

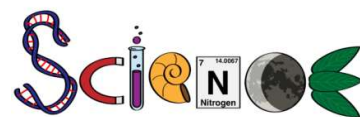
Learn... Unlearn... Relearn...



Explore Questions

# TNPSC – Agriculture, Horticulture & ALL Competitive Exams

*Equip for Learning... Prepare for Unlearning... Practice for Relearning...*



## Paper II General Studies

As per the Revised & Updated Syllabus of TNPSC

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## Foreword

Dear Friends,

Greeting from SAAI Academy!

- ***DON'T USE THIS BOOK, AT THE LAST MOMENT!***
- ***STUDIES AND PRACTICES HELPS YOU TO SUCCEED!***

This is the **Book on the series for TNPSC – Agriculture / Horticulture Exams**. It contains the General Studies such as ***General Sciences, Geography and History and Culture of India, Indian Polity, Indian Economy, Indian National Movement, History, Culture, Heritage and Socio-Political Movements of Tamil Nadu, Development Administration in Tamil Nadu and Aptitude and Mental Ability Tests*** with special references to TNPSC Revised Syllabus for the candidates of Agriculture and Horticulture. It is systematically compiled in a student-friendly manner and updated by keeping in mind on the present trends in TNPSC Exam patterns.

*In the Unit 2, it contains **Current Affairs**, which are updated regularly and will be circulated only through online as it has frequent changes.*

You are expected to be self-disciplined and self-motivated, and are **requested to prepare different models of questions as explained during the orientation programme. Self-Confidence with Systematic and SMART preparation would definitely make you a frontrunner.**

Kindly refer previous year's questions, to understand the pattern and type of questions asked and perform the class test and online tests regularly.

Wish you ALL THE BEST for your success in TNPSC exam. For further details please contact [saaistudies@gmail.com](mailto:saaistudies@gmail.com) or call +91-93821 32593.

Regards

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The time required by moonlight to reach the earth is \_\_\_\_\_ 1.3 seconds.

The planets are kept in motion in their respective orbits by \_\_\_\_\_ Gravitation and centrifugal force.

The same side of the moon always faces the Earth because \_\_\_\_\_ The period of rotation of the Moon on its axis and the period of revolution around the Earth is almost the same.

Asteroids have their orbits between the planets \_\_\_\_\_ Mars and Jupiter.

The orbits of planets around the Sun or of satellites around the Earth can be \_\_\_\_\_ Circular and elliptic.

Which one of the following statements is correct with reference to our solar system? The Earth is the densest of all the planets in our solar system.

Which planet is considered as the Dwarf planet? Pluto.

Which of the following is the largest of the inner planets? Earth.

The orbit in which of the following planets is nearest to the Sun? Mars.

The planet with the maximum number of satellites is \_\_\_\_\_. Saturn.

The outermost layer of the Sun is called \_\_\_\_\_. Corona.

Great Bear is a \_\_\_\_\_ Constellation.

If there is no Sun, the color of the sky would be \_\_\_\_\_. Black.

Which of the following is called the Red Planet? Mars.

Which of the following statements is/are correct with regard to the Milky Way? 1. It is a spiral galaxy. 2. The solar system resides in one of its spiral arms.

The planet having thirteen moons is \_\_\_\_\_. Neptune.

The exact time taken by the earth for a single rotation on its axis is \_\_\_\_\_ 23 hrs 56 minutes 4.09 sec.

What is the total number of planets that move around the Sun? Eight.

The constellations of stars appear at different positions in the sky at different times during the night mainly \_\_\_\_\_. Because the earth rotates about its axis.

Twelve constellations referred to as zodiac are \_\_\_\_\_. A group of stars.

Which is the first Asian country to reach the orbit of Mars? India.

The energy of the Sun is vested in which of the following processes? Nuclear Fusion.

The Milky Way extends through a distance \_\_\_\_\_ 105 light years.

The brightest star in the sky is \_\_\_\_\_. The Sun.

The surface temperature of the Sun is measured at 6000°C

Why is there a spluttering sound when water is sprinkled on hot oil? Boiling point of the oil is higher than that of water.

The phenomenon of mirage is due to total internal reflection.

In India, Apsara is connected with a nuclear reactor.

The instrument used for measuring the force and velocity of wind is an anemometer.

Tungsten is used in the manufacture of electric bulbs because it has a high melting point.

Which one of the following statements is incorrect? Evaporation precedes cooling.

Nobel prize was awarded to Einstein for his work on the photoelectric effect.

Silicon is a semiconductor.

For satellite communication, we use microwaves.

Match list-I with list-II correctly:

List-I      List-II

(a) Radium      4. Madam Curie

(b) X-ray      1. Roentgen

(c) Penicillin      2. Alexander Fleming

(d) Theory of Relativity      3. Einstein

Correct match: 4 1 2 3

Electric current is the flow of free electrons.

The mass of an electron is  $9.11 \times 10^{-28}$  gm.

Which one of the following lenses should be used to correct the defect of short-sightedness? Concave lens.

Food is cooked quickly in a pressure cooker because the boiling point of water increases.

The relation between the Celsius scale, Fahrenheit scale, and Reaumur scale of temperature is  $C/5 = R-32/9 = R/4$ .

The unit of surface tension is N/m.

The unit of power is kilowatt.

Dry ice is solid carbon dioxide.

Which of the following can be identified by using line spectrum? Solids.

A medium can carry a longitudinal wave because of elasticity.

When a wave goes from one place to another, it transports energy.

A hot body will radiate heat most rapidly if its surface is black and rough.

The base of the electric iron is brightly polished mainly to reduce heat lost by radiation.



- ☒  $Zn^{++}$  acts as a coenzyme.
- ☒ The phenotypic ratio of a monohybrid cross is 3:1.
- ☒ The smallest measuring unit in cytology is an angstrom.
- ☒ It is believed that life evolved in its early stage under oxygen-free conditions. Obligate anaerobic bacteria might have been able to survive in that environment.
- ☒ Sexual reproduction is absent in the group of fungi called Deuteromycetes.
- ☒ One of the characteristics that differentiates prokaryotes from eukaryotes is membrane-bound organelles.
- ☒ The most common method of vegetative reproduction in usnea is Soredia.
- ☒ The fungus employed as a genetic tool is Neurospora.
- ☒ Heterotrichous habit is exhibited by Ectocarpus.
- ☒ Photosynthesis cannot take place in ultraviolet light.
- ☒ The cause of deforestation is the rapid explosion of human and livestock populations.
- ☒ Soil gets eroded by floods and rains.
- ☒ The shape of Human Immunodeficiency Virus (HIV) is spherical.

☒ **Match list-I with list-II correctly:**

- (a) Virus    3. Dimitry Ivanowsky  
(b) Bacteria    4. Anton Van Leeuwenhoek  
(c) Nucleus    2. Robert Brown  
(d) Cell    1. Robert Hooke

Correct match: 3 4 2 1

- ☒ Polyploidy is most common in the plant kingdom.
  - ☒ In photosynthesis, the light reaction is known as the Hill reaction and the dark reaction is known as the Blackman reaction.
  - ☒ DNA structure was first described by Watson and Crick.
  - ☒ An example of cymose inflorescence is Crotalaria.
  - ☒ Rice is a staple food in India. In the milling process, polishing is the final process, and the polished rice is rich in starch.
  - ☒ The ratio 9:3:3:1 represents a dihybrid.
  - ☒ Gnetum is a climber.
  - ☒ The largest living tree on earth is a giant oak.
  - ☒ Protonema appears in the life cycle of Funaria.
-

- ❑ The disease caused by the fungus *Colletotrichum falcatum* is known as Red rot.
- ❑ Dendrochronology is the study of age of a tree with the help of annual rings.
- ❑ Clove is obtained from which part of the plant? Flower buds.
- ❑ Which of the algae grows in sewage ponds? Volvox.
- ❑ Which of the plant groups mentioned below is popularly known as amphibious of the plant kingdom? Bryophytes.
- ❑ Catalytically active enzyme is called apoenzyme.
- ❑ Water droplets at the tip of the leaf are due to guttation.

❑ **Match list-I with list-II correctly:**

(Disease)      (Spreading agents)

- (a) Cholera      1. Fungi
- (b) Polio      3. Virus
- (c) Malaria      2. Protozoa
- (d) Dermatitis      4. Bacteria

Correct match: 4 3 2 1

- ❑ The age of a tree can be determined by counting the annual growth rings.
- ❑ The name "Traveller's palm" refers to *Ravenala madagascariensis*.
- ❑ Phyllode is seen in the plant *Acacia melanoxylon*.
- ❑ Polyploids can be artificially induced by colchicine.
- ❑ Parthenocarpy can be induced by IAA.
- ❑ *Raphanobrassica* was discovered by Mendel.
- ❑ When FADH<sub>2</sub> is oxidized, the following number of ATP is produced: 2.
- ❑ Half leaf experiment proves the essentiality of CO<sub>2</sub>.
- ❑ The universal CO<sub>2</sub> acceptor molecule is called OAA.
- ❑ In anoxygenic photosynthesis, which of the following takes part as electron donors? H<sub>2</sub>S.
- ❑ Velamen root is found in *Vanda*.
- ❑ Rosewood is obtained from *Dalbergia latifolia*.
- ❑ Penicillin was invented by A. Fleming.
- ❑ Spirulina, which is a source of SCP, is a blue-green algae.
- ❑ Chlorophyll is formed in the presence of magnesium.
- ❑ Hormone involved in phototropism is auxin.

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Who was the first to adopt the title of Sultan?\*: b. Aibak

Queen Chand Bibi who fought against Akbar belonged to which Kingdom?\*: b. Ahmadnagar

The title of Viceroy was added to the office of the Governor-General of India for the first time in\*: b. 1858 AD

The Moplah rebellion of 1921 broke out in\*: b. Kerala

Who is called 'Vikram Hero'?\*: a. Periyar

Who was the Mughal Emperor during the outbreak of the 1857 revolt?\*: b. Bahadur Shah II

Vivekananda founded\*: c. Ramakrishna Mission

Veerapandia Kattabomman was hanged on\*: a. Oct. 11th, 1799

Brahma Samaj was founded by\*: a. Raja Rammohan Roy

Who is known as Indian Bismarck?\*: c. Vallabhai Patel

Mahatma Gandhi was referred to as the "Father of the Nation" by\*: a. Jawaharlal Nehru

The poet Subramania Bharathi was born at\*: b. Ettayapuram

The Sati tradition was abolished by the reformer\*: c. Dayanand Saraswathi

The author of the National Anthem "Jana Gana Mana" is\*: a. Rabindranath Tagore

The author of the National Song "Vande Mataram" is\*: c. Bankim Chandra Chatterji

King George visited India during the Viceroyalty of\*: c. Lord Hardinge

Which of the following Acts gave representation of Indians for the first time in the legislature?\*: b. Indian Council Act, 1919

Which was the only province where Muslims had taken to education and commerce quite early?\*: a. Bengal

Who committed the most daring murder in 1907 of Sir Curzon Wylie at a Public meeting in London?\*: b. M.L. Dhingra

The first Military opposition against the British in India was\*: b. Vellore Sepoy Mutiny of 1806 A.D.

The Rowlatt Act was passed in the year\*: b. 1919

Mahadev Govind Ranade was a member of the\*: b. Prarthana Samaj

The headquarters of the Gadar party was at\*: c. San Francisco

Who was the Congress President when India became Independent?\*: c. J.B. Kripalani

Which year did Bankim Chandra Chattopadhyay write "Ananda Math"?\*: c. 1882

Mahabalipuram is famous for the rock-cut architecture done during the regime of\*: b. Pallavas





**Excavations and Sangam Age Town:**

Archaeological Survey of India (ASI) excavated a Sangam Age town in Keezhadi village, Tirupathur taluk.

Radiocarbon dating of samples from Beta Analytic (USA) dated to 200 BCE.

Roman artifacts found, suggesting ancient Indo-Roman trade relations.

**Dolmens and Megalithic Tombs:**

Megalithic Dolmens found in Veeraraghavapuram (Kanchipuram), Kummalaruthupatti (Dindigul), and Narasingampatti (Madurai).

**Tamil Nadu Temples and Vimanas:**

Temples with high Vimanas in Tamil Nadu, including Tanjore Big Temple (216 feet), Gangai Konda Cholapuram (170 feet), and Thiripuvanam (126 feet).

**Trade Relations and Nedunchezhiyan:**

Flourishing trade between Tamil country and Rome during the republic.

Nedunchezhiyan praised for victory over combined army of Chera, Chola, and Velir chieftains.

**Pandya Rule and Chola Reign:**

Pandyas ruled from Madurai with Korkai as their main port.

Karikalan portrayed as the greatest Chola of the Sangam age.

**Chenguttuvan and Chellirumporai:**

Chenguttuvan ensured the safety of the port Musiri by putting down piracy.

Chellirumporai issued coins in his name.

**Tholkappiyum Verse on Empathy:**

Tholkappiyum verse emphasizes empathy, encouraging people to think of others' suffering.

**Silapathigaram and Manimegalai:**

Silapathigaram speaks about dance, art, ruling system, and trading in Sangam Age.

Manimegalai, a twin novel, explores communion, trust, and life standards.

**Coins in Sangam Age:**

Copper coins were in circulation during the Sangam age, in square shape.

## 6) திருவள்ளுவர் எப்படிப்பட்டவர்?

திருவள்ளுவருக்கு அடையாளமாக எந்த ஒரு மதமோ சாதியோ இல்லை. அவர் குறிப்பிட்ட பெயர்கள் அனைத்தும், ஆறு, மலை, குன்று, வேந்தன், கடவுள் என பொதுப்பெயர்கள் மட்டுமே. அவர் எந்த ஒரு நாட்டையும் அரசரையும் உயர்த்தியோ இகழ்ந்தோ கூறவில்லை. அதிலும் பொதுமையை கடைபிடித்தார். முக்கியமாக தமிழ் எனும் சொல் கூட இந்த நூலில் இல்லை. ஒரு நூல் அல்லது காவியம் காலத்தையும் தாண்டி நிலைத்து நிற்கவேண்டுமெனில் அதில் பலமான கதாப்பாத்திரம் ஒன்று இருக்கவேண்டும். எடுத்துக்காட்டாக ராமாயணத்தில் ராமரும், மஹாபாரத்தில் கிருஷ்ணரும், பஞ்சபாண்டவர்களும் முக்கிய கதா பாத்திரங்களாக இருந்ததால் இக்காவியங்கள் உலகப்புகழ் பெற்றன.

இவர்களை நீக்கிவிட்டோ அல்லது வேறொரு கதாபாத்திரத்தை அந்த இடத்தில் பொருத்தியோ இந்த காவியங்களை படிக்க இயலாது. ஆனால் திருக்குறளை அரசன் முதல் ஆண்டி வரை யாருடன் வேண்டுமானாலும் பொருத்தி பார்க்கலாம். அது நிச்சயமாக அனைவருக்கும் பொருந்தும். எந்த ஒரு கதா பாத்திரமும் தேவைப்படாமல் மக்களையும் அவர்கள் வாழும் துழலையுமே கதையின் நாயகனாக மாற்றும் வல்லமை திருக்குறளுக்கு உண்டு. திருக்குறள் உலகில் உள்ள பல்வேறு மொழிகளில் மொழிப்பெயர்க்கப்பட்டுள்ளது. பல்வேறு நாட்டைச்சார்ந்த அறிஞர்கள் திருக்குறளை கற்று அதிசயித்துள்ளனர். இது போல் ஒரு காவியம் தங்கள் மொழியில் இல்லையே என வருந்தியுள்ளனர்.

மனிதனானவன் முதலில் அறம் செய்யவேண்டும். அந்த அறத்தின் வழியில் பொருள் சேர்க்கவேண்டும். அறத்தின் வழியில் சேர்த்த பொருளை கொண்டு இல் வாழ்வில் இன்பத்தை பெறவேண்டும் என அனைத்து மதங்களும் கூறும் இந்த சித்தாந்தத்தை எந்த ஒரு மதத்தையும் சாராமல் தனித்து கூறுவதே திருக்குறளின் தனிச்சிறப்பு.

## சமூக, அரசியல், பொருளாதார நிகழ்வுகளில் திருக்குறளின் பொருத்தப்பாடு

### 1) திருக்குறள் சாதி சமயம் ஆகியவற்றுக்கு அப்பாற்பட்டது எப்படி?

உலகில் உள்ள மனிதர்கள் அனைவரும் சமமானவர்கள். அனைவருக்கும் உணவு, நீர் என உயிர் வாழ இவை தேவையானவை. இவை இல்லாமல் எந்த சாதி, மத மனிதர்களாலும் வாழ முடியாது. இந்தியாவில் சாதி மற்றும் மதம் என்பது சமூகத்துடன் ஒன்றிணைந்த





## UNIT–IX: Development Administration in Tamil Nadu

### Other Indicators:

**Per Capita Income:** Kanyakumari came first in the list while Ariyalur ends the list.

**Life Expectancy:** Chennai tops the list while Tiruppur ends the list.

**Literacy rate:** Kanyakumari has high literacy rate while Dharmapuri has the low literacy rate.

**Gross Enrollment ratio (GER) — Primary:** Nilgiris came first while Tirupput came last.

**Gross Enrollment ratio (GER) — Secondary:** Surprisingly Dharmapuri came first in Secondary level GER and Erode came last.

**Gross Domestic Product:** GDP is the market value of all the final goods and services produced in the country during a time period (usually a year).

**Gross National Income:** Gross national income is a measurement of a country's income. It includes all the income earned by the country's citizens and businesses, including any income earned abroad.

**Purchasing Power Parity:** Purchasing power parity is defined as the number of units of a country's currency required to buy the same amount of goods and services in the domestic market as one dollar would buy in the US.

- India became the third largest economy in terms of PPP.
- First → China; Second → US in PPP.

### Social welfare schemes in Tamil Nadu

- Adi Dravidar and Tribal Welfare Department
- Adi Dravidar and Tribal Welfare Department -Incentive / Award of Prizes - District Level Prize plus2 Examination Rs.3000/- 10th Std First prize Rs.1000/- Second Prize Rs.500/- Third Prize Rs.300/.
- Adi Dravidar and Tribal Welfare Department -Incentive / Award of Prizes - For each subjects (c) plus2 Examination Rs.2000/- (d)10th Std Examination Rs.1000/-
- Adi Dravidar and Tribal Welfare Department -Scholarship - Free Education upto 12th Std. to all i.e. tuition fee will not be collected and the amount will be reimbursed by Government.



Narmada Bachao	Medha Patkar
Servants of India Society	G K Gokhale
Servants of People Society	Lala Lajpat Rai
Satyasodhak Samaj	Jyotiba Phule
Servants of God or Khudai Khidmatgar	Khan Abdul Gaffar Khan
Van Mahotsav	K M Munshi
Bhoodan Movement	Vinobha Bhave
Tattvabodhini Sabha	Debendranath Tagore
Dadoba Pandurang	Paramhansa Sabha
Seva Sadon	Behramii M Malabari
Wahabi Movement	Shah Waliullah
Ahmadiyya Movement	Mirza Ghulam Ahmed
Self Respect Movement	E V Ramaswami Naicker

### Reservation Policy

Category	Reservation Percentage
Scheduled Caste	15%
Scheduled Tribe	7.5%
Other Backward Classes (OBC)	27%
Economically Weaker Sections (EWS)	10%
Persons with Benchmark Disabilities	4%

- The Mandal Commission was set up on 1st January 1979 by the Indian Government under the then Prime Minister Morarji Desai. **"Other Backward Classes" or OBCs**. The criteria are classified as social, economic and educational.

**Some of the prominent laws framed for reservation policies are listed below.**

- Article 15(4) – 1st Amendment, 1951 – Special provision for Advancement of Backward Classes.
- Article 15(5) – 93rd Amendment, 2006 – Provision of Reservation for Backward, SC, and ST classes in private educational institutions.
- Article 16(3) – Reservation of posts in public employment on the basis of residence
- Article 16(4) – Reservation in public employment for backward classes.
- Article (330 – 342) – talks about special provisions for certain classes of society
- Article 45 – Under Directive Principles of State Policy, states have a duty to raise the standards of living and health of backward classes.
- Article 39 A – Under Directive Principles of State Policy – states have to ensure justice and free legal aid to Economically Backward Classes.

### Social Justice and Social Harmony

- Whose report played a crucial role in distributing a land to the lower caste groups?
  - Tremancree – collector of Chenealpet district submitted a report on





Stands first in providing access to school according to the Performance Grading Index.

**Tamil Nadu e-Governance Initiatives:**

Developed e-biz for single window clearance to industries.

Integrated Tamil Nadu Chief Minister's health insurance program with the central "Ayushman Bharat."

**Ayushman Bharat:**

Launched across the country on September 25, 2018.

Covers 10.74 Crore households or approximately 50 Crore Indians.

**Total Fertility Rate (TFR):**

TFR of India is 2.3.

TFR of Tamil Nadu is 1.6, achieving the target of the 12th Five-Year Plan.

**Institutional Deliveries:**

Tamil Nadu achieves 99.9% institutional deliveries, of which 65% are in government institutions.

Financial assistance of Rs.18,000 is provided to pregnant mothers.

**Special Economic Zone (SEZ) Act 2005:**

Promotes production and industrialization in Tamil Nadu.

**Coastline and Infrastructure:**

Tamil Nadu has the second-longest coastline in India, covering 1076 km from Pulicat to Kanyakumari.

Features special economic zones, national highways, international airports, sea ports, and warehousing facilities for economic development.

**Population Statistics:**

Total population of India: 121 Crore.

Total population of Tamil Nadu: 7.21 Crore.

Tamil Nadu is the 6th biggest state, and the most populated state is Uttar Pradesh with 19.9 Crore population.

50% of the state is urbanized, accounting for 9.6% at the national level.

**Economic Indicators:**

Gross Domestic Product (GDP) rank of Tamil Nadu: Second.

Dollar per capita income of Tamil Nadu: Rs.2200.

Service sector contributes 45% of Tamil Nadu's GDP.

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## Unit 10: Aptitude & Mental Ability Tests

### Simplification:

Algebraic expressions contain alphabetic symbols as well as numbers. When an algebraic expression is simplified, an equivalent expression is found that is simpler than the original. This usually means that the simplified expression is smaller than the original.

#### **BODMAS RULE:**

This rule depicts the correct sequence in which the operations are to be executed, so as to find out the value of a given expression. Here, 'B' stands for 'Bracket', 'O' for 'of', 'D' for 'Division', 'M' for 'Multiplication', 'A' for 'Addition', 'S' for 'Subtraction'.

When an expression contains a vinculum (a horizontal line above an expression), before applying the 'BODMAS' rule, we simplify the expression under the vinculum.

The next step is to evaluate all the expressions in the brackets. After removing the brackets, we must use the following operations strictly in the following order:

1. of
2. Division, Multiplication
3. Addition, Subtraction

So, the order of precedence is:

V Vinculum first

B Brackets [{}]

O Of, Orders (i.e. Powers and Square Roots, etc.)

DM Division and Multiplication (left-to-right)

AS Addition and Subtraction (left-to-right)

### **SURDS AND INDICES**

#### **Types of Surds:**

**Mixed surds:** If one factor of a surd is a rational number and the other factor is an irrational number, then it is called a mixed surd.

**Examples:**  $2\sqrt{5}$ ,  $-2\sqrt{3}$

**Pure surds:** If a surd has unity as its only rational factor, the other factor being an irrational number, then it is called as pure surd.

**Examples:**  $\sqrt{3}$ ,  $\sqrt{a}$

Since surds are irrational numbers, they can be added or subtracted as real numbers. Also a rational number can be added or subtracted from a surd. The result will be a real number.

**Examples:**  $\sqrt{5}+3$ ;  $2-\sqrt{7}$ ;  $\sqrt{3}-2$

#### **Addition and Subtraction of Surds:**

Example:  $5\sqrt{2}+20\sqrt{2}-3\sqrt{2} = 22\sqrt{2}$

Example:  $\sqrt{45}-3\sqrt{20}+4\sqrt{5} = \sqrt{5}$

$(100 - 40\%) \text{ of } x = 420$

$$60\% \text{ of } x = 420 \quad 60/100 \times x = 420 \quad X = 700$$

Hence, the fruit seller had a total of 700 apples

**Q.2: A person multiplied a number by  $3/5$  instead of  $5/3$ , What is the percentage error in the calculation?**

Solution: Let the number be  $X$ .

$X$  is mistakenly multiplied by  $\frac{3}{5} = \frac{3X}{5}$

$X$  should be multiplied by  $\frac{5}{3} = \frac{5X}{3}$

Thus, the error will be  $= (\frac{5X}{3} - \frac{3X}{5}) = \frac{16X}{15}$

Percentage Error  $= (\text{error}/\text{True value}) \times 100$

$$= \left[ \left( \frac{16}{15} \right) \times X / \left( \frac{5}{3} \right) \times X \right] \times 100 = 64\%$$

**Q.3: If 20% of  $x = y$ , what is the value of  $y\%$  of 20 in terms of  $x$ ?**

20% of  $x = y$

$$\Rightarrow (20/100) \times x = y \quad y\% \text{ of } 20$$

$$= (y/100) \times 20$$

$$= \left[ (20x/100) / 100 \right] \times 20 = 4x/100 = 4\% \text{ of } x$$

**Q.4: Three students contested an election and received 1000, 5000 and 10000 votes, respectively. What is the percentage of the total votes the winning student gets?**

Solution: Total number of votes  $= 1000 + 5000 + 10000 = 16000$

The student who won the votes got 10000 votes

Hence, the percentage will be:

$$(10000/16000) \times 100\% = 62.5\%$$

**Q.5: If the price of a product is first decreased by 25% and then increased by 20%, then what is the percentage change in the price?**

Solution: Let the original price be Rs. 100.

New final price  $= 120\%$  of  $(75\% \text{ of Rs. } 100)$

$$= \text{Rs. } \left[ (120/100) \times (75/100) \times 100 \right] = \text{Rs. } 90$$

Therefore, the net change in price is  $100 - 90 = 10$ .

Percentage decrease  $= 10\%$

**Q.6: The value of a washing machine depreciates at the rate of 10% every year. If its present value is Rs. 8748, then what was the price of the washing machine three years ago?**

Current price of the washing machine  $= \text{Rs. } 8748$

The price of the machine depreciated at the rate of 10% every year

Therefore, the price of the washing machine three years ago  $= 8748 \div (1 - 10/100)^3$

$$= \text{Rs. } [8748 \times (10/9) \times (10/9) \times (10/9)] = \text{Rs. } 12000$$

**Q.7: For a student to clear an examination, he must score 55% marks. If he gets 120 and fails by 78 marks, what is the total marks for the examination?**

Solution: Given, the mark obtained by the student is 120 and the student fails by 78 marks

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By division  $x = 210/3 = 70$

**10. If  $57 : x = 51 : 85$ , then the value of  $x$  is**

It can be written as  $57/x = 51/85$

By cross multiplication  $57 \times 85/51 = x$

So we get  $x = 95$

**11. The ratio of boys and girls in a school is  $12 : 5$ . If there are 840 girls in the school, then the number of boys is** Consider  $x$  as the number of boys

Ratio of boys and girls =  $12 : 5$

It can be written as  $12/5 = x/840$

By cross multiplication  $x = 12/5 \times 840 = 2016$

**12. If 4, a, a, 36 are in proportion, then  $a =$**

It is given that 4, a, a, 36 are in proportion

Write it as  $4 : a :: a : 36$

So we get  $4/a = a/36$

By cross multiplication  $4 \times 36 = a \times a$

We get  $a^2 = 144$  So  $a = 12$

**13. If  $5 : 4 :: 30 : x$ , then the value of  $x$  is**

It can be written as  $5/4 = 30/x$

By cross multiplication  $x = 30 \times 4/5 = 24$

**14. If a, b, c, d are in proportion, then**

It is given that a, b, c, d are in proportion

We can write it as  $a : b :: c : d$

So we get  $a/b = c/d$

By cross multiplication  $ad = bc$

**15. If a, b, c, are in proportion, then**

It is given that a, b, c are in proportion

We can write it as  $a : b :: b : c$

So we get  $a/b = b/c$

By cross multiplication  $b^2 = ac$

**16. If the cost of 5 bars of a soap is Rs. 30, then the cost of one dozen bars is**

Consider Rs  $x$  as the cost of one dozen bars

It can be written as  $30/5 = x/12$

So we get  $x = 30/5 \times 12 = \text{Rs } 72$

**17. 12 men can finish a piece of work in 25 days. The number of days in which the same piece of work can be done by 20 men, is**

Consider  $x$  days required by 20 men to do the same work

$20/12 = 25/x$

So we get  $x = 12 \times 25/20 = 15$  days



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