

## GCSE (9-1) Astronomy

# 11.5 Optical telescopes 1

### Pupil Worksheet



Week 19 Topic 11.5



Spec. refs 11.14, 11.15, 11.16, 11.17, 11.18

1. Which photoreceptors in the human eye respond to **bright** lights? Choose from:

cones	rods	both rods and cones
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Your answer: .....

(1)

2. What is the approximate diameter of the pupil of the human eye in bright light?

- A 0.3 mm
- B 3 mm
- C 3 cm
- D 6 cm

(1)

3. What is the name of naked-eye observing technique in which an observer first spends about 30 minutes outside to allow the retina's rods desensitise?

.....

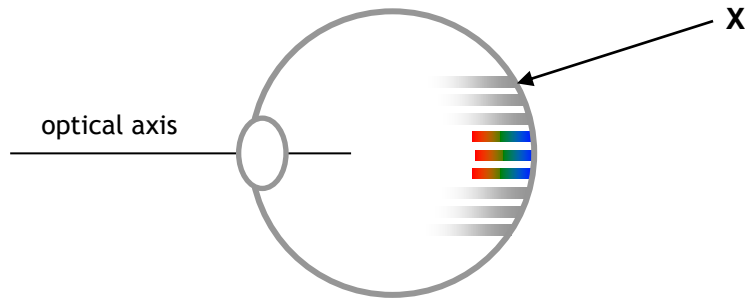
(1)

4. Which part of the human eye allows light to enter?

.....

(1)

5. The diagram shows a cross-section through the human eye.



Which type of photoreceptors are labelled **X**?

Your answer: .....

(1)

6. Which line in the table shows the correct components of a **reflecting** telescope?

	<u>objective element</u>	<u>eyepiece</u>
<input checked="" type="checkbox"/>	<b>A</b> convex lens	convex lens
<input checked="" type="checkbox"/>	<b>B</b> convex lens	concave mirror
<input checked="" type="checkbox"/>	<b>C</b> convex mirror	convex lens
<input checked="" type="checkbox"/>	<b>D</b> concave mirror	convex lens

(1)

7. Which of the following gives the **highest resolution** of a telescope?

- A** large diameter of objective element
- B** small diameter of objective element
- C** large diameter of eyepiece
- D** large magnification

(1)

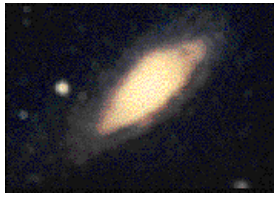
8. Which **other** factor determines the resolution of an image formed by a telescope?

.....

(1)

9. Which of the following images of the Andromeda Galaxy has the **poorest** resolution?

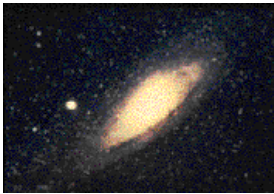
A



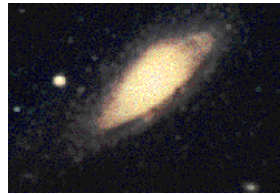
B



C



D



(1)

10. The image shows a reflecting telescope.



The objective element of such a telescope is a



A converging lens



B converging mirror



C diverging mirror



D plane mirror

(1)

11. When using most types of telescope, the observer looks along its optical axis **except** when using a

- A** Cassegrain reflector
- B** Galilean refractor
- C** Keplerian refractor
- D** Newtonian reflector

(1)

12. Which type of telescope uses a small diverging secondary mirror to reflect light back down the 'tube'?

..... (1)

13. What is the name of the small telescope usually attached to larger reflectors?

Choose from:

stellarscope      GOTO-scope      finderscope

Your answer: .....

(1)

14. Which GCSE Astronomy pupil is correct?

**Lily:** The resolution of a telescope is far more important than a telescope's magnification.

**Nathan:** The magnification of a telescope is far more important than a telescope's resolution.

Your answer: .....

(1)

15. The main difference between a Galilean refractor and a Keplerian refractor is that the Keplerian refractor

- A** consists of two convex lenses and not one
- B** consists two concave lenses and not one
- C** contains a small plane mirror to reflect light
- D** has a much smaller magnification

(1)

## Solutions

1. cones (1 mark)
2. **B** (1)
3. dark adaptation (1)
4. pupil (1)
5. cones (1)
6. **D** (1)
7. **A** (1)
8. wavelength (1) of light
9. **A** (1)
10. **B** (1)
11. **D** (1)
12. Cassegrain (reflector) (1)
13. finderscope (1)
14. Lily (1)
15. **A** (1)

**Your score:**  / 15