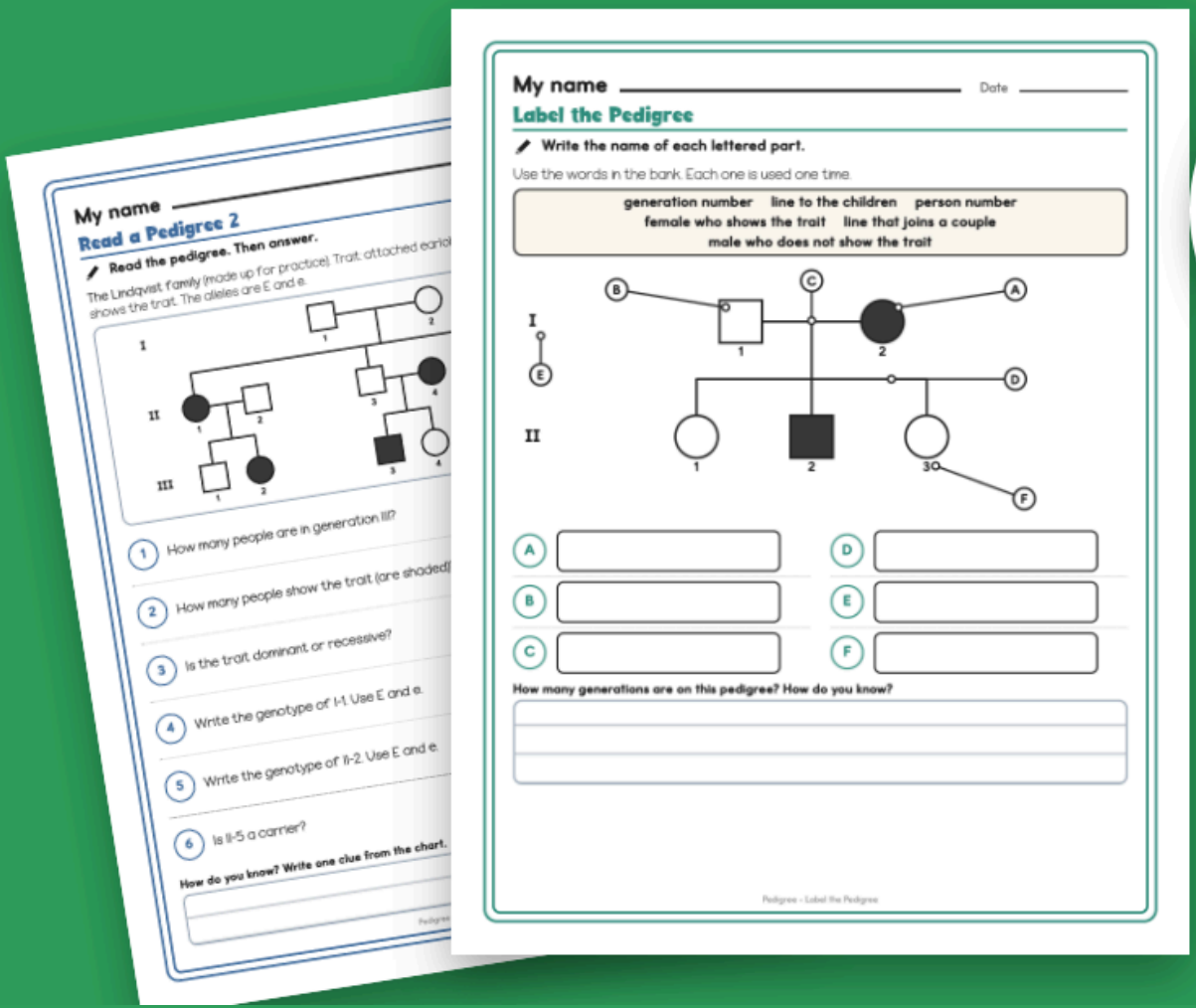
PEDIGREE WORKSHEETS

GENETICS
GRADES 9-10



24 STUDENT PAGES

Bright Path Sped

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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.
- The name line, every answer box, every ruled work box and every check box on the student pages are type-in fields, and so are the tracker, class grid, team note and family page. You can also print any page and write by hand. The drawing page (Build a Pedigree 2) is for printing.
- It works offline. No account, no subscription, no internet connection needed after you download it.

Print at 100 percent

Turn off fit to page and shrink to fit so the ruled lines stay 0.34 inch apart. Every student page is black and white inside a colored border, so it still reads when copied in black and white. Shaded symbols print dark gray.

Student work

A filled-in tracker, class grid or team note carries a real student's name. Keep it in the data folder, and use a first name only on any page that leaves your hands.

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. Every question is read, and a fix to the file ships as a free update: re-download it any time from My Purchases.

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PREVIEW

How To Read a Page

The parts of a student page, then the kinds of sheet in the order they come.

The parts of a page

- **The answer box.** A bordered box for a letter, a number or a genotype. Click it to type, or print and write in it.
- **The ruled work box.** Lines 0.34 inch apart for sentences. Write one idea to a line.
- **The check box.** True or false, dominant or recessive, carrier or not sure: click or mark.
- **The word bank.** A box of words to use. Each word is used one time.
- **The cut line.** Eight pieces in a 4 by 2 grid and twelve in a 4 by 3 grid, edge to edge: straight cuts only.

Kind of sheet	How many	What the student does
Readings, symbols, words	6 sheets	Read, label and match; keep the symbols key and clue cards out.
Worked example and charts	4 sheets, 21 items	Model one chart, then read three full pedigrees.
Sort and decide	3 sheets, 17 items	Mini pedigrees, carriers, Punnett squares.
Build a pedigree	2 sheets, 19 items	Story one is a chart to check; story two is drawn on the page.
Check and write	3 sheets	True or false, find Dev's mistakes, short answers.
Quizzes, exit tickets, sorts	12 items, 3 tickets, 20 pieces	Two quizzes, one exit sheet, two cut-and-paste pages.

Untimed, unscored on the page

No student page has a timer or a score on it. The keys and the tracker are for you. The answer keys are on pages 29 to 35.

Short answers

Their key (page 34) says what to look for, not one right sentence. Accept any answer that uses a clue from the clue cards or the readings.

Printing and the type-in fields

Every page prints clean in black and white. The name line, every answer box, every ruled box and every check box are type-in fields in any PDF reader: click one, type, then save. This is a fillable PDF, not a slideshow or a word-processor file.

Room to work

Work boxes hold two or more lines. The drawing page (Build a Pedigree 2) has three dashed rows, one for each generation. Print it and let students draw in pencil.

PREVIEW

Preview · Bright Path Sped

My name _____ Date _____

Reading 1: What a Pedigree Shows

Read about pedigrees. Then answer.

Symbols, rows and numbers

A **pedigree** is a chart that follows one trait through the people in a family. Each person is a symbol. A **square** is a male and a **circle** is a female. A **shaded** symbol means the person shows the trait. A plain symbol means the person does not. A line between two symbols joins a couple, and a line down from the couple leads to their children. Each row of the chart is a **generation**. The rows are numbered with Roman numerals: I, II, III. Each person in a row has a number, so II-3 is the third person in generation II.

Main idea: What is this reading mostly about?

Check what you read. Write the letter in the box.

1. What does a circle stand for in a pedigree?
   - **A** A female
   - **B** A male
   - **C** A person who shows the trait

2. What does a shaded symbol mean?
   - **A** The person is a male
   - **B** The person shows the trait
   - **C** The person is in generation I

3. Who is II-3?
   - **A** The second person in generation III
   - **B** The third person in generation I
   - **C** The third person in generation II

PREVIEW

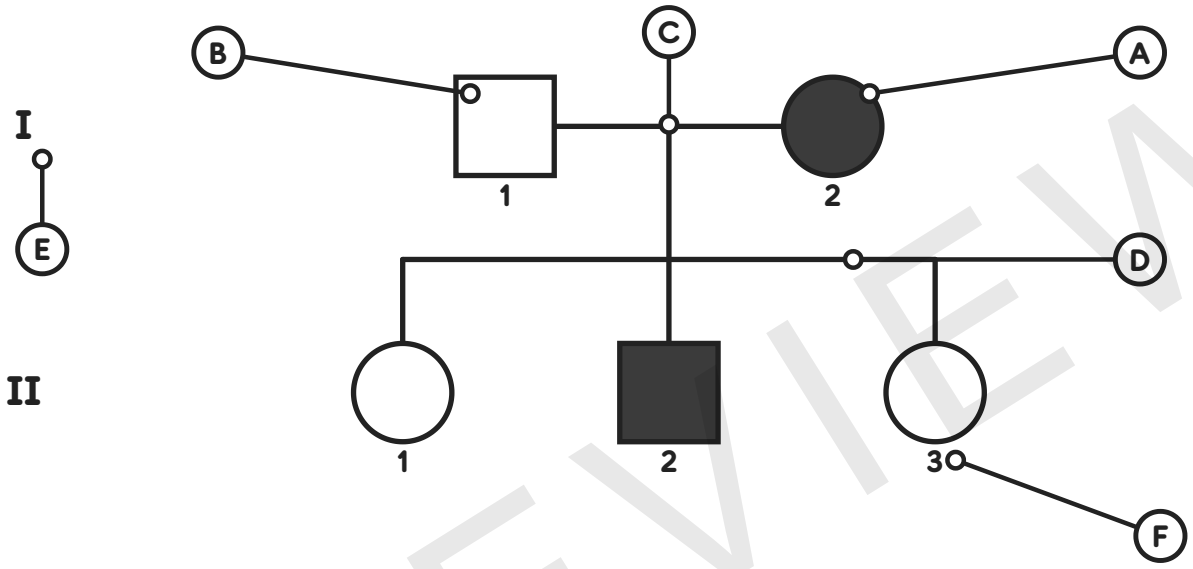
My name _____ Date _____

Label the Pedigree

Write the name of each lettered part.

Use the words in the bank. Each one is used one time.

generation number **line to the children** **person number**
female who shows the trait **line that joins a couple**
male who does not show the trait



A _____ D _____

B _____ E _____

C _____ F _____

How many generations are on this pedigree? How do you know?

PREVIEW

Preview · Bright Path Sped

My name _____ Date _____

Reading 2: Alleles, Dominant and Recessive

Read about alleles. Then answer.

Why a trait shows or hides

A person has two **alleles** for a gene, one from each parent. A **dominant** allele is written with a capital letter, like E. It shows when a person has at least one copy. A **recessive** allele is written with a small letter, like e. It shows only when a person has two copies. The two alleles a person has are the **genotype**: EE, Ee or ee. A person with Ee has one of each. If e is the recessive allele, that person does not show the recessive trait but can pass e to a child. A person like that is called a **carrier**.

Main idea: What is this reading mostly about?

Check what you read. Write the letter in the box.

1. Which genotype shows a recessive trait?
   - **A** ee
   - **B** Ee
   - **C** EE

2. How many alleles does a person have for one gene?
   - **A** One
   - **B** Two
   - **C** Four

3. What is a carrier of a recessive trait?
   - **A** A person who shows the trait
   - **B** A person with two dominant alleles
   - **C** A person with one recessive allele who does not show the trait

PREVIEW

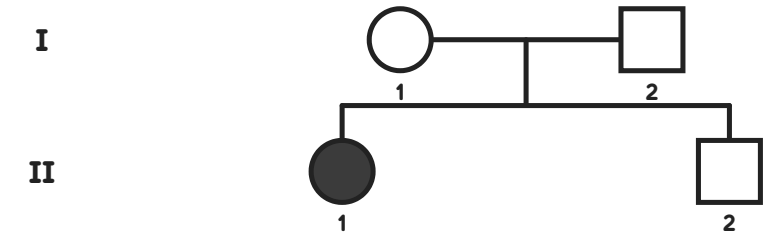
Preview · Bright Path Sped

My name _____ Date _____

Worked Example: Read a Pedigree

Read the example. Then try one.

Example. The family is made up for practice. Trait: attached earlobes (E, e). Find the key, find who is shaded, then look at the parents.



Step 1

Who shows the trait?
Only II-1 is shaded.

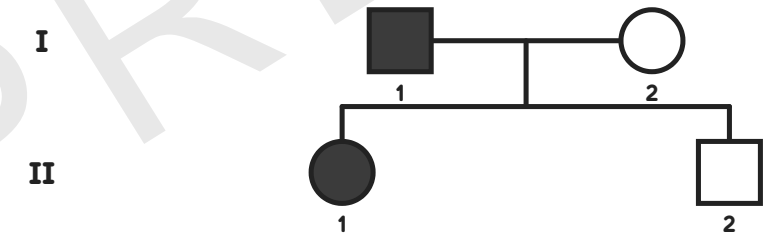
Step 2

Do her parents show it?
No. I-1 and I-2 are both plain, so the trait is recessive.

Step 3

What are the genotypes?
II-1 is ee. Each parent passed on one e, so I-1 and I-2 are Ee.

Your turn. Trait: freckles. The trait is dominant. F is the allele for freckles.



I-1

Write the genotype of I-1. Use F and f.

I-2

Write the genotype of I-2. Use F and f.

II-1

Write the genotype of II-1. Use F and f.

PREVIEW

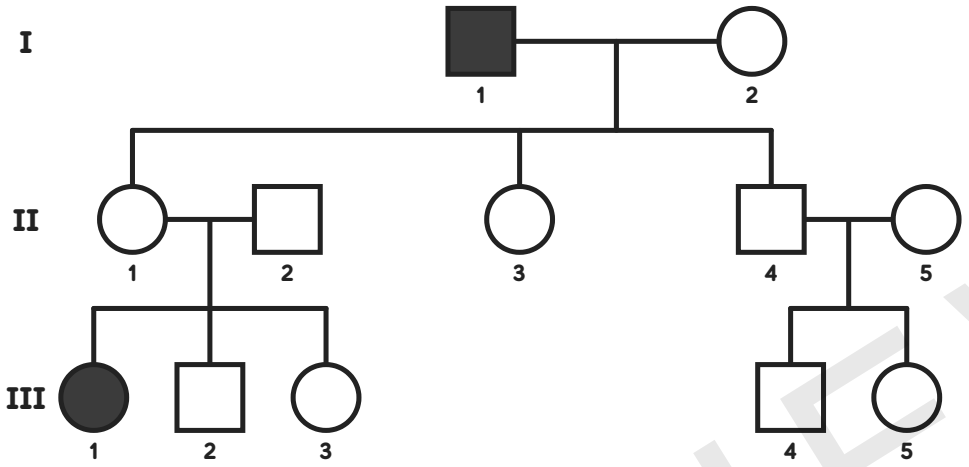
Preview · Bright Path Sped

My name _____ Date _____

Read a Pedigree 3

Read the pedigree. Then answer.

The Ramirez family (made up for practice). Trait: tongue rolling (shaded: cannot roll the tongue). Shaded means the person shows the trait. The alleles are R and r.



1. How many people are in generation III? ☐

2. How many people show the trait (are shaded)? ☐

3. Is the trait dominant or recessive? ☐ **dominant** ☐ **recessive**

4. Write the genotype of I-1. Use R and r. ☐

5. Write the genotype of II-2. Use R and r. ☐

6. Is II-3 a carrier? ☐ **yes** ☐ **no** ☐ **not sure**

How do you know? Write one clue from the chart.

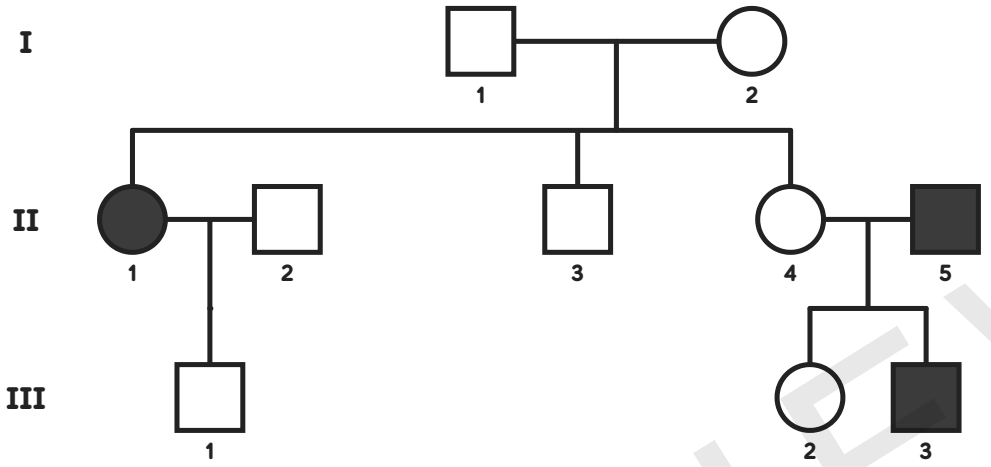
PREVIEW

My name _____ Date _____

Who Is a Carrier?

Check each person who is not shaded.

The Hassan family (made up for practice). Trait: a bent thumb tip (hitchhiker's thumb). Shaded means the person shows the trait. A carrier has one recessive allele (Tt) and does not show the trait.



I-1	Is I-1 a carrier?	☐ carrier	☐ not sure
I-2	Is I-2 a carrier?	☐ carrier	☐ not sure
II-2	Is II-2 a carrier?	☐ carrier	☐ not sure
II-3	Is II-3 a carrier?	☐ carrier	☐ not sure
II-4	Is II-4 a carrier?	☐ carrier	☐ not sure
III-1	Is III-1 a carrier?	☐ carrier	☐ not sure
III-2	Is III-2 a carrier?	☐ carrier	☐ not sure

Pick one person you marked not sure. Why can you not tell?

PREVIEW

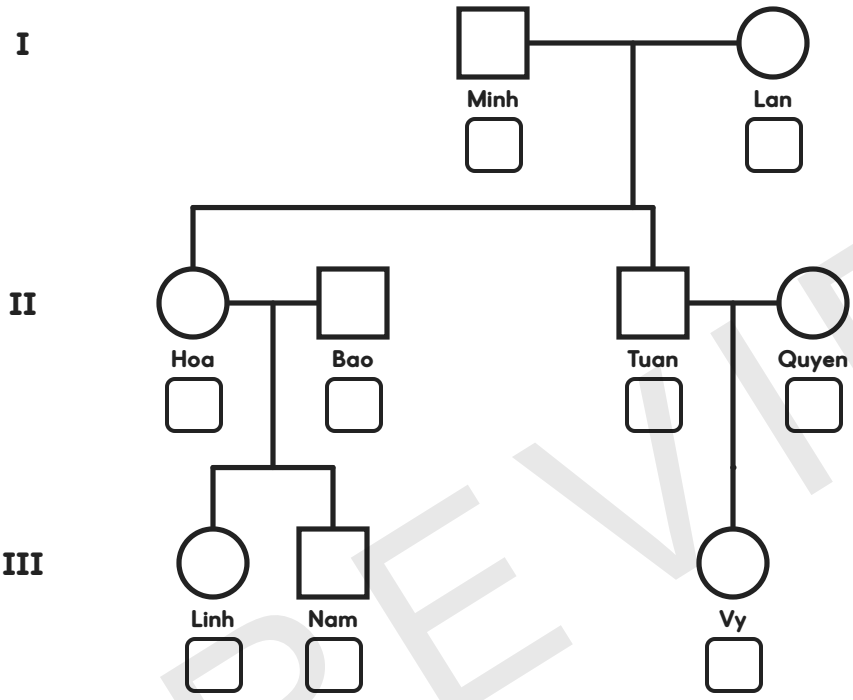
My name _____ Date _____

Build a Pedigree 1: Story and Chart

Read the story. Check who shows the trait.

The Tran family is made up for practice. **Dimples is a dominant trait.** D is the allele for dimples. Minh and Lan have two children, Hoa and Tuan. Hoa and her husband Bao have two children, Linh and Nam. Tuan and his wife Quyen have one daughter, Vy. Minh, Hoa and Linh have dimples. Nobody else in the family does.

Check the box under each person who shows the trait. Then shade those symbols.



Linh (III-1) has dimples. Write her genotype. Use D and d.

How do you know Linh has a d allele? Look at her father.

PREVIEW

My name _____ Date _____

True or False

Is it true or false? Check one.

Check true or false for each sentence.

1. A square stands for a male. ☐ true ☐ false

2. A shaded circle is a male who shows the trait. ☐ true ☐ false

3. Generations are numbered with Roman numerals. ☐ true ☐ false

4. A carrier of a recessive trait shows the trait. ☐ true ☐ false

5. Two unshaded parents can have a shaded child if the trait is recessive. ☐ true ☐ false

6. A dominant trait needs two copies of the allele to show. ☐ true ☐ false

Pick one false sentence. Fix it so it is true.

PREVIEW

My name _____ Date _____

Find the Mistake

Find the mistake. Then fix it.

Dev is made up for practice. Each sentence has one mistake.

1 **Dev wrote:**

"A square is a female."

What is wrong?

Write it the right way.

2 **Dev wrote:**

"A shaded symbol means the person is a carrier."

What is wrong?

Write it the right way.

3 **Dev wrote:**

"Two unshaded parents cannot have a shaded child."

What is wrong?

Write it the right way.

4 **Dev wrote:**

"A person with Ee shows the recessive trait."

What is wrong?

Write it the right way.

PREVIEW

My name _____ Date _____

Exit Tickets

Answer each ticket before you go.

Each ticket takes about two minutes. Your teacher may collect them at the door.

1. Tell what a circle, a square and a shaded symbol mean on a pedigree.

2. Two parents are Ee and Ee. Write the genotype of each of their 4 possible children.

3. What is one question you still have about pedigrees?

PREVIEW

My name _____ Date _____

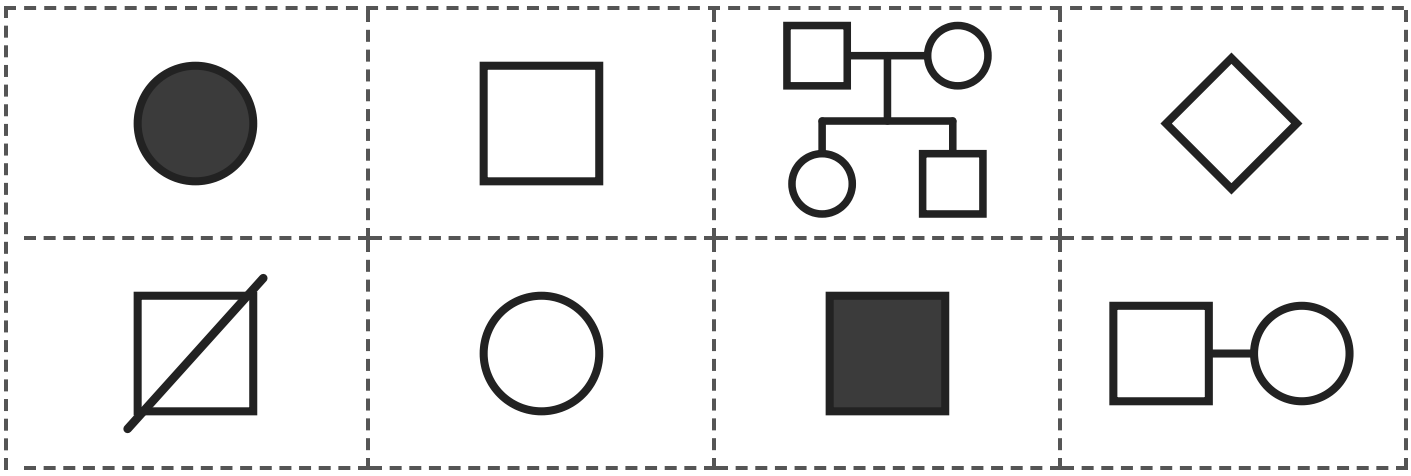
Cut and Paste 1: Match the Symbols

Cut out the eight symbols. Paste each one in its box.

A male	A female	Sex not known	A male who shows the trait

A female who shows the trait	A couple	A couple and their children	A person who has died

Cut on the dashed lines: eight pieces, one cut across and three cuts down.



PREVIEW

Answer Key: Readings, Words, Labels

Every letter is the position of the right option in the printed list.

Readings pages 5, 9

Item	Letter	Answer
5.1	A	A female
5.2	B	The person shows the trait
5.3	C	The third person in generation II
9.1	A	ee
9.2	B	Two
9.3	C	A person with one recessive allele who does not show the trait

Pedigree Words page 8

Word	Letter	Meaning
1. pedigree	B	a chart that follows one trait through a family
2. generation	F	one row of people on a pedigree
3. allele	D	one version of a gene
4. genotype	A	the two alleles a person has, like Ee
5. phenotype	E	the trait a person shows
6. carrier	C	a person with one recessive allele who does not show the trait

Label the Pedigree page 7

Letter	Name	How to tell
A	female who shows the trait	the shaded circle in generation I
B	male who does not show the trait	the plain square in generation I
C	line that joins a couple	the line between the two parents
D	line to the children	the bar that leads down to the three children
E	generation number	the Roman numeral at the left of a row
F	person number	the small number under a symbol

The Symbols Key (reference) page 6

Symbol	How it is drawn
A male	A square.
A female	A circle.
Sex not known	A diamond.
A male who shows the trait	A shaded square.
A female who shows the trait	A shaded circle.
A couple	A line between the two symbols.
A couple and their children	A line down, then a bar to each child.
A person who has died	A slash through the symbol.

PREVIEW

Answer Key: Worked Example, Sorts, Carriers, Squares

The mini pedigrees and the carrier chart are invented. The carrier chart (page 16) is drawn with every genotype in the key on page 32.

Dominant or Recessive? page 15

#	Check	Why
1	recessive	Two plain parents have a shaded child (or the trait skips a generation).
2	dominant	Two shaded parents have a plain child.
3	either	Both a dominant and a recessive pattern can fit.
4	recessive	Two plain parents have a shaded child (or the trait skips a generation).
5	dominant	Two shaded parents have a plain child.
6	either	Both a dominant and a recessive pattern can fit.

Worked Example page 11

Item	Answer
Example, step 3	II-1 is ee; I-1 and I-2 are Ee
Your turn: I-1	Ff
Your turn: I-2	ff
Your turn: II-1	Ff

Who Is a Carrier? page 16

Person	Check	Why
I-1 (Karim)	carrier	A shaded child or a shaded parent shows one recessive allele is passed on.
I-2 (Samira)	carrier	A shaded child or a shaded parent shows one recessive allele is passed on.
II-2 (Zaid)	not sure	Could be TT or Tt: nothing on the chart settles it.
II-3 (Omar)	not sure	Could be TT or Tt: nothing on the chart settles it.
II-4 (Yara)	carrier	A shaded child or a shaded parent shows one recessive allele is passed on.
III-1 (Faris)	carrier	A shaded child or a shaded parent shows one recessive allele is passed on.
III-2 (Dina)	carrier	A shaded child or a shaded parent shows one recessive allele is passed on.

Punnett Squares page 17

Cross	Top row / bottom row	With tt
1. Tt x Tt	TT, Tt / Tt, tt	1 of 4
2. Tt x tt	Tt, tt / Tt, tt	2 of 4
3. TT x tt	Tt, Tt / Tt, Tt	0 of 4
4. tt x tt	tt, tt / tt, tt	4 of 4

How these answers were checked

Every genotype, carrier answer and dominant-or-recessive answer comes from trying every genotype that fits the shading under both models, so a key line is only printed when the chart settles it. Where it does not, the page says either or not sure.

PREVIEW

Answer Key: Writing

These pages have no single right sentence. Accept any answer that uses a clue from the readings or the clue cards.

Short answers: what to look for page 21

Item	Look for
21.1	Recessive: two unshaded parents have a shaded child, or the trait skips a generation. Dominant: two shaded parents have an unshaded child, or every shaded person has a shaded parent.
21.2	If the trait is recessive, both parents can be carriers (Ee). Each passes on e, and the child gets two (ee).
21.3	A carrier is unshaded and has a shaded parent or a shaded child, so the person must carry one recessive allele.

Exit tickets

- Exit tickets (page 25): ticket 1 names a circle as a female, a square as a male and a shaded symbol as a person who shows the trait; ticket 2 is the four children of Ee x Ee: EE, Ee, Ee, ee; ticket 3 is open.

What a strong written answer includes

- It names the clue it uses: two plain parents with a shaded child (recessive), or two shaded parents with a plain child (dominant).
- It uses at least one word from the readings: allele, genotype, carrier, generation, dominant, recessive.
- It gives a genotype in two letters (EE, Ee or ee) when it talks about alleles.

Feedback to give

- Name one thing the answer does well, using the student's own words.
- Point to the one clue the answer left out, and ask the student to find it on a chart.
- Let the student fix the answer in the box and save the page again.

PREVIEW

Pedigree Tracker

One student, every scored sheet. Filled example: page 40.

Student _____ Teacher _____ Month _____

Page	Page type and set	Items	Right	Date	Notes
5	Reading 1: What a Pedigree Shows	3			
7	Label the Pedigree	6			
8	Pedigree Words	6			
9	Reading 2: Alleles, Dominant and Recessive	3			
11	Worked Example: Read a Pedigree	3			
12	Read a Pedigree 1	6			
13	Read a Pedigree 2	6			
14	Read a Pedigree 3	6			
15	Dominant or Recessive?	6			
16	Who Is a Carrier?	7			
17	Punnett Squares	4			
18	Build a Pedigree 1: Story and Chart	10			
19	Build a Pedigree 2: Draw It	9			
20	True or False	6			
22	Find the Mistake	4			
23	Quiz A	6			
24	Quiz B	6			
27	Cut and Paste 1: Match the Symbols	8			
28	Cut and Paste 2: Dominant or Recessive	12			

PREVIEW

How to fill this in

Write how many items the student got right with no prompt, and the date. A blank means not tried yet, never wrong. There are 117 items on the 19 scored sheets. Answer keys: pages 29 to 35. Filled example: page 40.

This month we are working on (your own standard or wording)

Team Note

Use this page between team meetings or when a student moves classes, to hand off what changed without writing a note from scratch. Everything below is observable, with a blank for the number or the wording your team already uses.

Student _____ Team member _____ Date _____

Kind of sheet	Covered since last note (Y/N)	Items right	Still blank
Readings and words			
Symbols and labels			
Read a pedigree			
Sort and carriers			
Build a pedigree			
Quizzes			
Cut and paste			

What I saw (observable, not a conclusion)

- Named ___ of 6 parts on the labeled pedigree (page 7).
- Sorted ___ of 6 mini pedigrees as dominant, recessive or either (page 15).
- Marked ___ of 7 people correctly on the carrier page (page 16).
- Explained in a complete sentence how two plain parents can have a shaded child: yes / no / with a reminder.

Next step

- Next page or set: ___, because ___ (what you saw).
- What to try in another class or at home: ___.
- What to keep doing because it is working: ___.
- Anything for the team meeting to decide: ___ (this page records what happened, never a label or a plan).

Summary, in one or two sentences, for whoever reads this next

A filled-in line, for reference

"Sorted 4 of 6 mini pedigrees correctly on 9/29. Next step: reread the clue cards (page 10) and ask: do two plain parents ever have a shaded child?" That is the level of detail this page is built for. It matches the filled example on page 40.

PREVIEW

Mina's Tracker (Invented Student)

Mina K. is invented; nothing on this page describes a real student. The blank tracker is on page 36.

Student: Mina K. (an invented student)

Teacher: Mr. Brooks (invented)

Month: September

Page	Page type and set	Items	Right	Date	Notes
5	Reading 1: What a Pedigree Shows	3	3	9/8	-
7	Label the Pedigree	6	5	9/12	Mixed up the couple line and the line to the children
8	Pedigree Words	6	5	9/15	Swapped genotype and phenotype
9	Reading 2: Alleles, Dominant and Recessive	3	2	9/10	Mixed up the dominant and recessive alleles
11	Worked Example: Read a Pedigree	3	3	9/17	-
12	Read a Pedigree 1	6	5	9/22	Wrote the wrong genotype for a shaded parent
13	Read a Pedigree 2	6	4	9/24	Chose dominant for two plain parents
14	Read a Pedigree 3	6	-	-	-
15	Dominant or Recessive?	6	4	9/29	Checked dominant for a trait that skipped a generation
16	Who Is a Carrier?	7	6	10/1	Marked one not-sure person as a carrier
17	Punnett Squares	4	-	-	-
18	Build a Pedigree 1: Story and Chart	10	-	-	-
19	Build a Pedigree 2: Draw It	9	-	-	-
20	True or False	6	-	-	-
22	Find the Mistake	4	-	-	-
23	Quiz A	6	5	10/6	Missed which genotype is a carrier
24	Quiz B	6	-	-	-
27	Cut and Paste 1: Match the Symbols	8	8	10/8	-
28	Cut and Paste 2: Dominant or Recessive	12	-	-	-

How to read it

Mina K. has done **11 of 19** scored sheets and got **50 of 60** items right with no prompt. **3** sheets were all right and **8** carry a note. Every number comes from the table.

What the table points to

The lowest sheets are Reading 2: Alleles, Dominant and Recessive (2 of 3), Read a Pedigree 2 (4 of 6) and Dominant or Recessive? (4 of 6). That is where the next practice goes. The 8 sheets left blank are not tried yet, never wrong.

PREVIEW