Dos and Don'ts for the General Science & Ability Paper

Hi there — you've prepared well! Remember, knowing the content is one thing, but presenting it in the paper exactly as required is another. Here are a few key points to keep in mind:

1. For a 5-mark part, aim to write at least 2 and at most 3 sides of the answer sheet. Often, a question has two or three parts, and the marks are divided accordingly — so address each part fairly.

2. Manage your time wisely — you have about 35 minutes per full question, which comes down to around 8 minutes for each 5-mark part. Stick to this to avoid rushing later.

3. Make your answers look scientific, not just theoretical. Use flowcharts and diagrams wherever they add clarity.

4. Neatness matters — keep your handwriting clean, avoid cutting or overwriting.

5. Mind your spelling and grammar — while GSA doesn't deduct marks for these, your expression leaves an impression.

6. In the ability portion, explain analytical ability questions in words. For a 5-mark part, show all steps and provide clear explanations.

Good luck for CSS 2026 — you're going to ace it, in sha Allah! ⭐

Handwritten underneath:

Date: 3-01-25

Name: Umm Farwa

Batch: 09 GSA

Mock Exam 01

General Science & Ability

(Section A)

Q No 2

a Describe the structure of big bang according to big bang theory.

Definition:
The Big Bang Theory
Universe everything and from

a single, extremely hot and dense point (singularity) about 13.8 billion years ago and has been expanding ever since.

Structure

Singularity:
All matter and energy concentrated in one point.

Explosion and Expansion:
Sudden expansion sent matter outward.

Formation of Particles:
Quarks → protons and neutrons → atoms.

Formation of Cosmic Structures:
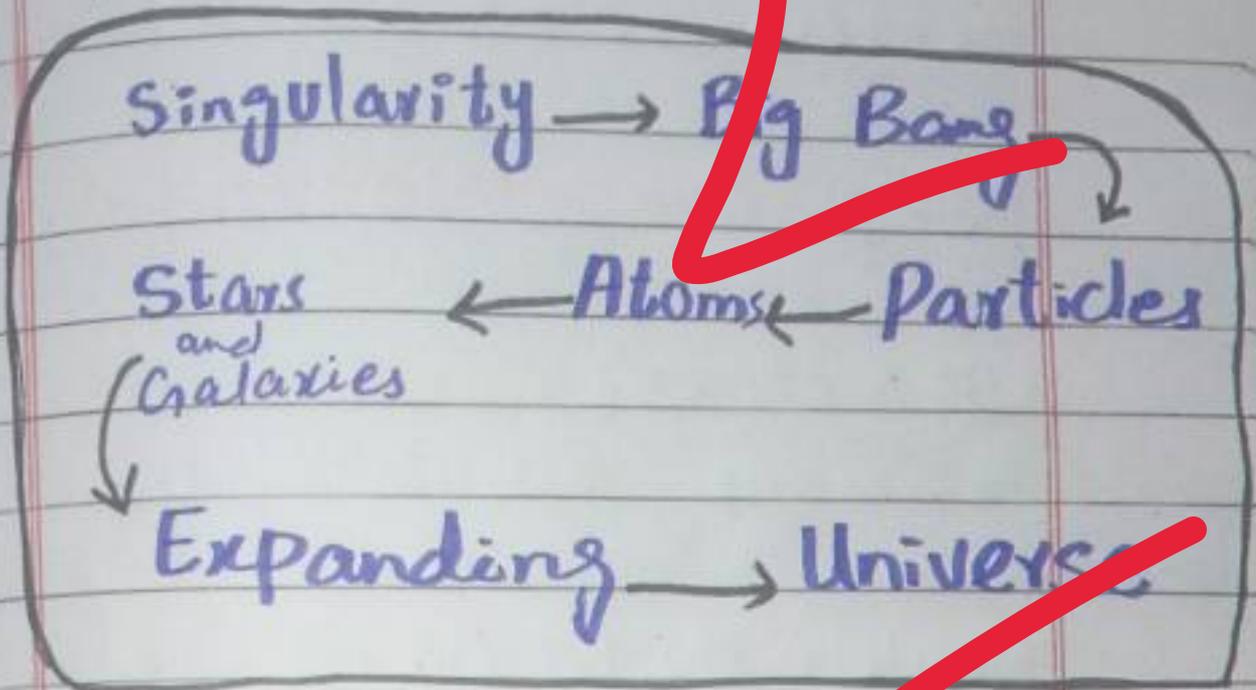Atoms formed stars, glaxies, and clusters.

Present Universe:
Continues to expand

with galaxies moving apart.

Singularity → Big Bang

Stars and Galaxies ← Atoms ← Particles

Expanding → Universe

flow chart diagram

b Define Urinary System and explain the working of nephron.

Definition

The urinary System removes metabolic waste and maintains

water-salt balance, consisting of kidneys, ureters, bladder urethra.

Nephron - Working:

Structure:

Bowman's capsule + Glomerulus, Proximal tubule + Loop of Henle + Distal tubule + Collecting duct

Filtration

Blood filtered in glomerulus, water, salts, glucose, urea →
Bowman's capsule.

Reabsorption

Useful substances reabsorbed into blood.

Secretion and Excretion:

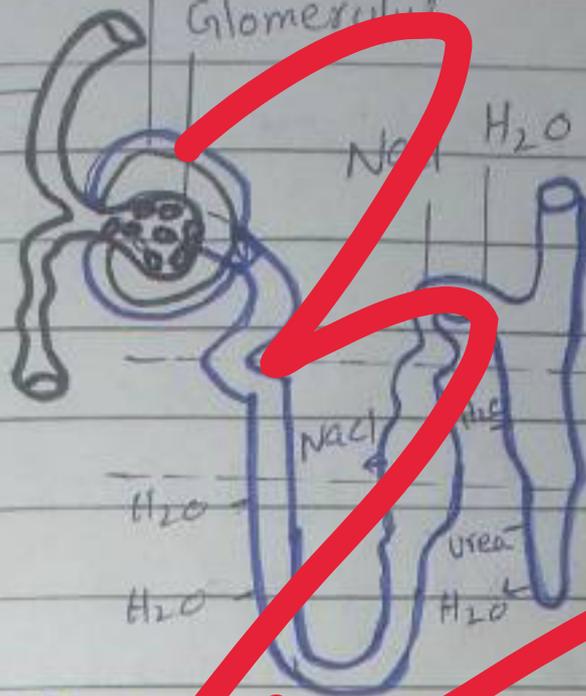waste secreted into tubules → Urine collected →
Bladder → Urethra.

Bowman's capsule

Glomerulus

Afferent arteriole

Efferent arteriole

Na^+ H_2O

Cortex

$NaCl$ outer medulla

H_2O

Urea

H_2O H_2O Inner medulla

Nephron

c. What is Un-balanced diet? How it affects the healthy living?

Definition:

An Un-balanced diet either lacks essential nutrients (proteins, vitamins, minerals) or has excessive components (sugar, fats).

Effects on Health:

Deficiency Diseases:
e.g. Rickets (vit D)
scurvy (vit C).

Obesity and Heart Diseases
Excess fats and
sugar.

Weak Immunity
poor resistance to
infections.

Delayed Growth
Especially in children, affects
mental and physical development

Chronic Conditions:
Diabetes, hypertension
due to poor diet.

Unbalanced Diet:
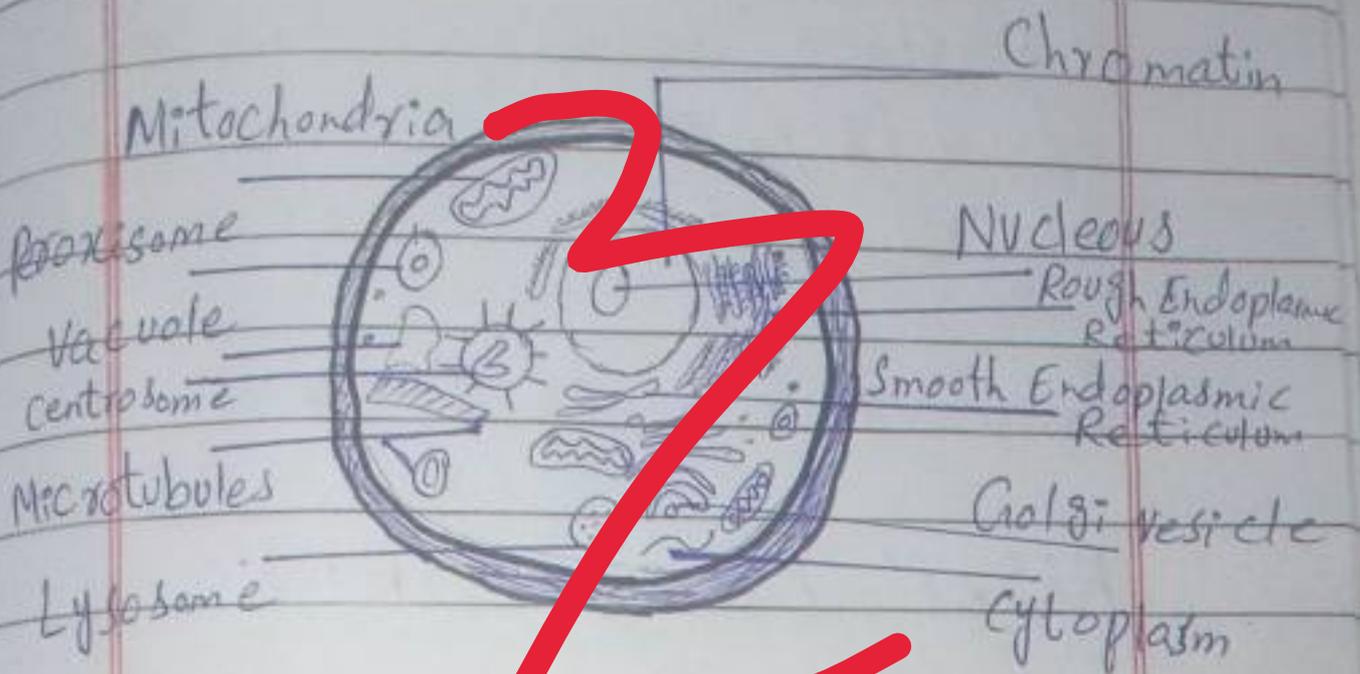Nutrient → Deficiency
Diseases & Health issues

d **Describe the structure and functions of cell membrane, cytoplasm and mitochondria?**

Answer:

Components	Structure	Function
Cell wall	Rigid layer outside Plant cells (cellulose)	Provides support Shape and Protection
Cell Membrane	Thin flexible lipid bilayer around cell.	Controls movements of substances in out.
Cytoplasm	Jellylike substance with organells	Site of reactions and supports organells
Mitochondria	Double-membrane organell with ATP cristae	produces ATP via cellular respiration

Mitochondria

Chromatin

Peroxisome

Nucleous

Rough Endoplasmic
Reticulum

Vacuole

Centrosome

Smooth Endoplasmic
Reticulum

Microtubules

Golgi vesicle

Lysosome

Cytoplasm

Animal cell structure with Cell (plasma) Membrane

QNo. 5

a What is DRM?
Importance and Risks?

Definition:

Disaster Risk Management (DRM) is the process of identifying, assessing,

and reducing the risks of disasters to minimize loss of life, property and environmental damage.

Importance of Risk Assessment in DRM:

1. **Identifies hazards:** Natural (earthquake), flood, and man-made (industrial accidents).

2. **Evaluates Vulnerability** Determines which communities or areas are most at risk.

3. **Prioritizes resources** Helps allocates funds, equipment, and personnel effectively.

4 **Prepares response strategies:** Enables early warning systems

and evacuation plans.

5 Reduces potential losses:
By taking preventive measures, damages can be minimized.
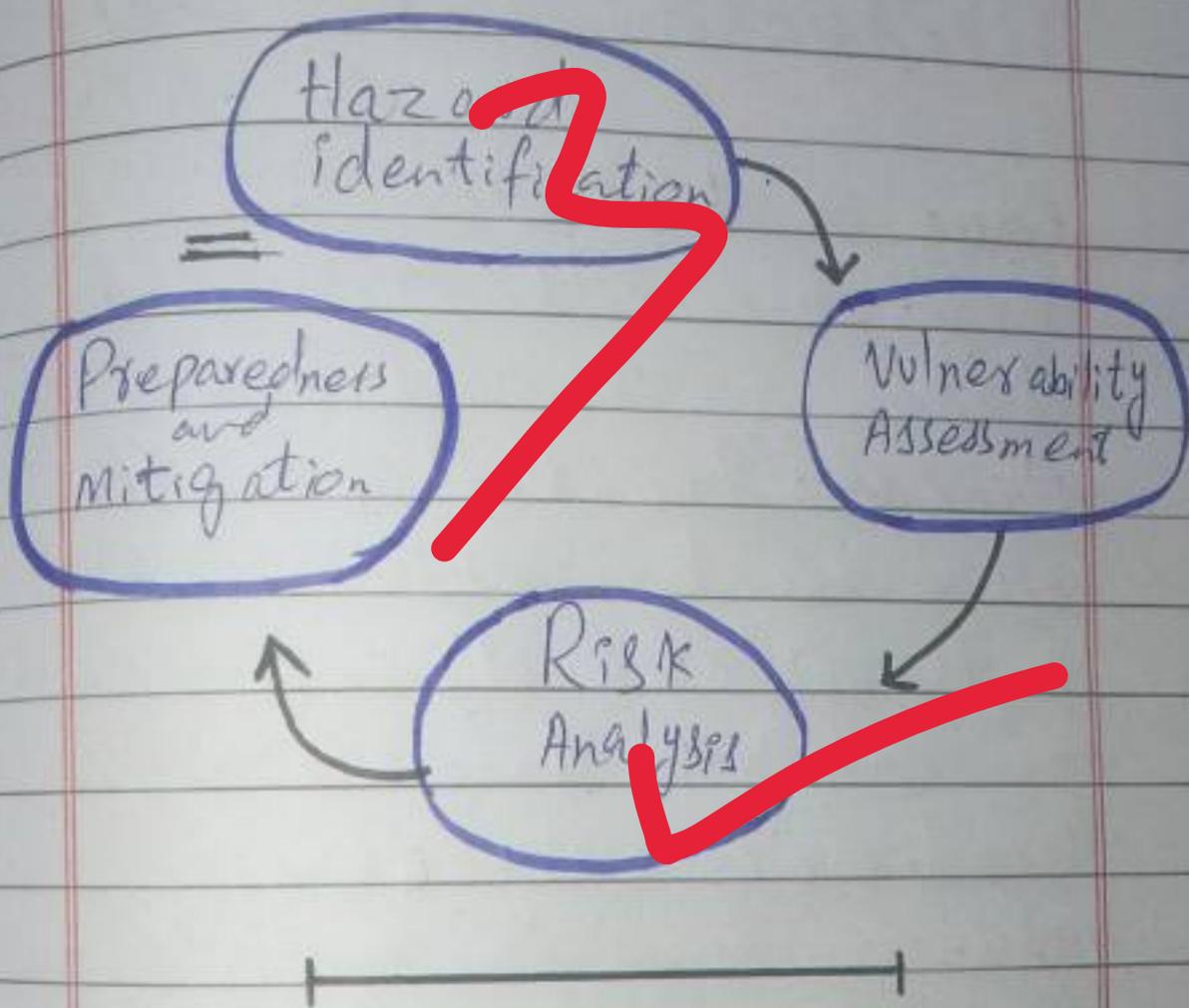
b Biofuels - Biodiesel and Biogas

Definition: Biofuels are

renewable fuels derived from biological materials such as plants, algae, or animal waste.

Production of Biofuels.

Raw materials
Vegetable oils or animals fats.

Process: Transesterification— oils react with alcohol (methanol/ethanol) in presence of catalyst to produce biodiesel + glycerin.

use:
Can be used as a diesel **Substitute** in engines.

Production of Biogas:

Raw materials: organic waste

(kitchen waste, cow dung).

Process:

Anaerobic digestion in a biogas digester, producing methane (CH_4), CO_2, and trace gases.

Use:

Fuel for cooking, heating, or electricity generation.

Vegetable oil + Alcohol + Catalyst $\longrightarrow$ Biodiesel + Glycerin

Organic waste $\longrightarrow$ Anaerobic Digestion $\longrightarrow$ Biogas ($CH_4 + CO_2$)

Biogas and Biodiesel

C Digestive system &

Stomach and Small intestine?

Definition:
The digestive system is a group of organs that break down food, absorb nutrients, and eliminate waste.

Role of Stomach:

1 Mechanical digestion
Churning food into chyme.

2 Chemical digestion
Secretes HCl & pepsin to break proteins

3 Temporary storage:
Holds food before release

to small intestine.

Role of Small intestine:

Duodenum: Receives bile & pancreatic juice for digestion of fats, proteins carbohydrates.

Jejunum & Ileum: Main site of nutrient absorption into blood/lymph.

Villi & microvilli: increase surface area for maximum absorption.

Diagram Stomach & Small intestine

→ Esophagus
→ Stomach
→ Duodenum
→ Jejunum
→ Ileum
→ Large intestine
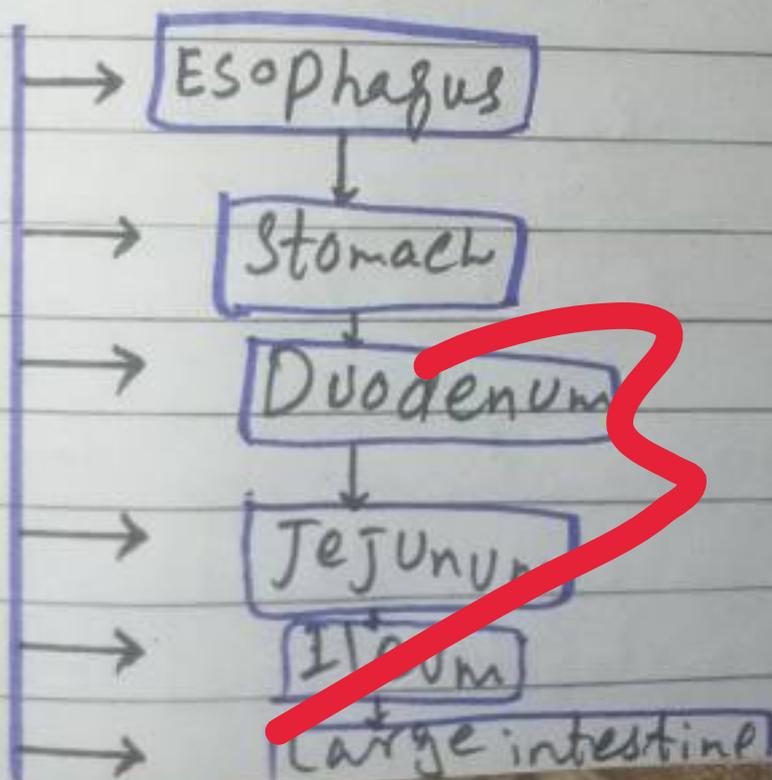
d | Plastic b → Properties, Application & Environmental Risks ?

Definition:

Plastics are synthetic polymers made from petroleum derivatives, widely used for their versatility and durability.

Properties.

a. Lightweight and strong.
b. Flexible or rigid
c. Resistant to water, chemials and corrosion.
d. Insulating (electrical & thermal)

Applications:

a. Packaging (bottles, bags)
b. Construction (pipes, insulation)

c Household items (utensils, furniture)
d Electronics (casing, components)

Environmental Risks:

1 Non-biodegradable → accumulates in landfills & oceans.

2 Releases toxic chemicals when burned

3 Harm to wildlife through ingestion or entanglement

4 Microplastics contaminate soil and water

Petroleum →
Polymerization
↓
Plastic Products
Pollution
Recycling
waste
use ←

(Plastic Life cycle)
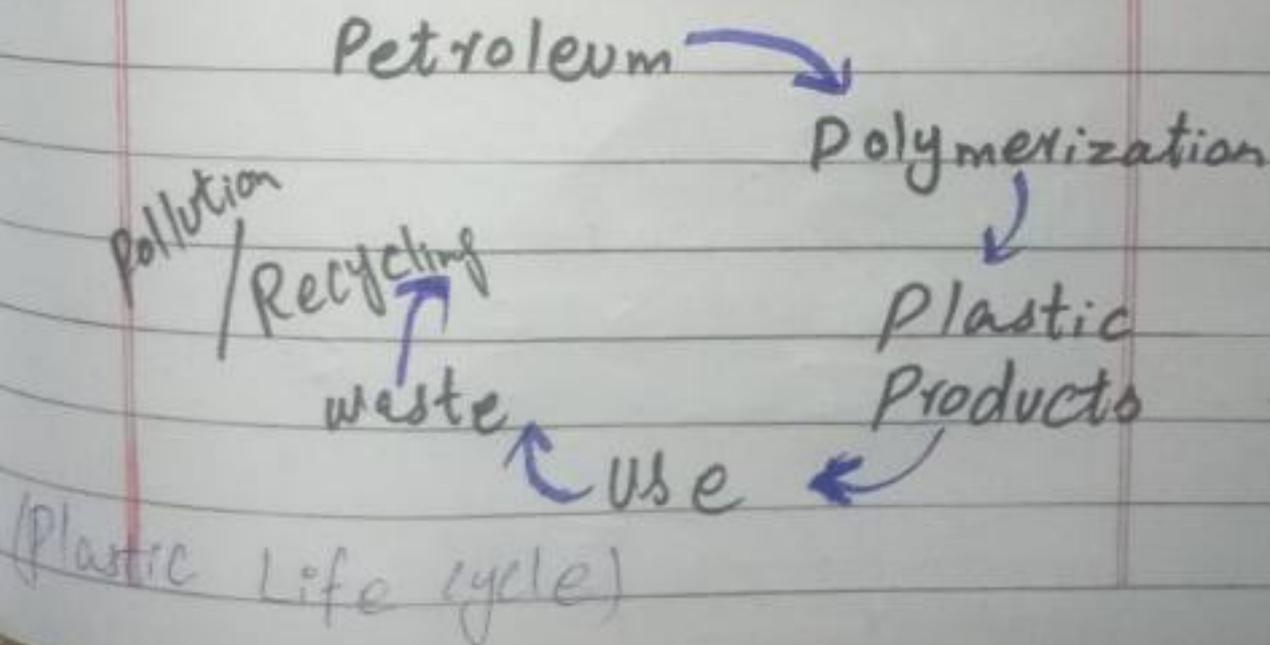
(Section B)

Q No.7

(a) Ratio of two numbers

Given:

$$40\% \text{ of } 1^{st} \text{ number} = \frac{2}{3} \text{ of } 2^{nd} \text{ numb}$$

Let first number = x
Second number $= y$

$$0.4x = \frac{2}{3}$$

Solve for ratio $x:y$

$$\frac{x}{y} = \frac{2/3}{0.4}$$

$$\frac{2/3}{2/5} \implies \frac{2}{3} \times \frac{5}{2}$$

$$= \frac{5}{3}$$

Answer = $5:3$

(b) Cost price of a ball

Given:

Selling 17 balls = Rs. 720

Loss = Cost price of 5 balls

Cost price of one ball = ?

Lets

Cost price of one ball = x

Total cost price of 17 balls = $17x$

Loss = $5 \times x = 5x$

Selling price formula

Selling price = Cost price − Loss

$720 = 17x - 5x$

$720 = 12x$

$x = \dfrac{720}{12} = 60$

Cost price of one ball = Rs. 60

c   **Present age of son**

Given
→ Father is 24 years older than son
→ in 2 years: Father's age
    = 2 × son's age

Lets
   Present age of son $= x$

Father's age $= x + 24$

After 2 years

$x + 24 + 2 = 2(x + 2)$

$x + 26 = 2x + 4$

$2x - x = 26 - 4$

$x = 22$

| Present age of son $= 22$ years |

d   Time taken by Rashid and Kamran working together

Given

Rashid : 32 pages in 6 hours

$$\frac{32}{6} = \frac{16}{3} \text{ pages/h}$$

Kamran : 40 pages in 5 hours

$$\frac{40}{5} = 8 \text{ pages/hr}$$

Total assignment = 110 pages

Combined work rate.

$$\frac{16}{3} + 8$$

$$\frac{16}{3} + \frac{24}{3} = \frac{40}{3} \text{ pages/hr}$$

Time to complete 110 pages together

$$= \boxed{8 \text{ hours } 15 \text{ minutes}}$$

Q No. 8

a   Houses Arrangement

Given :
   A is to the right of B.
                    → B − A
   E is to the left of C
   and   right of A
                 → A − E − C
   B is to the right of D
                 → D − B
Now   Arrange

From B − A and D − B → D − B − A
E is between A and
             → A − E − C
Combine all
      D − B − A − E − C
Now   middle house
      D, B, A, E, C

Middle house A

b) Direction & Distance

Given movements:

Start → North → 4km → turn left →
→ 5km → turn left → 5km → turn left
→ 6km → turn left → 1km

Track position

1 Start → North 4km → Current
position 4km N of Start (2) Next Turn left →
West 5km → Now 4km north, 5km west

3 Turn left → South 5km →
now (4-5) = -1m north
→ 1 km south, 5km west.

4 Turn left → East 6km → now 1km
South, (5-6) = -1 km east →
2 km east, 1 km south

5 Turn left → North 1km → now
0 km north south, 1 km east.

Distance from starting point

Coordinates = (East 1 km, North 0 km)

Distance $= \sqrt{(1^2 + 0^2)} = 1$ km

Direction while finding

Last movement = North, So facing North.

Direction after 2nd turn

2nd turn → after west (first turn)
→ second left → South

Direction to return to start

From (1 km east, 0 km north)

must run west

C Odd man out - Anagrams

Given

a. THRSI → Thirs → Thirst
b. AOTC → Coat
c. EOUBSL → Lobes/Obsole → Double
d. KTRIS → Skirt
e. RETAEWS → Sweater

mast are cloathing items:
Coat, skirt, sweater
odd ones: Thirst → not clothing

Answer (a) Thirsi

d How many triangles
in the figure?

Outer (big) triangles = 8
inner (small) triangles = 8

Center complete triangles = 2

So = 8 + 8 + 2 = 18

Total = 18 Triangles