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# GENERAL SCIENCE AND ABILITY

## SECTION - II

### Question No. 6

- a) Five years ago the age of father was thrice the age of son. If son is 30 years now. What is the current age of father?

Solution:

Given data:

Age of son = 30 years

To find:

Age of father = ?

Solution:

let the father's age be =  $x$

and the son's age =  $y$

Then, according to the given condition,

five years ago age of father =  $x - 5$

$$x - 5 = 3(y - 5)$$

$$x - 5 = 3y - 5$$

$$x - 5 = 3y - 5$$

Putting the son's age as 30.

$$x - 5 = 3(30) - 5$$

$$x - 5 = 90 - 5$$

$$x - 5 = 85$$

$$x = 85 + 5$$

$$x = 90$$

Thus, the current age of father is 90.



b) Mean of 10, 30,  $Y$  and 50 is 50. What is the value of  $Y$ .

Solution :

$$\text{Mean} = \frac{\text{Sum of observations}}{\text{No. of observations}}$$

$$50 = \frac{10 + 30 + Y + 50}{4}$$

$$50 \times 4 = 90 + Y$$

$$200 - 90 = Y$$

$$Y = 110$$

Thus, the value of  $Y$  is 110.

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c) Find the missing terms

i- 2, 6, 18, 54, 162

$$2 \times 3 = 6$$

$$6 \times 3 = 18$$

$$18 \times 3 = 54$$

$$54 \times 3 = 162$$

$$\begin{array}{r} 54 \\ \times 3 \\ \hline 162 \end{array}$$

Thus the missing number is 162.

ii) 3125, 256, —, 4, 1

3125

5

256

d) If the product of two numbers is 320 and their ratio is 1:5. What is the difference between the squares of these numbers.

Solution.

Let the one number be  $x$  and the other  $5x$  according to the given condition.

$$x \times 5x = 320$$

$$5x^2 = 320$$

$$x^2 = \frac{320}{5}$$

$$\sqrt{x^2} = \sqrt{64}$$

$$x = 8$$

Thus the 1st number be = 8

$$\text{2nd number} = 5x$$

$$= 5(8)$$

$$= 40$$

Taking the difference of their squares

$$= (40)^2 - (8)^2$$

$$= 1600 - 64$$

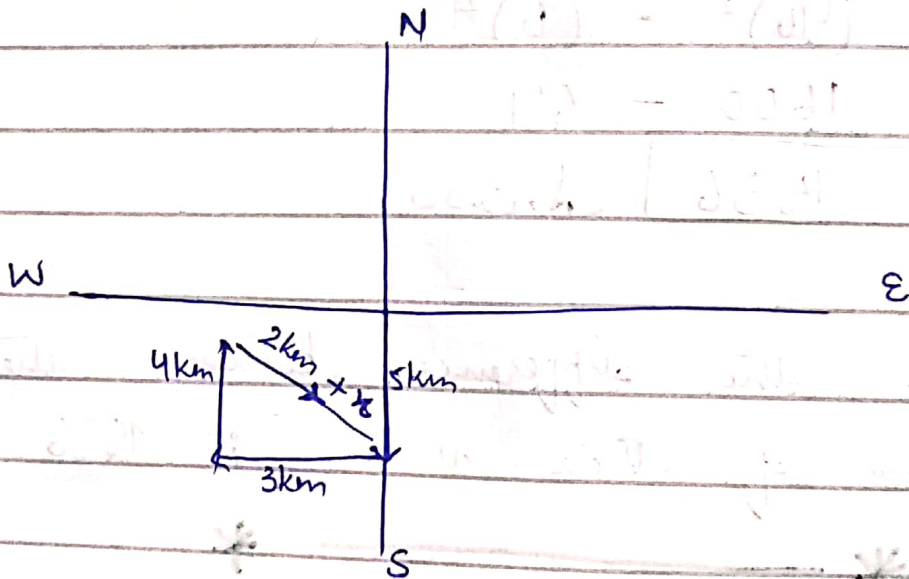
$$= 1536 \text{ Answer.}$$

Thus, the difference between the squares of their numbers is 1536.



## Question No. 8 :-

- a) A crow travels south 5km and then 3km west, and then 4km north. Finally travels 2km south-east. How far is the crow from initial point?



By using Pythagoras theorem.

$$(\text{hyp})^2 = (\text{base})^2 + (\text{perpendicular})^2$$

$$(\text{hyp})^2 = (3\text{km})^2 + (4\text{km})^2$$

$$(\text{hyp})^2 = 9\text{km}^2 + 16\text{km}^2$$

$$(\text{hyp})^2 = 25\text{km}^2$$

Taking square root on both sides.

$$\sqrt{(\text{hyp})^2} = \sqrt{25\text{km}^2}$$

b) A pizza is divided into 8 slices in which 3 slices contain raisin in it. Shiza picks a slice, what is the probability that she will pick a slice with raisin?

Solution:

$$\text{Probability} = \frac{\text{No. of favorable outcomes}}{\text{Total number of outcomes}}$$

$$= \frac{3}{8}$$

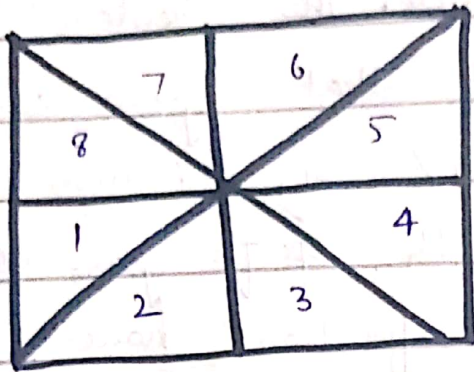
$$\boxed{\text{Probability} = 0.375} \quad \text{Ans}$$

Thus, the probability of picking a slice with raisin is 0.375.



$$\begin{array}{r} 0.375 \\ 8 \overline{) 30} \\ \underline{24} \\ 60 \\ \underline{56} \\ 40 \\ \underline{40} \\ 0 \end{array}$$

c) Find the number of Triangles in the following figure.



$$8 \times 2 \\ = 16.$$

Thus, there are 16 number of Triangles in this figure.



d) Discuss the factors which affect IQ.

Answer:

## Factors Affecting The IQ

Several factors influence IQ, including a combination of genetic and environmental elements:-



## 1. Genetic influence

Genetic factors play a role in shaping intelligence. The heritability estimates suggest that genes contribute to about 50-80% of individual differences in IQ. Specific genes associated with cognitive function have been identified.

## 2- Social and economic influence

Social and economic factors can significantly impact IQ. Children growing up in low socio-economic environments often face limited access to quality education, nutritional resources, and stimulating experiences. These disadvantages can hinder cognitive development, potentially lowering IQ scores. Thus, addressing social and economic disparities is crucial for fostering environments that support optimal cognitive development and mitigate the potential negative impact on IQ.

### 3- Gender influence

Research generally suggests that there are no innate intellectual differences between genders. However, societal factors and stereotypes can influence educational opportunities and expectations, indirectly affecting IQ scores.

### 4- Health and Physical development influence

Health and physical development are crucial factors influencing IQ. Malnutrition, exposure to toxins, and inadequate health care during early childhood can impair brain development, potentially impacting cognitive abilities and lowering IQ scores.

# SECTION - I

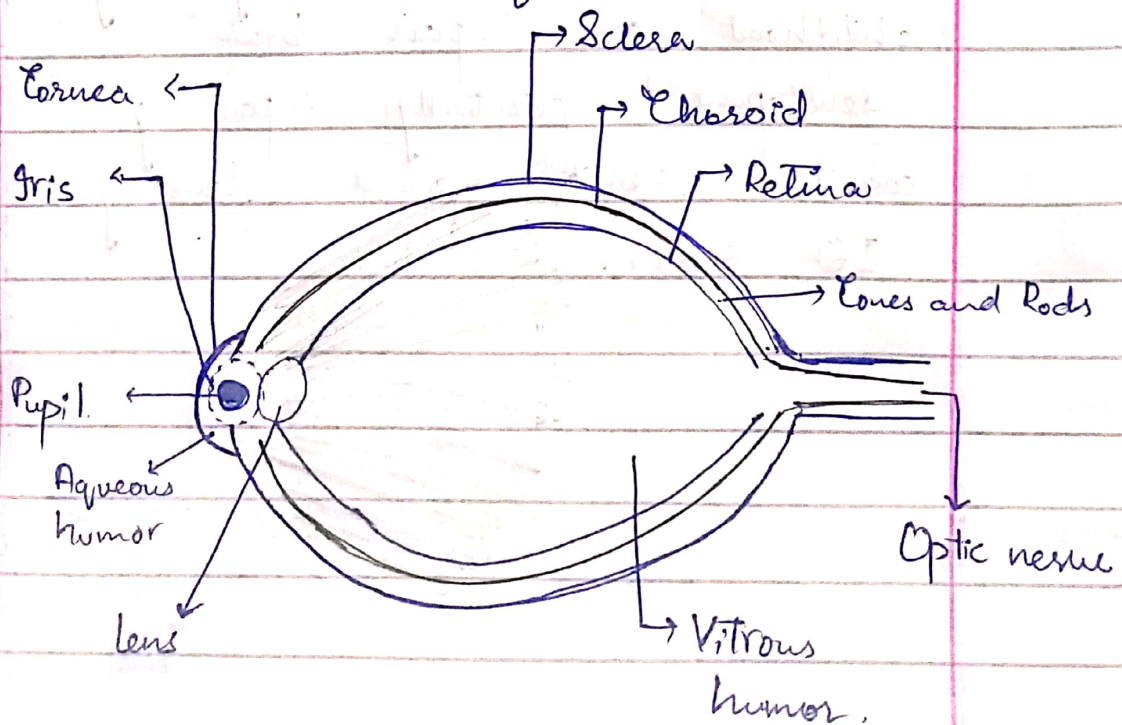
Question No. 3.

- a) Discuss different parts of eye. How far sightedness and short sightedness can be corrected?

Answer:-

## Human Eye

Human eye is a sensory organ. It provides sensory information to humans in the form of visuals.



# Parts of human eye

## 1- Sclera

It is an outermost layer of the eye. It protects the eye.

## 2- Choroid

It is present beneath the Sclera. It is little thicker and reddish as well. It is responsible for the nourishment of the eye.

## 3- Cornea

It is outermost and transparent layer. The light waves interact with Cornea first, thus Cornea is responsible for the bending of light waves.

## 4- Iris

It is a pigmented muscle which controls the movement of pupil.

## 5- Pupil

Pupil is the small ~~hole~~ hole from where the light enters into the eye.

## 6- lens

lens are responsible for the reception of light and focusing of light.

## 7- Retina

It is the innermost and the most sensitive region. The retina has small extensions called cones and rods.

## 8- Cones and Rods

Cones and rods have photo receptors in them. Photo receptors convert the light waves into an action potential - i.e; image formation.

## 9- Optic Nerves

Optic nerve transmit the image towards the brain.

## 10- Aqueous Humor and Vitreous humor

These are the fluid filled regions. They are involved in the maintenance of fluid.