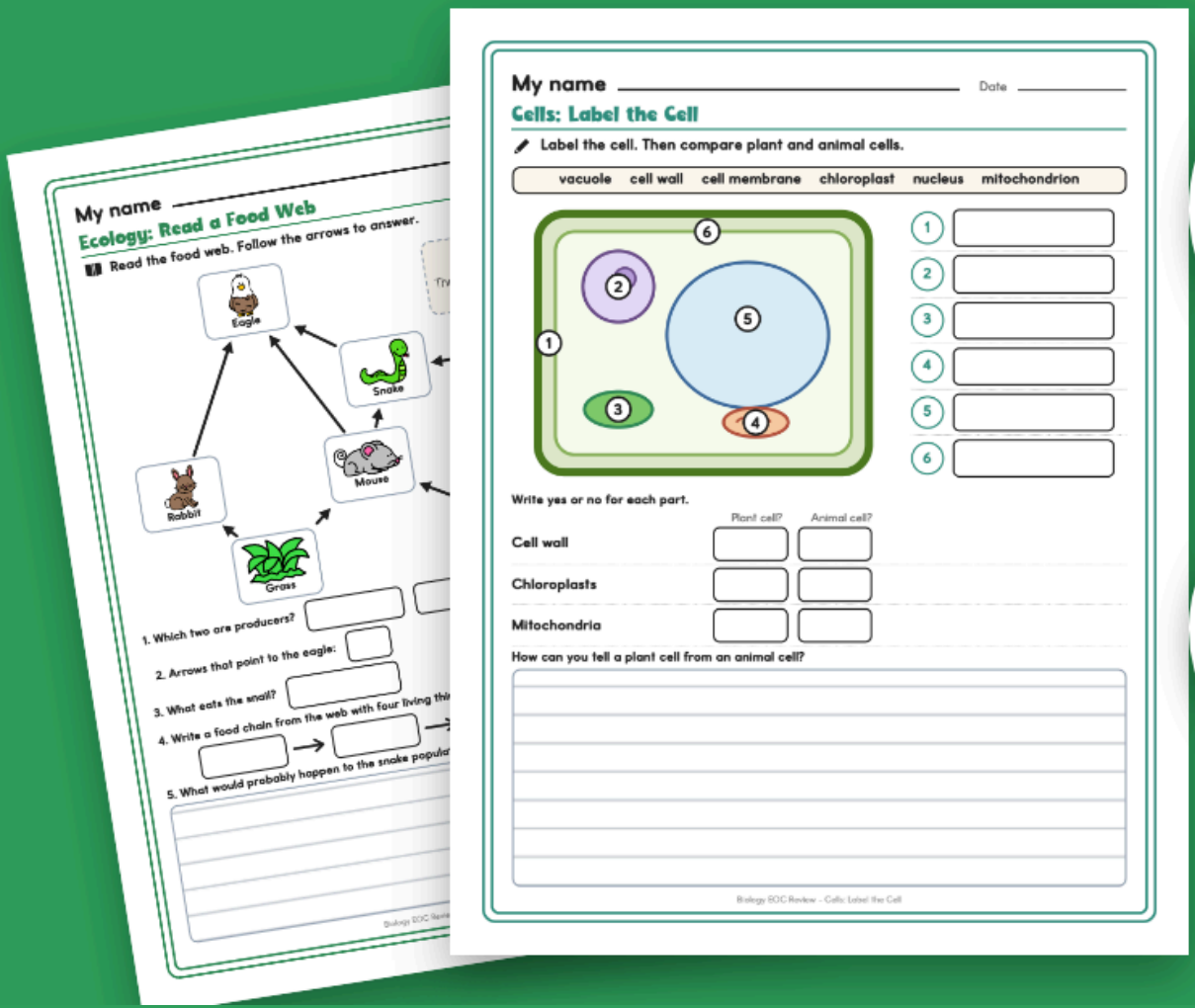
BIOLOGY EOC REVIEW

CELLS · GENETICS · ECOLOGY · GRADES 9-10



22 STUDENT PAGES

165 ITEMS

Bright Path Sped

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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.

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PREVIEW

How To Read a Page

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

The parts of a page

- **The answer box.** A bordered box for a letter, a number or a word. 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.** Yes or no, abiotic or biotic: click or mark.
- **The word bank.** A box of words to use. Every word is used once.
- **The drawn diagrams.** The cell, the DNA strand, the bar chart, the Punnett squares and the homeostasis loop are drawn on the page for the student to fill in.

Page type	What it looks like	What the student does
Words and key ideas	5 pages	Read five key ideas, then match six words to their meanings.
Diagram and table pages	7 pages	Label a cell, match DNA bases, fill in Punnett squares, read a chart, read a food web, fill in an energy pyramid, match body systems.
Questions	5 pages	Six multiple-choice items and two short answers for every unit.
Mixed review	2 pages, 16 items	Items from all five units, so students must decide which unit an item is from.
Writing and checks	3 pages	A claim-evidence-reasoning page about two pond tanks, a find-the-mistake page and a self check.

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 27 to 30.

Short answers

The short-answer key (page 30) says what to look for, not one right sentence. Accept any answer that uses the correct idea in the student's own words.

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. If a student needs more room, hand over one page a day, or let students write on scrap paper and copy their best sentences into the box.

PREVIEW

Preview · Bright Path Sped

My name _____ Date _____

Cells: Words and Key Ideas

Match each word to what it means.

Key ideas: Cells

- All living things are made of cells, and cells come from other cells.
- The cell membrane controls what goes in and out of a cell.
- The nucleus holds the DNA, the cell's instructions.
- Mitochondria release energy from food. Chloroplasts (plant cells) capture light energy for photosynthesis.
- Mitosis makes two new cells with the same DNA as the first cell.

Write the letter of the meaning in the box.

1	**cell membrane**		A	A part of plant cells where photosynthesis happens.
2	**nucleus**		B	The thin outer layer that controls what goes in and out of the cell.
3	**mitochondria**		C	A stiff outer layer that supports a plant cell.
4	**chloroplast**		D	Parts that release energy from food.
5	**ribosome**		E	A tiny part that builds proteins.
6	**cell wall**		F	The part of the cell that holds the DNA.

Use two of the words in one sentence about cells.

PREVIEW

Preview · Bright Path Sped

My name _____ Date _____

Cells: Questions

Pick the best answer. Write its letter.

1. Which part of a cell controls what goes in and out?
   A The cell membrane **B** The nucleus **C** A ribosome

2. Which cell part releases energy from food?
   A The ribosome **B** The cell wall **C** The mitochondrion

3. Which part is found in plant cells but not in animal cells?
   A Nucleus **B** Chloroplasts **C** Mitochondria

4. Which statement is part of cell theory?
   A All living things are made of cells
   B Only plants are made of cells
   C Cells come from nonliving matter

5. What is the result of mitosis?
   A Four cells with half the DNA
   B One large cell with extra DNA
   C Two cells with identical DNA

6. What is the smallest unit of life?
   A A tissue **B** A cell **C** An organ

7. Explain how the cell membrane and the cell wall are different.

8. Tell how photosynthesis and cellular respiration are connected in a plant.

PREVIEW

My name _____ Date _____

DNA: Match the Bases

Write the matching bases. Then fill in the blanks.

A pairs with T **C pairs with G**

1. Strand 1 is given. Write the matching bases on strand 2.

T	A	C	G	G	A	T	C

DNA
in the nucleus → **mRNA**
a copy of a gene → **Protein**
built by a ribosome

2. Fill in each blank. Use the word bank.

protein **nucleus** **mRNA**

1. DNA is found in the _____ of a cell.
2. A copy of a gene is made as _____.
3. A ribosome reads the mRNA and builds a _____.

3. Why does a cell need DNA copied into mRNA before it can make a protein?

PREVIEW

Preview · Bright Path Sped

My name _____ Date _____

Genetics: Questions

Pick the best answer. Write its letter.

1. What is a gene?
   - **A** A kind of cell
   - **B** A section of DNA that codes for a trait
   - **C** A copy of a protein

2. A pea plant has the genotype Bb. What does it have?
   - **A** One dominant and one recessive allele
   - **B** Two dominant alleles
   - **C** Two recessive alleles

3. Tall (T) is dominant to short (t). What is the phenotype of a Tt plant?
   A Medium **B** Short **C** Tall

4. Which genotype is homozygous recessive?
   A tt **B** Tt **C** TT

5. What does a Punnett square predict?
   - **A** Which parent has more DNA
   - **B** The chances of each offspring genotype
   - **C** How many cells an offspring will have

6. Which two bases always pair in DNA?
   A A and C **B** T and G **C** A and T

7. A plant has the genotype Tt and is tall. Explain why it is tall even though it has a t allele.

8. Explain the difference between genotype and phenotype. Give an example.

PREVIEW

My name _____ Date _____

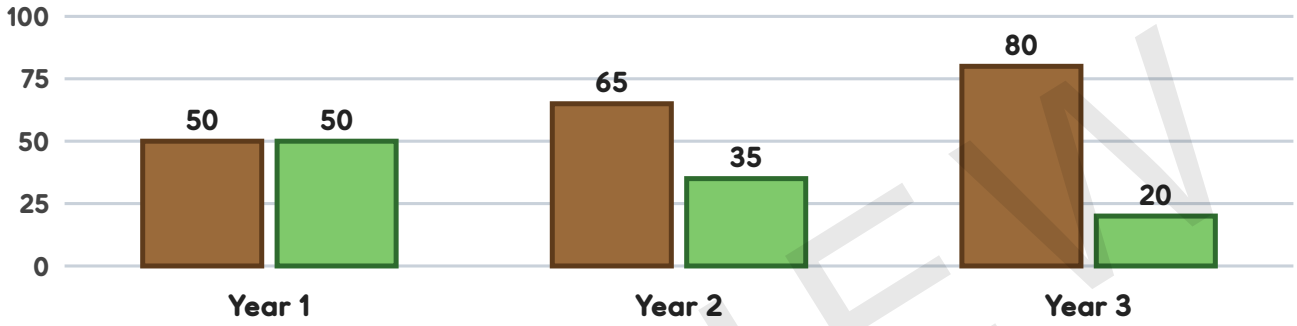
Evolution: Natural Selection

Read the chart. Then put the steps in order.



The beetle field. A field has dark brown soil. Some beetles are brown and some are green. Birds hunt beetles by sight. Each year 100 beetles were counted. These numbers are made up for practice.

Brown beetles Green beetles The bars show how many of the 100 beetles.



Year	Brown beetles	Green beetles	Total beetles	How many more brown than green?
Year 1	50	50		
Year 2	65	35		
Year 3	80	20		

Write 1 to 5 to put the steps of natural selection in order.

- ☐ The brown beetles that survive have more offspring, and the offspring are brown too.
- ☐ Beetles in a field vary: some are green and some are brown.
- ☐ After many generations, most of the beetles in the field are brown.
- ☐ The soil is dark brown, so birds see the green beetles more easily.
- ☐ Birds eat more of the green beetles than the brown beetles.

Which beetle color is better adapted to this field? Why?

PREVIEW

Preview · Bright Path Sped

My name _____ Date _____

Ecology: Words and Key Ideas

Match each word to what it means.

Key ideas: Ecology

- A food chain shows how energy moves. Each arrow points from the food to the one that eats it.
- Producers make food. Consumers eat other living things. Decomposers break down dead matter.
- About 10 percent of the energy moves up to the next step. The rest is used up or leaves as heat.
- Abiotic factors are nonliving, like sunlight, water and soil. Biotic factors are living.
- An ecosystem is the living things and the nonliving factors in one area.

Write the letter of the meaning in the box.

1	**producer**		A	All the members of one species living in an area.
2	**consumer**		B	A living thing that makes its own food.
3	**decomposer**		C	All the populations living in the same area.
4	**population**		D	A living thing that eats other living things.
5	**community**		E	Nonliving, like sunlight, water and soil.
6	**abiotic**		F	A living thing that breaks down dead plants and animals.

Use two of the words in one sentence about ecology.

PREVIEW

My name _____ Date _____

Ecology: Energy and Factors

Fill in the energy. Then sort the factors.

Only about 10 percent of the energy moves up to the next step. To find 10 percent, divide by 10.

1. Energy at each step (units). Take 10 percent of the step below.



Tertiary consumers _____



Secondary consumers _____



Primary consumers _____



Producers 5,000

2. Start with 3,000 units. Fill in the next two steps.

3,000 → _____ → _____

3. Is it a living (biotic) or nonliving (abiotic) factor? Check one.

1	Rabbit	☐ abiotic	☐ biotic	2	Sunlight	☐ abiotic	☐ biotic
3	Soil	☐ abiotic	☐ biotic	4	Mushroom	☐ abiotic	☐ biotic
5	Grass	☐ abiotic	☐ biotic	6	Temperature	☐ abiotic	☐ biotic

Why are there fewer eagles than rabbits?

PREVIEW

Preview · Bright Path Sped

My name _____ Date _____

Body Systems: Words and Key Ideas

Match each word to what it means.

Key ideas: Body Systems

- Cells make tissues, tissues make organs, and organs make organ systems.
- The digestive system breaks down food. The circulatory system moves blood. The respiratory system takes in oxygen.
- The nervous system sends signals. The muscular and skeletal systems move and support the body.
- Homeostasis keeps the conditions inside the body steady.
- When a change is noticed, the body responds to bring things back toward steady.

Write the letter of the meaning in the box.

1	**tissue**		A	A group of tissues that work together to do one job.
2	**organ**		B	A change that the body notices.
3	**organ system**		C	A group of organs that work together.
4	**homeostasis**		D	What the body does after it notices a change.
5	**stimulus**		E	A group of similar cells that work together.
6	**response**		F	Keeping the inside of the body steady.

Use two of the words in one sentence about body systems.

PREVIEW

Preview · Bright Path Sped

My name _____ Date _____

Body Systems: Questions

Pick the best answer. Write its letter.

1. Which list goes from smallest to largest?
   - **A** Tissue, cell, organ, organ system
   - **B** Cell, tissue, organ, organ system
   - **C** Organ, tissue, cell, organ system

2. Which system moves blood around the body?
   - **A** The circulatory system
   - **B** The digestive system
   - **C** The skeletal system

3. Which system takes in oxygen?
   - **A** The nervous system
   - **B** The muscular system
   - **C** The respiratory system

4. What is homeostasis?
   - **A** Making new cells by mitosis
   - **B** Keeping the conditions inside the body steady
   - **C** Breaking down food

5. A person sweats on a hot day. What is sweating?
   - **A** A stimulus that makes the body hotter
   - **B** A problem the body cannot fix
   - **C** A response that helps keep the body steady

6. Which two systems work together to bring oxygen to cells?
   - **A** Respiratory and circulatory
   - **B** Skeletal and digestive
   - **C** Nervous and muscular

7. When you touch something hot and pull your hand away, tell how the nervous system and the muscular system work together.

8. Explain one way homeostasis works. Name the stimulus and the response.

PREVIEW

My name _____ Date _____

Biology EOC Review: Mixed Set B

Pick the best answer. Write its letter.

These questions come from all five units. Take your time. Guess if you are not sure.

1. Which cell part holds the DNA?
   A The membrane **B** The chloroplast **C** The nucleus

2. A Bb plant is crossed with a bb plant (B is dominant). Which genotype is possible in the offspring?
   A Bb **B** BB **C** BBbb

3. A drought leaves mostly hard seeds. Birds with thick beaks eat them more easily. What will most likely happen over many generations?
   A Birds will choose to grow thick beaks
   B More birds will have thick beaks
   C Each bird will grow a thicker beak during its life

4. A producer step has 5,000 units of energy. About how many units reach the secondary consumers?
   A 500 **B** 2,500 **C** 50

5. Which is an example of homeostasis?
   A Shivering when the body gets cold
   B Growing taller each year
   C Learning to ride a bike

6. What is an ecosystem?
   A Only the animals in one area
   B The living things and the nonliving factors in one area
   C Only one species in one area

7. Why is mitosis important?
   A It lets organisms grow and replace worn-out cells
   B It makes cells with half the DNA
   C It turns producers into consumers

8. What is an organ?
   A A group of organ systems
   B A part inside one cell
   C A group of tissues that work together

PREVIEW

Preview · Bright Path Sped

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:**

"Mitochondria make food from sunlight."

What is wrong?

Write it the right way.

2 **Dev wrote:**

"A pea plant with the genotype Tt is short because it has a small t."

What is wrong?

Write it the right way.

3 **Dev wrote:**

"Natural selection means an animal changes its body on purpose to survive."

What is wrong?

Write it the right way.

4 **Dev wrote:**

"Energy moves up a food chain with none of it lost."

What is wrong?

Write it the right way.

PREVIEW

Answer Key: Cells and Genetics

Every letter is the position of the right option in the printed list. Squares and strands are computed from the page data.

Cells: Words and Key Ideas page 5

Word	Letter
1. cell membrane	B
2. nucleus	F
3. mitochondria	D
4. chloroplast	A
5. ribosome	E
6. cell wall	C

Cells: Label the Cell page 6

Item	Answer
1	cell wall
2	nucleus
3	chloroplast
4	mitochondrion
5	vacuole
6	cell membrane
Cell wall	plant yes, animal no
Chloroplasts	plant yes, animal no
Mitochondria	plant yes, animal yes

Cells: Questions page 7

Item	Ltr	Answer
7.1	A	The cell membrane
7.2	C	The mitochondrion
7.3	B	Chloroplasts
7.4	A	All living things are made of cells
7.5	C	Two cells with identical DNA
7.6	B	A cell

Genetics: Words and Key Ideas page 8

Word	Letter
1. gene	C
2. allele	E
3. dominant	B
4. recessive	F
5. genotype	A
6. phenotype	D

DNA: Match the Bases page 9

Item	Answer
Strand 2	A T G C C T A G
Strand 1	T A C G G A T C (given)
Blank 1	nucleus
Blank 2	mRNA
Blank 3	protein

Genetics: Punnett Squares page 10

Cross	Squares (top row / bottom row)
Cross 1: Tt x Tt	TT Tt / Tt tt; tall 3 of 4
Cross 2: Tt x tt	Tt tt / Tt tt; tall 2 of 4
Cross 3: TT x tt	Tt Tt / Tt Tt; tall 4 of 4
Cross 4: tt x tt	tt tt / tt tt; tall 0 of 4

Genetics: Questions page 11

Item	Ltr	Answer
11.1	B	A section of DNA that codes for a trait
11.2	A	One dominant and one recessive allele
11.3	C	Tall
11.4	A	tt
11.5	B	The chances of each offspring genotype
11.6	C	A and T

Punnett notes

- Parent 1's alleles run across the top, parent 2's down the side. Each square holds one allele from each parent, capital letter first.
- Cross 3 (TT and tt) can only make tall plants: all four squares are Tt. In DNA, A pairs with T and C pairs with G; in RNA, U takes the place of T.

PREVIEW

Answer Key: Body Systems, Mixed Review, Writing

The student on the mistake page is invented, and so are the pond-tank numbers. Accept any wording that fixes the sentence.

Body Systems: Words and Key Ideas page 19

Word	Letter
1. tissue	E
2. organ	A
3. organ system	C
4. homeostasis	F
5. stimulus	B
6. response	D

Body Systems: Jobs and Homeostasis page 20

System	Job	Organ
Digestive	B	stomach
Circulatory	D	heart
Respiratory	F	lungs
Nervous	A	brain
Skeletal	E	bones
Muscular	C	muscles

Homeostasis loop page 20

Box	Answer
Box 3	sweating
Box 4	steady again

Body Systems: Questions page 21

Item	Ltr	Answer
21.1	B	Cell, tissue, organ, organ system
21.2	A	The circulatory system
21.3	C	The respiratory system
21.4	B	Keeping the conditions inside the body steady
21.5	C	A response that helps keep the body steady
21.6	A	Respiratory and circulatory

Pond tanks (invented numbers) page 24

Tank	Start	After	Change
Tank A	start 50	after 20	down 30
Tank B	start 50	after 80	up 30

Biology EOC Review: Mixed Set A page 22

Item	Ltr	Answer
22.1	A	A ribosome
22.2	C	One out of four
22.3	B	adaptation
22.4	B	The frog
22.5	A	The nervous system
22.6	C	Photosynthesis
22.7	B	T A C G
22.8	C	They show what living things were like long ago

Biology EOC Review: Mixed Set B page 23

Item	Ltr	Answer
23.1	C	The nucleus
23.2	A	Bb
23.3	B	More birds will have thick beaks
23.4	C	50
23.5	A	Shivering when the body gets cold
23.6	B	The living things and the nonliving factors in one area
23.7	A	It lets organisms grow and replace worn-out cells
23.8	C	A group of tissues that work together

Claim, evidence, reasoning

- Claim: yes, snails reduce how much algae grows.
- Evidence: Tank A, with snails, went from 50 to 20 percent (down 30). Tank B, with no snails, went from 50 to 80 percent (up 30).
- Reasoning: snails eat algae. Where snails were present the algae went down, and where they were absent it went up. Accept any answer that names the claim, uses both numbers and links them with a reason.

Notes on the body systems page

- The organ column takes any organ that belongs to the system. The unused loop word, shivering, is the response to cold.

PREVIEW

Biology EOC Review Tracker

One student, every scored page, unit by unit. Filled example: page 35.

Student _____ Teacher _____ Month _____

Page	Page type and set	Items	Right	Date	Notes
5	Cells: Words and Key Ideas	6			
6	Cells: Label the Cell	12			
7	Cells: Questions	6			
8	Genetics: Words and Key Ideas	6			
9	DNA: Match the Bases	11			
10	Genetics: Punnett Squares	20			
11	Genetics: Questions	6			
12	Evolution: Words and Key Ideas	6			
13	Evolution: Natural Selection	11			
14	Evolution: Questions	6			
15	Ecology: Words and Key Ideas	6			
16	Ecology: Read a Food Web	4			
17	Ecology: Energy and Factors	11			
18	Ecology: Questions	6			
19	Body Systems: Words and Key Ideas	6			
20	Body Systems: Jobs and Homeostasis	14			
21	Body Systems: Questions	6			
22	Biology EOC Review: Mixed Set A	8			
23	Biology EOC Review: Mixed Set B	8			
24	Claim, Evidence, Reasoning	2			
25	Find the Mistake	4			

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 165 items on the 21 scored pages. Answer keys: pages 27 to 30. Filled example: page 35.

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

PREVIEW

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 _____

Unit	Covered since last note (Y/N)	Items right	Still blank
Cells			
DNA and Genetics			
Evolution			
Ecology			
Body Systems			
Mixed sets			

What I saw (observable, not a conclusion)

- Filled in ___ of 20 Punnett items without a prompt (page 10).
- Got ___ of 15 food web and energy items right (pages 16, 17).
- Got ___ of 16 mixed review items right (pages 22, 23).
- Explained natural selection in a sentence: yes / no / with a reminder.

Next step

- Next page or unit: ___, 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

"Got 5 of 6 genetics questions right on 10/20. Next step: reread the key ideas on the genetics words page and say the difference between genotype and phenotype out loud." That is the level of detail this page is built for. It matches the filled example on page 35.

PREVIEW

Maya's Tracker (Invented Student)

Maya R. is invented; nothing on this page describes a real student. The blank tracker is on page 31.

Student	Teacher	Month
Maya R. (an invented student)	Ms. Okafor (invented)	October and November

Page	Page type and set	Items	Right	Date	Notes
5	Cells: Words and Key Ideas	6	5	10/6	Mixed up ribosome and nucleus
6	Cells: Label the Cell	12	10	10/8	Missed the vacuole and the membrane
7	Cells: Questions	6	6	10/10	-
8	Genetics: Words and Key Ideas	6	6	10/13	-
9	DNA: Match the Bases	11	9	10/15	Paired A with C twice
10	Genetics: Punnett Squares	20	16	10/17	Missed two squares and two counts
11	Genetics: Questions	6	5	10/20	Mixed up genotype and phenotype
12	Evolution: Words and Key Ideas	6	-	-	-
13	Evolution: Natural Selection	11	8	10/24	Put steps 3 and 4 in the wrong order
14	Evolution: Questions	6	-	-	-
15	Ecology: Words and Key Ideas	6	-	-	-
16	Ecology: Read a Food Web	4	-	-	-
17	Ecology: Energy and Factors	11	-	-	-
18	Ecology: Questions	6	-	-	-
19	Body Systems: Words and Key Ideas	6	-	-	-
20	Body Systems: Jobs and Homeostasis	14	-	-	-
21	Body Systems: Questions	6	-	-	-
22	Biology EOC Review: Mixed Set A	8	6	11/3	Missed the DNA pairing item
23	Biology EOC Review: Mixed Set B	8	-	-	-
24	Claim, Evidence, Reasoning	2	-	-	-
25	Find the Mistake	4	-	-	-

PREVIEW

How to read it

Maya R. has done **9 of 21** scored pages and got **71 of 86** items right with no prompt. **2** pages were all right and **7** carry a note. Every number comes from the table.

What the table points to

The lowest page is Evolution: Natural Selection (8 of 11). That is where the next practice goes. The 12 pages left blank are not tried yet, never wrong.

Binder Cover

Slide this into the front of a binder. Type a name in the two fields or write it by hand. The divider tabs and a spine label to cut out are on the next page (page 38).

Science - Biology

BIOLOGY EOC REVIEW

Five Units of Review Practice

Cells | **DNA** | **Evolution**

Ecology | **Body Systems**

Teacher _____

Class or student _____

PREVIEW