

## Section 2

Q No 6:

$$C = \text{(i)} \quad 162$$

$$\text{(ii)} \quad 125$$

b- The mean average of a set of values is calculated by adding up all the values and dividing by the number of values. In this case

$$\frac{60 + 30 + Y}{4} = 50$$

Combining the terms:

$$\frac{90 + Y}{4} = 50$$

Multiply both sides by 4:

$$90 + Y = 200$$

Subtract 90 from both sides:

$$Y = 110$$

So the value is **110**

d- Let the two numbers be  $x$  and  $5x$ , based on their ratio of

**1:5**

Given that the product of

the two numbers is 320.

$$x \cdot 5x = 320$$

simplify:

$$5x^2 = 320$$

Divide both sides by 5:

$$x^2 = 64$$

Now, find the values of  $x$ . Since

$x^2 = 64$ ,  $x$  can be either 8 or

-8.

The two numbers are  $x = 8$  and

$$5x = 40.$$

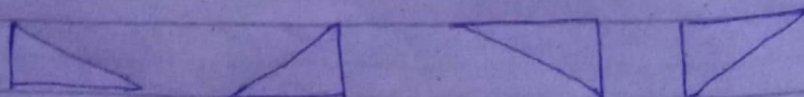
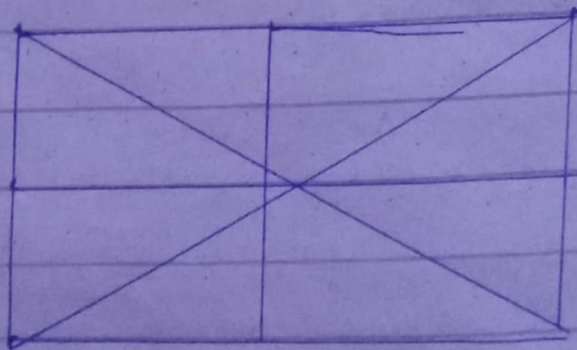
The difference b/w the squares of these two numbers is:

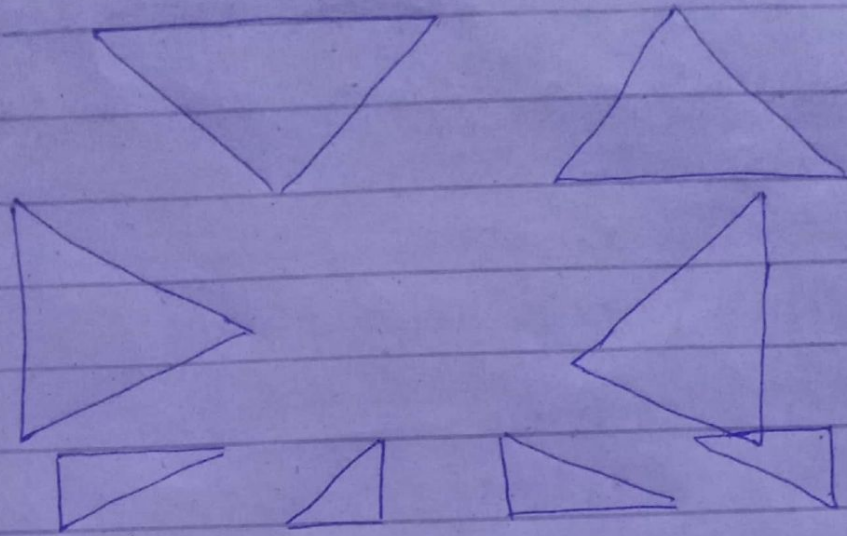
$$(40)^2 - (8)^2 = 1600 - 64 = 1536$$

so the difference between the squares is **1536**.

Q NO 8

C-





There are 12 Triangles in this given square.

d) There are several factors which can affect the IQ. some are mentioned below:

**Environment:** Early childhood experiences, nutrition can play a role to affect IQ.

**Education:** Learning environments, access to quality education and experiences play a role to affect IQ.

**Stress:** one who is in stress constantly, that can affect his IQ.

**Parental involvement:** The involvement of parents in child's life

can bring a positive or negative effect which can be a cause for IQ.

a South - 5 km  
West - 3 km  
North + 4 km

South-East It can be broken down into South and East components. The distance moved to South is -2 km and the distance moved East can be calculated using Pythagorean Theorem:

$$\sqrt{(2\text{ km})^2 + (2\text{ km})^2} = \sqrt{8}\text{ km}$$

(Approximately 2.83 km)

Now summing up all these components

$$= 5\text{ km} - 3\text{ km} + 4\text{ km} - 2\text{ km}$$

(South-East)

$$= -6\text{ km} + 4\text{ km} - 2\text{ km}$$

$$= -4\text{ km}$$

So, the crow is 4 km away from the initial point.

b The probability ( $p$ ) of Shazia picking a slice with raisin is calculated by the divided number of favorable outcomes (slice with raisin) by the total number of possible outcomes (Total <sup>slice</sup> number)

$$P(\text{raisin slice}) = \frac{\text{number of raisin slice}}{\text{Total number of slice}}$$

In this case:

$$P(\text{raisin slice}) = \frac{3}{8}$$

so the probability is  $\frac{3}{8}$

## Part II

### Section (I)

Q 2:

(a) Key Features of Cop28

**Back(ground):** The 28<sup>th</sup> session of the Conference of Parties (COP) to the UN Framework Convention on climate change, (UNFCCC) was held in Dubai

from November 30 to 13 of December 2023. It was the first COP to take place in Middle East.

### Key Features:

The COP 28 has <sup>achieved</sup> some historic outcomes, such as

#### (i) Loss and Damage fund:

one of the first outcomes of COP 28 was the establishment of loss and damage fund.

It will provide a financial support to the developing countries which are already suffering from climate change, such as extreme weather, sea level rise and biodiversity loss. For loss and damage fund \$700 mn pledged by wealthy nations has been sworn until. This initiative can be fruitful for the climate change resilience.

#### (ii) Fossil Fuel phase-out and increase of Renewable energy capacity; The adoption of

fossil fuel phase out agreement has given a new trajectory to the parties to transition away from fossil fuels and adopt clean energy systems. The parties have thought estimatedly till 2050 there should not be any fossil fuel but only renewable energy sources. COP 28 addressed the need of the elimination of coal, gas, oil which are the main cause of climate crisis. The agreement also calls for a tripling of renewable energy capacity globally by 2030, and also acceleration of technologies such as carbon capture and storage.

### (iii) Role of the private sectors:

The private sectors had done a great contribution in the launch of a \$30 bn private market climate capital, which will mobilize the private ser-

sector in low carbon and climate resilient projects.

#### d) Three renewable energy resources under CPEC

Three renewable energy resources under CPEC include:

##### 1 Solar energy:

Pakistan has been focusing on solar power projects under CPEC to harness its abundant sunlight. This includes the development of solar farms and photovoltaic installations.

##### 2 Wind energy:

wind power is another significant energy resource under CPEC. wind farms and wind energy projects have been established to harness the wind potential in different regions of Pakistan.

##### 3 Hydro power:

Pakistan has a considerable hydropotential, and CPEC include projects rela.



ted to hydropower generation.

Dams and hydro electric power stations aim to utilize the flowing water to generate electricity.

Q No 3:

(ii) The eye is a complex organ with various parts that work together to enable vision.

**Key components of Eye:**

- 1: Cornea:** The transparent front part of eye that helps focus light onto the retina.
- 2 Iris:** The colored part of the eye that controls the size of the pupil, regulating the amount of light entering.
- 3 pupil:** The black circle opening in the centre of the Iris that allows light to enter the eye.
- 4 Lens:** Located behind the Iris, the lens helps further focus light onto the retina.

**5 Retina:** The innermost layer of the eye containing light sensitive cells (rods and cones) that transmit signals to the brain through the optic nerve.

**6 Optic Nerve:**

Transmits visual info from the retina to the brain

The shortsightedness is called **Myopia** and the farsightedness is called **Hyperopia**. Here below the correction of both sightedness is mentioned.

**Myopia correction:**

Diverging lenses, concave in shape are used to spread out the light entering the eye, helping it to focus correctly on the retina.

**Hyperopia correction:**

Converging lenses, convex in shape are used to bring the light entering the eye together, ensuring it focuses correctly

on the retina.

In Addition, corrective procedures like LASIK can be used to reshape the cornea, correcting myopia and Hyperopia.

### C How black holes are formed?

Black holes are formed through the gravitational collapse of massive stars. Here is a general view:

1: **Star formation:** A black hole begins its formation in the life cycle of a massive star. These stars are much more bigger than our sun.

2 **Nuclear fusion:** Massive stars are undergo nuclear fusion, converting hydrogen into helium and other heavier elements in their cores. This process generates outward pressure counteracting the gravitational force trying to collapse the star.

### 3 Depletion of Nuclear Fuels

Eventually, the star exhausts its nuclear fuel. When this happens, the outward pressure decreases and gravity becomes dominant.

### 4 collapse:

The massive star goes <sup>under</sup> a rapid collapse under the influence of its own gravity. This collapse is extremely intense and leads to a highly dense region known as a singularity at the center.

### 5 Formation of Event Horizon:

This singularity is surrounded by an invisible boundary called the event horizon. Once an object, including light, crosses this boundary, it can't escape the gravitational pull of the black hole.