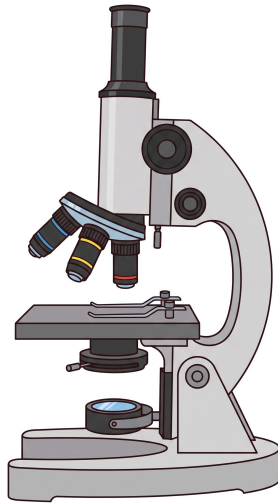


The Microscope

The parts of a microscope and how to use one



7

printable sheets

17

pages

All

answer keys included

The Microscope Teaching Pack

The parts of a microscope and how to use one

How to use this pack. The sheets are in a suggested teaching order: show the labeled diagram, have students label the blank one, then work through the practice sheets and finish with the quiz. Use them all over a week or pick the ones you need. The answer keys are together at the back.

What is inside

1. Teach

Parts of a Microscope Diagram 3

2. Label

Blank Microscope 4

3. Match

Parts of a Microscope and Their Jobs 5

4. Read

How a Microscope Works 6

5. Order

How to View a Slide 8

6. Review

Microscope Crossword 9

7. Check

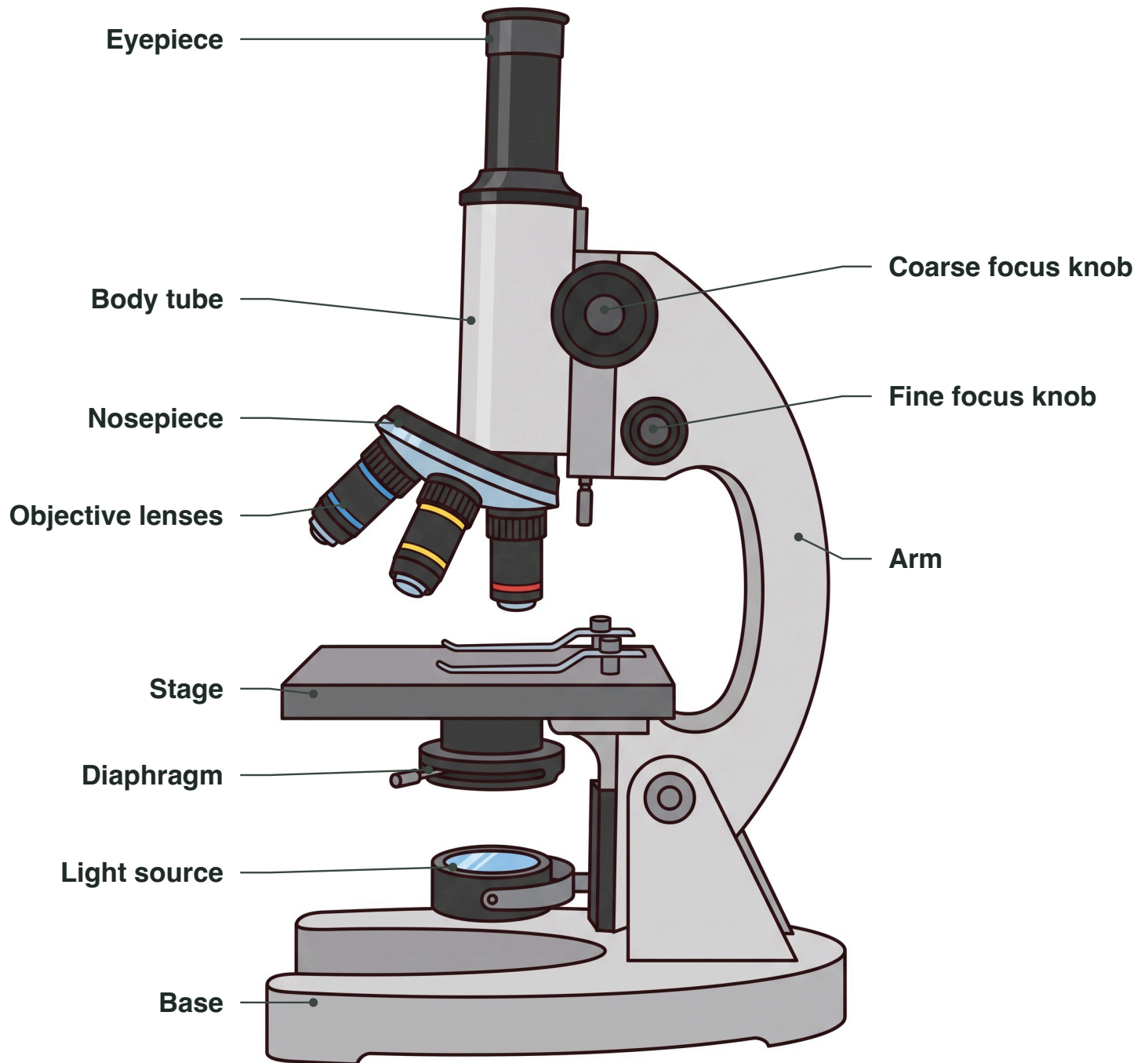
Microscope Quiz 10

Answer keys

Every answer key, in the same order 12

More free teaching packs. Cells, Mitosis, DNA and more at printablescholar.com/teaching-packs/

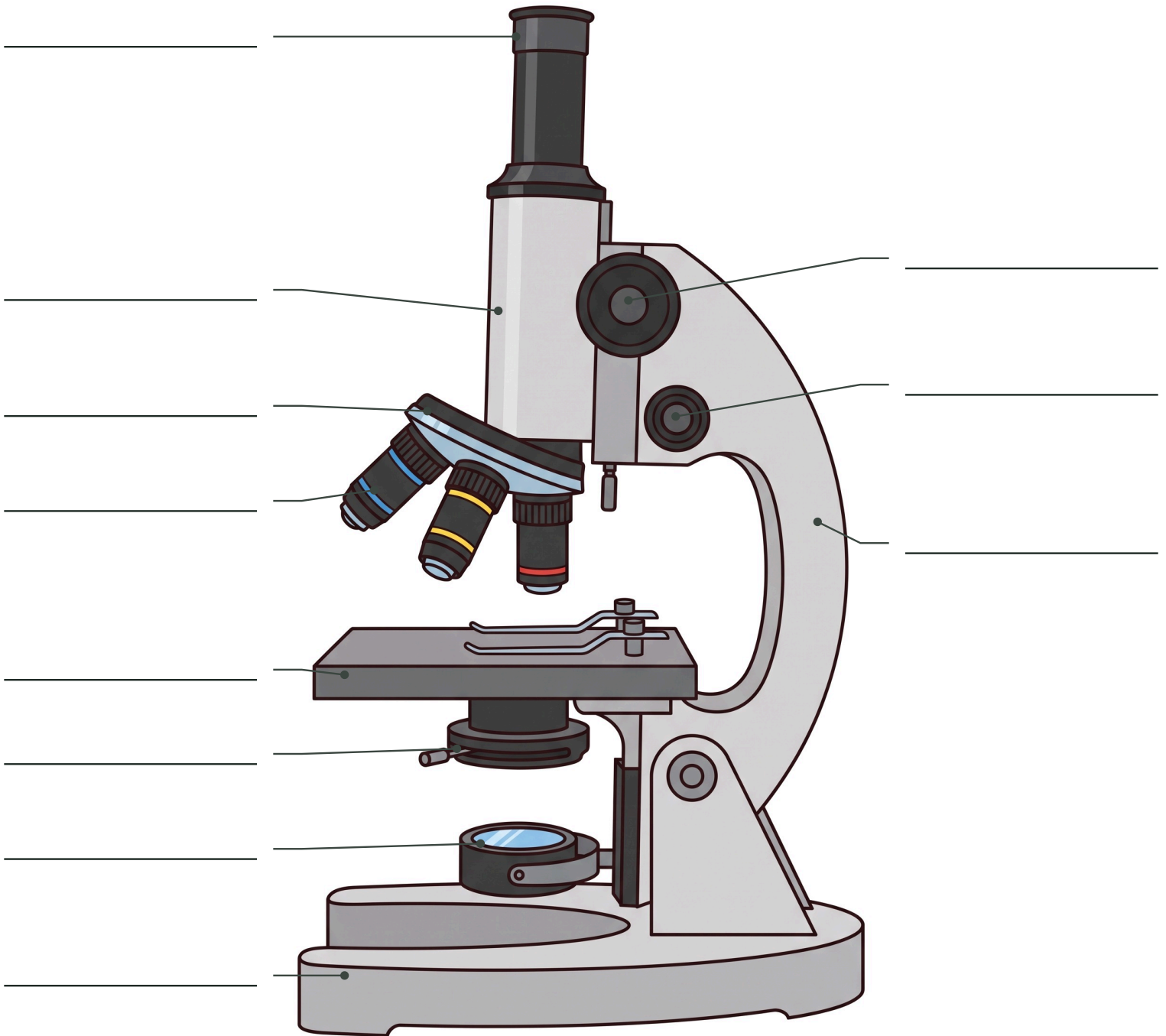
Parts of a Microscope



Parts of a Microscope

Name: _____

Write the name of each part on its line. Use the word bank.



Word bank

Arm Base Body tube Coarse focus knob Diaphragm Eyepiece
Fine focus knob Light source Nosepiece Objective lenses Stage

Parts of a Microscope and Their Jobs

Use the labeled microscope diagram to help you.

Part A. Write the part that does each job.

Word bank

Arm Base Body tube Coarse focus knob Diaphragm Eyepiece
Fine focus knob Light source Nosepiece Objective lenses Stage

1. The flat platform where you place the slide. _____
2. The lens at the top that you look through. It usually magnifies 10 times. _____
3. The smaller knob. It makes tiny changes to give a sharp image. _____
4. The rotating piece that holds the objective lenses. You turn it to switch between them. _____
5. The lamp that shines light up through the slide. _____
6. The curved part at the back. You hold it when you carry the microscope. _____
7. The lenses close to the slide. Each one has a different power. _____
8. It controls how much light passes up through the slide. _____
9. The heavy bottom part that the whole microscope stands on. _____
10. The larger knob. It makes big, quick changes to bring the image into view. _____
11. It connects the lens you look through to the lenses near the slide. _____

Part B. Answer the questions.

1. Which two parts on the diagram are lenses that magnify?

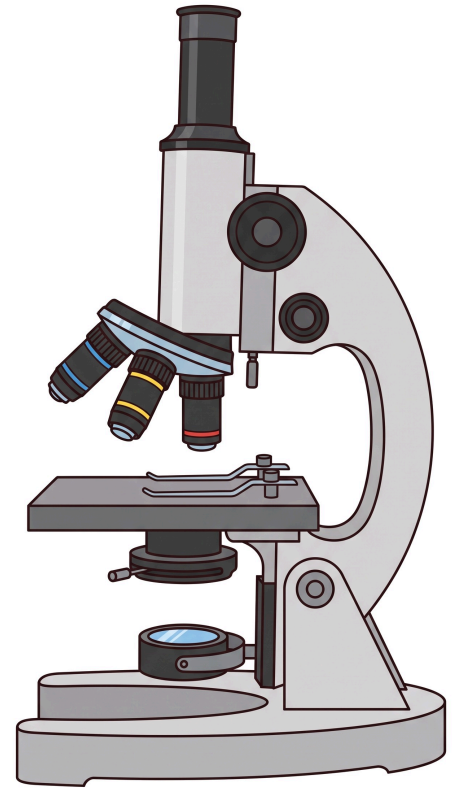
2. You carry a microscope with two hands. Which two parts do you hold?

3. To find the total magnification, multiply the power of the eyepiece by the power of the objective lens. The eyepiece is 10x and the objective lens is 40x. What is the total magnification?

How a Microscope Works

Read the text. Then answer the questions on the next page.

- 1 Many things are too small to see with your eyes alone. A **microscope** is a tool that makes tiny objects look much bigger. Most schools use a **compound light microscope**. It shines light through an object and uses two sets of lenses to **magnify** it. To magnify something is to make it look larger than it really is.
- 2 You look through the **eyepiece**, the lens at the top. It usually magnifies 10 times, which is written 10x. Close to the object are the **objective lenses**. A school microscope often has three: 4x, 10x and 40x. They sit on a rotating **nosepiece**, so you can turn from one to the next. To find the **total magnification**, multiply the power of the eyepiece by the power of the objective lens in use. With a 10x eyepiece and a 4x objective lens, an object looks 40 times bigger.
- 3 The object you study is called a **specimen**. It goes on a thin piece of glass called a **slide**, and the slide sits on the flat **stage**. A lamp shines light up through the slide. The **diaphragm** controls how much light gets through. The specimen must be very thin, because light has to pass through it.
- 4 Two knobs bring the image into focus. Always begin with the lowest-power objective lens. First, turn the large **coarse focus knob** to find the specimen. Next, turn the small **fine focus knob** to make the image sharp. Then, for a closer look, turn the nosepiece to a higher power. On high power, use only the fine focus knob. The lens sits very close to the slide, and a big move could push the lens into the slide.
- 5 Carry a microscope with two hands. Hold the **arm** with one hand and put the other hand under the **base**.



A compound light microscope. The lamp is in the base.

How a Microscope Works: Questions

Go back to the text to find each answer. The paragraphs are numbered to help you.

1. What is this text mostly about?

- ☐ How lenses are made from glass
- ☐ How a microscope works and how to use one
- ☐ What cells look like up close
- ☐ Who invented the microscope

2. What does it mean to magnify something?

- ☐ To shine light through it
- ☐ To cut it very thin
- ☐ To make it look larger than it really is
- ☐ To hold it still on a slide

3. A microscope has a 10x eyepiece. You are using the 40x objective lens. What is the total magnification?

4. Which part controls how much light gets through?

- ☐ The stage
- ☐ The nosepiece
- ☐ The eyepiece
- ☐ The diaphragm

5. Why must a specimen be very thin?

6. Number the steps 1, 2 and 3 to show how to focus a microscope (paragraph 4).

- ☐ Turn the nosepiece to a higher power.
- ☐ Turn the coarse focus knob to find the specimen.
- ☐ Turn the fine focus knob to make the image sharp.

7. Why should you use only the fine focus knob on high power?

- ☐ The coarse focus knob will not turn on high power.
- ☐ A big move could push the lens into the slide.
- ☐ The fine focus knob makes the image brighter.
- ☐ The fine focus knob changes the magnification.

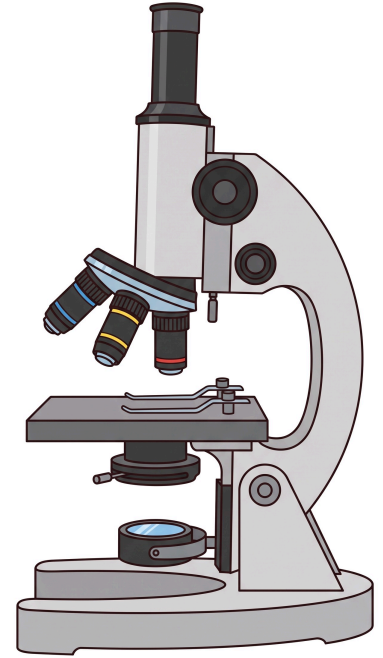
8. How should you carry a microscope?

How to View a Slide

These are the steps for looking at a slide with a microscope. They are mixed up. Put them in order.

Part A. Number the steps from 1 to 7.

- ☐ Turn the fine focus knob until the image is sharp.
- ☐ To look closer, turn the nosepiece to the next higher-power objective lens.
- ☐ Place the slide on the stage with the specimen over the opening where the light comes through.
- ☐ Before you add a slide, turn the nosepiece so the lowest-power objective lens is in place.
- ☐ Carry the microscope to your table with two hands and turn on the light.
- ☐ Sharpen the image again, this time with the fine focus knob only.
- ☐ Look through the eyepiece. Turn the coarse focus knob slowly until you can see the specimen.



Part B. Answer the questions.

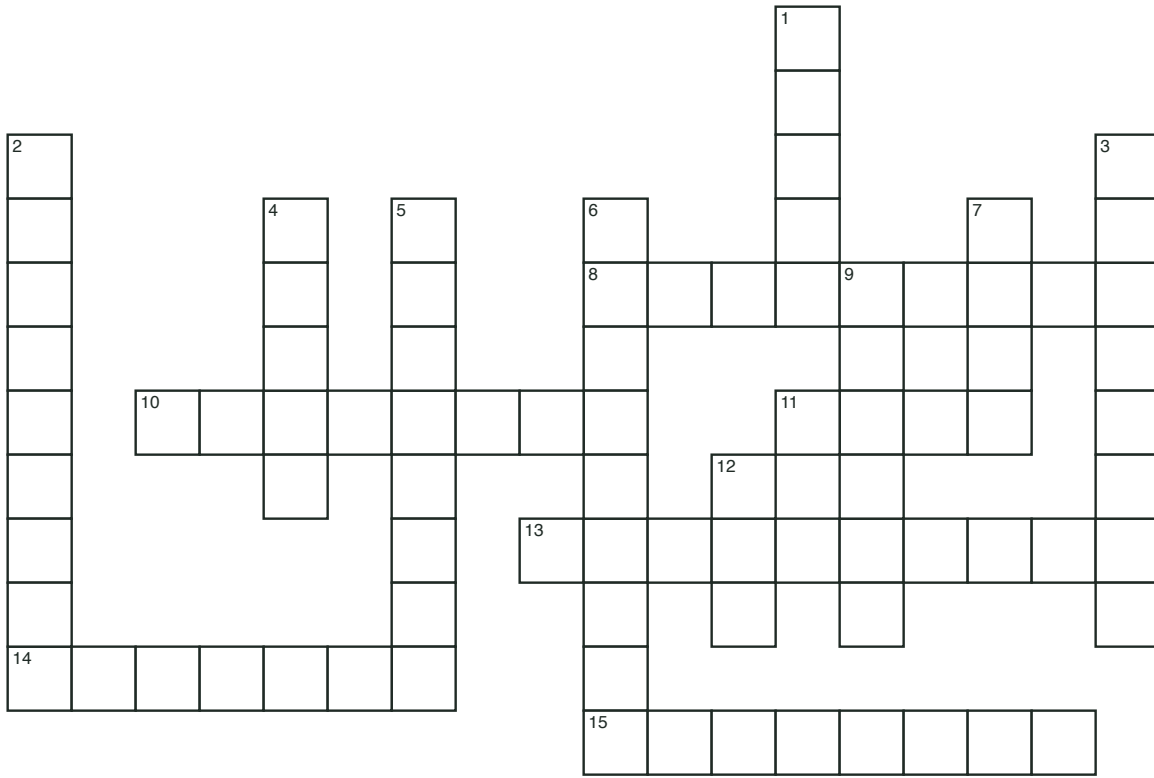
1. Why do you start with the lowest-power objective lens?

2. After you switch to a higher power, why do you use only the fine focus knob?

3. The eyepiece is 10x. You switch from the 4x objective lens to the 10x objective lens. What is the total magnification now?

Microscope Crossword

Read each clue. Write the answer in the puzzle, one letter in each box. Use the word bank if you get stuck.



ACROSS

8. The ____ lenses are close to the slide. Each one has a different power.
10. It connects the lens you look through to the lenses near the slide (2 words).
11. The heavy bottom part that everything stands on.
13. A tool that makes tiny objects look much bigger.
14. To make something look larger than it really is.
15. The lens at the top that you look through.

DOWN

1. The flat platform where you place the slide.
2. It controls how much light passes up through the slide.
3. The object you study under the lenses.
4. A thin piece of glass that holds the object you study.
5. What you do with the two lens powers to find the total.
6. The rotating piece that holds the objective lenses.
7. The ____ focus knob is the smaller one. It makes tiny changes.
9. The ____ focus knob is the larger one. It makes big, quick changes.
12. The curved part you hold when you carry the tool.

Word bank

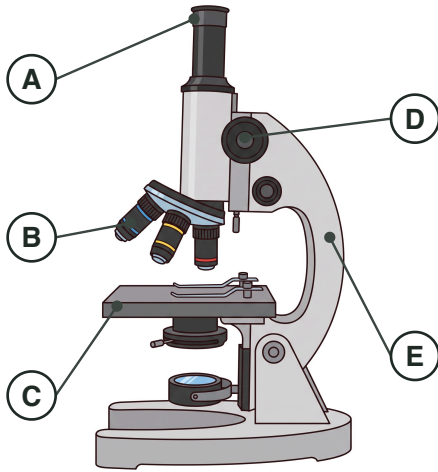
arm base body tube coarse diaphragm eyepiece fine magnify
microscope multiply nosepiece objective slide specimen stage

Microscope Quiz

Score _____ / 13

Show what you know about the microscope and how to use it.

Part A. This is a compound light microscope. Write the name of each part.



- A _____
B _____
C _____
D _____
E _____

Arm · Coarse focus knob · Eyepiece · Objective lenses · Stage

Part B. Choose the best answer.

1. Which part do you look through?

- ☐ The diaphragm
☐ The eyepiece
☐ The nosepiece
☐ The stage

2. Which part controls how much light passes up through the slide?

- ☐ The base
☐ The body tube
☐ The diaphragm
☐ The arm

3. Where do you place the slide?

- ☐ On the base
☐ On the nosepiece
☐ On the eyepiece
☐ On the stage

4. A 10× eyepiece is used with a 40× objective lens. What is the total magnification?

- ☐ 4×
☐ 50×
☐ 400×
☐ 4,000×

5. Which objective lens should you start with?

- ☐ The lowest power
☐ The middle power
☐ The highest power
☐ It does not matter

6. Which knob makes tiny changes to give a sharp image?

- ☐ The coarse focus knob
☐ The fine focus knob
☐ The nosepiece
☐ The light source

Part C. Write your answer.

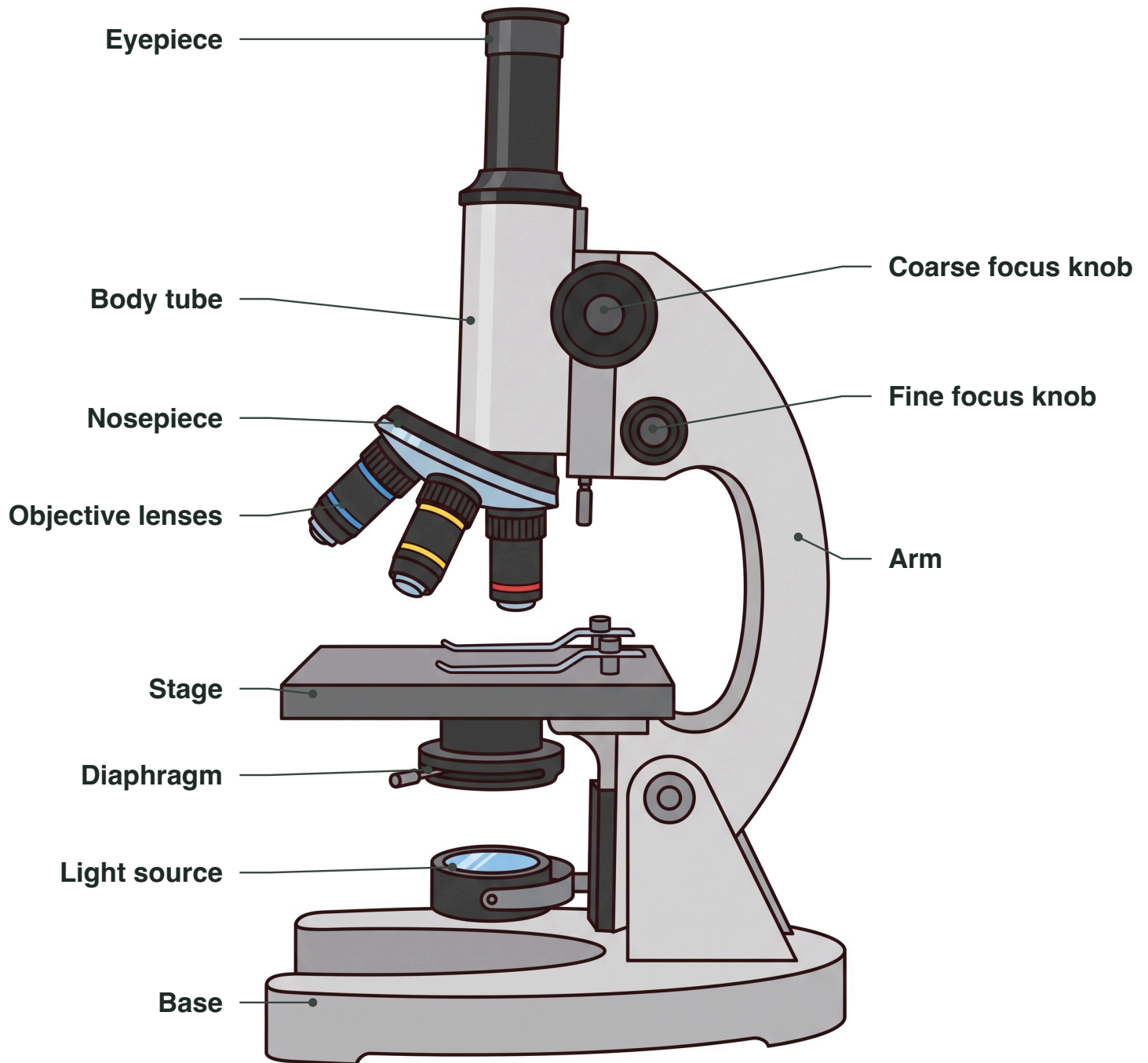
7. How should you carry a microscope?

8. Why should you never use the coarse focus knob on high power?

Answer Keys

In the same order as the sheets.

Parts of a Microscope: Answer Key



Parts of a Microscope and Their Jobs: Answer Key

Answers are in green. Written answers will vary; these are examples.

Part A. Write the part that does each job.

Word bank

Arm

Base

Body tube

Coarse focus knob

Diaphragm

Eyepiece

Fine focus knob

Light source

Nosepiece

Objective lenses

Stage

1. The flat platform where you place the slide.	Stage
2. The lens at the top that you look through. It usually magnifies 10 times.	Eyepiece
3. The smaller knob. It makes tiny changes to give a sharp image.	Fine focus knob
4. The rotating piece that holds the objective lenses. You turn it to switch between them.	Nosepiece
5. The lamp that shines light up through the slide.	Light source
6. The curved part at the back. You hold it when you carry the microscope.	Arm
7. The lenses close to the slide. Each one has a different power.	Objective lenses
8. It controls how much light passes up through the slide.	Diaphragm
9. The heavy bottom part that the whole microscope stands on.	Base
10. The larger knob. It makes big, quick changes to bring the image into view.	Coarse focus knob
11. It connects the lens you look through to the lenses near the slide.	Body tube

Part B. Answer the questions.

- Which two parts on the diagram are lenses that magnify?
The eyepiece and the objective lenses.
- You carry a microscope with two hands. Which two parts do you hold?
The arm with one hand, and the base with the other hand under it.
- To find the total magnification, multiply the power of the eyepiece by the power of the objective lens. The eyepiece is 10x and the objective lens is 40x. What is the total magnification?
400x (10 × 40 = 400).

How a Microscope Works: Answer Key

Answers are in green. Written answers will vary; these are examples.

1. What is this text mostly about?

- ☐ How lenses are made from glass
- ☒ **How a microscope works and how to use one**
- ☐ What cells look like up close
- ☐ Who invented the microscope

2. What does it mean to magnify something?

- ☐ To shine light through it
- ☐ To cut it very thin
- ☒ **To make it look larger than it really is**
- ☐ To hold it still on a slide

3. A microscope has a 10x eyepiece. You are using the 40x objective lens. What is the total magnification?

400x (10 × 40 = 400).

4. Which part controls how much light gets through?

- ☐ The stage
- ☐ The nosepiece
- ☐ The eyepiece
- ☒ **The diaphragm**

5. Why must a specimen be very thin?

Light has to pass through it.

6. Number the steps 1, 2 and 3 to show how to focus a microscope (paragraph 4).

- 3** Turn the nosepiece to a higher power.
- 1** Turn the coarse focus knob to find the specimen.
- 2** Turn the fine focus knob to make the image sharp.

7. Why should you use only the fine focus knob on high power?

- ☐ The coarse focus knob will not turn on high power.
- ☒ **A big move could push the lens into the slide.**
- ☐ The fine focus knob makes the image brighter.
- ☐ The fine focus knob changes the magnification.

8. How should you carry a microscope?

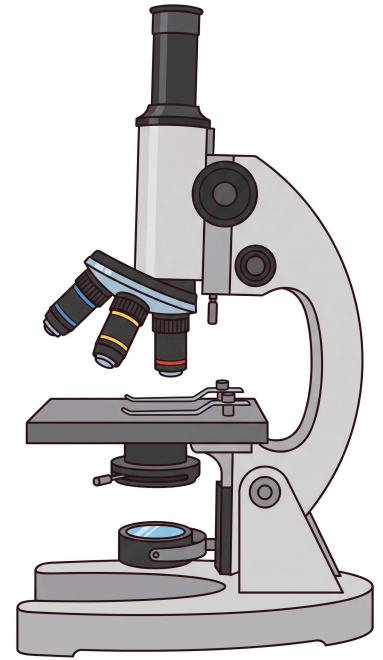
With two hands: one holding the arm and the other under the base.

How to View a Slide: Answer Key

Answers are in green. Written answers will vary; these are examples.

Part A. Number the steps from 1 to 7.

- 5 Turn the fine focus knob until the image is sharp.
- 6 To look closer, turn the nosepiece to the next higher-power objective lens.
- 3 Place the slide on the stage with the specimen over the opening where the light comes through.
- 2 Before you add a slide, turn the nosepiece so the lowest-power objective lens is in place.
- 1 Carry the microscope to your table with two hands and turn on the light.
- 7 Sharpen the image again, this time with the fine focus knob only.
- 4 Look through the eyepiece. Turn the coarse focus knob slowly until you can see the specimen.



Part B. Answer the questions.

1. Why do you start with the lowest-power objective lens?

It shows the widest area of the slide, so the specimen is easiest to find. It also sits farthest from the slide.

2. After you switch to a higher power, why do you use only the fine focus knob?

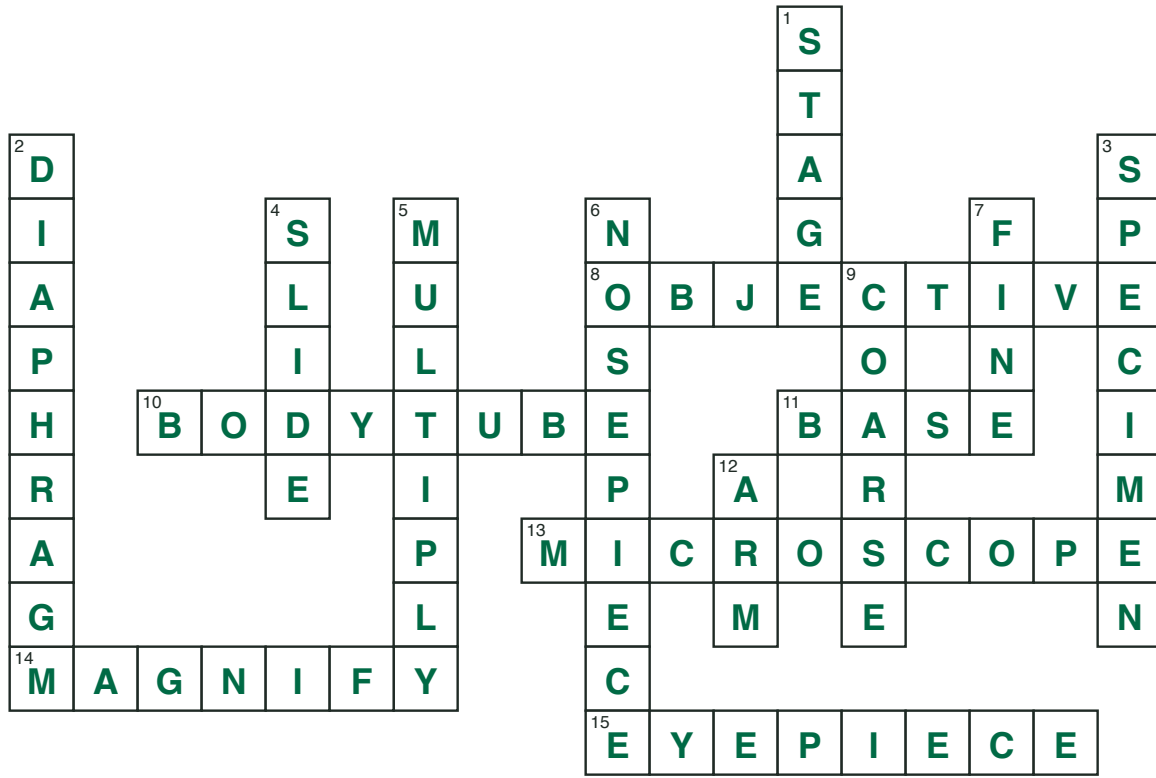
On high power the lens is very close to the slide. The coarse focus knob could push the lens into the slide.

3. The eyepiece is 10x. You switch from the 4x objective lens to the 10x objective lens. What is the total magnification now?

100x ($10 \times 10 = 100$).

Microscope Crossword: Answer Key

Answers are in green.



ACROSS

8. The ____ lenses are close to the slide. Each one has a different power.
10. It connects the lens you look through to the lenses near the slide (2 words).
11. The heavy bottom part that everything stands on.
13. A tool that makes tiny objects look much bigger.
14. To make something look larger than it really is.
15. The lens at the top that you look through.

DOWN

1. The flat platform where you place the slide.
2. It controls how much light passes up through the slide.
3. The object you study under the lenses.
4. A thin piece of glass that holds the object you study.
5. What you do with the two lens powers to find the total.
6. The rotating piece that holds the objective lenses.
7. The ____ focus knob is the smaller one. It makes tiny changes.
9. The ____ focus knob is the larger one. It makes big, quick changes.
12. The curved part you hold when you carry the tool.

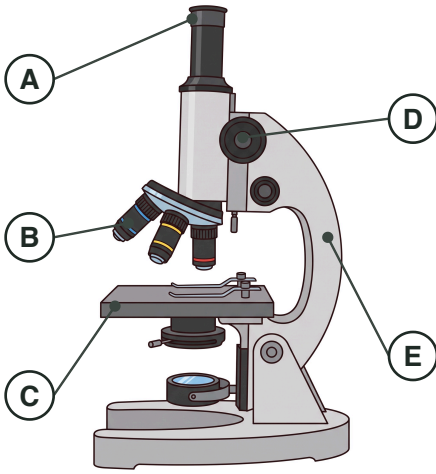
Word bank

arm base body tube coarse diaphragm eyepiece fine magnify
microscope multiply nosepiece objective slide specimen stage

Microscope Quiz: Answer Key

Answers are in green. Written answers will vary; these are examples.

Part A. This is a compound light microscope. Write the name of each part.



A **Eyepiece**

B **Objective lenses**

C **Stage**

D **Coarse focus knob**

E **Arm**

Arm · Coarse focus knob · Eyepiece · Objective lenses · Stage

Part B. Choose the best answer.

1. Which part do you look through?

- ☐ The diaphragm
- ☒ **The eyepiece**
- ☐ The nosepiece
- ☐ The stage

2. Which part controls how much light passes up through the slide?

- ☐ The base
- ☐ The body tube
- ☒ **The diaphragm**
- ☐ The arm

3. Where do you place the slide?

- ☐ On the base
- ☐ On the nosepiece
- ☐ On the eyepiece
- ☒ **On the stage**

4. A 10× eyepiece is used with a 40× objective lens. What is the total magnification?

- ☐ 4×
- ☐ 50×
- ☒ **400×**
- ☐ 4,000×

5. Which objective lens should you start with?

- ☒ **The lowest power**
- ☐ The middle power
- ☐ The highest power
- ☐ It does not matter

6. Which knob makes tiny changes to give a sharp image?

- ☐ The coarse focus knob
- ☒ **The fine focus knob**
- ☐ The nosepiece
- ☐ The light source

Part C. Write your answer.

7. How should you carry a microscope?

With two hands: one holding the arm and the other under the base.

8. Why should you never use the coarse focus knob on high power?

The lens is very close to the slide. A big move could push the lens into the slide.