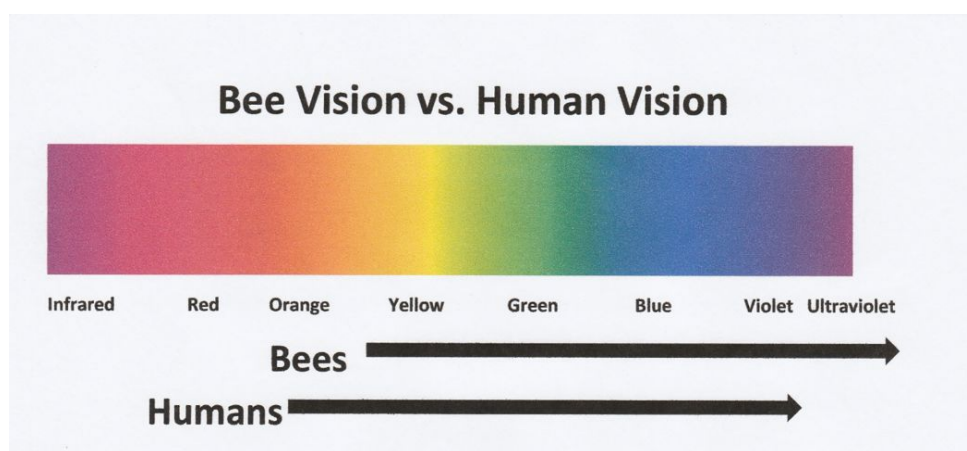


CCT Weekly Science Practice

COLOURFUL WORLD OF THE BEES

The remarkable eyesight of bees has long been a source of fascination in the scientific community. Nobel Prize-winning scientist *Karl von Frisch* proved that bees can see color. The color we see is based upon how a pigment absorbs and reflects light. When light hits an object, some is absorbed and some is reflected. Our eyes perceive the reflected portion as color. The brilliant color in flowers is a way of attracting pollinators, such as bees. The colors of flowers help target the areas of nectar. That's the reason why petals are usually a different color than leaves. Even though humans can see more colors, bees have a much broader range of color vision.



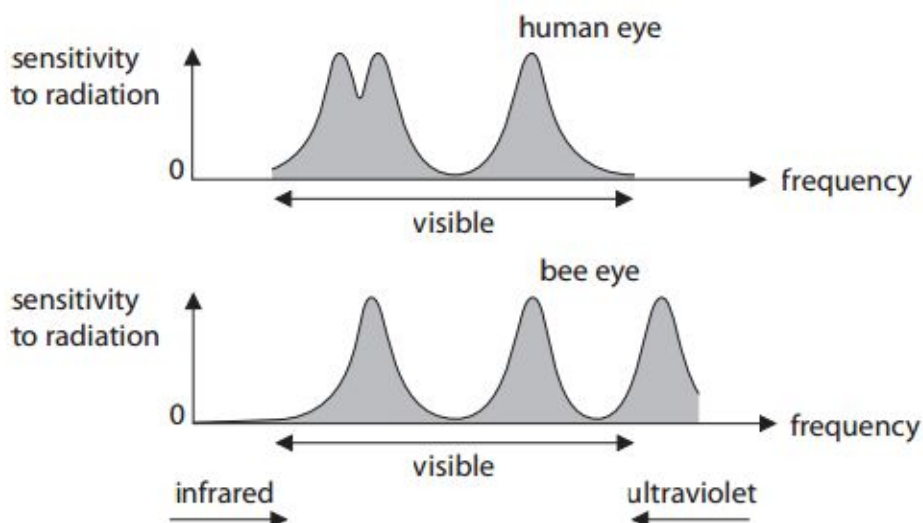
Question 1:

Based on the above spectrum showing colour sensitivity in bees, flowers of which colour will attract bees the least?

- (a) Purple
- (b) Blue
- (c) Red
- (d) Yellow

Question 2:

The diagrams show the radiations to which the human eye and the bee eye are sensitive.



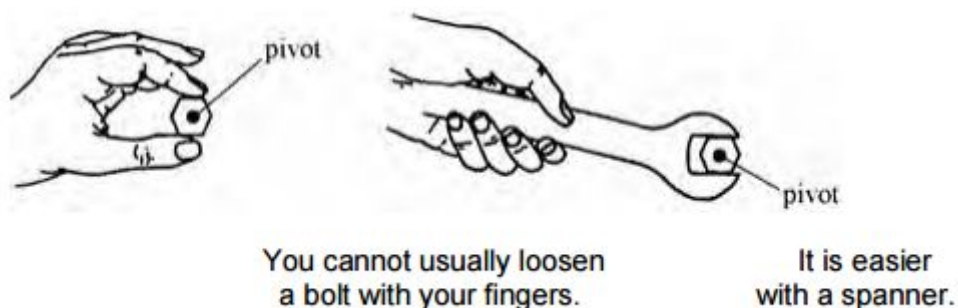
What is the key differences in the sensitivity to radiation between a human and a bee eye?

Question 3

A scientist wrote this sentence: “Ultraviolet radiation is harmful to humans but useful to honey bees.” Suggest what the scientist means by this sentence. You may wish to look back at the graphs in question 2.

SPANNERS

A lever is a machine that makes our work simpler. Spanner which is a lever, is also called a wrench. A spanner makes it a lot easier to loosen a bolt.

**Question 4**

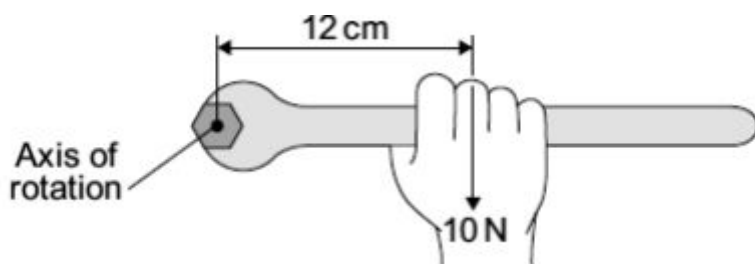
Choose words from this list to complete the sentences below.

lever piston pivot pulley turning effect

- i. The spanner is a simple
- ii. You use it to produce a bigger on the bolt.
- iii. A longer spanner works better. This is because there is a bigger distance between your force and the

Question 5

The diagram shows a long spanner.



The turning effect of force is called moment.

moment = force × perpendicular distance from the line of action of the force to the axis of rotation

Use the equation given above to calculate the moment, in N m, being produced.

Source:

- <https://www.beeeculture.com/bees-see-matters/>

Key for Scoring and Interpretation

Answer 1

Red (because its eyes does not have receptors for red colour)

Answer 2

Human beings can see only visible frequencies whereas bees can see ultraviolet frequency/
bees can see outside human frequency range.

Answer 3

UV radiations are harmful to humans as its exposure can cause skin cancer whereas bees can see ultraviolet light which may help it to locate food.

Answer 4

- i. ___Lever
- ii. ___Turning Effect
- iii. ___Pivot

Answer 5

$$\text{Moment} = 10 \times 0.12 = 1.2 \text{ N m}$$

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