







PUNNETT SQUARES

**For
Special
Ed**

 	B	b
b	 Bb	 bb
b	 Bb	 bb



INCLUDES GOOGLE SLIDES



This unit was created with this guy in mind. He has autism and an intellectual disability. He is a non-reader, and loves the sound of piano keys. With some support he is able to do this unit, and enjoys the challenge. He is my tester!!

Punnett Squares

By
Christa Joy
Special Needs for Special Kids

	F	F
f	Ff	Ff
f	Ff	Ff

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Also included in this resource as separate files:

- Lesson plans
- Links and directions to digital activities
- PowerPoint (this is the book in the lesson plans)
- Voice recorded PowerPoint
- Activities in black and white

This unit contains 10 days of material that is in both printable and digital formats. I have included a detailed lesson plan to help you make the most of everything in this unit including how to add some group activities.

It comes in 2 separate files. One in color and one in black and white.

Punnett Squares Lesson Plan

Preparation

- Print out a vocabulary board for each student to use throughout unit
 - Laminate or place in page protector
- Book
 - Print out, laminate, and bind
 - OR your students can listen to the pre-recorded version
- Vocabulary cards
 - Print out a set of cards onto cardstock and laminate
 - Make one set for each student and also one for the teacher to use in I Spy games
- Punnett Square Cards
 - Print out a large Punnett Square card onto cardstock and laminate (one per student)
 - Print out one set of genotype cards onto cardstock, laminate and cut apart

Preassessment (do day 1 before starting lesson)

- Choose the form of the assessment that best fits the learning level of your students
- Give the assessment to assess what you
- I cannot emphasize enough how important growth, this preassessment is so important

Teaching Tips

- *Color Coding:* this is a really easy way to do this activity. Outline or color in an empty grid with the corresponding picture symbols that you are using.
- a. For more info, read more here <https://specialneedsforspecialkiddsforspecialkidds.com/2015/05/12/color-coding-for-differentiation/>
- b. I also have a blog post on differentiation <https://specialneedsforspecialkiddsforspecialkidds.com/2015/05/12/3-ways-easily-and-effectively-differentiating-instruction/>
- *Make your own copies of the activities* yesterday. For that reason:

Day 3

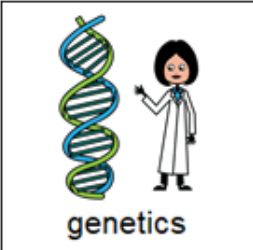
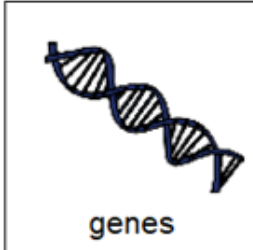
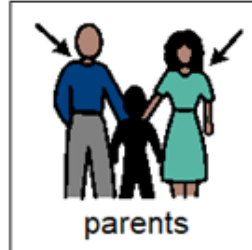
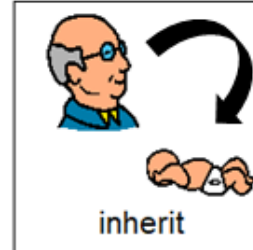
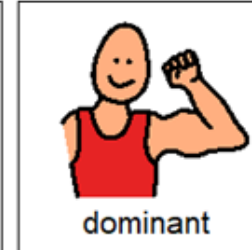

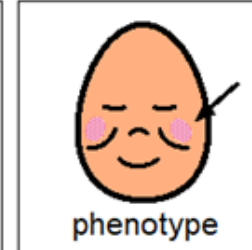
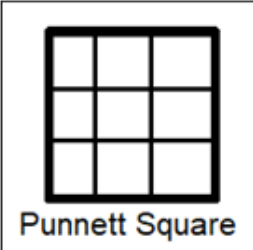

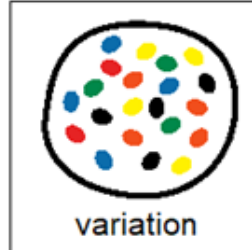
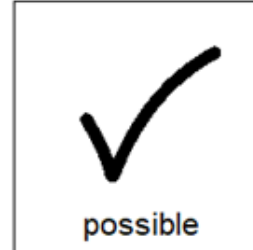
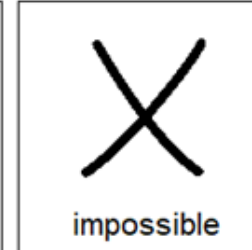
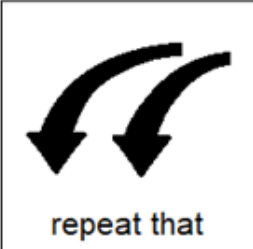

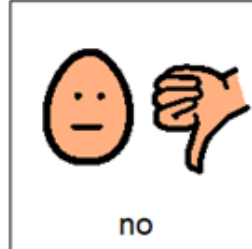


Activity	Notes	Materials
Read or listen to a recording of the book (10 minutes)	<ul style="list-style-type: none"> • Read through the story, asking lots of questions • Continue to make connections between book and vocabulary board 	<ul style="list-style-type: none"> • Book • Vocabulary board
Vocabulary cards Scavenger Hunt (10 minutes)	<ul style="list-style-type: none"> • Place one set of the vocabulary cards around the room before lesson <ul style="list-style-type: none"> ◦ Students walk around and find them, bring them back and matching them to their own set of cards 	<ul style="list-style-type: none"> • Vocabulary cards (extra sets)
Sorting activity review (5 minutes)	<ul style="list-style-type: none"> • Review the sorting activity completed yesterday 	<ul style="list-style-type: none"> • Completed worksheets
Sorting activity (10 minutes)	<ul style="list-style-type: none"> • Do the sorting activity on homozygous and heterozygous traits <ul style="list-style-type: none"> ◦ Given the genotype, students place the trait in the correct column ◦ Add color-coding for students who need more support • Have students notice similar traits in their classmates. Note the frequency of certain traits. • Make connections to the book as necessary 	<ul style="list-style-type: none"> • Sorting activity • Scissors • Glue
Sharing (10 minutes)	<ul style="list-style-type: none"> • Each student shares their finished worksheet with the group using the communication method of their choice 	<ul style="list-style-type: none"> • Completed worksheet • Communication devices

Quick Look

Day	Activity	Day	Activity
1	<ul style="list-style-type: none"> • Book • Vocab cards introduction • Circle map 	7	<ul style="list-style-type: none"> • Book • Vocab cards cut and paste • Punnett Square practice
2	<ul style="list-style-type: none"> • Book • Vocab cards activity • Sorting Activity 	8	<ul style="list-style-type: none"> • Book • Vocab cards cut and paste • Punnett Square practice
3	<ul style="list-style-type: none"> • Book • Vocab cards activity • Sorting activity 	9	<ul style="list-style-type: none"> • Book • Vocab cards cut and paste • Close reading
4	<ul style="list-style-type: none"> • Book • Group activity • Punnett Square practice 	10	<ul style="list-style-type: none"> • Book • Assessment

The lesson plans contain:

- Overall tips for teaching students with significant needs
- A quick look at what you will do each day
- Detailed instructions on how that day's lesson should run

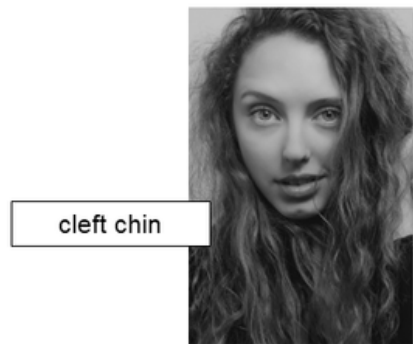
 genetics	 genes	 parents	 inherit	 dominant
 recessive	BB capital letters	bb lowercase letters	Aa Bb Cc Dd Ee Ff genotype	 phenotype
 Punnett Square	 frequency	 variation	 possible	 impossible
 repeat that	 yes	 no	 I don't know	 need a break

This unit comes with a vocabulary board.

Vocabulary boards are great for ALL students to assist with participation and engagement in group discussions.

Tips on how to use in the unit!!

That also means that only one parent has to have the gene for that trait for it to show up in its offspring. What are some examples of dominant traits?



There is a 32 page book with this unit using simple text and photos.

It comes in a PowerPoint version as well as a voice-recorded movie (mp4).

When the genotype is made up of two different genes, we call it **heterozygous**. Let's look at a Punnett Square where Mom is heterozygous (Ff) and Dad is homozygous (ff).

	Mom: Ff		
	F	f	
Dad: ff	f	Ff	freckles
	f	Ff	freckles
			no freckles

There are still 4 possible combinations. But now 2 combinations will result in offspring with freckles and 2 will result in offspring with no freckles.

recessive

This trait will only be seen if you have 2 matching genes of the same trait, like blue eyes.



Punnett Square

Grid of blocks used to find all the possible combinations and frequency of different traits.

	F	F
f	Ff	Ff
f	Ff	Ff

heredity

Parents passing on genes and traits to offspring.



gene

Made up of DNA. Carry the information about the specific traits that are passed down.



genotype

Set of genes that tells the cell what to create/be.

Aa Bb Cc
Dd Ee Ff

phenotype

What you can see, physical characteristics.



allele

Specific sequence of DNA that relates to traits like hair or eye color.



dominant

When present, this trait will always be seen, like brown eyes.



There are 10 vocabulary cards that come in color and black and white.

- Included are suggestions for group activities to do with these each day.
- There is also a cut-and-paste activity.

heredity



gene



	F	F
f	Ff	Ff
f	Ff	Ff

BB



bb

Aa Bb
Dd Ee

allele



dominant



2 genes that are the same makes up a trait.

matching genes of the same trait
eyes.

Grid of blocks used to find all the possible combinations and frequency of different traits.

Parents passing on genes and traits to offspring.

When present, this trait will always be seen, like brown eyes.

2 different genes makes up the trait.

Specific sequence of DNA that relates to traits like hair or eye color.

What you can see, physical characteristics.

Parent 1

Parent 2

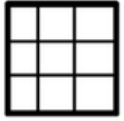








RR (right handed)	rr (left handed)
Rr (right handed)	BB (brown eyes)
Bb (brown eyes)	bb (blue eyes)
FF (freckles)	Ff (freckles)
ff (no freckles)	DD (dimples)
Dd (dimples)	dd (no dimples)

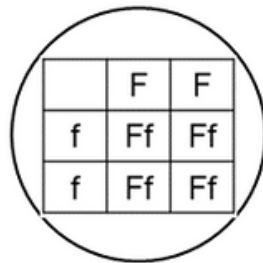
There are materials for a group activity. Students will practice filling out Punnett Squares.

Punnett Squares

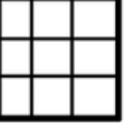





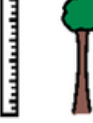





Errorless version

Cut apart pictures and place in circle map about Punnett Squares.

 grid	 predict	 frequency	 parents
 offspring	Aa Bb Cc Dd Ee Ff genotype	 phenotype	 dominant
 recessive	BB homozygous	Bb heterozygous	 variation



Cut apart pictures and place in circle map **ONLY IF** they relate directly to Punnett Squares.

 grid	 predict	 calculator	 parents	 frequency
 offspring	 height	 phenotype	 dominant	Aa Bb Cc Dd Ee Ff genotype
 recessive	BB homozygous	Bb heterozygous	 variation	 germs

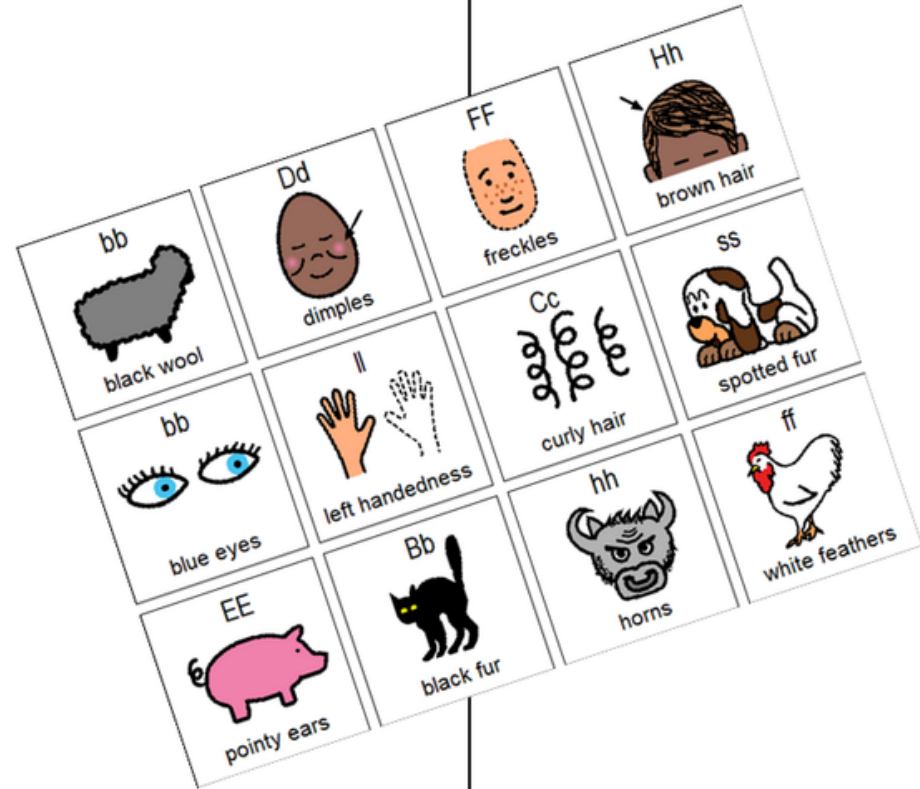
Christa.
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There is a circle map that reviews the main points from the book.

Circle maps are a great way for students to see the concept at a glance.

There are 2 versions:

- One is errorless
- One has wrong answers mixed in students will have to set aside.



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BB
 Homozygous

Bb
 Heterozygous

Gg	EE	PP
ss	ww	nn
Cc	Dd	Oo

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There are 2 sorting activities.

- Dominant/recessive traits
- Homozygous/heterozygous genotypes

Suggestions for differentiation and answer key are included.

#1

Fill out the Punnett Square below using the genotypes of both parents listed.

Trait: Cleft chin (dominant)

Mom does not have a cleft chin. Her genotype is cc.

Dad does have a cleft chin. His genotype is CC.

#9

Fill out the Punnett Square below and answer the questions at the bottom.

Trait: horns(dominant), no horns (recessive)

Mom has the genotype Hh

Dad has the genotype HH.

1. Color in the offspring that have horns green.
2. Color in the offspring that have horns red.

3. How many offspring have horns?

4. How many offspring do not have horns?

#6

Look at the Punnett Square below and answer the questions at the bottom.

Trait: Freckles (dominant), no freckles (recessive)

Mom has the genotype Ff.

Dad has the genotype ff.

	F	f
f	Ff	ff
f	Ff	ff

1. Color in the offspring that have freckles green.
2. Color in the offspring that do not have freckles red.

3. How many offspring have freckles?

4. How many offspring do not have freckles?

Challenger

Fill out the Punnett Square below and answer the questions at the bottom.

Trait: round seed (dominant) yellow seed (dominant)
Trait: wrinkled seed (recessive) green seed (recessive)

Genotype of both parents = YyRr

	YR	yR	Yr	yr
YR				
yR				
Yr				
yr				

1. How many offspring are yellow and round?
2. How many offspring are yellow and wrinkled?
3. How many offspring are green and round?
4. How many offspring are green and wrinkled?

There are 15 worksheets to practice using Punnett Squares.

- (5) fill out Punnett Square
- (3) answer questions about a Punnett Square filled out
- (2) fill out Punnett square and answer questions
- (2) two trait Punnett Squares

Punnett Squares

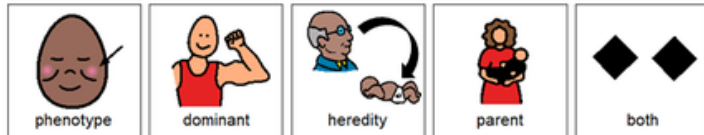
1. is passing on traits from the parents to its offspring.

2. Alleles are made of 2 genes, one from each .

3. The is what you can observe, like curly hair.

4. genes are always visible when present.

5. For a recessive gene to be seen, genes must be recessive.



Punnett Squares

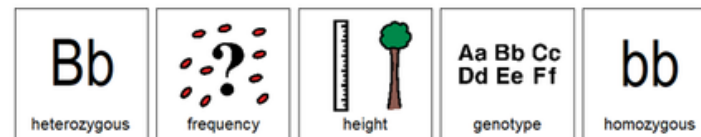
6. A Punnett Square is used to know the certain traits will occur.

7. To make a Punnett Square, you need to know the both parents.

8. A genotype where both genes are identical is called .

9. A genotype where both genes are different is called .

10. Some traits like cannot be determined using a Punnett Square.



Close worksheets are a great informal assessment. This unit has 10 questions that review facts about Punnett Squares.

Answer key included.

Version 1

1. This is used to determine the frequency certain traits will be inherited.



2. What do you need to complete a Punnett Square?



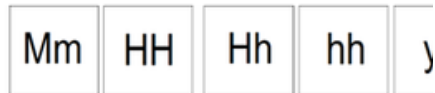
3. What is an example of a trait you **cannot** predict using a Punnett Square?



4. Circle all the possible combinations if parent 1 is BB and parent 2 is bb?



5. Circle all the possible combinations if parent 1 is Hh and parent 2 is Hh?



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Version 2

Print onto cardstock or mount on index cards. Cut pictures apart and show student answer choices for each question.

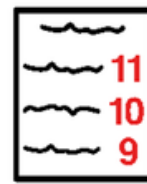
Q 1



calculator



Punnett Square



report card

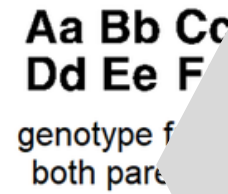
Q 2



Version 3



gene



genotype of both parents

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1. This is used to determine the frequency certain traits will be inherited.

- A. calculator
- B. Punnett Square
- C. report card

2. What do you need to complete a Punnett Square?

- A. phenotype
- B. genes
- C. genotype of both parents

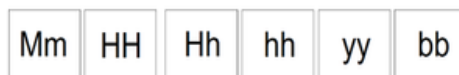
3. What is an example of a trait you **cannot** predict using a Punnett Square?

- A. curly hair
- B. freckles
- C. height

4. Circle all the possible combinations if parent 1 is BB and parent 2 is bb?



5. Circle all the possible combinations if parent 1 is Hh and parent 2 is Hh?

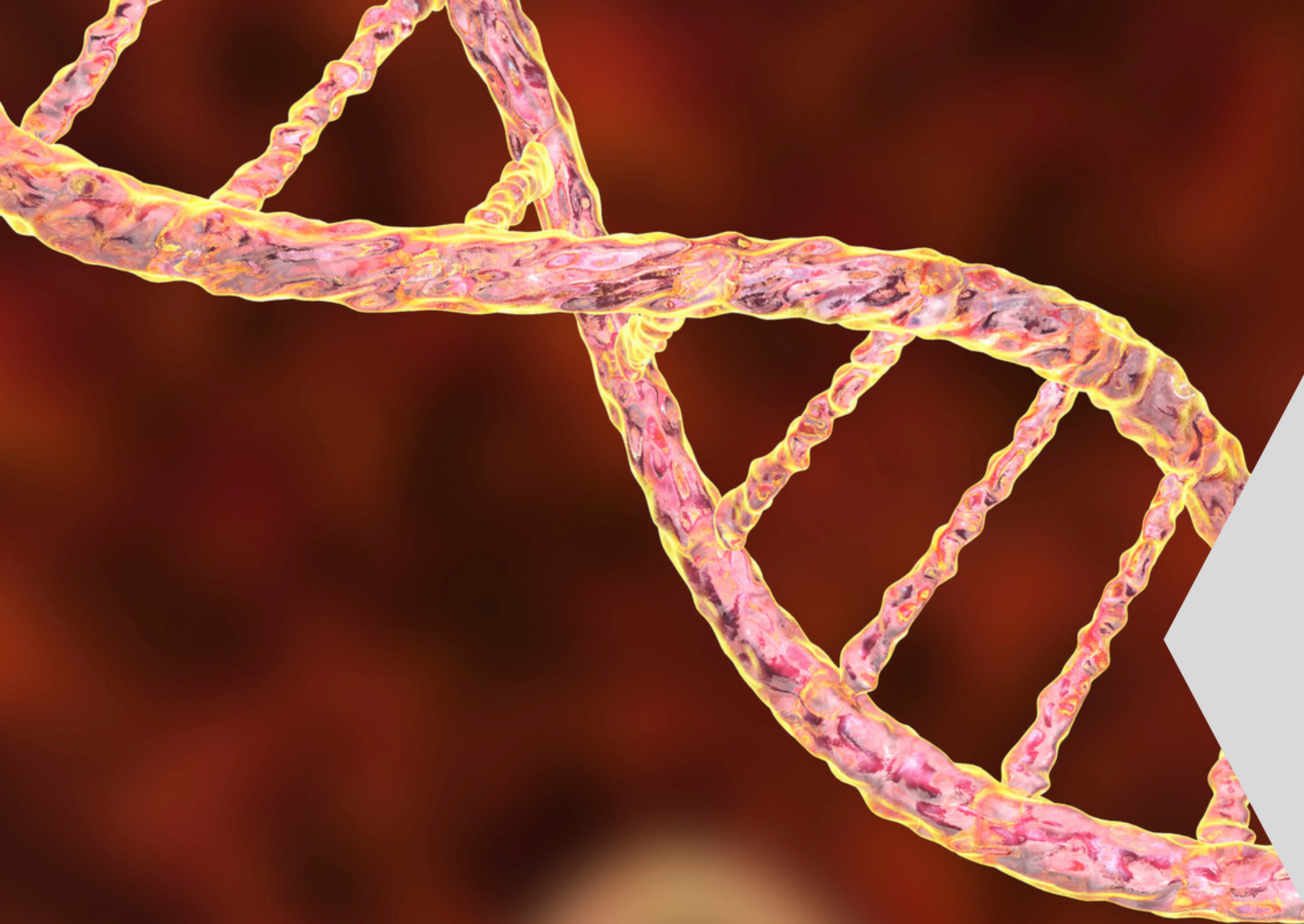


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FINALLY the assessment!! There are 3 versions.

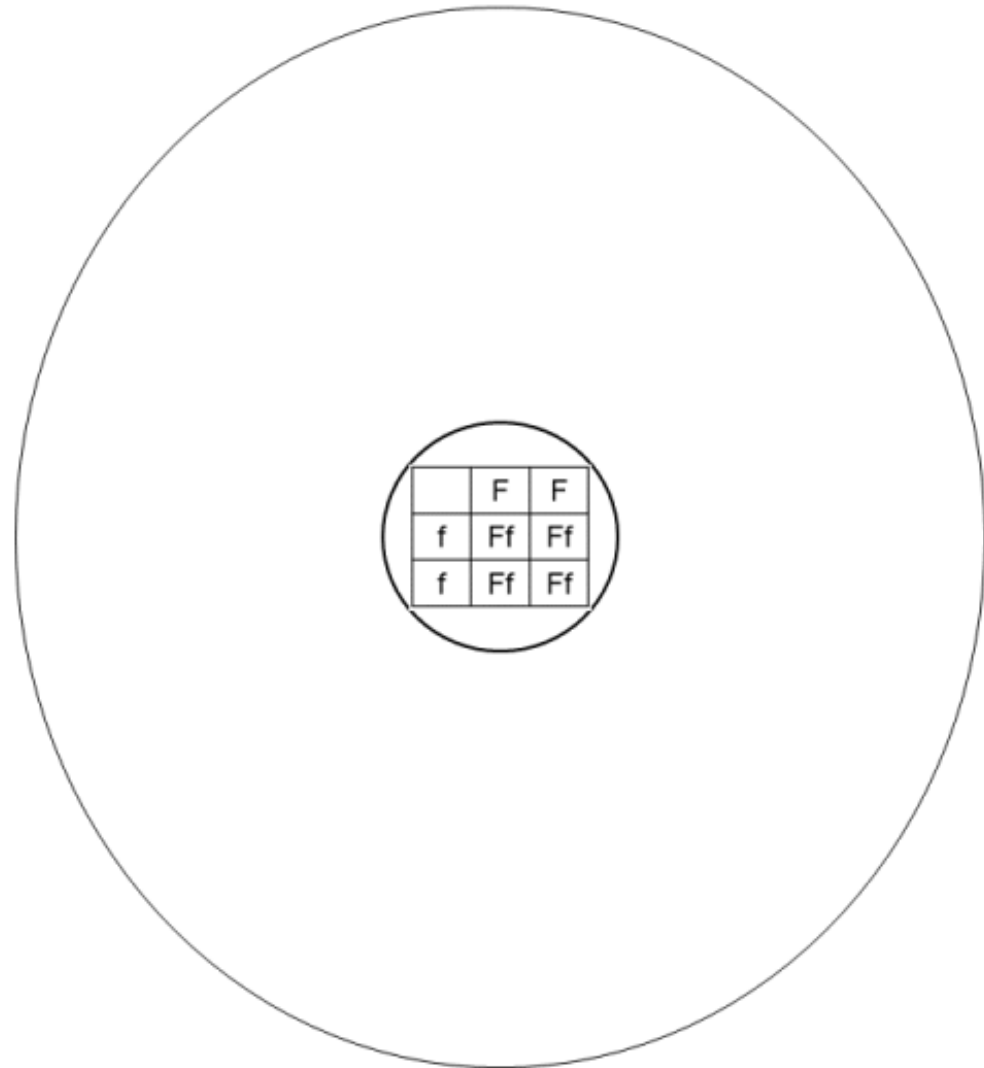
- 10 questions with 3 picture choices for each question
- cut out the answer choices and glue them on index cards
- traditional multiple choice

Answer key included.






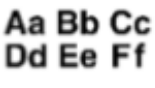








This unit also has digital activities. There is a movie version of the books students can listen to read aloud.

Great for review



Place the picture in the circle map about Punnett Squares.

 grid	 predict	 frequency	 parents
 offspring	 genotype	 phenotype	 dominant
 recessive	 homozygous	 heterozygous	 variation

The digital activities have students click and drag their answers.

Perfect for all learning levels

Trait: Dimples (dominant)

Mom does not have dimples. Her genotype is dd.

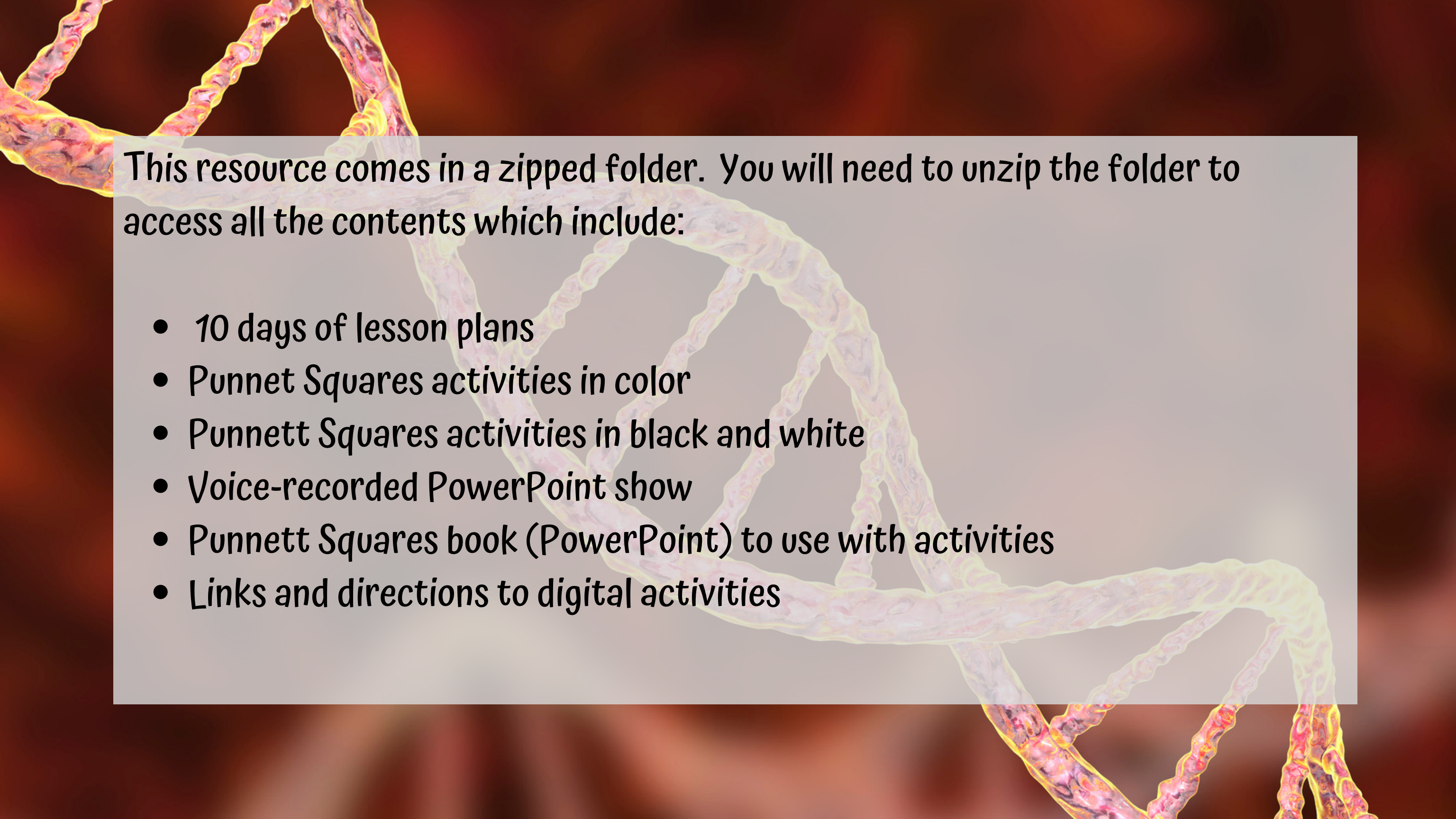
Dad has dimples. His genotype is Dd.

	d	d
D	Dd	Dd
d	dd	dd

Fill out the Punnett Square below using the genotypes of both parents listed.

dd	d	d
dd	Dd	Dd
D	D	

There are 2 sets of slides. One set has color-coding for more support.



This resource comes in a zipped folder. You will need to unzip the folder to access all the contents which include:

- **10 days of lesson plans**
- **Punnet Squares activities in color**
- **Punnett Squares activities in black and white**
- **Voice-recorded PowerPoint show**
- **Punnett Squares book (PowerPoint) to use with activities**
- **Links and directions to digital activities**

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