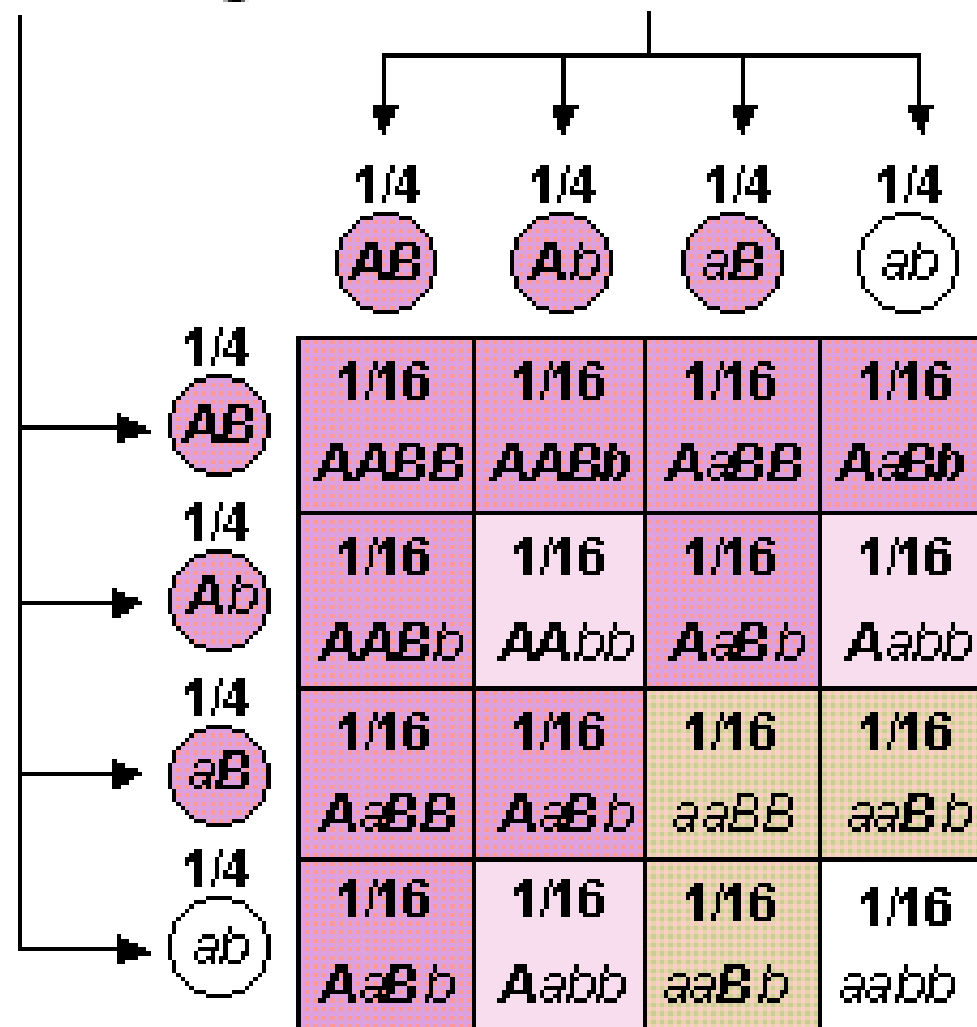
How many traits do dihybrid crosses examine?

How many traits do dihybrid crosses examine?

2

Example: Flower color AND Height

meiosis, gamete formation



Possible outcomes of cross-fertilization

AABB
purple-flowered
tall parent
(homozygous dominant)



AB

X

ab



aabb
white-flowered
dwarf parent
(homozygous recessive)

F1 OUTCOME: All F1 plants purple-flowered, tall
(**AaBb** heterozygotes)



meiosis, gamete formation

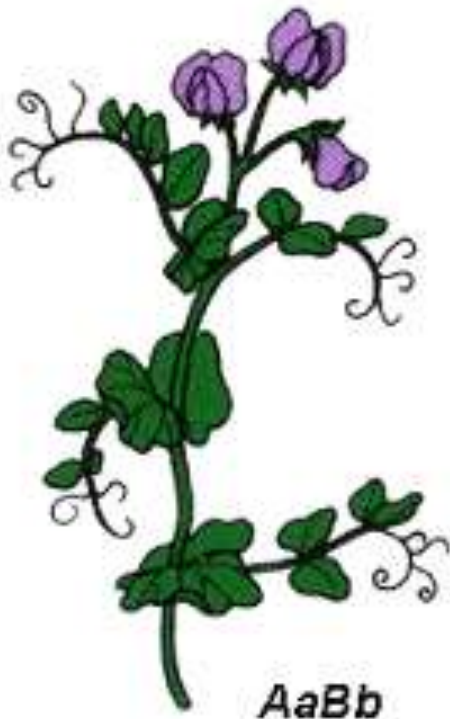
		1/4 AB	1/4 Ab	1/4 aB	1/4 ab
1/4 AB	1/16 AABB	1/16 AABb	1/16 AaBB	1/16 AaBb	
1/4 Ab	1/16 AABb	1/16 AAbb	1/16 AaBb	1/16 Aabb	
1/4 aB	1/16 AaBB	1/16 AaBb	1/16 aaBB	1/16 aaBb	
1/4 ab	1/16 AaBb	1/16 Aabb	1/16 aaBb	1/16 aabb	

Possible outcomes of cross-fertilization

ADDING UP THE F2 COMBINATIONS POSSIBLE:

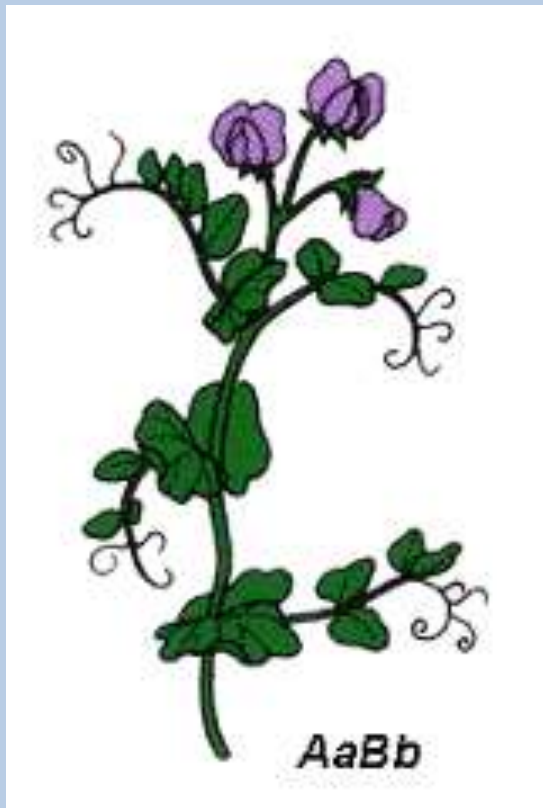
- 9/16 or 9 purple-flowered, tall
- 3/16 or 3 purple-flowered, dwarf
- 3/16 or 3 white-flowered, tall
- 1/16 or 1 white-flowered, dwarf

THE MOST COMMON MISTAKE FOR DIHYBRID CROSSES IS NOT WRITING THE POSSIBLE GAMETES CORRECTLY

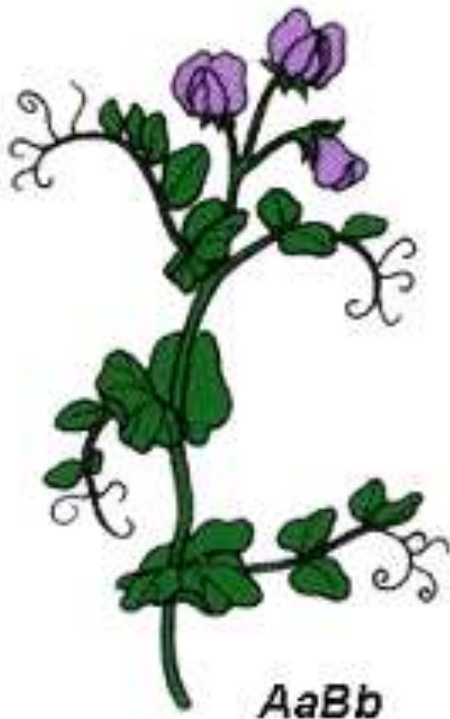


	AB	Ab	aB	ab
AB	1/16 AABB	1/16 AABb	1/16 AaBB	1/16 AaBb
Ab	1/16 AABb	1/16 AAbb	1/16 AaBb	1/16 Aabb
aB	1/16 AaBB	1/16 AaBb	1/16 aaBB	1/16 aaBb
ab	1/16 AaBb	1/16 Aabb	1/16 aaBb	1/16 aabb

The parent plants here have a genotype $AaBb$. What gametes can they make?



The parent plants here have a genotype **AaBb**. What gametes can they make? **AB Ab aB ab**



	AB	Ab	aB	ab
AB	1/16 AABB	1/16 AABb	1/16 AaBB	1/16 AaBb
Ab	1/16 AABb	1/16 AAbb	1/16 AaBb	1/16 Aabb
aB	1/16 AaBB	1/16 AaBb	1/16 aaBB	1/16 aaBb
ab	1/16 AaBb	1/16 Aabb	1/16 aaBb	1/16 aabb

Dihybrid Crosses Video

[https://www.youtube.com](https://www.youtube.com/watch?v=qIGXTJLrLf8)
[/watch?v=qIGXTJLrLf8](https://www.youtube.com/watch?v=qIGXTJLrLf8)

16 tributes will be selected to fill in one box each:

AaBb

AB

Ab

aB

ab

AB

Ab

aB

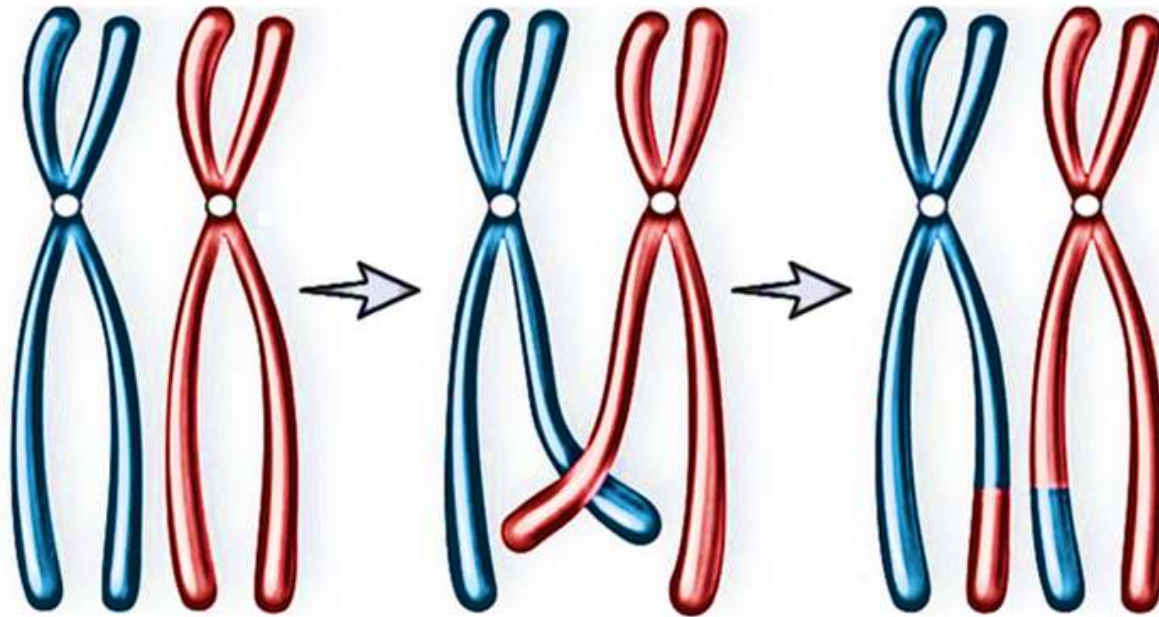
ab

AaBb

	AB	Ab	aB	ab
AB				
Ab				
aB				
ab				

HAPPY VALENTINE'S DAY!!!

If we were like Chromosomes...



...you'd be my homologous pair