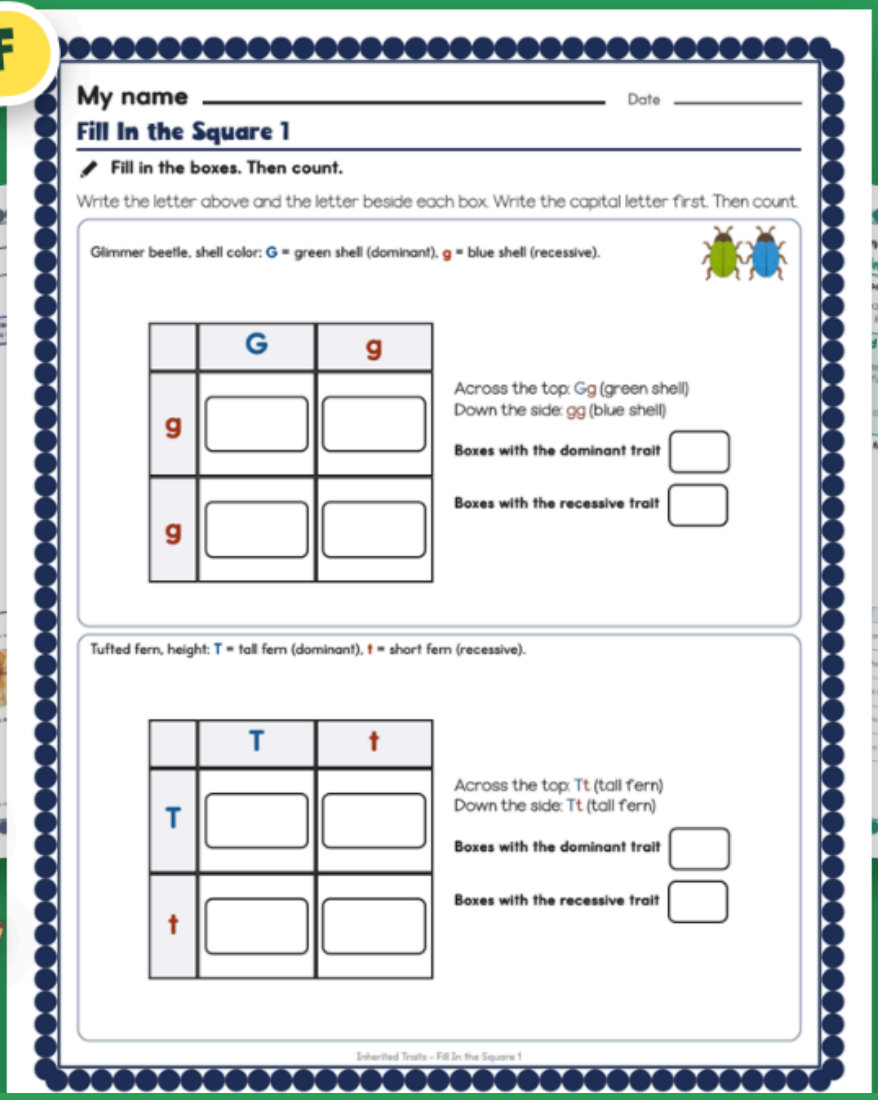
INHERITED TRAITS

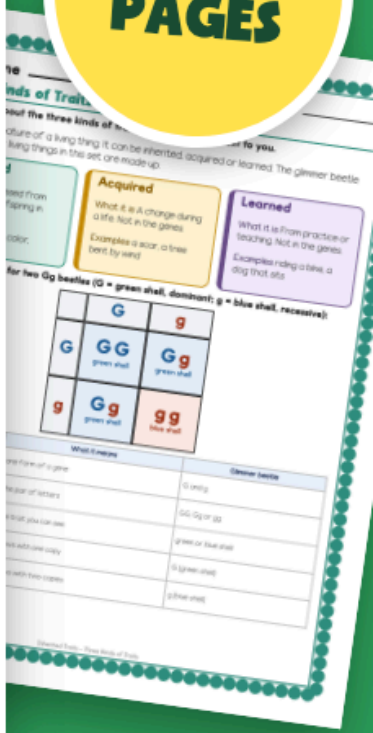
PUNNETT SQUARES, SORT, READING - GRADES 6-8

FILLABLE PDF

45 PAGES







Bright Path Sped

Terms of Use

Please read before you print your first page.

One classroom license

- This file is for one classroom: one teacher, one group of students.
- Please do not share it, post it online, or sell it.
- Extra licenses for a team or a school are available on the product page.

This is a fillable PDF

- Open it in a PDF reader (Adobe Acrobat Reader, Preview, or your browser), click into a line or a box, type, and Save As.
- Every name line, answer box, check box and ruled box on the student pages is a type-in field, and so are the tracker and the other record pages. You can also print any page and write by hand. Print the graph page to draw the bars in pencil.
- It works offline, with no account needed.

Print at 100 percent

Turn off fit to page and shrink to fit so the ruled lines stay 0.34 inch apart. Dominant is blue and recessive is red-orange, and every box also carries the words, so a black and white copy reads too.

Student work

A filled-in tracker, class grid or team note carries a real student's name. Keep it in the data folder.

Need help?

If a field will not behave or a page will not print the way you expect, use Ask a Question on the product page before leaving a review. A fix to the file ships as a free update from My Purchases.

© Bright Path Sped. For single-classroom use by the original purchaser.

PREVIEW

Teacher Notes

The parts of a student page, the page types in order, and a few teaching notes.

The parts of a page

- **The color code.** Dominant is blue and recessive is red-orange on the squares, the letters and the keys. Inherited is teal, acquired is gold and learned is plum on the reference page and the first sort mat.
- **The answer box.** A bordered box. Click it to type, or print and write in it.
- **The check box.** Inherited, acquired or learned; true or false; and the quiz choices.
- **The ruled work box.** Lines 0.34 inch apart, one idea to a line.
- **The cut lines.** Mat 1: 6 pieces in 3 across by 2 down, each 2.4 by 1.46 inches. Mats 2 and 3: 10 pieces, 5 across by 2 down, each 1.46 by 1.15 inches. Edge to edge.

Page type	What it looks like	What the student does
Three Kinds of Traits; Words	2 pages, 6 items	A reference page with a Punnett square, then six words to match.
Read: five short readings	5 pages, 25 items	Traits from parents, acquired and learned, alleles, Punnett squares, genes and environment.
Name the Trait 1 and 2	2 pages, 16 items	Inherited, acquired or learned: everyday examples, then clues.
Worked Example	1 page, 3 items	Four steps on a filled square, then a Your Turn.
Genotype and Phenotype	1 page, 12 items	Read a pair of letters: the trait it shows and the kind of pair.
Fill In the Square 1, 2 and 3	3 pages, 36 items	Six Punnett squares with type-in boxes, then count the traits.
Draw the Offspring	1 page, 8 items	Fill in a square, then draw each offspring in a blank box.
Read the Data Table; Graph the Data	2 pages, 18 items	Totals and comparisons; draw two bar graphs.
Fix It 1 and 2	2 pages, 10 items	True or false; rewrite each false statement.
Claim, Evidence, Reasoning 1 and 2	2 pages, 12 items	Four short scenarios with invented numbers.
Quiz; Short Answer	2 pages, 15 items	Ten choices, then five written answers.

Two steps, marked by a shape

- **Circle.** Name the Trait 1 (page 12): everyday examples in a sentence.
- **Triangle.** Name the Trait 2 (page 13): short clues, no story to lean on.

Teaching notes

- Ask every time: **was it in the genes from the start, did it change during a life, or was it learned?**
- Students often hear dominant as better or more common. Fix It 2 asks them to rewrite that idea: the word only tells which allele shows.
- A Punnett square shows chances. Ask what the four boxes say before you ask what will happen.
- The organisms are made up and the traits are simplified on purpose: one gene, two alleles. Use your own words for the details your class needs.
- All numbers are invented for practice. No lab procedure is included, and nothing here is health information.

PREVIEW

Preview - Bright Path Sped

My name _____ Date _____

Three Kinds of Traits

Read about the three kinds of traits. Keep this page next to you.

A **trait** is a feature of a living thing. It can be inherited, acquired or learned. The glimmer beetle and the other living things in this set are made up.

Inherited

What it is Passed from parents to offspring in genes.

Examples shell color, flower color

Acquired

What it is A change during a life. Not in the genes.

Examples a scar, a tree bent by wind

Learned

What it is From practice or teaching. Not in the genes.

Examples riding a bike, a dog that sits

A Punnett square for two Gg beetles (G = green shell, dominant; g = blue shell, recessive):

	G	g
G	G G green shell	G g green shell
g	G g green shell	g g blue shell

Word	What it means	Glimmer beetle
Allele	one form of a gene	G and g
Genotype	the pair of letters	GG, Gg or gg
Phenotype	the trait you can see	green or blue shell
Dominant	shows with one copy	G (green shell)
Recessive	shows with two copies	g (blue shell)

PREVIEW

Preview - Bright Path Sped

My name _____ Date _____

Read: Traits From Parents

Read. Then answer the questions.

A trait is a feature of a living thing, such as the shell color of a beetle or the height of a fern. An inherited trait is passed from parents to offspring in genes. Genes are instructions inside cells. Each offspring gets genes from both parents, so it can look like one parent, like both, or a little different from either. The glimmer beetle in this set is made up. Its shell color is an inherited trait, and so is the height of the made-up tufted fern. An inherited trait is in the genes from the start of life.

Key words

trait
a feature

gene
an instruction in a cell

offspring
the young of a parent

1 What is a trait?

- ☐ **a feature of a living thing**
- ☐ **a kind of gene**
- ☐ **a place to live**

2 Genes are...

- ☐ **food for seeds**
- ☐ **instructions inside cells**
- ☐ **kinds of ferns**

3 An inherited trait is passed on...

- ☐ **by practice**
- ☐ **by an injury**
- ☐ **from parents to offspring**

4 Name one inherited trait from the reading.

_____

5 Why might an offspring look a little different from both parents?

_____

PREVIEW

My name _____ Date _____

Read: Punnett Squares

Read. Then answer the questions.

A Punnett square is a grid that shows the chances for each pair of alleles in offspring. Write one parent's two alleles across the top and the other parent's two alleles down the side. Then fill each box with the letter above it and the letter beside it. For two beetles that are both Gg, the four boxes read GG, Gg, Gg and gg. The pair of letters is the genotype. The trait you can see, such as a green shell, is the phenotype. Three boxes show a green shell and one shows blue. That does not mean exactly three of every four offspring will be green. A Punnett square shows chances.

Key words

Punnett square
a grid of chances

genotype
the pair of letters

phenotype
the trait you see

1 A Punnett square shows...

☐ **the parents' age** ☐ **the chances for offspring** ☐ **what every offspring will be**

2 The pair of letters, such as Gg, is the...

☐ **phenotype** ☐ **genotype** ☐ **trait**

3 In the Gg and Gg square, how many boxes show a green shell?

☐ **1** ☐ **2** ☐ **3**

4 What does phenotype mean?

_____

5 In the Gg and Gg square, why do 3 of 4 boxes show green?

_____

PREVIEW

Preview - Bright Path Sped

My name _____ Date _____

Name the Trait 1

Check one box for each one. Write how you know.

Was it in the genes from the start, did it change during a life, or was it learned?

1. A dog has floppy ears, just like both of its parents.



☐ **inherited** ☐ **acquired** ☐ **learned** **I know because** _____

2. A cat learns to come when it hears the food bag.



☐ **inherited** ☐ **acquired** ☐ **learned** **I know because** _____

3. A tree grows with a bent trunk because of strong wind.

☐ **inherited** ☐ **acquired** ☐ **learned** **I know because** _____

4. A bird has blue feathers like its parents.



☐ **inherited** ☐ **acquired** ☐ **learned** **I know because** _____

5. A student gets a scar after falling off a bike.



☐ **inherited** ☐ **acquired** ☐ **learned** **I know because** _____

6. A puppy learns to sit when it is asked.



☐ **inherited** ☐ **acquired** ☐ **learned** **I know because** _____

7. A sunflower seed grows into a plant with yellow petals.



☐ **inherited** ☐ **acquired** ☐ **learned** **I know because** _____

8. A person learns to play the piano.



☐ **inherited** ☐ **acquired** ☐ **learned** **I know because** _____

PREVIEW

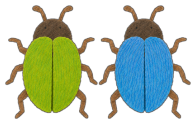
Preview - Bright Path Sped

My name _____ Date _____

Worked Example

Read how it is done. Then try one.

Glimmer beetle, shell color: G = green shell (dominant), g = blue shell (recessive). Two Gg parents.



	G	g
G	G G green shell	G g green shell
g	G g green shell	g g blue shell

Step 1 Write the parents. Put one parent's alleles across the top (G and g). Put the other parent's down the side (G and g).

Step 2 Fill each box. Write the letter above and the letter beside it. Write the capital letter first.

Step 3 Read each box. GG and Gg show the dominant trait: a green shell. gg shows the recessive trait: a blue shell.

Step 4 Count. 3 boxes show green and 1 box shows blue. That is a chance, not a promise.

Your turn. The square for the bloom flower is filled in.

Bloom flower, petals: S = striped petals (dominant), s = plain petals (recessive). Parents: Ss and ss.

	S	s
s	S s striped petals	s s plain petals
s	S s striped petals	s s plain petals

Boxes with striped petals ☐

Boxes with plain petals ☐

The top left box is

☐ **heterozygous** ☐ **homozygous**

I know because...

PREVIEW

Preview - Bright Path Shed

My name _____ Date _____

Fill In the Square 2

Fill in the boxes. Then count.

Write the letter above and the letter beside each box. Write the capital letter first. Then count.

Ridge fish, fin shape: **R** = ridged fin (dominant), **r** = smooth fin (recessive).

	R	R
r		
r		

Across the top: RR (ridged fin)
Down the side: rr (smooth fin)

Boxes with the dominant trait ☐

Boxes with the recessive trait ☐

Bloom flower, petals: **S** = striped petals (dominant), **s** = plain petals (recessive).

	S	S
S		
s		

Across the top: SS (striped petals)
Down the side: Ss (striped petals)

Boxes with the dominant trait ☐

Boxes with the recessive trait ☐

PREVIEW

Preview - Bright Path Sped

My name _____ Date _____

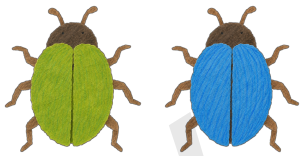
Draw the Offspring

Fill in the square. Then draw each offspring.

Glimmer beetle, shell color: G = green shell (dominant), g = blue shell (recessive).

	G	g
g		
g		

Parent 1: Gg (green shell)
Parent 2: gg (blue shell)
The beetles are made up.



green blue

Use the square. Offspring 1 is the top left box, 2 is the top right, 3 is bottom left, 4 is bottom right. Draw each beetle's shell in its box.

Offspring 1

Shell color ☐ **green** ☐ **blue**

Offspring 2

Shell color ☐ **green** ☐ **blue**

Offspring 3

Shell color ☐ **green** ☐ **blue**

Offspring 4

Shell color ☐ **green** ☐ **blue**

PREVIEW

My name _____ Date _____

Fix It 1

Is it true or false? Fix each false one.

Some of these are true. Some have a mistake. Rewrite each false one so it is true.

1. An inherited trait is passed from parents to offspring. ☐ true ☐ false

   If false, fix it: _____

2. A scar from a fall is an inherited trait. ☐ true ☐ false

   If false, fix it: _____

3. A learned behavior comes from practice or teaching. ☐ true ☐ false

   If false, fix it: _____

4. Learning to ride a bike changes the genes in a person's cells. ☐ true ☐ false

   If false, fix it: _____

5. An offspring gets both alleles for a trait from the same parent. ☐ true ☐ false

   If false, fix it: _____

PREVIEW

My name _____ Date _____

Claim, Evidence, Reasoning 1

Read the facts. Write your claim, evidence and reasoning.

Two green parents (invented numbers)

Two glimmer beetles with green shells are both Gg. They have 20 offspring: 14 have green shells and 6 have blue shells. Can two green parents have a blue offspring?

Claim

Evidence: use the numbers

Reasoning: why does the evidence fit the claim?

Two ferns (invented) (invented numbers)

Two tufted ferns are both Tt. Fern 1 gets full light and grows 40 centimeters. Fern 2 is kept in a dark closet and grows 22 centimeters. Is the difference in height inherited or acquired?

Claim

Evidence: use the numbers

Reasoning: why does the evidence fit the claim?

PREVIEW

Preview - Not for Sale

My name _____ Date _____

Quiz

Check the best answer for each one.

1. A trait passed from parents to offspring in genes is...

   ☐ **inherited** ☐ **acquired** ☐ **learned**

2. A skill that comes from practice or teaching is...

   ☐ **acquired** ☐ **inherited** ☐ **learned**

3. A scar from an injury is...

   ☐ **learned** ☐ **acquired** ☐ **inherited**

4. Different forms of a gene are called...

   ☐ **alleles** ☐ **traits** ☐ **squares**

5. An allele that shows when only one copy is there is...

   ☐ **recessive** ☐ **dominant** ☐ **hidden**

6. The letters Gg are the...

   ☐ **phenotype** ☐ **genotype** ☐ **environment**

7. The look of a trait, such as a green shell, is the...

   ☐ **genotype** ☐ **allele** ☐ **phenotype**

8. A Punnett square shows...

   ☐ **the chances for offspring** ☐ **what every offspring will be** ☐ **the age of the parents**

9. An organism with gg is...

   ☐ **homozygous recessive** ☐ **heterozygous** ☐ **homozygous dominant**

10. Two Gg parents. How many boxes of the square read gg?

    ☐ **0 of 4** ☐ **2 of 4** ☐ **1 of 4**

PREVIEW

Preview - Bright Path Shed

My name _____ Date _____

Cut and Sort 2

Cut out the pieces. Paste each one in its box.

Is it the pair of letters or the trait you can see? Paste five pieces in each box.

Genotype the pair of letters	**Phenotype** the trait you can see

PREVIEW

Cut on the dashed lines: one cut across and four down.

Gg	tall fern	rr	striped petals	Ss
smooth fin	TT	blue shell	Rr	short fern

Answer Key: Name the Trait and Sorts

Inherited: in the genes from the start. Acquired: a change during a life. Learned: from practice or teaching. In the sort keys, r1 c1 is the top left piece.

Name the Trait 1 page 12

#	Item	Type	A good clue
1	A dog has floppy ears, just like both of its parents.	Inherited	it came with the genes
2	A cat learns to come when it hears the food bag.	Learned	it comes from practice
3	A tree grows with a bent trunk because of strong wind.	Acquired	the environment changed it
4	A bird has blue feathers like its parents.	Inherited	it is in the genes
5	A student gets a scar after falling off a bike.	Acquired	it happened during a life
6	A puppy learns to sit when it is asked.	Learned	it is taught and practiced
7	A sunflower seed grows into a plant with yellow petals.	Inherited	the seed carries the instructions
8	A person learns to play the piano.	Learned	it needs practice and teaching

Name the Trait 2 page 13

#	Item	Type	A good clue
1	You are born with it. It was in the genes.	Inherited	in the genes from the start
2	A trainer teaches it, and it gets better with practice.	Learned	taught and practiced
3	An injury or the surroundings changed the body.	Acquired	a change during a life
4	Offspring show it because the parents passed on the alleles.	Inherited	alleles are passed on
5	A young animal copies what it watches a parent do.	Learned	copied, not in the genes
6	A plant grows crooked because it leans toward a window.	Acquired	light changed how it grew
7	It was learned, so it will not be passed on in genes.	Learned	learned behaviors are not in the genes
8	Seeds from the plant carry the instructions for it.	Inherited	the instructions are in the seeds

Cut and Sort 1 page 28

Piece	Piece shows	Box
r1 c1	a bird's feather color	Inherited
r1 c2	a scar on a knee	Acquired
r1 c3	a dog sits when asked	Learned
r2 c1	flower color on a plant	Inherited
r2 c2	a tree that leans from wind	Acquired
r2 c3	riding a bike	Learned

Cut and Sort 2 page 29

Piece	Piece shows	Box
r1 c1	Gg	Genotype
r1 c2	tall fern	Phenotype
r1 c3	rr	Genotype
r1 c4	striped petals	Phenotype
r1 c5	Ss	Genotype
r2 c1	smooth fin	Phenotype
r2 c2	TT	Genotype
r2 c3	blue shell	Phenotype
r2 c4	Rr	Genotype
r2 c5	short fern	Phenotype

PREVIEW

Answer Key: Fix It and Quiz

Accept a fixed sentence that says the same thing in a student's own words.

Fix It 1 page 22

#	Is it	Fixed sentence
1	true	-
2	false	A scar is acquired. It came from something that happened, and it is not passed on in genes.
3	true	-
4	false	Learning does not change the genes. A learned behavior comes from practice.
5	false	An offspring gets one allele for a trait from each parent.

Fix It 2 page 23

#	Is it	Fixed sentence
1	true	-
2	false	A recessive trait shows only when there are two recessive alleles.
3	true	-
4	false	Gg is heterozygous: the two alleles are different. Homozygous means the same, such as GG or gg.
5	false	A Punnett square shows chances, not certain results.

Quiz page 26

#	Answer
1	inherited
2	learned
3	acquired
4	alleles
5	dominant
6	genotype
7	phenotype
8	the chances for offspring
9	homozygous recessive
10	1 of 4

Where to go after the quiz

- Missed the kinds of traits: reread page 8 and sort again on page 28.
- Missed the words: sort page 29 and match the words again on page 6.
- Missed the squares: fill in another square on page 16 and work page 14 again.

PREVIEW

Answer Key: Punnett Squares

The four boxes are listed in reading order (top left, top right, bottom left, bottom right). Dominant and recessive are the number of boxes that show each trait. Every cell was computed from the parents' letters.

Fill In the Square 1 page 16

Cross	Top left	Top right	Bottom left	Bottom right	Dominant	Recessive
Glimmer beetle Gg and gg	Gg	gg	Gg	gg	2	2
Tufted fern Tt and Tt	TT	Tt	Tt	tt	3	1

Fill In the Square 2 page 17

Cross	Top left	Top right	Bottom left	Bottom right	Dominant	Recessive
Ridge fish RR and rr	Rr	Rr	Rr	Rr	4	0
Bloom flower SS and Ss	SS	SS	Ss	Ss	4	0

Fill In the Square 3 page 18

Cross	Top left	Top right	Bottom left	Bottom right	Dominant	Recessive
Glimmer beetle Gg and Gg	GG	Gg	Gg	gg	3	1
Tufted fern tt and tt	tt	tt	tt	tt	0	4

Draw the Offspring (page 19)

The square for Gg and gg reads Gg, gg, Gg, gg. Offspring 1 to 4 are the boxes in reading order: **green shell, blue shell, green shell, blue shell**. Boxes 1 and 3 green, 2 and 4 blue. Accept any drawing that shows the right shell color in each box.

Accept variations

A student may write the boxes in a different order if the letters above and beside each box are right. Check that the capital letter is first, and ask the student to say which boxes show the dominant trait.

Check every square

- Each square's dominant and recessive counts add up to 4. 2 + 2, 3 + 1, 4 + 0, 4 + 0, 3 + 1, 0 + 4.
- When a parent is homozygous dominant (RR or SS in these squares), no box shows the recessive trait.

PREVIEW

Class Progress Grid

Every student on one grid: items right by page type.

Class or group _____ Month _____

Student	Words, readings (of 31)	Name the trait, worked (of 19)	Genotype, squares (of 56)	Data, fix it (of 28)	Claims, quiz, short (of 27)	Sorts (of 26)

PREVIEW

How to fill this in

For each column, add up how many items that student has right with no prompt (the tracker rows). One glance across a row shows which kind of work is easiest and which is next.

Grouping for small-group time

Students low on the words and readings need the reference page (page 5) and the worked example (page 14). Students low on Name the Trait 1 need the first sort mat (page 28). Students near full marks can move to Name the Trait 2 (page 13), the bar graphs (page 21) and the claims (pages 24 and 25).

Maya's Tracker (Invented Student)

Maya R. is invented; nothing on this page describes a real student. The blank tracker is on page 37.

Student: Maya R. (an invented student)

Teacher: Ms. Alvarez (invented)

Month: November

Page	Page type and set	Items	Right	Date	Notes
6	Inheritance Words	6	5	11/3	Mixed up genotype and phenotype
7	Read: Traits From Parents	5	5	11/4	-
8	Read: Acquired and Learned	5	-	-	-
9	Read: Alleles	5	-	-	-
10	Read: Punnett Squares	5	-	-	-
11	Read: Genes and Environment	5	-	-	-
12	Name the Trait 1	8	6	11/5	Called two learned items acquired
13	Name the Trait 2	8	-	-	-
14	Worked Example	3	-	-	-
15	Genotype and Phenotype	12	9	11/10	Said Gg is homozygous
16	Fill In the Square 1	12	10	11/12	Wrote the small letter first in two boxes
17	Fill In the Square 2	12	-	-	-
18	Fill In the Square 3	12	-	-	-
19	Draw the Offspring	8	-	-	-
20	Read the Data Table	10	-	-	-
21	Graph the Data	8	-	-	-
22	Fix It 1	5	-	-	-
23	Fix It 2	5	-	-	-
24	Claim, Evidence, Reasoning 1	6	-	-	-
25	Claim, Evidence, Reasoning 2	6	-	-	-
26	Quiz	10	-	-	-
27	Short Answer	5	-	-	-
28	Cut and Sort 1	6	5	11/13	One piece pasted in the wrong box
29	Cut and Sort 2	10	-	-	-
30	Cut and Sort 3	10	-	-	-

How to read it

Maya R. has done **6 of 25** scored pages and got **40 of 49** items right with no prompt. **1** page was all right and **5** carry a note. Every number comes from the table.

What the table points to

The lowest pages are Name the Trait 1 (6 of 8) and Genotype and Phenotype (9 of 12). That is where the next practice goes. The 19 pages left blank are not tried yet, never wrong.

PREVIEW

Binder Cover

Slide this into the front of a binder. The divider tabs and a spine label to cut out are on the next page (page 44).

Science - Life Science

	G	g
G	G G green shell	G g green shell
g	G g green shell	g g blue shell

INHERITED TRAITS

Punnett Squares

Learn | **Practice** | **Check**

Teacher _____ Class or student _____

PREVIEW