

Smart Edu Hub / Smart Exam Resources

9700 / CAIE A level Biology / Paper-1/ Multiple Choice
Questions

1.1.2-Comparing-Eyepiece-Graticule-and-stage-Micrometer-Set-1-qp

Total Questions: 11

Questions

Question 1:

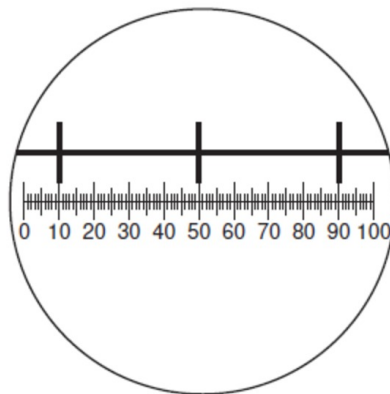
The graticule and stage micrometer are used to measure cells.

Which is the correct reason why the graticule is calibrated?

- A The graticule can be used to make measurements.
- B The graticule is magnified by the objective lens.
- C The graticule magnifies the specimen.
- D The graticule makes comparisons.

Question 2:

The diagram shows a stage micrometer, with divisions 0.1 mm apart, viewed through an eyepiece containing a graticule.



The same eyepiece is now used to examine a blood smear.

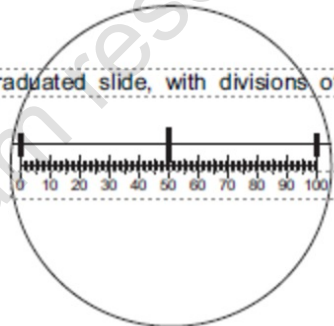
How many graticule divisions will cover the diameter of a white cell of $10\mu\text{m}$?

- A 1
- B 4
- C 10
- D 20

Questions (Continued)

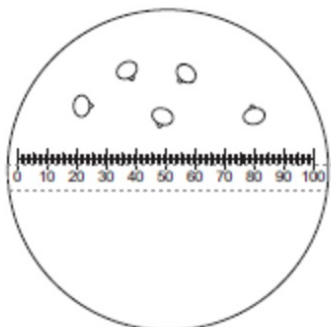
Question 3:

The diagram shows a graduated slide, with divisions of 0.1 mm viewed using an eyepiece graticule.



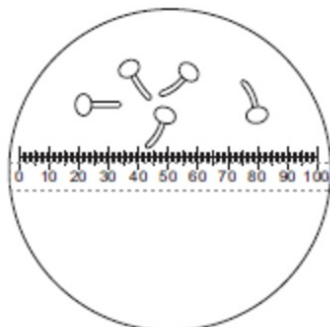
Pollen grains were grown in a sugar solution and viewed using the eyepiece graticule. Diagram 1 shows the pollen grains at first and diagram 2 shows them after four hours.

diagram 1



at start

diagram 2



after 4 hours

What is the growth rate of the pollen tubes?

- A $5\mu\text{mh}^{-1}$ B $10\mu\text{mh}^{-1}$ C 5mmh^{-1} D 10mmh^{-1}

Question 4:

Eyepiece graticules and stage micrometers are used to measure cells.

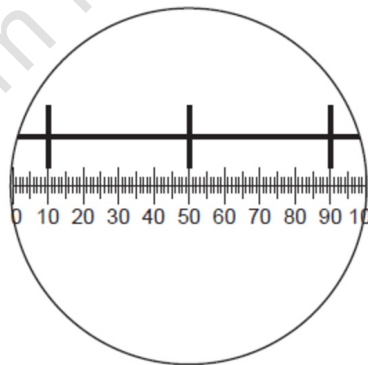
Which is the correct reason why an eyepiece graticule is calibrated?

- A An eyepiece graticule can be used to make measurements.
- B An eyepiece graticule is magnified by the objective lens.
- C An eyepiece graticule magnifies the specimen.
- D An eyepiece graticule makes comparisons.

Questions (Continued)

Question 5:

The diagram shows a stage micrometer, with divisions 0.1 mm apart, viewed through an eyepiece containing a graticule.

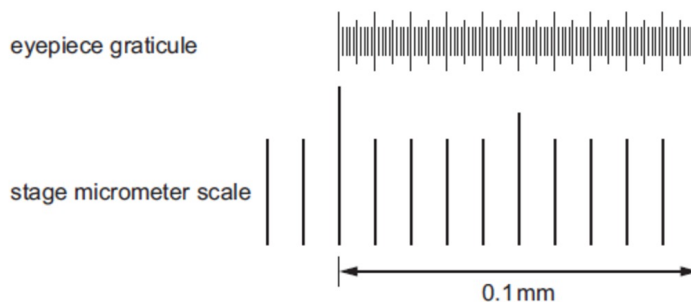


What is the area of the field of view of the microscope at this magnification? ($\pi = 3.14$)

- A $\pi \times 12.5 \times 12.5 = 4.9 \times 10^2 \mu\text{m}^2$
- B $\pi \times 50 \times 50 = 7.9 \times 10^3 \mu\text{m}^2$
- C $\pi \times 125 \times 125 = 4.9 \times 10^4 \mu\text{m}^2$
- D $\pi \times 250 \times 250 = 2.0 \times 10^5 \mu\text{m}^2$

Question 6:

The diagram shows an eyepiece graticule and part of a stage micrometer scale as seen using $\times 100$ magnification.



How is the value, in μm , of one eyepiece graticule unit calculated?

- A divide 100 by 0.1 and multiply by 1000
- B divide 100 by 0.1 and multiply by 1000 divided by 100
- C multiply 0.1 by 1000 and divide by 100
- D multiply 0.1 by 1000 and divide by 100 then divide again by 100

Questions (Continued)

Question 7:

An eyepiece graticule has a scale with 100 divisions. A stage micrometer has a scale with 50 divisions, each of which is 0.040 mm apart.

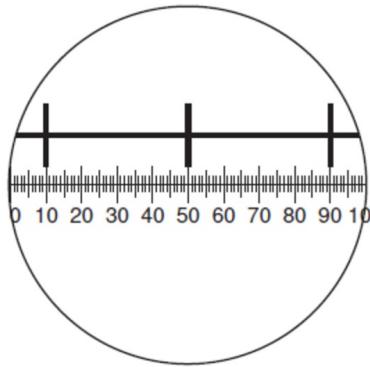
Using a $\times 40$ objective lens, the whole length of this stage micrometer scale lines up with 15 divisions of the eyepiece graticule.

What is the actual length of the 100 division scale of the eyepiece graticule?

- A 1.3 mm B 13 mm C 75 μm D 750 μm

Question 8:

The diagram shows a stage micrometer, with divisions 0.1 mm apart, viewed through an eyepiece containing a graticule.



What is the area of the field of view of the microscope at this magnification? ($\pi = 3.14$)

- A $\pi \times 12.5 \times 12.5 = 4.9 \times 10^2 \mu\text{m}^2$
B $\pi \times 55 \times 55 = 9.5 \times 10^3 \mu\text{m}^2$
C $\pi \times 125 \times 125 = 4.9 \times 10^4 \mu\text{m}^2$
D $\pi \times 250 \times 250 = 2.0 \times 10^5 \mu\text{m}^2$

Questions (Continued)

Question 9:

Which steps are needed to find the actual width of a xylem vessel viewed in transverse section using a $\times 10$ objective lens?

- 1 Convert from mm to μm by multiplying by 10^{-3} .
- 2 Calibrate the eyepiece graticule using a stage micrometer on $\times 4$ objective lens.
- 3 Measure the width of the xylem vessel using an eyepiece graticule.
- 4 Multiply the number of eyepiece graticule units by the calibration of the eyepiece graticule.

- A 1, 2, 3 and 4
B 1 and 2 only
C 2, 3 and 4 only
D 3 and 4 only

Question 10:

The graticule and stage micrometer are used to measure cells.

Which is the correct reason why the graticule calibrated?

- A The graticule can be used to make measurements.
B The graticule is magnified by the objective lens.
C The graticule magnifies the specimen.
D The graticule makes comparisons.

Questions (Continued)

Question 11:

Which steps are needed to find the actual width of a xylem vessel viewed in transverse section using a $\times 40$ objective lens?

- 1 Convert from mm to μm by multiplying by 10^{-3} .
- 2 Calibrate the eyepiece graticule using a stage micrometer on $\times 10$ objective lens.
- 3 Measure the width of the xylem vessel using an eyepiece graticule.
- 4 Multiply the number of eyepiece graticule units by the calibration of the eyepiece graticule.

- A** 1, 2, 3 and 4
B 2, 3 and 4 only
C 1 and 2 only
D 3 and 4 only