

LSS17 : Ernest Rutherford



PHYSICIST Ernest Rutherford 1871-1937

Rutherford was born at Spring Grove near Nelson in New Zealand on 18th August, 1871. His father James Rutherford was a schoolmaster and a farmer. Following a scholarship from Nelson College in 1889, he went to Canterbury College in Dunedin. He received his B.A. in 1893, M.A. in 1895 and B.Sc. in 1894. For his honors degree he investigated the magnetic properties of iron by high frequency electric discharge and published his first scientific paper on the topic. He converted a very small number of atoms into alpha rays...

LSS18 : Satyendra Nath Bose



PHYSICIST-MATHEMATICIAN Satyendra Nath Bose 1894-1974

Satyendra Nath Bose was a scientist of exceptionally brilliant caliber, with his very high intelligence he solved many problems and kept working the field of his interest. He made numerous contributions to quantum statistics. Perhaps no other scientist in our country wrote as much on the foundations of quantum statistics. Satyendra Nath Bose was born on 1st January 1894 in Shriniketan, West Bengal. From his childhood he was recognized as a prodigy. When he joined Presidency College of Kolkata, he found himself among the company of brilliant students like Bhupendra Nath Saha, J.C. Ghosh and Manu Gupta like C.C. Bose and P.C. Ray. This period of great boisterousness led to an indelible memory. It is a result of his own efforts that he is known as the Indian Einstein...

LSS19 : Dr. Vikram Sarabhai



PHYSICIST Dr. Vikram Sarabhai 1919-1971

Dr. Vikram Sarabhai, one of the greatest scientists and statesmen of India, revolutionized the future of Indian Space Research Program because of his significant contribution to the field of cosmic ray physics and development of space technology in India. He was not only an imaginative and creative scientist but also a pioneering industrialist and an astute planner. Besides his technical expertise for scientific observation and studies, he also created a number of organizations like IRI Ahmedabad, Ahmedabad Centre for Industrial Research Association, Centre for Environmental Planning and Technology and Windfall Association. Sarabhai was born on 12th August 1919 at Ahmedabad to an affluent industrialist family. His father had established Sarabhai owned many mills in Gujarat. He got his early education in a private school established by his mother Sharda Devi. After that he went to Cambridge and studied for three years in Natural Sciences from St. John's College in 1938. Then he returned to India and joined Indian Institute of Science in Bangalore. He started his research in cosmic rays there under the expert guidance of Sir C.V. Raman. After the war, he returned to Cambridge and obtained his Ph.D. in 1947 for his thesis titled Cosmic Ray Ionization in Tropical Latitudes...

LSS20 : Thomas Alva Edison



PHYSICIST Thomas Alva Edison 1847 - 1931

Edison was the most prolific and practical inventor whose work has greatly influenced the world, particularly in the fields of communication and electrical power. He had patented more than a thousand inventions, the best known of which were the phonograph, the gramophone and the incandescent electric lamp. Edison was the seventh child of Samuel Edison who managed to scrape together a plot in western Canada's Green Bay and settled in Milan, Ohio with the help of a large sum of money from his father. It was here, on 17th February, 1847 that Edison was born and named Thomas Alva Edison in honor of his father. He was brought up in Milan and most of his education was provided by his mother. He was not only a brilliant inventor but also a successful businessman. In 1862, he patented his first invention - an electric vote-recorder. During this time he was working with Western Union Telegraph in Boston, which he joined in 1862 as a telegraph operator. Based with Boston, he moved to New York. He got his first success there with a telegraph machine called 'Fidel' which communicated stock exchange prices across the country. The amount of \$ 30,000 he got by selling his invention to Gold and Stock Telegraph Company, was used to set up an industrial research laboratory in 1876 in Newark, New Jersey. In 1871, he married Mary Stewart. He turned his attention then to telephony. In 1876 he patented an electric transmitter system but it proved less commercially successful than Bell's telephone. He then invented carbon granule microphone and made a large amount of money. He moved to Menlo Park, a small village in New Jersey and set up his big laboratory which remained the centre for his research. In 1877, he invented the phonograph - a sound recorder. In October, 1879 he obtained a version of light using a thin carbon filament in an incandescent lamp. In 1882 he and Joseph Wilson Swan formed 'The Edison and Swan United Electrical Company Ltd.' to get commercial benefits of his discovery. In 1884 Mary died of typhoid. In 1885, he got with an idea of moving pictures and developed a high-speed camera and kinematograph. In 1890, he invented Edison White and named it West Orange town. In the last days, he spent most of his time in doing lecture tours and his personal correspondence. He died on 18th October, 1931 in West Orange.

LIFE SKETCH OF SCIENTISTS
A set of 20 charts
Laminated, Size 45 x 57 cm (In English and Hindi Separately)

FN01 : Our Food हमारा भोजन

OUR FOOD हमारा भोजन

BALANCED DIET संतुलित आहार
 Diet which contains all the nutrients in proper amounts to help in normal growth and development.
 वह आहार जिसमें सभी पोषक तत्वों की उचित मात्रा में उपस्थिति हो, जिससे सामान्य वृद्धि और विकास में मदद मिले।

COMPONENTS OF FOOD भोजन के घटक

FOOD PYRAMID भोजन पिरामिड

FUNCTIONS OF FOOD भोजन के कार्य

TABLE SHOWING DAILY REQUIREMENT OF NUTRIENTS पोषक तत्वों की दैनिक आवश्यकता

| Nutrient | Male (15-18) | Male (19-30) | Male (31-50) | Male (51-70) | Female (15-18) | Female (19-30) | Female (31-50) | Female (51-70) |
|-------------------|--------------|--------------|--------------|--------------|----------------|----------------|----------------|----------------|
| Energy (kcal) | 2800 | 3000 | 2800 | 2400 | 2200 | 2400 | 2000 | 1800 |
| Protein (g) | 55 | 60 | 55 | 45 | 45 | 50 | 45 | 40 |
| Carbohydrate (g) | 375 | 400 | 375 | 300 | 300 | 325 | 275 | 250 |
| Fat (g) | 65 | 70 | 65 | 55 | 55 | 60 | 55 | 50 |
| Vitamin A (IU) | 5000 | 5000 | 5000 | 4000 | 4000 | 4000 | 3000 | 2500 |
| Vitamin B1 (mg) | 1.5 | 1.5 | 1.5 | 1.2 | 1.2 | 1.2 | 1.0 | 0.8 |
| Vitamin B2 (mg) | 1.0 | 1.0 | 1.0 | 0.8 | 0.8 | 0.8 | 0.7 | 0.6 |
| Vitamin B3 (mg) | 15 | 15 | 15 | 12 | 12 | 12 | 10 | 8 |
| Vitamin B6 (mg) | 1.5 | 1.5 | 1.5 | 1.2 | 1.2 | 1.2 | 1.0 | 0.8 |
| Vitamin B12 (mcg) | 2.0 | 2.0 | 2.0 | 1.5 | 1.5 | 1.5 | 1.2 | 1.0 |
| Vitamin C (mg) | 75 | 75 | 75 | 60 | 60 | 60 | 45 | 35 |
| Calcium (mg) | 1000 | 1000 | 1000 | 800 | 800 | 800 | 600 | 500 |
| Iron (mg) | 10 | 10 | 10 | 8 | 8 | 8 | 6 | 5 |
| Zinc (mg) | 10 | 10 | 10 | 8 | 8 | 8 | 6 | 5 |
| Copper (mg) | 0.9 | 0.9 | 0.9 | 0.7 | 0.7 | 0.7 | 0.5 | 0.4 |
| Chloride (mg) | 2300 | 2300 | 2300 | 1800 | 1800 | 1800 | 1400 | 1200 |

FN02 : Proteins प्रोटीन

PROTEINS प्रोटीन

Plant Sources (अनाज/फल) **Animal Sources** (पशु/पक्षी)

FUNCTIONS OF PROTEINS प्रोटीन के कार्य

SPECIAL HIGH PROTEIN NEEDS प्रोटीन की विशेष आवश्यकताएँ

FN03 : Fats वसा

FATS वसा

CLASSIFICATION OF FATS वसा के वर्गीकरण

ESSENTIAL FATTY ACIDS आवश्यक वसीय अम्ल

SOURCES स्रोत

FUNCTIONS OF FATS वसा के कार्य

FN04 : Carbohydrates कार्बोहाइड्रेट्स

CARBOHYDRATES कार्बोहाइड्रेट्स

FUNCTIONS कार्य

STORE ENERGY IN FORM OF GLYCOGEN ग्लाइकोजन के रूप में ऊर्जा भंडारण

PROVIDE ENERGY THROUGH MITOCHONDRIA माइटोकॉन्ड्रिया के माध्यम से ऊर्जा प्रदान करना

SUPPLY CARBON FOR SYNTHESIS OF OTHER COMPOUNDS अन्य यौगिकों के संश्लेषण के लिए कार्बन प्रदान करना

FORM STRUCTURAL COMPONENTS IN CELLS AND TISSUES कोशिकाओं और ऊतकों में संरचनात्मक घटक बनना

FN05 : Vitamins विटामिन

VITAMINS विटामिन

FAT SOLUBLE वसा में घुलनशील

VITAMIN A विटामिन A

VITAMIN D विटामिन D

VITAMIN E विटामिन E

VITAMIN K विटामिन K

WATER SOLUBLE जल में घुलनशील

THIAMINE (VITAMIN B1) थायामिन (विटामिन B1)

RIBOFLAVIN (VITAMIN B2) रिबोफ्लेविन (विटामिन B2)

NICOTINIC ACID (VITAMIN B3) निकोटिनिक एसिड (विटामिन B3)

PANOTHENIC ACID (VITAMIN B5) पैंथोथेनिक एसिड (विटामिन B5)

BIOTIN (VITAMIN B7) बायोटिन (विटामिन B7)

ASCORBIC ACID (VITAMIN C) एस्कॉर्बिक एसिड (विटामिन C)

FN06 : Minerals खनिज

MINERALS खनिज

BOON IN NUTRITION पोषण में सहायक

POTASSIUM पोटैशियम

CALCIUM कैल्शियम

PHOSPHORUS फॉस्फोरस

IRON लौह

COBALT कोबाल्ट

FLUORINE फ्लोरिन

ZINC जिंक

COPPER कॉपर

CHLORINE क्लोरिन

FN07 : Water and Roughage जल और रूग्नाश

WATER AND ROUGHAGE जल और रूग्नाश

SOURCES OF WATER जल के स्रोत

FUNCTIONS OF WATER जल के कार्य

SOURCES OF ROUGHAGE रूग्नाश के स्रोत

FUNCTIONS OF ROUGHAGE रूग्नाश के कार्य

FN08 : Deficiency Diseases हीनताजनित रोग

DEFICIENCY DISEASES हीनताजनित रोग

Kwashiorkor क्वाशीओर्कर

Marasmus मारामस

Osteomalacia in adults ऑस्टीमालासिया (बड़ों में)

Rickets in children रिकेट्स (बच्चों में)

Goitre गोइटर

Anaemia आनीमिया

Night Blindness रात की अंधापन

Scurvy स्कर्वी

Pellagra पेलग्रा

Dental Caries दाँतों का क्षय

FN09 : Overnutrition Disorders

OVERNUTRITION DISORDERS अतिशय भोजन विकार

FN10 : Food's Nutritive Value

Food's Nutritive Value भोजन का पोषणिक मान

| Food Item | Energy | Protein | Carbohydrate | Fat | Fiber | Calcium | Iron | Vitamin A | Vitamin B1 | Vitamin B2 | Vitamin C | Vitamin E | Vitamin K | Sodium | Potassium | Magnesium | Zinc | Copper | Manganese | Selenium |
|-----------------|--------|---------|--------------|------|-------|---------|------|-----------|------------|------------|-----------|-----------|-----------|--------|-----------|-----------|------|--------|-----------|----------|
| Apple | 52 | 0.5 | 13.8 | 0.2 | 1.9 | 6 | 0.2 | 10 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Banana | 89 | 1.1 | 22.8 | 0.3 | 3.1 | 5 | 0.3 | 8 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 358 | 32 | 0.1 | 0.05 | 0.01 | 0.01 |
| Broccoli | 34 | 2.8 | 6.6 | 0.3 | 2.6 | 47 | 0.7 | 61 | 0.11 | 0.17 | 51 | 0.2 | 0.2 | 0.1 | 407 | 63 | 0.2 | 0.08 | 0.02 | 0.02 |
| Butter | 717 | 0.1 | 0.1 | 82.4 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Carrot | 41 | 0.9 | 9.7 | 0.1 | 2.8 | 33 | 0.6 | 830 | 0.05 | 0.06 | 3.6 | 0.1 | 0.1 | 0.1 | 407 | 63 | 0.2 | 0.08 | 0.02 | 0.02 |
| Chicken | 165 | 31 | 0 | 3.6 | 0 | 0 | 0.7 | 0 | 0.1 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cheese | 386 | 25 | 0 | 33 | 0 | 100 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cheerup | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Chickpea | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Corn | 123 | 3.3 | 22.7 | 0.2 | 1.7 | 0 | 0.2 | 0 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Custard | 148 | 2.5 | 0 | 12.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Egg | 143 | 12.6 | 0 | 11.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Flour | 364 | 11.1 | 70.9 | 1 | 2.7 | 0 | 0.3 | 0 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Garlic | 149 | 3.3 | 29.8 | 0.1 | 3.3 | 0 | 0.1 | 0 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Green Bean | 96 | 2.1 | 17.3 | 0.2 | 2.5 | 0 | 0.1 | 0 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Guava | 68 | 0.8 | 13.7 | 0.1 | 1.4 | 0 | 0.1 | 10 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Honey | 304 | 0.1 | 81.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ice Cream | 207 | 4.7 | 23.6 | 11.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jam | 263 | 0.1 | 65.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jelly | 294 | 0.1 | 70.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lettuces | 15 | 1.1 | 3.5 | 0.1 | 0.8 | 10 | 0.2 | 10 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Lentils | 116 | 22.6 | 42.6 | 0.4 | 16.3 | 13 | 3.3 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Milk | 42 | 3.3 | 4.7 | 1.1 | 0 | 120 | 0.1 | 0 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Milk Chocolate | 539 | 7.2 | 45.3 | 13.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mint | 111 | 0.1 | 2.8 | 0.1 | 0.1 | 0 | 0 | 0 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Molasses | 282 | 0.1 | 70.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mushrooms | 34 | 3.1 | 3.3 | 0.3 | 0.3 | 0 | 0.1 | 0 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Nuts | 628 | 14.5 | 62.8 | 54.8 | 2.9 | 0 | 0.1 | 0 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Oat | 389 | 11.1 | 69.3 | 6.9 | 10.9 | 0 | 0.3 | 0 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Onion | 40 | 0.9 | 9.7 | 0.1 | 2.8 | 0 | 0.1 | 0 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Peanut | 554 | 25.8 | 16.3 | 49.9 | 2.2 | 0 | 0.1 | 0 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Peanut Butter | 584 | 25.8 | 16.3 | 49.9 | 2.2 | 0 | 0.1 | 0 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Pineapple | 52 | 0.5 | 13.8 | 0.2 | 1.9 | 0 | 0.1 | 10 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Potato | 77 | 1.7 | 17.3 | 0.1 | 2.1 | 0 | 0.1 | 0 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Prunes | 49 | 0.5 | 13.8 | 0.2 | 1.9 | 0 | 0.1 | 10 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Rice | 111 | 2.6 | 22.8 | 0.2 | 3.1 | 0 | 0.2 | 0 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Rice Cooked | 111 | 2.6 | 22.8 | 0.2 | 3.1 | 0 | 0.2 | 0 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Rice Uncooked | 360 | 7.9 | 78.9 | 0.2 | 1.9 | 0 | 0.2 | 0 | 0.03 | 0.04 | 8.5 | 0.1 | 0.1 | 0.1 | 116 | 5 | 0.1 | 0.05 | 0.01 | 0.01 |
| Salmon | 208 | 20.4 | 0 | 11.6 | 0 | 0 | 0.7 | 0 | 0.1 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Soybean | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Curries | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Sprouts | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Tofu | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Tempeh | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Yogurt | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Curries | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Curries | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Curries | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Curries | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Curries | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Curries | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Curries | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Curries | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Curries | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Curries | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Curries | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Curries | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Curries | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Curries | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Curries | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Curries | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Curries | 163 | 14.5 | 34.3 | 1 | 17.3 | 161 | 4.7 | 16 | 0.25 | 0.35 | 14.7 | 0.2 | 0.2 | 0.1 | 497 | 80 | 0.3 | 0.12 | 0.03 | 0.03 |
| Soybean Curries | | | | | | | | | | | | | | | | | | | | |

HC01 : Health Rules

Health Rules स्वास्थ्य के नियम

16 illustrations depicting health rules: waking up early, brushing teeth, exercising, eating healthy, drinking water, and maintaining hygiene.

HC02 : Causes of Diseases

Causes of Diseases रोग के कारण

16 illustrations depicting causes of diseases: mosquitoes, flies, unhygienic food, and poor sanitation.

HC03 : Prevention of Diseases

Prevention of Diseases रोग से बचाव

16 illustrations depicting prevention of diseases: wearing masks, handwashing, avoiding crowded places, and maintaining cleanliness.

HC04 : Effects of Alcohol

Effects of Alcohol मद्य (शराब) के परिणाम

16 illustrations depicting the effects of alcohol: liver damage, loss of control, and health deterioration.

HC05 : Tobacco & Other Habit Forming Drugs

Tobacco & Other Habit Forming Drugs तम्बाकू तथा अन्य मादक पदार्थ

Large illustration showing the cycle of addiction to tobacco and other drugs, with a central figure surrounded by images of these substances.

HC06 : Clean Body

Clean Body स्वच्छ शरीर

16 illustrations depicting ways to keep the body clean: bathing, brushing teeth, nail care, and wearing clean clothes.

HC07 : Clean Water

Clean Water स्वच्छ पानी

16 illustrations depicting methods to obtain clean water: boiling, filtering, and using water purifiers.

HC08 : Constituents of Food

Constituents of Food अन्न के पौष्टिक अंश

Large illustration showing the nutritional components of food: Proteins, Salts, Carbohydrates, and Fats, with corresponding food items.

PREVENT THE DISEASES

A set of 20 charts

Laminated, Size 50 x 75 cm (Available in English and Hindi Combined)

PD01 : Cholera हैजा

Microscopic view of bowel **आंत्र का सूक्ष्मदर्शी दृश्य**

CAUSES **कारण**

SYMPTOMS **लक्षण**

TREATMENT **उपचार**

SUPPORTIVE CARE **सह-उपचार**

PD02 : Malaria मलेरिया

Malaria **मलेरिया**

CAUSES **कारण**

SYMPTOMS **लक्षण**

TREATMENT **उपचार**

SUPPORTIVE CARE **सह-उपचार**

PD03 : AIDS एड्स

Microscopic view of HIV **एड्स की सूक्ष्मदर्शी अवस्था**

CAUSES **कारण**

SYMPTOMS **लक्षण**

PRECAUTIONS **सावधानियाँ**

PD04 : Plague प्लेग

Plague **प्लेग**

CAUSES **कारण**

SYMPTOMS **लक्षण**

PREVENTION **उपचार**

SUPPORTIVE CARE **सह-उपचार**

PD05 : Tuberculosis (T.B.) क्षय रोग (टी.बी.)

X-Ray of Human Lung **मानव के फेफड़े का एक्स-रे**

CAUSES **कारण**

SYMPTOMS **लक्षण**

TREATMENT **उपचार**

SUPPORTIVE CARE **सह-उपचार**

PD06 : Leprosy कुष्ठ रोग (कोहू)

Leprosy **कुष्ठ रोग**

CAUSES **कारण**

SYMPTOMS **लक्षण**

TREATMENT **उपचार**

SUPPORTIVE CARE **सह-उपचार**

PD07 : Influenza श्लेष्माज्वर (फ्लू)

Influenza **श्लेष्माज्वर**

CAUSES **कारण**

SYMPTOMS **लक्षण**

TREATMENT **उपचार**

SUPPORTIVE CARE **सह-उपचार**

PD08 : Jaundice पीलिया

Jaundice **पीलिया**

CAUSES **कारण**

SYMPTOMS **लक्षण**

TREATMENT **उपचार**

SUPPORTIVE CARE **सह-उपचार**

PD09 : Cancer

CANCER कैंसर

Neoplastic Tumour अत्यधिक कोशिका

Carcinoma Tumour कैंसर कोशिका

Common Cancers आम कैंसर

CAUSES कारण

SYMPTOMS लक्षण

TREATMENT उपचार

SUPPORTIVE CARE सह-उपचार

PD10 : Typhoid

Typhoid मियादी बुखार (टाइफाइड)

CAUSES कारण

SYMPTOMS लक्षण

PREVENTION बचाव

TREATMENT उपचार

SUPPORTIVE CARE सह-उपचार

PD11 : Viral Diseases

Viral Diseases विषाणु संक्रमण

Microscopic view of Viruses विषाणु का सूक्ष्मदर्शी अवलोकन

CAUSES कारण

SYMPTOMS लक्षण

TREATMENT उपचार

SUPPORTIVE CARE सह-उपचार

PD12 : Chicken Pox

Chicken Pox चेचक

Varicella zoster Virus Cause of Chicken Pox चेचक का कारण

CAUSES कारण

SYMPTOMS लक्षण

TREATMENT उपचार

SUPPORTIVE CARE सह-उपचार

PD13 : Dysentery

Dysentery अतिसार

CAUSES कारण

SYMPTOMS लक्षण

TREATMENT उपचार

SUPPORTIVE CARE सह-उपचार

PD14 : Hepatitis

Hepatitis हैपेटाइटिस

CAUSES कारण

SYMPTOMS लक्षण

PREVENTION बचाव

TREATMENT उपचार

SUPPORTIVE CARE सह-उपचार

PD15 : Heart Attack

Heart Attack हृदय घात

Blockage of Coronary Artery शिरावाहक धारी की रुकावट

CAUSES कारण

SYMPTOMS लक्षण

TREATMENT उपचार

SUPPORTIVE CARE सह-उपचार

PD16 : Diabetes

Diabetes मधुमेह (शुगर)

CAUSES कारण

SYMPTOMS लक्षण

TREATMENT उपचार

SUPPORTIVE CARE सह-उपचार

PREVENT THE DISEASES
 A set of 20 charts
 Laminated, Size 50 x 75 cm (Available in English and Hindi Combined)

PREVENT THE DISEASES

A set of 20 charts

Laminated, Size 50 x 75 cm (Available in English and Hindi Combined)

PD17 : Asthma

Asthma दमा

Microscopic view of Lungs केशरी का सूक्ष्मदर्शी दृश्य

The small bronchiole passage becomes narrow due to swelling of the lining (inflammation) inside. केशरी की छोटी नली अंदर की सतह के सूजन के कारण संकुचित हो जाती है।

CAUSES कारण

Cold & Flu season, Allergens, Stress, and Smoking are common causes. सर्दी, फ्लू, एलर्जिक, तनाव, और धूम्रपान आम कारण हैं।

SYMPTOMS लक्षण

Wheezing, coughing, chest tightness, and shortness of breath are common symptoms. श्वसन, खांस, छाती में सख्तपन, और सांस लेने में कठिनाई आम लक्षण हैं।

TREATMENT उपचार

Regular use of inhalers and resting are common treatments. सांस लेने की नली में दवा का उपयोग और आराम आम उपचार हैं।

SUPPORTIVE CARE सह-उपचार

Avoid triggers, stay hydrated, and use a humidifier for supportive care. त्रिग्नर से बचें, हाइड्रेटेड रहें, और ह्यूमिडिफायर का उपयोग करें।

PD18 : Arthritis

Arthritis जोड़ों का दर्द

CAUSES कारण

Inflammation in joints causes pain and swelling. सूजन जोड़ों में दर्द और सूजन का कारण बनती है।

SYMPTOMS लक्षण

Pain, swelling, and stiffness in joints are common symptoms. जोड़ों में दर्द, सूजन, और सख्तपन आम लक्षण हैं।

TREATMENT उपचार

Physical therapy, medication, and surgery are common treatments. शारीरिक चिकित्सा, दवा, और सर्जरी आम उपचार हैं।

SUPPORTIVE CARE सह-उपचार

Exercise, weight management, and heat/cold therapy are common supportive care measures. व्यायाम, वजन प्रबंधन, और गर्म/ठंडा उपचार आम सह-उपचार हैं।

PD19 : Thyroid

Thyroid थाईरॉयड

Thyroidal Disorders and Thyroid Gland

The thyroid gland controls many of the metabolic reactions in the body. थाईरॉयड ग्रंथि शरीर में अधिकांश मेटाबोलिक प्रतिक्रियाओं को नियंत्रित करती है।

SYMPTOMS लक्षण

Weight changes, mood swings, and fatigue are common symptoms. वजन परिवर्तन, मूड स्विंग्स, और थकान आम लक्षण हैं।

TREATMENT उपचार

Medication and surgery are common treatments. दवा और सर्जरी आम उपचार हैं।

SUPPORTIVE CARE सह-उपचार

Diet and lifestyle changes are common supportive care measures. आहार और जीवनशैली परिवर्तन आम सह-उपचार हैं।

PD20 : Blood - Pressure

Blood-Pressure रक्तचाप

Hypertension उच्च रक्तचाप

A view of Artery Blockage रक्तचाप में अवरुद्ध रक्तसंचरण का दृश्य

High cholesterol and fatty deposits narrow the arteries. उच्च कोलेस्ट्रॉल और फैटी डिपोजिट्स रक्तसंचरण को अवरुद्ध करते हैं।

CAUSES कारण

Diet, stress, and genetics are common causes. आहार, तनाव, और आनुवंशिकता आम कारण हैं।

SYMPTOMS लक्षण

Headache, dizziness, and chest pain are common symptoms. सिरदर्द, चक्कर, और छाती में दर्द आम लक्षण हैं।

TREATMENT उपचार

Medication and lifestyle changes are common treatments. दवा और जीवनशैली परिवर्तन आम उपचार हैं।

SUPPORTIVE CARE सह-उपचार

Diet, exercise, and stress management are common supportive care measures. आहार, व्यायाम, और तनाव प्रबंधन आम सह-उपचार हैं।

AS01S : HIV

HIV

Structure of HIV

Mechanism of infection by human immunodeficiency virus

HIV is transmitted to only a few specific ways. The virus is not highly contagious. Transmission occurs only when blood or certain other body fluids from infected person enter another person's body. Various means of transmission are:

- Unprotected vaginal sex
- Unprotected anal sex
- Unprotected oral sex
- Sharing needles during drug abuse
- Transfusion of HIV infected blood
- Breast feeding by HIV infected mother
- Infants born to HIV infected mothers
- Using improper sterilized hospital tools
- Transplantation of infected organs

AS02S : Transmission of HIV

Transmission of HIV

HIV is transmitted to only a few specific ways. The virus is not highly contagious. Transmission occurs only when blood or certain other body fluids from infected person enter another person's body. Various means of transmission are:

- Unprotected vaginal sex
- Unprotected anal sex
- Unprotected oral sex
- Sharing needles during drug abuse
- Transfusion of HIV infected blood
- Breast feeding by HIV infected mother
- Infants born to HIV infected mothers
- Using improper sterilized hospital tools
- Transplantation of infected organs

AS03S : Prevention

PREVENTION

HIV, although lethal, does not spread as readily as the flu viruses or cold viruses. Individual can protect themselves from AIDS by adopting various preventive measures.

- Practice safer sex. Use condoms.
- Avoid multiple sexual partners.
- Never share needles. Always use sterile needles.
- HIV infected mothers should feed their baby formula milk instead of breast feeding.
- Delivering infant by cesarean section if mother is HIV infected.
- Drug treatment for HIV infected mothers during pregnancy.

AS04S : How AIDS is not Transmitted

HOW AIDS IS NOT TRANSMITTED

AIDS patients often face various types of discriminations because of several misconceptions widespread in the society. Also, these misconceptions unnecessarily create confusions in the minds of people. Therefore, everyone should have an accurate information about AIDS.

- AIDS is not caused by mosquito/blood bite.
- AIDS is not caused by touching or hugging.
- AIDS is not caused by hand shaking.
- AIDS is not caused by studying with HIV positive.
- AIDS is not caused by sharing public toilets.
- AIDS is not caused by working with HIV positive.
- AIDS is not caused by sneezing or coughing.
- AIDS is not caused by sharing food.

AS05S : Progress of Infection

PROGRESS OF INFECTION

AIDS PROGRESSES THROUGH THREE DISTINCT PHASES: ACUTE PHASE, CHRONIC PHASE AND FULL BLOWN AIDS.

- 1. ACUTE PHASE**
 - HIV enters the body and begins reproducing itself.
 - T4-cell count is high.
 - The number of viruses rises rapidly.
 - Antibodies to HIV begin to increase.
 - Most patients show no symptoms during the first few months after infection. A few may exhibit symptoms similar to those of infectious mononucleosis - fever, chills, aches and swollen lymph nodes. However these symptoms vanish shortly thereafter.
- 2. CHRONIC PHASE**
 - T4 cell count begins to fall.
 - Antibody levels rise initially and then fall.
 - Patients begin to show outward signs - severe fatigue, unexplained persistent fever, persistent cough, loss of memory, depression, diarrhea, difficulty in thinking and unexplained weight loss.
- 3. FULL-BLOWN PHASE**
 - AIDS has been defined as occurring in a person who:
 - has a laboratory documented HIV infection,
 - has a CD4 count less than 200 cells per ml of blood,
 - has had one or more infections that wouldn't normally occur in a person with a healthy immune system.
 - Persistent infections, severe loss of weight and weakness.
 - Microbes that normally are not capable of producing serious infections, take hold and become life threatening.

AS06S : Opportunistic Diseases

OPPORTUNISTIC DISEASES

Multiple infections and cancer may develop because of the disturbed immune response. Many of these infections are highly unusual in people with healthy immune systems. They are called opportunistic infections because they take advantage of a weakened immune system to cause AIDS.

- KAPOSI'S SARCOMA
- CANDIDIASIS
- PNEUMOCYSTIS CARINII
- LYMPHOMAS
- CMV-INFECTION
- HERPES SIMPLEX INFECTION

AS07S : Sexually Transmitted Diseases

Sexually Transmitted Diseases

Individuals who are infected with STDs are more prone to acquire HIV than uninfected individuals when they are exposed to the virus through sexual contact. Also, an HIV infected individual if also infected with another STD, is more likely to transmit HIV through sexual contact than other HIV infected partners. Thus, presence of other STDs increases the likelihood of both transmitting and acquiring HIV.

- Syphilis
- Gonorrhea
- Trichomoniasis
- Chlamydia
- Chancroid
- Genital Herpes

HP26S : Human Immune System

HUMAN IMMUNE SYSTEM

ORGANS OF THE IMMUNE SYSTEM

THE IMMUNE RESPONSE

DIFFERENTIATION OF LEUKOCYTES FROM A SINGLE STEM CELL

CHARTS ON AIDS
 A set of 8 charts
 Synthetic, Size 70 x 100 cm (Available in English Only)

FA01 : Skeleton & Circulatory System

SKELETON & CIRCULATORY SYSTEM

SKELETON

CIRCULATION OF BLOOD

SKULL

SPINE

HIP & KNEE BONES

BLOOD CIRCULATION

Skeleton is a flexible structure of rigid bones which provides shape and support to the body and offers protection to the internal organs. On an average there are 256 bones of various sizes and shapes in an adult human skeleton.

FA02 : Triangular Bandages

TRIANGULAR BANDAGES

TRIANGULAR BANDAGE FOLDED

KNIFE

FEET/FOOT

CLASP/KNIFE

ARM SLINGS

HEAD AND NECK SLINGS

SLING FROM THE SHOULDER

BANDAGE FOR THE SHOULDER

BANDAGE FOR THE SCALP

BANDAGE FOR THE FOOT

ANKLE BANDAGE

PURPOSE OF BANDAGES

Bandages are for the use of a person when the blood is to be checked, to prevent swelling, to support, to immobilize and to prevent movement. They should be applied firmly enough to keep moving materials in position, but not so tight as to cause injury or impede circulation of blood.

FA03 : Roller Bandages

ROLLER BANDAGES

APPLICATION OF DRESSING

PROTECTIVE COVERING FOR WOUND OR FRACTURE

FINGER BANDAGE **SPICA BANDAGE FOR THUMB** **Wrist BANDAGING**

BANDAGES FOR THE ELBOW **FOOT & ANKLE BANDAGING** **BANDAGE FOR THE HEEL**

HEAD **CONTOUR** **NECK** **NECK** **NECK** **NECK**

SPICA BANDAGE FOR SHOULDER **HEEL BANDAGE** **HEEL SPICA BANDAGE** **HEEL SPICA BANDAGE FOR GROUND**

CAPE LINE BANDAGES

EAR BANDAGE **BANDAGE FOR THE EYE**

FA04 : Fractures

Fractures

Pain, Swelling and Loss of energy are the general signs of a fracture. A first aider should immobilise the fractured body part. Sling or splint should be used where necessary.

Types of Fracture

Fracture of elbow

Fracture of Wrist

Fracture of Finger

Fracture of Lower Jaw

Fracture of Spine

FA05 : Artificial Respiration

Artificial Respiration

HOLGER - NIELSEN METHOD (For Adults)

SCHAFFER'S METHOD

SILVESTER'S METHOD

For Children Under Five Years

FA06 : Transport of the Injured

TRANSPORT OF THE INJURED

ONE MAN CARRY

TWO MAN CARRY

THREE PERSON CARRY

TWO HANDED SEAT

STRETCHER LIFT

FA07 : Unconsciousness

Unconsciousness

Unconscious Condition of a Casualty

SEIZURES

HYSTERESIS

DROWNING

FA08 : Haemorrhage

HAEMORRHAGE

HAEMORRHAGE

PRESSURE POINT FOR THE RADIAL ARTERY

PRESSURE POINT FOR THE FEMORAL ARTERY

PRESSURE POINT FOR THE CAROTID ARTERY

PRESSURE POINT FOR THE SUBCLAVIAN ARTERY

FA09 : Electric Shock And Treatment

ELECTRIC SHOCK AND TREATMENT

INSIDE THE HOUSE

OUTSIDE THE HOUSE

Effects of Shock

1. Paralysis of respiratory muscles
2. Injury to the heart
3. Burns
4. Muscle contraction
5. Euphoria
6. Choking if liquid is in contact
7. Pain
8. Minor lacerations

Treatment

1. Do not touch the victim
2. Call for help
3. Cut off the power or remove the person who has been struck
4. Remove the person from the area
5. Check for breathing
6. Give artificial respiration
7. First aid
8. First aid

ARTIFICIAL RESPIRATION

1. Place the person on their back
2. Tilt the head back
3. Pinch the nose
4. Breathe into the mouth

CONTACT IN EMERGENCY :

Call for help: Ambulance, Fire Brigade, Police

FA10 : Emergency Resuscitation

EMERGENCY RESUSCITATION

Mouth-to-Mouth Rescue Breathing

Step 1: Put the head on casualty's forehead and tilt the head back. With two fingers under the chin and thumb on top, tilt the jaw. This opens the airway.

Step 2: Resting the hand on the neck, open your mouth wide and raise the tongue.

Step 3: Put your mouth against the casualty's mouth and make a tight seal with your lips. Breathe and into the casualty's mouth. Give two effective rescue breaths.

Step 4: Check for the circulation by feeling for breathing, coughing or movement. If there is no sign of circulation, perform CPR.

Cardiac Compressions

Place the heel of the hand on the center of the chest. Push down hard and fast. Push the heel of the hand of your other hand on the center of the chest. Push down hard and fast. Push the heel of the hand of your other hand on the center of the chest. Push down hard and fast.

FA11 : Removal of Foreign Bodies

REMOVAL OF FOREIGN BODIES

Foreign bodies of all kinds can become lodged in body parts or orifices and may cause injury, bleeding, infection, discomfort and other problems. Foreign bodies must be removed safely and clearly.

FOREIGN BODY IN THE EYE

While the patient looks down, place a cloth folded applicator on the upper lid.

FOREIGN BODY IN THE EAR

Gently flood the ear with tepid water or rewarmed oil. Insert a cotton applicator.

FOREIGN BODY IN THE NOSE

Put the tip forward and up, holding it back over the applicator.

GLASS PRICES IN THE SKIN

Gently remove the foreign object with sterilized tweezers.

FOR ADULTS

Lean victim forward supporting his chest. Give five sharp blows between shoulder blades.

FOR INFANTS

Lay the baby face down on forearm with their head down. Give five sharp blows.

FA12 : Burns & Scalds

Burns & Scalds

A major priority in all burn cases is to cool the skin and cover the burn to prevent infection. Remove anything that is stuck to the burn. Do not burst any blisters. In case of chemical burn do not try to neutralize the chemical.

Thermal Burns

Chemical Burn to Eye

Chemical Burn to Body

Scalds

Clothes on Fire

FA13 : Snakes & Their Bites

Snakes & Their Bites

Morphology of poisonous Snake

Corals Snake, **Sea-scaled Viper**, **Eastern Green Mamba**, **Cobra**

Gently wash the bitten area with soap and water.

If available, apply suction with the extractor. Do not attempt cut and mouth suction.

Elevating the head and shoulder, bandage the bitten part firmly but not too tightly to stop circulation. Do not apply tourniquet.

Splint the bandaged bitten part to rest it. Seek medical attention to give antivenom.

FA14 : Poisons & Their Antidotes

POISONS & THEIR ANTIDOTES

A poison is a substance capable of injuring & killing a person. An antidote is an agent which counter acts a poison. An antidote for an acid is an alkali & for an alkali is an acid.

POISON MAY ENTER BODY THROUGH MOUTH, NOSE OR SKIN. FOR PROPER TREATMENT TRY TO FIND OUT THE POISON TAKEN

| Poison | Symptoms | Treatment |
|--|---|--|
| ACIDS Hydrochloric, Sulphuric, Nitric, Hydrofluoric | Takes orally, causes burning sensation in the stomach, throat and upper abdominal and inguinal regions or grey blisters on the skin of sensitive areas. There will be effluence on coming in contact with skin. | The vomiting should be induced. Give plenty of water to dilute the acid. If possible, add few drops of weak alkali such as milk of magnesia or solution of sodium bicarbonate. |
| ALKALIS Lye, Quick Lime, Ammonia, Caustic Soda, Potash | Same as above. But if vomiting takes place there will not be any effluence on coming in contact with skin. | Vomiting should not be induced. Give plenty of water to dilute down the action of alkali. If possible, add few drops of weak acid such as lemon juice or dilute vinegar. |
| DISINFECTANTS Carbolic acid, Phenol, Lysol, Dettol, Iodoform, Cresolol | Weakness, dizziness, vomiting, diarrhoea, nausea, staggering, loss of consciousness, vomiting may lead to prostration. | Do not make the casualty vomit. Give two spoons of common salt in a glass of water or a tea-spoon full of medicinal oil. |
| ALCOHOL Wine, Whisky, Brandy, Beer, After abuse | Same as above. | Give tea or coffee or any soothing drink. Give heat to the feet and hold to the head. Induce vomiting by giving few spoons of emetic salt in a glass of water or by drinking the toxic antidote. |
| CARBON MONOXIDE Gases from burning petrol, kerosene, kerosene, Petroleum, kerosene, gas, kerosene | Weakness and giddiness followed by suffocation, coma and collapse, convulsions of pupils. | Immediately remove the casualty from the place. Ensure free passage of air. Apply artificial respiration-ventilation. |
| ARSENIC The green crystals (used in rat poison) | Liver and face are bright, protrusion of pupils and stupor after vomit. | Give some emetic to induce vomiting and give water containing dilute soda bicarbonate, coffee or tea with a few drops of lemon juice to drink. In severe cases give hot butter and stramonium. |
| OPIMUM Lauder's opium, Smoking pipe, Opium or Morphine habit | Coma and heaviness. | Give some emetic to induce vomiting. Keep the casualty awake. Give one spoon of emetic or glucose's salt with water. Give tea or coffee. |
| HYCOCYANIC Cyanide salt | Profuse sweating. | Give some emetic to induce vomiting. Give drink of egg or water followed by milk, hot water or alcohol. Give few spoons of potassium permanganate dissolved in water. |
| PHOSPHORIC Cyanide salt in photographic & industrial use | Weakness, blurred vision, stinging of throat and chest, slow pulse, prostration, convulsions, loss of consciousness. | If it is an emergency, induce vomiting. Give artificial respiration. Have given salt. Give water with few spoons of potassium permanganate. |
| STRYCHNINE & DIGITALIS Serravallo's, Serravallo's, Serravallo's | No signs. | Induce vomiting, unless spasms have begun. Keep very quiet. Do not make any movement. If breathing stops, apply artificial respiration. |
| DIPTERIX Crushed seeds are administered in food or drink by individuals with suicidal or homicidal intentions. | Spasms of throat, swelling of the face with bulging eyes. Rapid pulse and rapid, irregular respiration with profuse sweating. Death may occur in a few hours. | Induce vomiting. Keep the casualty awake. Give an emetic. Proceed hypodermically by sticking with leeches. Stramonium by hot coffee or a tea-spoon of atropine. Apply warm and alcohol to the chest. |

FA15 : First Aid & Appliances

FIRST AID & APPLIANCES

FIRST AID LEARNING IS A CIVIC RESPONSIBILITY OF EVERY CITIZEN.

FIRST AIDER IS A PERSON QUALIFIED TO GIVE FIRST AID.

PRIORITY OF TREATMENT

1. Immediate response to call for assistance.
2. Proper examination & diagnosis.
3. Control of bleeding, if necessary give cardiopulmonary resuscitation.
4. Treat shock with care of unconsciousness.
5. Fracture immobilization.
6. Eye, Ear, Nose injuries, burns, etc.
7. Arrange transport for the injured to hospital or to his home.
8. Assume the casualty of good treatment.

ESSENTIAL ITEMS FOR FIRST AID

FIRST AID CHARTS
 A set of 15 charts, Size 50 x 75 cm
 Laminated, (Available in English Only and also in English-Hindi Combined)

YO01 : Shuddhi Kriyas

SHUDDHI KRIYAS (SHAT KARMAS)

Kapal Bhasm (Dhruv)
Sit in Ushtrasana and do 4-6 glasses of lukewarm salty water. Breathe forward. Touch the uvula by two fingers and do Ushtrasana. Throw the salt water through the mouth.

Kapal Bhuj
Do Kapal Bhuj for 10 days. Do it after lunch and before bed. Do it 10 times. Repeat 10 times. Do it 10 times. Repeat 10 times.

Jal Nadi
Take salt solution in water in a liquid form (yogasana). Sit in lotus position and do Jal Nadi. Carry it out through the other.

Saba Nadi
After washing the nose (Nadi), insert the tip of the index finger. Repeat 10 times through other nostrils.

Ghrit Nadi
Drop 3-4 drops of ghee (Clarified butter) in both nostrils before going to sleep.

Triphala Ghrita
Carry your body of 30 mg. 100 mg and 100 mg. Look at the nose. Carry the nose right. Carry the nose left. Carry the nose right. Carry the nose left. Carry the nose right. Carry the nose left.

Kail Chakrasan
Stand straight in a line of feet. Over the right eye. Place hands in front of the chest level. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Urdhva Dhanurasana
Lie on your back and do Urdhva Dhanurasana. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Bhujangasana
Lie on your back and do Bhujangasana. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Benefits
1. Kapal Bhasm: Cleanses the respiratory system, improves digestion, and helps in weight loss.
2. Kapal Bhuj: Improves lung capacity and helps in asthma.
3. Jal Nadi: Cleanses the nasal passages and improves breathing.
4. Saba Nadi: Improves the quality of sleep and helps in stress management.
5. Ghrit Nadi: Improves the quality of hair and skin.
6. Triphala Ghrita: Improves the quality of vision and helps in eye health.
7. Kail Chakrasan: Improves the quality of hearing and helps in ear health.
8. Urdhva Dhanurasana: Improves the quality of posture and helps in back pain.
9. Bhujangasana: Improves the quality of flexibility and helps in joint health.

YO02 : Shankh Prakhshalan

SHANKH PRAKSHALAN

Kanya
Carry your body of 30 mg. 100 mg and 100 mg. Look at the nose. Carry the nose right. Carry the nose left. Carry the nose right. Carry the nose left. Carry the nose right. Carry the nose left.

Urdhva
Stand straight in a line of feet. Over the right eye. Place hands in front of the chest level. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Triphala
Carry your body of 30 mg. 100 mg and 100 mg. Look at the nose. Carry the nose right. Carry the nose left. Carry the nose right. Carry the nose left. Carry the nose right. Carry the nose left.

Kail
Stand straight in a line of feet. Over the right eye. Place hands in front of the chest level. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Urdhva
Lie on your back and do Urdhva Dhanurasana. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Bhujangasana
Lie on your back and do Bhujangasana. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Benefits
1. Kanya: Improves the quality of hearing and helps in ear health.
2. Urdhva: Improves the quality of posture and helps in back pain.
3. Triphala: Improves the quality of vision and helps in eye health.
4. Kail: Improves the quality of hearing and helps in ear health.
5. Urdhva: Improves the quality of posture and helps in back pain.
6. Bhujangasana: Improves the quality of flexibility and helps in joint health.

YO03 : Surya Namaskar

SURYA NAMASKAR

Step 1
Stand straight in a line of feet. Over the right eye. Place hands in front of the chest level. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Step 2
Lie on your back and do Urdhva Dhanurasana. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Step 3
Lie on your back and do Bhujangasana. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Step 4
Lie on your back and do Urdhva Dhanurasana. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Step 5
Lie on your back and do Bhujangasana. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Step 6
Lie on your back and do Urdhva Dhanurasana. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Step 7
Lie on your back and do Bhujangasana. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Step 8
Lie on your back and do Urdhva Dhanurasana. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Step 9
Lie on your back and do Bhujangasana. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Step 10
Lie on your back and do Urdhva Dhanurasana. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Benefits
1. Surya Namaskar: Improves the quality of posture and helps in back pain.
2. Urdhva Dhanurasana: Improves the quality of posture and helps in back pain.
3. Bhujangasana: Improves the quality of flexibility and helps in joint health.
4. Urdhva Dhanurasana: Improves the quality of posture and helps in back pain.
5. Bhujangasana: Improves the quality of flexibility and helps in joint health.

YO04 : Yog Mudras, Padmasan & Matsyasan

YOG MUDRAS, PADMASAN & MATSYASAN

YOG MUDRAS
1. Sit in Padmasan. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.
2. Bend forward. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

PADMASAN
1. Sit in Padmasan. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.
2. Bend forward. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

MATSYASAN
1. Sit in Padmasan. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.
2. Bend forward. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Benefits
1. Yog Mudras: Improves the quality of posture and helps in back pain.
2. Padmasan: Improves the quality of posture and helps in back pain.
3. Matsyasan: Improves the quality of flexibility and helps in joint health.

YO05 : Paschimottanasan-Ardhmatsyendrasan

PASCHIMOTTANASAN-ARDHMATSYENDRASAN

PASCHIMOTTANASAN
1. Sit in Paschimottanasan. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.
2. Bend forward. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

ARDHMATSYENDRASAN
1. Sit in Ardhamatsyendrasan. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.
2. Bend forward. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Benefits
1. Paschimottanasan: Improves the quality of posture and helps in back pain.
2. Ardhamatsyendrasan: Improves the quality of posture and helps in back pain.

YO06 : Vajrasan, Ushtrasan & Suptavajrasan

VAJRASAN, USHTRASAN & SUPTAVAJRASAN

Vajrasan
1. Sit in Vajrasan. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.
2. Bend forward. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Ushtrasan
1. Sit in Ushtrasan. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.
2. Bend forward. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Suptavajrasan
1. Sit in Suptavajrasan. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.
2. Bend forward. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Benefits
1. Vajrasan: Improves the quality of posture and helps in back pain.
2. Ushtrasan: Improves the quality of posture and helps in back pain.
3. Suptavajrasan: Improves the quality of posture and helps in back pain.

YO07 : Bhujangasan, Shalabhasan, Dhanurasan & Mayurasan

BHUJANGASAN, SHALABHASAN, DHANURASAN & MAYURASAN

Bhujangasan
1. Lie on your back and do Bhujangasan. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.
2. Bend forward. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Shalabhasan
1. Lie on your back and do Shalabhasan. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.
2. Bend forward. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Dhanurasan
1. Lie on your back and do Dhanurasan. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.
2. Bend forward. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Mayurasan
1. Lie on your back and do Mayurasan. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.
2. Bend forward. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Benefits
1. Bhujangasan: Improves the quality of flexibility and helps in joint health.
2. Shalabhasan: Improves the quality of posture and helps in back pain.
3. Dhanurasan: Improves the quality of posture and helps in back pain.
4. Mayurasan: Improves the quality of posture and helps in back pain.

YO08 : Pawanuktasan & Chakrasan

PAWAN MUKTASAN & CHAKRASAN

Pawanuktasan
1. Lie on your back and do Pawanuktasan. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.
2. Bend forward. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Chakrasan
1. Lie on your back and do Chakrasan. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.
2. Bend forward. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right. Carry the hands to the left. Carry the hands to the right.

Benefits
1. Pawanuktasan: Improves the quality of posture and helps in back pain.
2. Chakrasan: Improves the quality of posture and helps in back pain.

INC01 : Breast Changes in Pregnancy

BREAST CHANGES IN PREGNANCY

CHANGES IN THE BODY OF UTERUS:

- By 12 weeks the uterus is enlarged and the fundus is at the level of the umbilicus.
- By 16 weeks the uterus is enlarged and the fundus is at the level of the umbilicus.
- By 20 weeks the uterus is enlarged and the fundus is at the level of the umbilicus.
- By 24 weeks the uterus is enlarged and the fundus is at the level of the umbilicus.
- By 28 weeks the uterus is enlarged and the fundus is at the level of the umbilicus.
- By 32 weeks the uterus is enlarged and the fundus is at the level of the umbilicus.
- By 36 weeks the uterus is enlarged and the fundus is at the level of the umbilicus.
- By 40 weeks the uterus is enlarged and the fundus is at the level of the umbilicus.

Height of fundus by weeks of normal gestation with a single fetus:

Enlarging Uterus During Gestation Period:

Changes in Uterine Size & Shape in Puerperium Period:

BREAST CHANGES DURING PREGNANCY:

- Hormonal changes during pregnancy cause reproductive forward and changes in breast tissues. The breasts usually become larger, warmer, tingling and abnormally sensitive to touch.
- Breasts start increasing in size at about eight weeks of pregnancy.
- Breasts start swelling, but without any discharge.
- Nipples and areola become darker and bigger.
- During first months of pregnancy, the colostrum starts producing. In last months of pregnancy, breasts will have a little amount of thick yellowish liquid.
- The areol glands on the surface of the areola called as Montgomery's tubercles become more bumps.

Montgomery's tubercles during pregnancy:

13th week of Pregnancy: Breast starts to become larger and warmer.

20th week of Pregnancy: Nipples and areola become darker and bigger.

Lactating breast: Breast starts to produce milk.

INC02 : Uterine Changes During Pregnancy

UTERINE CHANGES DURING PREGNANCY

CHANGES IN THE BODY OF UTERUS:

- By 12 weeks the uterus is enlarged and the fundus is at the level of the umbilicus.
- By 16 weeks the uterus is enlarged and the fundus is at the level of the umbilicus.
- By 20 weeks the uterus is enlarged and the fundus is at the level of the umbilicus.
- By 24 weeks the uterus is enlarged and the fundus is at the level of the umbilicus.
- By 28 weeks the uterus is enlarged and the fundus is at the level of the umbilicus.
- By 32 weeks the uterus is enlarged and the fundus is at the level of the umbilicus.
- By 36 weeks the uterus is enlarged and the fundus is at the level of the umbilicus.
- By 40 weeks the uterus is enlarged and the fundus is at the level of the umbilicus.

Height of fundus by weeks of normal gestation with a single fetus:

Enlarging Uterus During Gestation Period:

Changes in Uterine Size & Shape in Puerperium Period:

INC03 : First Stage of Labour

FIRST STAGE OF LABOUR

CERVICAL EFFACEMENT AND DILATION:

A. Foetal Position before labour begins:

B. Foetus moves into the birth canal and cervix begins to dilate:

FIRST STAGE OF LABOUR IS DIVIDED INTO TWO PHASES:

A. Latent Phase:

- Cervical dilation < 3 cm and
- Regular contractions

B. Active Phase:

- Cervical dilation > 3 cm and
- Regular contractions

Normal Progress:

- Nulliparous women:
 - 1. Mean duration: 8-16 hours
 - 2. Maximum normal duration: 20 hours
- Multiparous women:
 - 1. Maximum normal duration: 14 hours

INC04 : Second Stage of Labour

SECOND STAGE OF LABOUR

A. Expulsion of the head of the foetus from uterus.

B. Expulsion of the foetus from uterus.

The second stage of labour begins when the cervix is completely effaced and ends with the delivery of the baby. The second stage is often referred to as the "pushing" stage. During the second stage, the woman becomes actively involved by pushing the baby through the birth canal to the outside world. When the baby's head is visible at the opening of the vagina, it is called "crowning". The second stage is shorter than the first stage, and generally takes between 30 to 90 minutes in a woman's first pregnancy.

INC05 : Third Stage of Labour

THIRD STAGE OF LABOUR

After the baby is delivered, the new mother enters the third and final stage of labour — delivery of the placenta. This stage usually lasts just a few minutes and involves the passage of the placenta out of the uterus and through the vagina.

A. EXPULSION OF THE PLACENTA:

B. CONTRACTION OF UTERUS:

C. EXPELLED PLACENTA:

INC06 : Complete Breech Presentation

COMPLETE BREECH PRESENTATION

Complete Breech (Flexed): Legs are normally flexed in the vertex position.

Vaginal Examination of Complete Breech: Sacrum, anus, genitalia and feet can be identified. The sacrum can be mistaken for the occiput unless all four toes are palpated.

INC07 : Incomplete Breech Presentation

INCOMPLETE BREECH PRESENTATION

The incomplete breech presents with the legs flexed and one or both legs extended on the abdomen. Severely percent of breech presentations are of this type and it is particularly common in pregnancies of first-time mothers whose muscle tone inhibits flexion of the legs and feet during labor.

Frank Breech (Breech with extended legs):

Presenting Part: Sacrum
Attitude: Flexion except for legs at knees

Vaginal Examination of frank breech is LLL position. In feet felt, the legs are extended.

INC08 : Foot Presentation

FOOT PRESENTATION

Footling Breech: This is rare. One or both feet present because neither hips nor knees are fully flexed. The feet are lower than the buttocks, which distinguishes it from the complete breech.

Single Footling Presentation

Knee Presentation: Knee presentation is very rare. One or both hips are extended with the knees flexed.

Knee Presentation

INC17 : Spina Bifida

SPINA BIFIDA

Spina bifida is a type of birth defect called neural tube defect. In spina bifida, a baby's spine does not close completely during early pregnancy. Spina bifida can begin to develop in a fetus even before the mother knows she is pregnant.

Spina bifida with neural cocle

- Thinned meninges form.
- No symptoms. Defect in the skin or a growth of hair over malformed vertebrae.
- Small defect in one or more vertebrae.
- Spinal cord and nerves are normal.
- Usually no orthopedics.

Myelomeningocele

- A cyst made up of meninges, which surround the spinal cord, protrudes through the open part of the spine.
- Spinal fluid can leak out.
- The cyst can be surgically removed.
- Development after surgery is usually normal.

Meningocele

- A cyst made up of meninges, which surround the spinal cord, protrudes through the open part of the spine.
- Spinal fluid can leak out.
- The cyst can be surgically removed.
- Development after surgery is usually normal.

INC18 : Hydrocephalus

HYDROCEPHALUS

Hydrocephalus is a condition of excess production, flow, or absorption of cerebrospinal fluid (CSF). It is characterized by an abnormal increase in CSF volume within the skull and enlarged ventricles in the brain. CSF is normally reabsorbed by the choroid plexus.

Clinical appearance in advanced hydrocephalus

Pathophysiology and Pathology

1. Hypertension during pregnancy
 - a. May be preeclampsia, a complication.
 - b. Causes of the irregularity of rates.
 - c. Usually asymptomatic defects.
2. Risk factors for acquired conditions, such as infections, trauma, spontaneous intracranial bleeding, and neoplasms.
3. Communicating hydrocephalus
 - a. Failure with absorption system.
 - b. Excessive production of CSF.
 - c. The ventricular system becomes greatly distended.

Normal Mechanisms in Infants

1. Excessive fluid growth.
2. Delayed absorption of the ventricular fluid.
3. Hypertonic blood and elevated osmotic pressure within skull.
4. Signs of increased intracranial pressure.
5. Later physical signs
 - a. Fontanelle becomes prominent.
 - b. Seizure episodes along with increased acidotic values.
 - c. Epilepsy and epilepsy may be observed, appearing the same above the eye.
 - d. When ventricles expand, causing "sunset eyes."
 - e. Strabismus, hydrognathus, or other cranial nerve palsies.
 - f. Difficulty holding head up.
 - g. Progressive mental developmental lag.

Diagnosis Evaluation

1. Ophthalmology may reveal papilloedema.
2. CT scan in the diagnostic tool of choice.
3. Skull X-ray shows widening of the fontanelle and suture and presence of intracranial lesion.
4. Infant's head circumference, including abnormal fontanelles.

Management

1. Hydrocephalus can be treated through a variety of surgical procedures.
2. Intracranial fluids for removal done in communicating hydrocephalus.
3. Subtotal skull resect (craniectomy).

Prognosis

1. Many children experience normal motor and intellectual development.
2. The severity of hydrocephalus is directly proportional to the extent between onset of hydrocephalus and the time of diagnosis.
3. Approximately two-thirds of patients will die at any time age if they do not receive surgical treatment.

Potential brain sites in children with hydrocephalus

1. Abnormal expansion of ventricles
2. Central expansion of ventricles
3. Abnormal expansion of ventricles
4. Abnormal expansion of ventricles

INC19 : Anencephalus

ANENCEPHALUS

Clinical Appearance in Anencephaly

DEFINITION

A neural tube defect occurring prior to 28 days which prevents the closure of the anterior neuropore resulting in a large defect of the anterior, midbrain, and occipital regions.

EPIDEMIOLOGY

INCIDENCE 1:100 live births

RISK FACTORS

1. Occurrence rate is 4% and increases to 10% if a female has had 2 previous pregnancies.
2. Maternal age related deficiency.
3. Folate acid deficiency.

ASSOCIATED ANOMALIES

1. Atrial septal defects (defect in ventricular wall).
2. Atrial valve defects, ventricular septal defects.

PATHOPHYSIOLOGY

1. Both neural neuropores and the neural tube (ventricular fluid) are absent.
2. Absence of the cerebellum.
3. Absence of the brainstem usually present.
4. Hypoplastic pituitary gland.
5. The remaining brain remaining consists of perinatal connective tissue, vascular, and meninges.

CLINICAL FEATURES

1. Characteristic appearance: a large defect in the roof of the skull (calvarium), meninges, and brain tissue is well angulated mass of neural tissue connected with the meninges continuous with the site.
2. The cranial defect may indicate ectopia of the neural region exposing the brain and followed when seen postnatally.
3. The skull plates may protrude due to inadequately reabsorbing CSF.

INVESTIGATIONS

1. Prenatal Diagnosis
 - a. Elevated maternal serum alpha-fetoprotein (AFP).
 - b. Level of chorionic gonadotropin (CG) and amniocentesis.
2. Postnatal - elevated AFP and amniocentesis.

MANAGEMENT

1. The treatment of anencephaly varies according to the extent of the defect.

Development of Neural Tube

INC20 : Breast Self Examination

BREAST SELF EXAMINATION

Look in the mirror for visual signs and consult a doctor as soon as possible if you notice any of these changes. The woman lies on her back for breasts with the points of her fingers to feel for lumps (either superficial or deeper in tissue) or lumps.

Visual Inspection

1. Inspect for changes in size, shape, or color.
2. Inspect for changes in the position of the areola.
3. Inspect for changes in the position of the nipple.
4. Inspect for changes in the position of the breast.

Palpation with Fingers

Palpation with Fists

Palpation with Knuckles

Visual Inspection

1. Inspect for changes in size, shape, or color.
2. Inspect for changes in the position of the areola.
3. Inspect for changes in the position of the nipple.
4. Inspect for changes in the position of the breast.

Palpation with Fingers

Palpation with Fists

Palpation with Knuckles

Visual Inspection

1. Inspect for changes in size, shape, or color.
2. Inspect for changes in the position of the areola.
3. Inspect for changes in the position of the nipple.
4. Inspect for changes in the position of the breast.

Palpation with Fingers

Palpation with Fists

Palpation with Knuckles

Visual Inspection

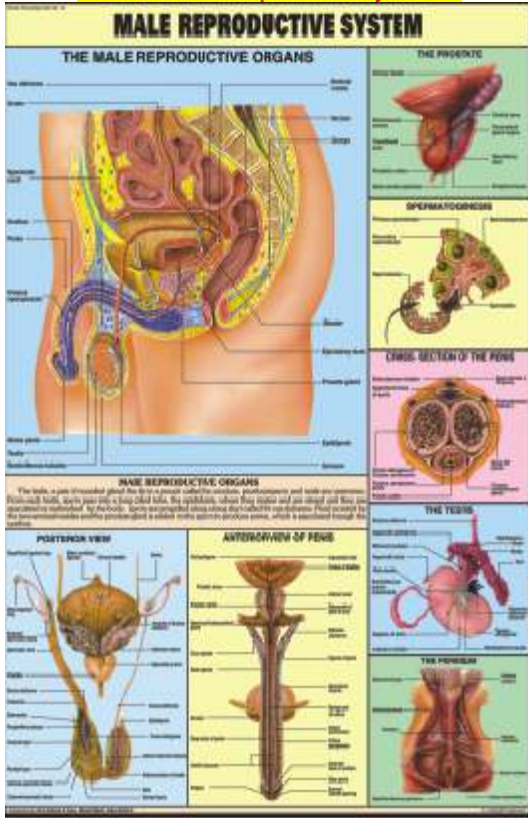
1. Inspect for changes in size, shape, or color.
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3. Inspect for changes in the position of the nipple.
4. Inspect for changes in the position of the breast.

Palpation with Fingers

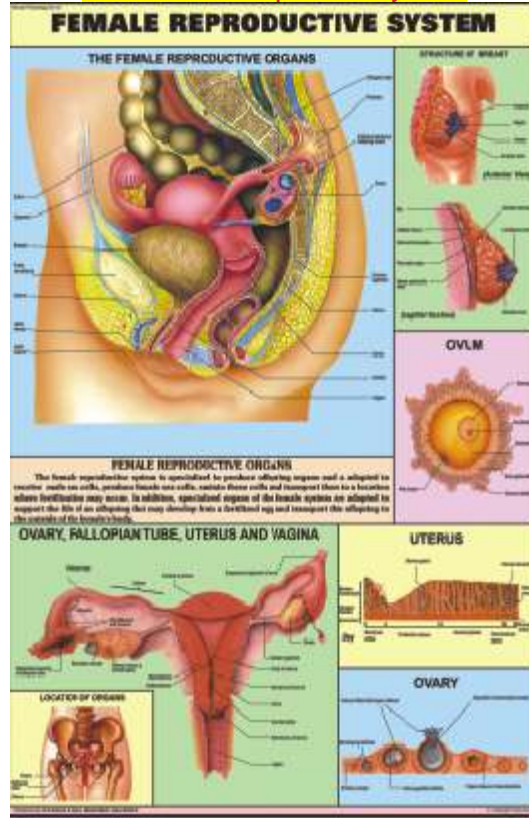
Palpation with Fists

Palpation with Knuckles

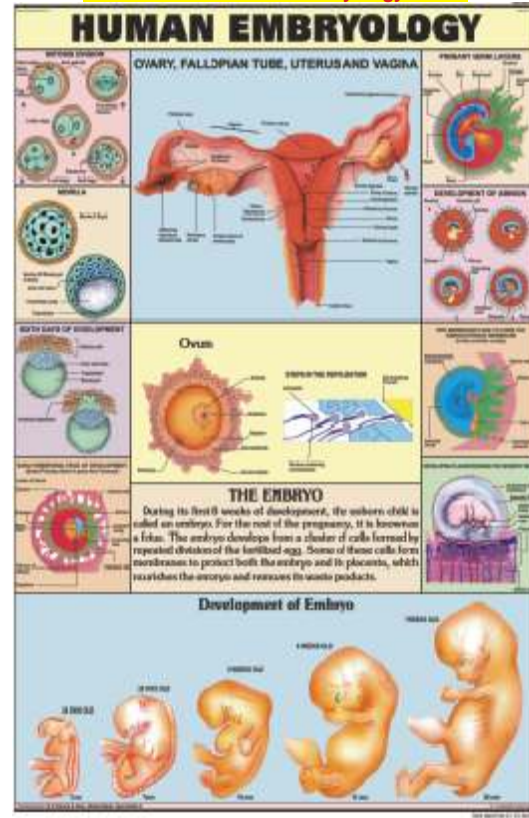
HP12S : Male Reproductive System



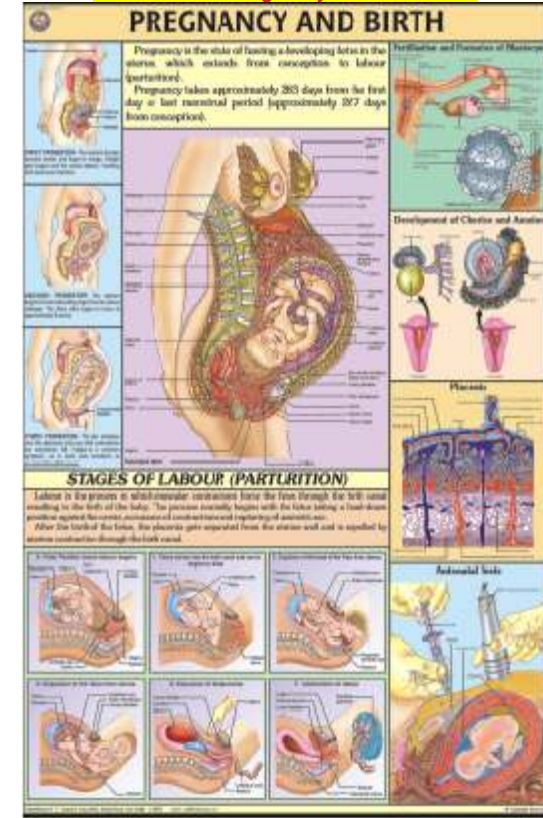
HP13S : Female Reproductive System



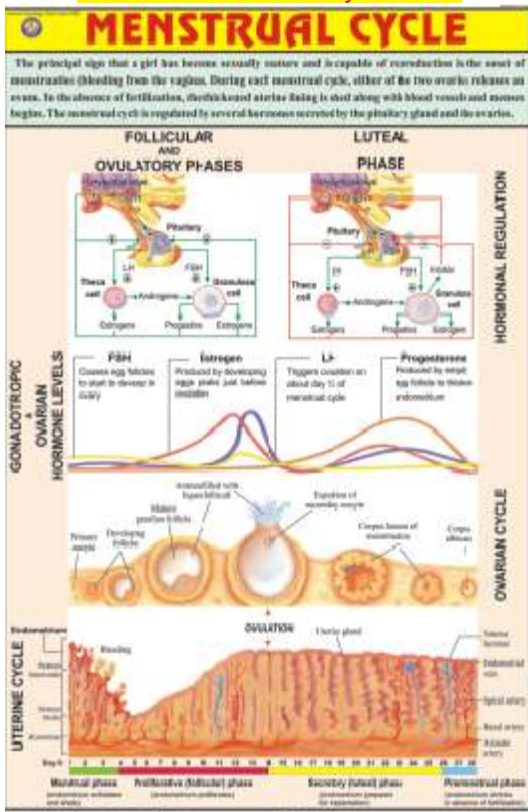
HP14S : Human Embryology



HP18S : Pregnancy And Birth



HP30S : Menstrual Cycle



HP31S : Contraception (Birth Control)



MATHEMATICS PRIMARY CHARTS

A set of 7 charts
Laminated, Size 50 x75 cm (Available in English and Hindi Separately)

MP01 : Numerical Chart

NUMERICAL CHART

| | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|-----|
| 1 | 11 | 21 | 31 | 41 | 51 | 61 | 71 | 81 | 91 |
| 2 | 12 | 22 | 32 | 42 | 52 | 62 | 72 | 82 | 92 |
| 3 | 13 | 23 | 33 | 43 | 53 | 63 | 73 | 83 | 93 |
| 4 | 14 | 24 | 34 | 44 | 54 | 64 | 74 | 84 | 94 |
| 5 | 15 | 25 | 35 | 45 | 55 | 65 | 75 | 85 | 95 |
| 6 | 16 | 26 | 36 | 46 | 56 | 66 | 76 | 86 | 96 |
| 7 | 17 | 27 | 37 | 47 | 57 | 67 | 77 | 87 | 97 |
| 8 | 18 | 28 | 38 | 48 | 58 | 68 | 78 | 88 | 98 |
| 9 | 19 | 29 | 39 | 49 | 59 | 69 | 79 | 89 | 99 |
| 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

MP02 : Addition

ADDITION

SYMBOL +

One and one are two
 $1 + 1 = 2$

Three and two are five
 $3 + 2 = 5$

Six and two are eight
 $6 + 2 = 8$

Four and three are seven
 $4 + 3 = 7$

Three are two and one
 $3 = 2 + 1$

Eight are three and five
 $8 = 3 + 5$

One & two & three are six
 $1 + (2+3) = 3 + 3 = 6$

One & two & three are six
 $1 + (2+3) = 1 + 5 = 6$

Two & (three & four) = 2 + 7 = 9
 $(2+3)+4 = 5+4 = 9$

Three & (two & three) = 3 + 5 = 8
 $(3+2)+4 = 5+4 = 9$

One & (three & five) = 1 + 8 = 9
 $(1+3)+5 = 4+5 = 9$

Five Tens - 3 Units = 50 + 3 = 53
4 Tens - 2 Units = 40 + 2 = 42
8 Tens - 5 Units = 80 + 5 = 85

Six Tens + 7 Units = 60 + 7 = 67
2 Tens + 5 Units = 20 + 5 = 25
8 Tens + 1 Ten + 2 Units = 80 + 10 + 2 = 92

3 Tens + 6 Units = 30 + 6 = 36
5 Tens + 5 Units = 50 + 5 = 55
8 Tens + 1 Ten + 1 Unit = 80 + 10 + 1 = 91

MP03 : Subtraction

SUBTRACTION

SYMBOL -

Birds 6
Fly 2
Balance 4
I had 5
Burst 2
Balance 3

I had Mangoes 6
I ate 3
Balance 3
 $6 - 3 = 3$

I had Books 4
Sold 3
Balance 1
 $4 - 3 = 1$

Father gave me Apples 3
Mother gave me Apples 2
I gave to sister Apple 1
Balance = 4
 $3 + 2 - 1 = 4$

I had Toffees 5
Mother gave me Toffees 5
I ate Toffees - 6
Balance I had = 4
 $5 + 5 - 6 = 4$

5 - 2 = 3
5 + 5 - 6 = 4
3 + 2 - 1 = 4

Tens Units
 $56 - 34 = 22$

Hundreds Tens Units
 $864 - 432 = 432$

Hundreds Tens Units
 $874 - 485 = 389$

Or difference of 56 and 34 is 22.
Or difference of 864 and 432 is 432.
Or difference of 874 and 485 is 389.

MP04 : Multiplication

MULTIPLICATION

SYMBOL x

Four times three
 $3 + 3 + 3 + 3 = 3 \times 4 = 12$

10 + 10 + 6 = 10 \times 2 + 6 = 26
10 + 10 + 10 + 4 = 10 \times 3 + 4 = 34

20 2
18 10 1 2 4
16 8 3 6
14 7 5 8
12 10

30 3
27 10 1 2 6
24 6 3 9
21 7 5 12
18 15

40 4
36 10 1 2 8
32 8 3 12
28 7 5 16
24 20

50 5
45 10 1 2 10
40 8 3 15
35 7 5 20
30 25

60 6
54 10 1 2 12
48 8 3 18
42 7 5 24
36 30

70 7
63 10 1 2 14
56 8 3 21
49 7 5 28
42 35

80 8
72 10 1 2 16
64 8 3 24
56 7 5 32
48 40

90 9
81 10 1 2 18
72 8 3 27
63 7 5 36
54 45

100 10
90 10 1 2 20
80 8 3 30
70 7 5 40
60 50

MP05 : Division

DIVISION

SYMBOL ÷

1 Part of the collection is shaded. There are 2 equal parts of the collection.
So one-half or 1/2 of the collection is shaded.

1 Part of the collection is shaded. There are 3 equal parts of the collection.
So one-third or 1/3 of the collection is shaded.

1 Part of the collection is shaded. There are 4 equal parts of the collection.
So one-fourth or 1/4 of the collection is shaded.

9 Divided by 3 equals 3
Mother has 12 Mangoes she divided them among her 4 children. Each gets 3.
 $12 \div 4 = 3$

One half of 4 is 2
One third of 6 is 2
One fourth of 20 is 5
How many 7 are there in 28?

Divide 4 Tens 3 Units by 3
6 Tens = 3 x 2 Tens
3 Units = 3 x 1 Unit
2 Tens 1 Unit = 21
or
21
3 63
- 21
0

The man which is divided by a number is called DIVIDEND. The number by which it is divided is called DIVISOR. The answer is called QUOTIENT. The left over number is REMAINDER.

8 912
- 84
11
- 13
32
- 32
0

24 (Quotient)
3 (Divisor)
64 (Dividend)
1 (Remainder)

Quotient = Dividend ÷ Divisor
Dividend = Quotient x Divisor + Remainder
Divisor = (Dividend - Remainder) ÷ Quotient

MP06 : Multiplication Tables

MULTIPLICATION TABLES

| NUMBERS | MULTIPLICATION BY TWO | MULTIPLICATION BY THREE | MULTIPLICATION BY FOUR | MULTIPLICATION BY FIVE |
|---------|-----------------------|-------------------------|------------------------|------------------------|
| 1 | 2 | 3 | 4 | 5 |
| 2 | 4 | 6 | 8 | 10 |
| 3 | 6 | 9 | 12 | 15 |
| 4 | 8 | 12 | 16 | 20 |
| 5 | 10 | 15 | 20 | 25 |
| 6 | 12 | 18 | 24 | 30 |
| 7 | 14 | 21 | 28 | 35 |
| 8 | 16 | 24 | 32 | 40 |
| 9 | 18 | 27 | 36 | 45 |
| 10 | 20 | 30 | 40 | 50 |

| MULTIPLICATION BY SIX | MULTIPLICATION BY SEVEN | MULTIPLICATION BY EIGHT | MULTIPLICATION BY NINE | MULTIPLICATION BY TEN |
|-----------------------|-------------------------|-------------------------|------------------------|-----------------------|
| 6 | 7 | 8 | 9 | 10 |
| 12 | 14 | 16 | 18 | 20 |
| 18 | 21 | 24 | 27 | 30 |
| 24 | 28 | 32 | 36 | 40 |
| 30 | 35 | 40 | 45 | 50 |
| 36 | 42 | 48 | 54 | 60 |
| 42 | 49 | 56 | 63 | 70 |
| 48 | 56 | 64 | 72 | 80 |
| 54 | 63 | 72 | 81 | 90 |
| 60 | 70 | 80 | 90 | 100 |

| MULTIPLICATION BY ELEVEN | MULTIPLICATION BY TWELVE | MULTIPLICATION BY THIRTEEN | MULTIPLICATION BY FOURTEEN | MULTIPLICATION BY FIFTEEN |
|--------------------------|--------------------------|----------------------------|----------------------------|---------------------------|
| 11 | 12 | 13 | 14 | 15 |
| 22 | 24 | 26 | 28 | 30 |
| 33 | 36 | 39 | 42 | 45 |
| 44 | 48 | 52 | 56 | 60 |
| 55 | 60 | 65 | 70 | 75 |
| 66 | 72 | 78 | 84 | 90 |
| 77 | 84 | 91 | 98 | 105 |
| 88 | 96 | 104 | 112 | 120 |
| 99 | 108 | 117 | 126 | 135 |
| 110 | 120 | 130 | 140 | 150 |

| MULTIPLICATION BY SIXTEEN | MULTIPLICATION BY SEVENTEEN | MULTIPLICATION BY EIGHTEEN | MULTIPLICATION BY NINETEEN | MULTIPLICATION BY TWENTY |
|---------------------------|-----------------------------|----------------------------|----------------------------|--------------------------|
| 16 | 17 | 18 | 19 | 20 |
| 32 | 34 | 36 | 38 | 40 |
| 48 | 51 | 54 | 57 | 60 |
| 64 | 68 | 72 | 76 | 80 |
| 80 | 85 | 90 | 95 | 100 |
| 96 | 102 | 108 | 114 | 120 |
| 112 | 119 | 126 | 133 | 140 |
| 128 | 136 | 144 | 152 | 160 |
| 144 | 153 | 162 | 171 | 180 |
| 160 | 170 | 180 | 190 | 200 |

MP07 : Roman Numeral Chart

ROMAN NUMERAL CHART

| I = 1 | V = 5 | X = 10 | L = 50 | C = 100 | D = 500 | M = 1000 |
|---------|----------|-----------|---------|---------|---------|----------|
| I | XI | XXI | XXXI | XLI | | |
| 1 | 11 | 21 | 31 | 41 | | |
| II | XII | XXII | XXXII | XLII | | |
| 2 | 12 | 22 | 32 | 42 | | |
| III | XIII | XXIII | XXXIII | XLIII | | |
| 3 | 13 | 23 | 33 | 43 | | |
| IV | XIV | XXIV | XXXIV | XLIV | | |
| 4 | 14 | 24 | 34 | 44 | | |
| V | XV | XXV | XXXV | XLV | | |
| 5 | 15 | 25 | 35 | 45 | | |
| VI | XVI | XXVI | XXXVI | XLVI | | |
| 6 | 16 | 26 | 36 | 46 | | |
| VII | XVII | XXVII | XXXVII | XLVII | | |
| 7 | 17 | 27 | 37 | 47 | | |
| VIII | XVIII | XXVIII | XXXVIII | XLVIII | | |
| 8 | 18 | 28 | 38 | 48 | | |
| IX | XIX | XXIX | XXXIX | XLIX | | |
| 9 | 19 | 29 | 39 | 49 | | |
| X | XX | XXX | XL | L | | |
| 10 | 20 | 30 | 40 | 50 | | |
| LX = 60 | LXX = 70 | LXXX = 80 | XC = 90 | C = 100 | | |

MKS06a : Mensuration

MENSURATION

A graphical list of the formulae for measurement concepts.

| | |
|---|---|
| <p>Rectangle</p> <p>Perimeter: $P = 2l + 2b$</p> <p>Area: $A = l \times b$</p> | <p>Cube</p> <p>Lateral Surface Area = $4s^2$</p> <p>Total Surface Area = $6s^2$</p> <p>Volume = s^3</p> |
| <p>Circle</p> <p>Circumference = $2\pi r$ or πd</p> <p>Area = πr^2 (or $\pi \times \frac{d^2}{4}$)</p> | <p>Rectangular Solid (Cuboid)</p> <p>Volume = $l \times b \times h$</p> <p>Surface Area = $2(lb + bh + hl)$</p> |
| <p>Triangle</p> <p>Perimeter: $P = a + b + c$</p> <p>Area: $\frac{1}{2} \times \text{base} \times \text{height}$</p> | <p>Cylinder</p> <p>Volume: $V = \pi r^2 h$</p> <p>Surface Area = $2\pi r^2 + 2\pi rh$</p> |
| <p>Trapezium</p> <p>Perimeter: $P = a + b + c + d$</p> <p>Area: $\frac{1}{2}(a+b) \times h$</p> | <p>Cone</p> <p>Volume: $V = \frac{1}{3}\pi r^2 h$</p> <p>Total Surface Area = $\pi r^2 + \pi rl$</p> |
| <p>Parallelogram</p> <p>Area: $A = \text{base} \times \text{height}$</p> | <p>Sphere</p> <p>Volume: $V = \frac{4}{3}\pi r^3$</p> <p>Surface Area = $4\pi r^2$</p> |

MKS06b : Graph Chart

GRAPH CHART

MKS06c : Shapes And Figures

SHAPES AND FIGURES

| | | |
|--|---|--|
| <p>The figure above is not a polygon, since it has a closed figure.</p> | <p>Right Triangle</p> <p>A triangle having a right angle. One of the angles of the triangle measures 90 degrees. The side opposite the right angle is called the hypotenuse.</p> | <p>Parallelogram</p> <p>A four-sided polygon with two pairs of parallel sides. The sum of the angles of a parallelogram is 360 degrees.</p> |
| <p>The figure above is not a polygon, since it has one end of two segments.</p> | <p>Scalene Triangle</p> <p>A triangle having three sides of different lengths.</p> | <p>Trapezoid</p> <p>A four-sided polygon having one pair of parallel sides. The sum of the angles of a trapezoid is 360 degrees.</p> |
| <p>Polygon</p> <p>A polygon is a closed figure made by joining five segments.</p> | <p>Obtuse Triangle</p> <p>A triangle having an obtuse angle. One of the angles of the triangle measures more than 90 degrees.</p> | <p>Pentagon</p> <p>A five-sided polygon. The sum of the angles of a pentagon is 540 degrees.</p> |
| <p>Regular Polygon</p> <p>A regular polygon is a polygon whose sides are of the same length, and whose angles are equal. The sum of the angles of a polygon with n sides where $n \geq 3$ is $(n-2) \times 180^\circ$.</p> | <p>Quadrilateral</p> <p>A four-sided polygon. The sum of the angles of a quadrilateral is 360 degrees.</p> | <p>Hexagon</p> <p>A six-sided polygon. The sum of the angles of a hexagon is 720 degrees.</p> |
| <p>Triangle</p> <p>A three-sided polygon. The sum of the angles of a triangle is 180 degrees.</p> | <p>Square</p> <p>A four-sided polygon having equal length sides having all right angles. The sum of the angles of a square is 360 degrees.</p> | <p>Heptagon</p> <p>A seven-sided polygon. The sum of the angles of a heptagon is 900 degrees.</p> |
| <p>Isosceles Triangle</p> <p>A triangle having two sides of equal length.</p> | <p>Rectangle</p> <p>A four-sided polygon having all right angles. The sum of the angles of a rectangle is 360 degrees.</p> | <p>Octagon</p> <p>An eight-sided polygon. The sum of the angles of an octagon is 1080 degrees.</p> |
| <p>Equilateral Triangle</p> <p>A triangle having all three sides of equal length. The angles of an equilateral triangle all measure 60 degrees.</p> | <p>Rhombus</p> <p>A four-sided polygon having all four sides of equal length. The sum of the angles of a rhombus is 360 degrees.</p> | <p>Nonagon</p> <p>A nine-sided polygon. The sum of the angles of a nonagon is 1260 degrees.</p> |

MKS06d : Mathematical Symbol

MATHEMATICAL SYMBOL

| | |
|--------------------------------------|----------------------------------|
| + Plus; Positive | \int Integral |
| - Minus; Negative | \sphericalangle Angle |
| \pm Plus or minus; error margin | \perp Perpendicular |
| \mp Minus or plus | \parallel Parallel |
| \times Multiplied by | \cong Congruent to |
| \div Divided by | \therefore Therefore |
| = Equal to | \because Because |
| \neq Not equal to | \forall For all |
| \approx Approximately equal to | $\{$ Set |
| : Ratio or such that | \cup Union |
| > Greater than | \cap Intersection |
| < Less than | \subset Is a subset of |
| \propto Directly Proportional to | $\not\subset$ Is not a subset of |
| ∞ Infinity | \Rightarrow Implies that |
| $\sqrt{\quad}$ Square root | \Leftarrow Is implied by |
| ! Factorial | \Leftrightarrow If and only if |
| % Per Cent | \dots etc. |
| ∇ Del (differential operator) | \circ Composite function |
| $^\circ$ Degrees | Δ Increment |
| | Σ Sum |

MKS06e : Algebraic Identities

ALGEBRAIC IDENTITIES

| | | |
|---|--|--|
| <p>Product of 2 Binomials</p> <p>$(a + b)(c + d) = ac + ad + bc + bd$</p> | <p>Product of a Binomial and a Trinomial</p> <p>$(a + b)(c + d + e) = ac + ad + ae + bc + bd + be$</p> | <p>Multiplication of Binomials</p> <p>$(a + b)(c + d) = ac + ad + bc + bd$</p> |
| <p>The square of a Binomial of the form $(a + b)^2$ is equal to the square of the first term + square of the 2nd term + twice the product of both the terms.</p> | | |
| <p>$(a + b)^2 = a^2 + 2ab + b^2$</p> | <p>$(a - b)^2 = a^2 - 2ab + b^2$</p> | <p>$(a + b)(a - b) = a^2 - b^2$</p> |
| <p>The square of a Binomial of the form $(a - b)^2$ is equal to the square of the first term + square of the 2nd term - twice the product of both the terms.</p> | | |
| <p>$(a - b)^2 = a^2 - 2ab + b^2$</p> | <p>$(a + b)(a - b) = a^2 - b^2$</p> | <p>$(a + b)^2 = a^2 + 2ab + b^2$</p> |
| <p>The product of the sum and difference of two quantities is equal to the difference in their squares.</p> | | |
| <p>$(a + b)(a - b) = a^2 - b^2$</p> | <p>$(a + b)(a - b) = a^2 - b^2$</p> | <p>$(a + b)(a - b) = a^2 - b^2$</p> |

MUP01 : Number System

NUMBER SYSTEM

| | |
|--|--|
| Natural Numbers Counting numbers starting from 1. | 1 2 3 4 5 ... |
| Whole Numbers When zero is added to natural numbers, it gives whole numbers. | 0 1 2 3 4 ... |
| Integers System of numbers containing whole numbers and negative of natural numbers is system of integers. | ... -3 -2 -1 0 1 2 3 |
| Rational Numbers A number in the form of $\frac{p}{q}$, where p and q are integers and $q \neq 0$, is a rational number. | $\frac{100}{17}$ $\frac{21}{31}$ $-\frac{61}{19}$ $-\frac{38}{1}$ $\frac{0}{1}$ |
| Even Numbers Numbers exactly divisible by 2 are even numbers. Unit digit of even numbers is either 0, 2, 4, 6 or 8. | 22 164 198 100 8 100 |
| Odd Numbers Numbers which are not divisible by 2. Unit digit of odd numbers is either 1, 3, 5, 7 or 9. | 31 197 2001 109 83 105 |
| Prime Numbers Numbers which have only two factors either 1 or the number itself. 2 is the smallest prime number. | 2 3 5 7 11 13 ... |
| Composite Numbers Numbers which have more than two factors. | 4 6 10 18 23 25 ... |

MUP02 : Algebra (Definition & Formulae)

ALGEBRA

Definitions & Formulae

Definitions

- A combination of terms connected by sign of + and - is called an Algebraic Expression.
- A monomial is another name for a term.
- A binomial is made up of two monomials and a trinomial is made up of three monomials connected by + or - signs.
- A polynomial is made up of more than three terms (monomials) linked by + and - signs.
- A linear equation is a statement of equality between two expressions of the first degree.
- The value of a variable in an equation is called its root.

Formulae

- $(a - b)^2 = a^2 + b^2 - 2ab$
- $(a + b)^2 = a^2 + b^2 + 2ab$
- $a^2 - b^2 = (a + b)(a - b)$
- $(a - b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$
- $(a - b)^3 = a^3 + b^3 + 3ab(a - b)$
- $(a - b)^3 = a^3 - b^3 - 3ab(a - b)$
- $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$
- $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$
- $a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$
- If $a + b + c = 0$, then $a^3 + b^3 + c^3 = 3abc$

MUP03 : Addition of Rational Numbers

ADDITION OF RATIONAL NUMBERS

- Closure Property** :- The sum of two rational numbers is always a rational number. If a and b are two rational numbers and $a + b = c$, then c is also a rational number.
- Commutative Property** :- Two rational numbers can be added in any order. If a and b are two rational numbers then $a + b = b + a$
- Associative Property** :- Three rational numbers to be added can be grouped in any order. If a, b and c are three rational numbers then $(a + b) + c = a + (b + c)$
- Addition of Zero** :- The sum of any rational number and zero is the rational number itself. 0 is a rational number such that for every rational number 'a', $a + 0 = 0 + a = a$
- Additive Inverse** :- The negative of a rational number added to it makes it 0. So, the + and - forms of a rational number are called the additive inverse of each other. For rational number 'a' and -a, $a + (-a) = (-a) + a = 0$ is true. -a is additive inverse of a.

SUBTRACTION OF RATIONAL NUMBERS

- Closure Property** :- The difference of two rational numbers is a rational number. If a and b are two rational numbers and $a - b = c$ then c is also a rational number.
- Subtraction is not Commutative** :- If a and b are two rational numbers and $a = b$, then $a - b = b - a$. If $a \neq b$, then $a - b \neq b - a = -a - b$
- Subtraction is not Associative** :- If a, b and c are three rational numbers then $(a - b) - c \neq a - (b - c)$, $c \neq -c$
- Subtraction with Zero** :- If a is a rational number then $a - 0 = a$ but $0 - a = -a$

MUP04 : Multiplication of Rational Numbers

MULTIPLICATION OF RATIONAL NUMBERS

- Closure Property** :- The product of two rational numbers is always a rational number. If a and b are two rational numbers and $a \times b = c$, then c is also a rational number.
- Commutative Property** :- Two rational numbers can be multiplied in any order. If a and b are two rational numbers then $a \times b = b \times a$
- Associative Property** :- Three or more rational numbers can be grouped in any order for multiplication. If a, b and c are three rational numbers then $a \times (b \times c) = (a \times b) \times c$
- Identity Element** :- The product of any rational numbers and 1 is the rational number itself. If a is a rational number then $a \times 1 = 1 \times a = a$. Therefore 1 is identity element for multiplication.
- Multiplication with 0** :- Any rational number multiplied by 0 is equal to 0. If a is a rational number then $a \times 0 = 0 \times a = 0$

DIVISION OF RATIONAL NUMBERS

- Closure Property** :- The division of two rational numbers is always a rational number. If a and b are two rational numbers and $a \div b = c$, then c is also a rational number, $b \neq 0$
- Division is not Commutative** :- If a and b are two rational numbers then $a \div b \neq b \div a$
- Division is not Associative** :- If a, b and c are three rational numbers then $(a \div b) \div c \neq a \div (b \div c)$
- Division by 1** :- If a is a rational number then $a \div 1 = a$ and $1 \div a = \frac{1}{a} \neq a$
- Division by 0** :- If a is a rational number then $a \div 0$ is not possible and $0 \div a = 0$

If a, b and c are three rational numbers then

- $a \div (b \times c) = a \div b \times a \div c = (a \div b) \times \frac{1}{c}$
- $a \div (b \div c) = a \div b \times c = (a \div b) \times c$
- $(a \div b) \div c = a \div b \times \frac{1}{c} = a \div (b \times c)$
- $(a \div b) \times c = a \div (b \div c)$

MUP05 : Some Geometrical Concepts

SOME GEOMETRICAL CONCEPTS

| | |
|---|---|
| Point A dot having no length, width or depth, only fixed position is a point. It is represented by capital letters. | Line Line is a set of continuous points which extends indefinitely. It has only length, no width and no end points. It is represented by small letters written on one side. |
| Line Segment It is a part of a line. It has two end points. It has fixed length. | Ray A ray is a part of a line which has one end point. It moves indefinitely in one direction. It has indefinite length. |
| Collinear Points Three or more points lying on a same line are called Collinear Points. Points A, B, C, D, P, Q, and R are collinear. | Non - Collinear Points Points not lying on the same line are Non-Collinear points. |
| Concurrent Lines Three or more lines passing through the same point are concurrent lines. Point of intersection is called point of concurrence. | Non - Concurrent Lines Three or more lines which do not pass through the same point are non-concurrent lines. |
| Perpendicular Lines Lines intersecting each other at right angles. | Parallel Lines Two straight lines that are at the same distance and which do not meet each other are called parallel lines. |
| Intersecting Lines Lines which meet each other at a point are called intersecting lines. Point of meeting is called point of intersection. | Perpendicular Bisector A line which bisects a line segment at right angle is called perpendicular bisector. It bisects AB perpendicularly at O such that AO = OB |

MUP06 : Angles

ANGLES

| | |
|--|---|
| Acute angle Angle of measure less than 90° and greater than 0°. | Right angle Angle of measure of 90°. |
| Obtuse angle Angle of measure greater than 90° but less than 180°. | Straight angle Angle of measure of 180°. |
| Reflex angle Angle of measure greater than 180° but less than 360°. | Complete angle Angle of measure of 360°. |
| Complementary angles If the sum of measures of two angles is equal to 90°, then they are complementary angles. | Supplementary angles If the sum of measures of two angles is equal to 180°, then they are supplementary angles. |

MUP07 : Pair of Angles

PAIR OF ANGLES

| | |
|--|--|
| ADJACENT ANGLES Two angles having a common vertex and one common arm and the other two arms or opposite sides of the common arm are called adjacent angles. | LINEAR PAIR Pair of adjacent angles whose sum is 180°. In a pair of angles opposite rays form straight line. |
| VERTICALLY OPPOSITE ANGLES Pair of angles made by two intersecting lines so that no arm is common. Vertically opposite angles are always equal to each other. | CORRESPONDING ANGLES A pair of exterior and interior angles formed when a transversal intersects two lines so that both the angles are on the same side of the transversal and they are not forming linear pair. |
| ALTERNATE ANGLES A pair of exterior and interior angles formed when a transversal intersects two lines so that the angles are on opposite sides of the transversal and they are not forming linear pair. | INTERIOR ADJACENT ANGLES Pair of interior angles formed on the same side of a transversal when it intersects two lines. |

MUP08 : Triangles

TRIANGLES

A CLOSED FIGURE MADE UP OF THREE LINE SEGMENTS & THREE ANGLES

WHAT TRIANGLES HAVE

- Three sides
- Three angles
- Three vertices
- Total of 3 angles = 180°
- An exterior angle equals the sum of its two interior opposite angles.
- The sum of any two sides of a triangle is greater than the third side.

WHAT TRIANGLES CANNOT HAVE

- Two right angles
- Two obtuse angles
- All angles = 60°
- All angles = 90°
- One obtuse and one right angle

| | | |
|--|--|---|
| Equilateral Triangle All sides equal. All angles are also equal. | Isosceles Triangle Two sides equal. Two angles are also equal. | Scalene Triangle All sides unequal. All angles are unequal. |
| Acute Triangle All angles less than 90°. | Obtuse Triangle One angle more than 90°. | Right Triangle One angle 90°. |

Pythagoras Theorem
In a right-angled triangle, the square of the hypotenuse equals the sum of the squares of its sides.

Concurrent Lines
The altitudes of a triangle are concurrent, i.e. they meet at a point called orthocentre.

Interior Angles
The three interior angles of a triangle are concurrent, i.e. they meet at a point called incentre.

Exterior Angles
The exterior angles of a triangle are concurrent and meet at a point called ex-centre.

Perpendicular Bisectors
The perpendicular bisectors of three sides of a triangle are concurrent and meet at a point called circumcentre.

MUP09 : Quadrilaterals

QUADRILATERALS

Closed Figure made up of four line segments

Properties of Quadrilaterals

- Points A, B, C, D are called the vertices of the quadrilateral.
- Line segments AB, BC, CD and DA are called the sides of the quadrilateral.
- Four angles of the quadrilateral are $\angle A, \angle B, \angle C, \angle D$.
- The two line segments joining the opposite vertices are called diagonals.
- The sum of the angles of a quadrilateral is 360° .

Convex Quadrilateral

With each angle less than 180° .

With each of its angle less than 180° .

Concave Quadrilateral

With one angle less than 180° .

Trapezium

A quadrilateral with two parallel sides and the other two non-parallel.

Parallelogram

A quadrilateral with both the pairs of opposite sides parallel.

- The opposite sides of a parallelogram are equal and parallel.
- The opposite angles of a parallelogram are equal.
- Diagonals of a parallelogram bisect each other.

Rhombus

A parallelogram whose all sides are equal.

The diagonals of a rhombus bisect each other at right angle.

Rectangle

A parallelogram with each of its angle a right angle.

- Perimeter is equal to $2 \times \text{sum of sides}$.
- Area of a rectangle is $\text{length} \times \text{breadth}$.
- Each angle of a rectangle is a right angle.
- The diagonals of a rectangle are equal and bisect each other at right angle.

Square

A rhombus with all the sides equal.

- Perimeter is equal to $4 \times \text{side}$.
- Area of a square is $\text{side} \times \text{side}$.
- Each angle of a square is a right angle.
- The diagonals of a square are equal and bisect each other at right angle.

MUP10 : Circle

CIRCLE

Set of all points equidistant from a fixed point called centre or focus.

Focus : Fixed distance (OC) between centre and circle.
Diameter : Chord (AB) passing through centre.
Radius : $r = 2 \times \text{radius}$

Circumference

Perimeter of circle.
 $C = 2\pi r$

Chord

Line segment joining two points on the circle.

Diameter (PQ) is the longest chord.

Semicircle

Perimeter of semicircle = πr .

Diameter divides the circle in two equal parts and each part is called semicircle.

Arc

Continuous piece of a circle is an arc.

Major arc: PAQ is major arc.
Minor arc: PBQ is minor arc.

Sector

Two parts of a circle region divided by a chord and radii are called sectors. Sector with greater central angle is major sector. Sector with smaller central angle is minor sector.

Segment

Two parts of a circle region divided by a chord are segments. Segment with major arc is major segment. Segment with minor arc is minor segment.

Area

Region occupied by the circular disc is called area of the circle.

Area of a circle = πr^2

Concentric Circles

Circles with different radii and same centre.

$\pi = 22/7$ or 3.14 $r = \text{Radius}$ $\theta = \text{Central angle}$
 $O = \text{Centre of circle}$ $C = \text{Circumference}$

MUP11 : Congruent Triangles

CONGRUENT TRIANGLES

Two triangles are congruent if:

- Their corresponding sides are equal.
- Their corresponding angles are equal.

SSS Congruency

If the corresponding sides of two triangles are equal, they are congruent.

$\triangle ABC \cong \triangle PQR$ (SSS)

ASA Congruency

If two angles and included side of a triangle is equal to two corresponding angles and included side of another triangle, then they are congruent.

$\triangle ABC \cong \triangle PQR$ (ASA)

SAS Congruency

If two sides and included angle of a triangle is equal to two corresponding sides and included angle of another triangle, then they are congruent.

$\triangle ABC \cong \triangle PQR$ (SAS)

AAA Congruency

If two angles and a side of a triangle is equal to two corresponding angles and a corresponding side of another triangle, then they are congruent.

$\triangle ABC \cong \triangle PQR$ (AAA)

AAS Congruency

If two angles and a side of a triangle is equal to two corresponding angles and a corresponding side of another triangle, then they are congruent.

$\triangle ABC \cong \triangle PQR$ (AAS)

RHS Congruency

If the hypotenuse of a right triangle and a side is equal to the hypotenuse and a side of another right triangle, then they are congruent.

$\triangle ABC \cong \triangle PQR$ (RHS)

MUP12 : Properties of Circle

PROPERTIES OF CIRCLE

Perpendicular drawn from the centre of a circle to a chord bisects the chord.

$OM \perp AB$
 $AM = MB$

In a circle, line joining the centre of circle to the mid-point of a chord is perpendicular to the chord.

$OM \perp AB$
 $OM \perp AB$

Equal chords of a circle are equidistant from the centre.

$AB = PQ$
and $OM = ON$

Chords of a circle equidistant from the centre are equal.

$OM \perp AB, ON \perp PQ$
and $OM = ON$
 $\therefore AB = PQ$

Equal chords of a circle subtend equal angles at the centre.

$AB = PQ$
 $\angle AOB = \angle POQ$

Chords of a circle which subtend equal angles at the centre are equal.

$\angle AOB = \angle POQ = \theta^\circ$
 $\therefore AB = PQ$

Angle subtended by an arc of a circle at the centre is twice the angle subtended by it at any point of the alternate segment of the circle.

$m\angle AOB = 2 \times m\angle ACB$

Sun of either pair of opposite angles of a cyclic quadrilateral is 180° .

In cyclic quadrilateral ABCD
 $\angle A + \angle C = 180^\circ$
 $\angle B + \angle D = 180^\circ$

- Angle in the semi-circle is right angle.
- Angle in the major arc is acute angle.
- Angle in the minor arc is obtuse angle.

MUP13 : Mensuration - I

MENSURATION - I

| Figure | Area | Perimeter | Illustrations |
|--------|---|--------------------|---|
| | $l \times b$ | $2 \times (l + b)$ | $l = \text{length}$ $b = \text{breadth}$ |
| | $s \times s$ | $4 \times s$ | $s = \text{side}$ |
| | $\frac{1}{2} \times d \times (h_1 + h_2)$ | $p + q + r + s$ | $d = \text{diagonal}$ $h_1, h_2 = \text{altitudes}$ $p, q, r, s = \text{sides}$ |
| | $\frac{1}{2} \times b \times h$ or $\frac{s_1(s_2 - s_3)}{2}$ | $a + b + c$ | $h = \text{altitude}$ $a, b, c = \text{sides}$ $b = \text{base}$ $s = \frac{a + b + c}{2}$ |
| | $b \times h$ | $2 \times (a + b)$ | $h = \text{altitude}$ $a = \text{side}$ $b = \text{base}$ |
| | $\frac{1}{2} \times d_1 \times d_2$ or $h \times s$ | $4 \times s$ | $d_1, d_2 = \text{diagonal}$ $h = \text{altitude}$ $s = \text{side}$ |
| | $\frac{1}{2} \times (a + b) \times h$ | $a + b + c + d$ | $a, b = \text{parallel sides}$ $c, d = \text{non-parallel sides}$ $h = \text{altitude}$ |
| | πr^2 | $2\pi r$ | $\pi = 3.14$ or $22/7$ $r = \text{radius}$ |

MUP14 : Mensuration - II

MENSURATION - II

| Figure | Lateral Surface Area | Total Surface Area | Volume | Illustrations |
|--------|----------------------|--------------------|------------------------|--|
| | $2(l + b) \times h$ | $2(lb + bh + lh)$ | lbh | $l = \text{length}$ $b = \text{breadth}$ $h = \text{height}$ |
| | $4s^2$ | $6s^2$ | s^3 | $s = \text{side}$ |
| | $2\pi rh$ | $2\pi r(r + h)$ | $\pi r^2 h$ | $r = 3.14$ or $22/7$ $r = \text{radius}$ $h = \text{height}$ |
| | πrl | $\pi r(l + r)$ | $\frac{1}{3}\pi r^2 h$ | $r = 3.14$ or $22/7$ $r = \text{radius}$ $h = \text{height}$ $l = \sqrt{r^2 + h^2}$ |
| | — | $4\pi r^2$ | $\frac{4}{3}\pi r^3$ | $r = 3.14$ or $22/7$ $r = \text{radius}$ |
| | — | $3\pi r^2$ | $\frac{2}{3}\pi r^3$ | $r = 3.14$ or $22/7$ $r = \text{radius}$ |

MUP15 : Profit & Loss

PROFIT & LOSS

- $\text{Gain} = \text{Selling Price} - \text{Cost Price}$
when
(Selling Price > Cost Price)
- $\text{Loss} = \text{Cost Price} - \text{Selling Price}$
when
(Cost Price > Selling Price)
- $\text{Gain \%} = \frac{\text{Gain} \times 100}{\text{Cost Price}}$
- $\text{Loss \%} = \frac{\text{Loss} \times 100}{\text{Cost Price}}$
- $\text{Selling Price} = \frac{(100 + \text{Gain \%}) \times \text{Cost Price}}{100}$
- $\text{Selling Price} = \frac{(100 - \text{Loss \%}) \times \text{Cost Price}}{100}$
- $\text{Cost Price} = \frac{\text{Selling Price} \times 100}{100 + \text{Gain \%}}$
- $\text{Cost Price} = \frac{\text{Selling Price} \times 100}{100 - \text{Loss \%}}$
- $\text{Discount} = \text{List Price} - \text{Selling Price}$
- $\text{Discount Rate} = \text{Discount \%} = \frac{\text{Discount} \times 100}{\text{List Price}}$
- $\text{Selling Price} = \frac{\text{List Price} \times (100 - \text{Discount \%})}{100}$
- $\text{List Price} = \frac{100 \times \text{Selling Price}}{100 - \text{Discount \%}}$

GCM01S : Heavenly Bodies

HEAVENLY BODIES

NORTHERN HEAVEN **SOUTHERN HEAVEN**

CONSTELLATIONS

TYPES OF GALAXIES

OUR SOLAR SYSTEM

GCM02S : Solar System

SOLAR SYSTEM

ORBITS OF THE PLANETS

PLANETS

| Planet | Distance from Sun (km) | Orbit Period (Earth Years) | Orbit Period (Earth Days) | Orbit Speed (km/hr) |
|---------|------------------------|----------------------------|---------------------------|---------------------|
| MERCURY | 57,909,175 | 0.240846 | 88 | 47.8 |
| VENUS | 108,208,460 | 0.719098 | 225 | 35.4 |
| EARTH | 149,597,870 | 1.000000 | 365 | 29.8 |
| MARS | 227,939,200 | 1.880814 | 687 | 24.1 |
| JUPITER | 778,547,048 | 11.861035 | 4333 | 13.1 |
| SATURN | 1,429,402,500 | 29.446843 | 10759 | 9.7 |
| URANUS | 2,870,676,200 | 84.013300 | 30688 | 6.8 |
| NEPTUNE | 4,504,000,000 | 164.781414 | 60190 | 5.4 |

FACTS ABOUT EARTH

- 1. The Earth is the only planet in the solar system that has liquid water on its surface.
- 2. The Earth is the only planet in the solar system that has a solid surface.
- 3. The Earth is the only planet in the solar system that has a magnetic field.
- 4. The Earth is the only planet in the solar system that has a large moon.
- 5. The Earth is the only planet in the solar system that has a large body of water.
- 6. The Earth is the only planet in the solar system that has a large population.
- 7. The Earth is the only planet in the solar system that has a large economy.
- 8. The Earth is the only planet in the solar system that has a large culture.
- 9. The Earth is the only planet in the solar system that has a large history.
- 10. The Earth is the only planet in the solar system that has a large future.

GCM03S : Earth & Its Motions

EARTH & ITS MOTIONS

TWO MOTIONS OF THE EARTH

Seasons are caused due to Revolution

Day & Night caused due to Rotation

SOLAR ECLIPSE

LUNAR ECLIPSE

OCEAN TIDES

PHASES OF MOON

THE EARTH IS ROUND

FACTS ABOUT EARTH

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- 10. The Earth is the only planet in the solar system that has a large future.

GCM04S : Structure of the Earth

STRUCTURE OF THE EARTH

INTERNAL STRUCTURE

SEISMIC TECHNIQUES

WEGENER'S THEORY OF CONTINENTAL DRIFT

SURFACE STRUCTURE

PLATE TECTONICS

LANDFORMS

MAP OF EARTHQUAKES

MAP OF VOLCANOES

SEISMOMETER

TYPES OF VOLCANOES

GCM05S : Rocks & Minerals

ROCKS & MINERALS

ROCKS RELATED TO PLATE TECTONICS

ROCKS

- 1. Igneous Rocks
- 2. Sedimentary Rocks
- 3. Metamorphic Rocks

ROCK CYCLE

IGNEOUS ROCK STRUCTURES

MINERALS

COMPARISON OF THE EARTH'S CRUST

GCM06S : Atmosphere And Space

ATMOSPHERE AND SPACE

THE ATMOSPHERE IS A THICK LAYER OF AIR THAT ENVELOPES THE EARTH'S SURFACE.

ORIGIN OF EARTH'S ATMOSPHERE

VAN ALLEN RADIATION BELT

DISTRIBUTION OF HEAT ENERGY THROUGH THE ATMOSPHERE

VARIATIONS IN ATMOSPHERIC PRESSURE & TEMPERATURE

GCM07S : Pressure & Winds

PRESSURE & WINDS

PRESSURE

WINDS

WINDS

WINDS

GCM08S : Weather Map Symbols

WEATHER MAP SYMBOLS

CLOUD COVER

WIND CONDITIONS

WEATHER CONDITIONS

SEA CONDITIONS

GCM09S : Ocean

OCEAN

Oceans are vast water bodies covering 71% of the earth's surface. They play a crucial role in regulating temperature variations & climate.

TOPOGRAPHY OF OCEAN FLOOR

The ocean floor comprises two distinct parts: the continental shelf and slope, and the deep-sea floor. At the edge of the continental shelf, the sea bed slopes down to the abyssal plain lying at an average depth of 3600 m. Abyssal plain is divided by

ATOLL FORMATION

VERTICAL DISTRIBUTION OF OCEAN LIFE

KF CURRENT

TIDALS

COSMETIC FEATURES

MAP OF OCEANIC CURRENTS

GCM10S : Surveying

SURVEYING

CHAIN AND TAPE SURVEY

METHOD OF SURVEYING

INSTRUMENTS REQUIRED

LAND MEASURING CHAIN

PLANE TABLE SURVEY

INSTRUMENTS REQUIRED

METHOD OF SURVEYING

GCM11S : Conventional Signs

CONVENTIONAL SIGNS

| | | | |
|--|--|--------------------------|--|
| BOUNDARIES | | RAILROADS | |
| COMMUNICATION & POWER LINES | | WATER FEATURES | |
| SETTLEMENTS | | PHYSICAL FEATURES | |
| VEGETATIONS | | OTHERS | |

The chart displays a grid of symbols for various features: boundaries, railroads, communication and power lines, water features, settlements, physical features, vegetations, and others. Each symbol is accompanied by a small text label.

GCM12S : Map Projections

MAP PROJECTIONS

Method of representing surfaces and angles from a globe on to a plane is called Map Projections. All map projections distort the surface in some fashion. Depending upon the purpose of drawing, various map projections exist which preserve some properties of the spherical body with corresponding effects.

The Developable Surface

Cylinder, Cone, Plane

Map Projections:

- Lambert Equal-Area Projection
- Booth Projection
- Polycyclic Projection
- Geometric Projection
- Interrupted Goode Homolosine Projection
- Albers Equal-Area Projection
- Conic Equal-Area Projection
- Mercator Projection
- Mollweide Projection
- Cylindrical Equal-Area Projection
- Lambert's Cylindrical Equal-Area Projection
- Secoidal Projection
- Orthographic Projection

GCM13S : Storm and Ocean Current

Storm and Ocean Current

Tornadoes, hurricanes and cyclones are the most violent storms of nature. They are generated by electrical storms and they take the form of powerful funnel-shaped whirlwinds that extend from the sky to the ground. In these storms, moving air is mixed with soil and other matter rotating at velocities as high as 300 miles per hour (480km/h).

Beginning of a Tornado

Rotation

Descent

The Tornado

Planet Spiral

Cyclone and Anticyclone

How Ocean Currents are Formed

Map of Ocean Currents

CHARTS ON GEOGRAPHY
 A set of 13 charts
 Size 70 x 100 cm, Available in English only (Syn.), Available in English & Hindi Combined (Lam.)

LATEST GEOGRAPHY CHARTS

A set of 20 charts

Laminated, Size 50 x 75 cm (Available in English and Hindi Combined)

GCS01 : Phases of the Moon

PHASES OF THE MOON चन्द्रमा की कलाएँ

FACE OF THE MOON
The nearest of the moon that always faces the earth...

MOON DATA

| | |
|---------------------|-----------------------------------|
| Age | 4500-4600 million years (approx.) |
| Distance from Earth | 384,400 km |
| Orbit around Earth | 384,400 km |
| Time to orbit Earth | 27.32 days |
| Time to orbit Sun | 365.25 days |
| Surface temperature | 100°C to -150°C |
| Surface gravity | 1.6 m/s² |
| Surface area | 37,932,336 km² |
| Volume | 21,700,000,000 km³ |
| Mass | 7.342 × 10 ²² kg |
| Density | 3.34 g/cm³ |
| Escape velocity | 2.38 km/s |
| Surface composition | Silicate rocks and minerals |
| Atmosphere | None |
| Magnetic field | None |
| Moons | None |
| Discovery | Known since antiquity |

GCS02 : Solar & Lunar Eclipse

SOLAR & LUNAR ECLIPSE सूर्य व चन्द्र ग्रहण

Solar Eclipse
Occurs when the Moon passes between the Sun and Earth, blocking the Sun's light.

Lunar Eclipse
Occurs when the Earth passes between the Sun and Moon, blocking the Sun's light from reaching the Moon.

GCS03 : Seasons

SEASONS ऋतु परिवर्तन

Seasons
Spring, Summer, Autumn, Winter

Factors affecting seasons:
1. Tilt of the Earth's axis
2. Revolution of the Earth around the Sun

GCS04 : Tides

TIDES ज्वार भाटा

Spring Tides
Full moon and New moon

Neap Tides
First quarter and Last quarter

GCS05 : Sun and Planets

SUN AND PLANETS सूर्य तथा ग्रह

Structure of Sun

Planets
Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune

Planetary Data

| Planet | Distance from Sun (km) | Orbit (days) | Mass (kg) | Volume (km³) |
|---------|------------------------|--------------|--------------------------|--------------------------|
| Mercury | 57,909,175 | 88 | 3.301 × 10 ²³ | 6.083 × 10 ¹⁰ |
| Venus | 108,208,427 | 225 | 4.867 × 10 ²⁴ | 9.28 × 10 ¹⁰ |
| Earth | 149,597,870 | 365 | 5.972 × 10 ²⁴ | 1.083 × 10 ¹¹ |
| Mars | 227,939,200 | 687 | 6.417 × 10 ²³ | 2.16 × 10 ¹¹ |
| Jupiter | 778,547,048 | 4,333 | 1.898 × 10 ²⁷ | 1.53 × 10 ¹⁵ |
| Saturn | 1,429,400,000 | 9,453 | 5.683 × 10 ²⁶ | 8.27 × 10 ¹⁴ |
| Uranus | 2,870,972,000 | 29,450 | 4.464 × 10 ²⁵ | 6.84 × 10 ¹³ |
| Neptune | 4,494,398,000 | 59,800 | 1.024 × 10 ²⁶ | 1.64 × 10 ¹⁴ |

GCS06 : Water Cycle in Nature

WATER CYCLE IN NATURE प्रकृति में जल चक्र

Evaporation
Water from the ocean and land evaporates into the atmosphere.

Condensation
Water vapor in the atmosphere condenses into clouds.

Precipitation
Water falls from clouds as rain or snow.

Runoff
Water flows over the land into rivers and oceans.

Infiltration
Water seeps into the ground, becoming groundwater.

GCS07 : Directions and How to Find Them

DIRECTIONS AND HOW TO FIND THEM दिशाओं का ज्ञान

Directions
North, South, East, West

How to Find Them
Using a compass, a watch, or the sun.

GCS08 : Conventional Signs

CONVENTIONAL SIGNS रुढ़िगत संकेत

Conventional Signs
Symbols used to represent different features on a map.



GCS09 : Earth is Round

Earth Is Round पृथ्वी गोल है

This chart explains the evidence for Earth's roundness. It includes diagrams of a ship's hull disappearing over the horizon, the Earth's shadow on the Moon during a lunar eclipse, and the Earth's curvature being visible from space. It also discusses how the Earth's rotation causes day and night.

GCS10 : Physical Features of Earth

PHYSICAL FEATURES OF EARTH पृथ्वी के भौतिक लक्षण

This chart identifies the major physical features of India. It shows the Himalayas in the north, the Deccan Traps in the west, and the Eastern Ghats in the east. It also highlights the Indo-Gangetic plains, coastal plains, and the Indian Ocean. A list of major rivers and lakes is provided.

GCS11 : Day & Night

DAY & NIGHT दिन और रात

This chart explains the concept of day and night. It shows how Earth's rotation on its axis causes different parts of the planet to be illuminated by the Sun. It includes diagrams of Earth's tilt and the resulting day and night cycle, as well as a world standard time zone map.

GCS12 : Earthquake

Earthquake भूकम्प

This chart discusses the causes and effects of earthquakes. It explains how tectonic plates moving against each other can cause earthquakes. It also shows the different types of seismic waves (P-waves, S-waves, and surface waves) and the effects of earthquakes, such as ground shaking and tsunamis.

GCS13 : Latitude and Longitude

Latitude and Longitude

This chart explains the geographical coordinate system. It defines latitude and longitude and shows how they are used to locate places on Earth. It includes diagrams of the globe showing latitude and longitude lines, and a world map with a grid.

GCS14 : Types of Clouds

Types of Clouds मेघों के प्रकार

This chart identifies different types of clouds. It includes High Clouds (Cirrus, Cirrostratus, Altostratus, Nimbostratus), Middle Clouds (Altostratus, Nimbostratus), and Low Clouds (Stratus, Stratocumulus, Cumulus, Cumulonimbus). It also describes the characteristics of each type.

GCS15 : Hill Features, Contours & Map Setting

HILL FEATURES, CONTOURS & MAP SETTING

This chart explains how to read a map and identify hill features. It shows how contour lines represent elevation and how to identify features like peaks, ridges, and valleys. It also includes instructions on how to set a map using a magnetic compass.

GCS16 : Factors That Affect Climate

Factors That Affect Climate जलवायु को प्रभावित करने वाले कारक

This chart discusses the factors that affect climate. It includes Latitude, Wind & Air Masses, Ocean Currents, Altitude, and Distance from Water Bodies. It explains how each factor influences the temperature and precipitation of a region.

LATEST GEOGRAPHY CHARTS
 A set of 20 charts
 Laminated, Size 50 x 75 cm (Available in English and Hindi Combined)

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GCS17 : Weather Instruments

WEATHER INSTRUMENTS

Wind Vane: Shows the direction of the wind.

Anemometer: Measures the wind speed.

Barometer: Measures the atmospheric pressure.

Rain Gauge: Measures the amount of rainfall.

Thermometer: Measures the temperature.

Hygrometer: Measures the relative humidity.

Psychrometer: Measures the wet-bulb temperature.

Stevenson Screen: A wooden enclosure to shield meteorological instruments from precipitation and direct heat.

Wet and Wet Bulb Thermometer: Measures the humidity.

Max. & Min. Thermometer: Measures the maximum and minimum temperature.

GCS18 : Volcano

VOLCANO ज्वालामुखी

Volcanoes are vents or fissures in the Earth's crust through which magma, ash, and gases are ejected. They are formed by the movement of tectonic plates. The magma that rises to the surface is called lava. Volcanoes can be classified based on their structure and activity.

Structure of Volcano

Labels include: Crater, Vent, Conduit, Chamber, and Magma.

Classification based on cone structure

- Shield Volcano:** Broad, gently sloping.
- Stratovolcano:** Steep, conical.
- Cinder Cone:** Small, steep-sided.
- Composite Volcano:** Made of alternating layers of lava flows and ash.
- Caldera Volcano:** Large, bowl-shaped.

Activity Based Classification

- Active Volcano:** Currently erupting or has erupted recently.
- Dormant Volcano:** Not currently erupting but has the potential to do so.
- Extinct Volcano:** No longer erupting and is not expected to erupt again.

Active Volcanoes of the World

GCS19 : Ocean Currents

Ocean Currents सागरीय धाराएँ

Ocean currents are flows of water in the ocean. They are caused by differences in temperature and salinity. They play a crucial role in the Earth's climate system.

Types of Ocean Currents

- Surface Currents:** Driven by wind.
- Deep Currents:** Driven by density differences.

Major Ocean Currents

Direction and Speed of Ocean Currents

Diagram showing the relationship between wind direction and current direction.

Ekman Spiral

Diagram illustrating the Ekman spiral, where current speed increases with depth up to the Ekman layer.

GCS20 : Sunlight and Rainbow

SUNLIGHT AND RAINBOW

Sunlight takes 8.3 minutes to reach the Earth. The total frequency spectrum of electromagnetic radiation given off by the Sun is called Sunlight.

Composition of Sunlight

Sunlight on Earth

RAINBOW

Double Rainbow

Diagram showing the formation of a double rainbow.

Colour and Light

- The white light from the Sun reaches the object (here apple).
- All the colours are absorbed, except the red.
- The red is the colour that we see.

CF01 : Changing Face of the Earth

CHANGING FACE OF THE EARTH पृथ्वी का बदलता स्वरूप

GLACIER
हिमनद



RIVER
नदी



SEA WATER
समुद्री जल



GROUND WATER
भूमिगत जल



WIND
पवन



बदलता प्रक्रियाओं के कारक
EXTERNAL PROCESSES

CF02 : Denudation

DENUDATION अनाच्छादन

The geomorphological forms are controlled and controlled by processes, get destroyed, broken, moved or shifted, light and broken by atmospheric forces, weathering processes. The residual forms of weathering are transported by erosion and mass movement. This combined process is called Denudation.

पृथ्वी का स्वरूप बदलता प्रक्रियाओं के कारकों द्वारा नियंत्रित और नियंत्रित है, नष्ट हो जाता है, टूट जाता है, हटाया जाता है, हल्का और टूट जाता है, वायुमंडलीय बलों द्वारा, अपघटन प्रक्रियाओं द्वारा। अपघटन प्रक्रियाओं के शेष रूपों को अपघटन और द्रव्य-संचरण द्वारा परिवहन किया जाता है। यह संयुक्त प्रक्रिया को अनाच्छादन कहा जाता है।

I Weathering अपघटन

A. शारीरिक अपघटन (Physical Weathering)

1. तापमान परिवर्तन (Temperature Change)
2. बर्फ का दबाव (Ice Action)
3. वायुमंडलीय दबाव (Atmospheric Pressure)

B. रासायनिक अपघटन (Chemical Weathering)

1. वायुमंडलीय कार्बोनेशन (Atmospheric Carbonation)
2. जल का कार्बोनेशन (Aqueous Carbonation)
3. ऑक्सीकरण (Oxidation)

C. जैविक अपघटन (Biological Weathering)

1. पौधों द्वारा (By Plants)
2. जानवरों द्वारा (By Animals)
3. सूक्ष्मजीवों द्वारा (By Microbes)

II Mass-movement द्रव्य-संचरण

A. धीरे-धीरे संचरण (Slow Movement)

B. तेजी से संचरण (Rapid Movement)

III Erosion अपघटन

A. शारीरिक अपघटन (Physical Erosion)

1. जल द्वारा (By Water)
2. बर्फ द्वारा (By Ice)
3. वायुमंडलीय द्वारा (By Wind)

B. रासायनिक अपघटन (Chemical Erosion)

1. जल द्वारा (By Water)
2. बर्फ द्वारा (By Ice)
3. वायुमंडलीय द्वारा (By Wind)

CF03 : Streams (River)

STREAMS (Rivers) जलधाराएँ (नदियाँ)

A river system consists of a main channel & all of its tributaries. The flow is towards the sea. It is not the divided into two main systems: (A) Drainage system, which collects & carries water and sediment from the catchment area. (B) A main trunk, which is largely a transporting system. (C) A depositing system, which is found at the river's mouth.

एक नदी प्रणाली एक मुख्य धारा और उसके सभी सहायक धाराओं से मिलती है। प्रवाह समुद्र की ओर होता है। इसे दो प्रमुख प्रणालियों में बांटा जा सकता है: (A) एक नदी प्रणाली, जो जल और कचरे को एकत्रित करती है और उन्हें समुद्र की ओर ले जाती है। (B) एक मुख्य धारा, जो मुख्य रूप से परिवहन प्रणाली है। (C) एक अवक्षेपण प्रणाली, जो नदी के मुहाने पर पाई जाती है।

COGNOSCENCE FLOW OF WATER IN RIVER CHANNEL

Water flows in a river channel in a specific way. It is not uniform. It is affected by the shape of the channel, the nature of the bed, and the nature of the banks.

RIVERS BUILD LEAVES

Rivers build leaves in two ways: (A) River Bedding Plane (B) River Cutting Plane (C) River after repeated Floods

CF05 : Streams (River's Patterns)

Streams (River's Patterns) जलधाराएँ (नदियों के प्रतिरूप)

All drainage systems are made up of an interconnected network of streams that together form particular patterns. The nature of a drainage pattern can vary greatly from one type of terrain to another, primarily in response to the kind of rock on which the streams developed & the structural pattern of faults and folds.

सर्वे नदी प्रणालियाँ एक एकत्रीकृत जाल के रूप में बनी हैं, जो एक-दूसरे से जुड़ी हुई हैं। नदी प्रणालियों के प्रतिरूप, जो एक-दूसरे से अलग-अलग हैं, मुख्य रूप से भू-रचना के प्रकार और तटस्थता के पैटर्न पर निर्भर करते हैं।

DRAINAGE PATTERNS

A. शारीरिक अपघटन (Physical Drainage)

B. रासायनिक अपघटन (Chemical Drainage)

TYPES OF DRAINAGE PATTERNS

1. Dendritic (Dendritic)

2. Trellis (Trellis)

3. Rectangular (Rectangular)

4. Radial (Radial)

5. Ring (Ring)

6. Anastomosing (Anastomosing)

7. Parallel (Parallel)

8. Subparallel (Subparallel)

9. Bifurcating (Bifurcating)

10. Centric (Centric)

11. Superficial (Superficial)

12. Anarctic (Anarctic)

CF06 : Sea Water

SEA WATER समुद्री जल

Sea water is a mixture of water and dissolved salts. The most abundant salt in sea water is sodium chloride. The total amount of salt in the sea is about 4.7 billion billion tonnes.

सागर का जल पानी और घुलने वाले लवणों का मिश्रण है। सागर में सबसे अधिक मात्रा में सोडियम क्लोराइड लवण पाया जाता है। सागर में कुल लवणों की मात्रा लगभग 4.7 ट्रिलियन टन है।

WORK OF SEA-WATER

1. EROSIONAL (Erosional)

2. TRANSPORTATIONAL (Transportational)

3. DEPOSITIONAL (Depositional)

DIFFERENT TYPES OF WAVES

1. Wind waves (Wind waves)

2. Swell (Swell)

3. Storm surge (Storm surge)

4. Tsunami (Tsunami)

CF07 : Coastal Landscape

COASTAL LANDSCAPE समुद्र तटवर्ती भू-आकृतियाँ

Marine erosional landforms are formed by the action of waves and wind. They are found along the coast. They are: (A) Cliffs (B) Corals (C) Wave-cut platforms (D) Wave-cut shore lines (E) Ogee (F) Shore profiles of colluvium.

सागरीय अपघटन भू-आकृतियाँ लहरों और हवा के प्रभाव से बनी हैं। ये तटवर्ती क्षेत्रों में पाई जाती हैं। ये हैं: (A) खड़ीय (B) कoral (C) लहर-काटे हुए प्लेटफॉर्म (D) लहर-काटे हुए तटरेखाएँ (E) ओगी (F) कलुवियम के तटरेखा प्रोफाइल।

MARINE EROSIONAL LANDFORMS

1. CLIFFS (खड़ीय)

2. CORALS (कoral)

3. WAVE-CUT PLATFORM (लहर-काटे हुए प्लेटफॉर्म)

4. WAVE-CUT SHORE LINES (लहर-काटे हुए तटरेखाएँ)

5. OOGEE (ओगी)

6. SHORE PROFILES OF COLLUVIUM (कलुवियम के तटरेखा प्रोफाइल)

DEPOSITIONAL LANDFORMS

1. SAND DUNE (रेत की टीला)

2. SAND BAR (रेत की बाधा)

3. SAND SPIT (रेत की टापु)

4. SAND BAR (रेत की बाधा)

5. SAND BAR (रेत की बाधा)

6. SAND BAR (रेत की बाधा)

7. SAND BAR (रेत की बाधा)

8. SAND BAR (रेत की बाधा)

9. SAND BAR (रेत की बाधा)

10. SAND BAR (रेत की बाधा)

CF04 : River's Landscape

RIVER'S LANDSCAPE नदी-स्थलाकृतियाँ

Erosional landforms are formed by the action of water. They are: (A) Water Fall (B) River Meander (C) Rapids (D) V-shaped Valleys (E) Pot Holes (F) River Terraces (G) Interlocking Spurs (H) Deltas (I) Flood plain & natural levees (J) Alluvial Fans & Cones (K) Delta (L) Delta (M) Delta (N) Delta (O) Delta (P) Delta (Q) Delta (R) Delta (S) Delta (T) Delta (U) Delta (V) Delta (W) Delta (X) Delta (Y) Delta (Z) Delta (AA) Delta (AB) Delta (AC) Delta (AD) Delta (AE) Delta (AF) Delta (AG) Delta (AH) Delta (AI) Delta (AJ) Delta (AK) Delta (AL) Delta (AM) Delta (AN) Delta (AO) Delta (AP) Delta (AQ) Delta (AR) Delta (AS) Delta (AT) Delta (AU) Delta (AV) Delta (AW) Delta (AX) Delta (AY) Delta (AZ) Delta (BA) Delta (BB) Delta (BC) Delta (BD) Delta (BE) Delta (BF) Delta (BG) Delta (BH) Delta (BI) Delta (BJ) Delta (BK) Delta (BL) Delta (BM) Delta (BN) Delta (BO) Delta (BP) Delta (BQ) Delta (BR) Delta (BS) Delta (BT) Delta (BU) Delta (BV) Delta (BW) Delta (BX) Delta (BY) Delta (BZ) Delta (CA) Delta (CB) Delta (CC) Delta (CD) Delta (CE) Delta (CF) Delta 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CHANGING FACE OF THE EARTH
 A set of 15 charts
 Laminated, Size 50 x 75 cm (Available in English and Hindi Combined)

MR01 : Direction and How to Find Them

DIRECTIONS AND HOW TO FIND THEM

COMPASS

Directions play a very important part in the study of geography. Without the hypothetical fixation of four main directions (i.e. North, South, East and West), we cannot find the situation, have safe navigation, air or road transport nor could we express other phenomena of earth, e.g. Seasons, Movements of earth, Day and Night etc.

In case we draw an imaginary line between the two stars (Polaris) of the Great Bear, then at a distance five times more than the distance between these two stars, there is a bright shining star which is known as Pole Star.

Fix a rod on the ground before noon. Tying red as centre, draw a circle up to the end of the shadow. Keeping rod fixed, the shadow will get shorter and after noon it will become longer and will touch the circle once again. The bisector of the angle formed by both the shadows will point towards north.

Sun always rises in the east.

THE PRISMATIC COMPASS

Luminous patch used for night-work.

Hair line engraved on glass window to take sight on to some object.

North pointing arrow-head is luminous for night-work.

The head of the torch in India is to the North.

In India Muslims always pray facing the west.

MR03 : True, Grid and Magnetic North

TRUE, GRID AND MAGNETIC NORTH

वास्तविक उत्तर, मानचित्रिय उत्तर और चुम्बकीय उत्तर

OF ALL THE DIRECTIONS, NORTH IS MOST IMPORTANT.
उत्तर को सब दिशाओं में महत्वपूर्ण दिशा माना गया है।

Different types of North उत्तर के प्रकार

TRUE NORTH

True North is the direction in which the Earth's axis points towards the North Pole. It is the direction in which the Earth's axis points towards the North Pole.

GRID NORTH

Grid North is the direction in which the Earth's axis points towards the North Pole. It is the direction in which the Earth's axis points towards the North Pole.

MAGNETIC NORTH

Magnetic North is the direction in which the Earth's magnetic field points towards the North Pole. It is the direction in which the Earth's magnetic field points towards the North Pole.

LONGITUDES

Longitude is the distance in degrees east or west from the Prime Meridian to any place on the Earth's surface.

GRID SYSTEM & STANDARD MERIDIAN

A grid system is a system of lines drawn on a map to show the location of any place on the Earth's surface.

MR04 : Hill Features, Contours & Map Setting

HILL FEATURES, CONTOURS & MAP SETTING

पर्वतीय आकृतियाँ, समोच्च रेखाएँ तथा मानचित्र अध्ययन

Contours are imaginary lines passing through points of the same height above sea level. They are drawn at regular intervals of height (e.g. 5, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300, 310, 320, 330, 340, 350, 360, 370, 380, 390, 400, 410, 420, 430, 440, 450, 460, 470, 480, 490, 500, 510, 520, 530, 540, 550, 560, 570, 580, 590, 600, 610, 620, 630, 640, 650, 660, 670, 680, 690, 700, 710, 720, 730, 740, 750, 760, 770, 780, 790, 800, 810, 820, 830, 840, 850, 860, 870, 880, 890, 900, 910, 920, 930, 940, 950, 960, 970, 980, 990, 1000, 1010, 1020, 1030, 1040, 1050, 1060, 1070, 1080, 1090, 1100, 1110, 1120, 1130, 1140, 1150, 1160, 1170, 1180, 1190, 1200, 1210, 1220, 1230, 1240, 1250, 1260, 1270, 1280, 1290, 1300, 1310, 1320, 1330, 1340, 1350, 1360, 1370, 1380, 1390, 1400, 1410, 1420, 1430, 1440, 1450, 1460, 1470, 1480, 1490, 1500, 1510, 1520, 1530, 1540, 1550, 1560, 1570, 1580, 1590, 1600, 1610, 1620, 1630, 1640, 1650, 1660, 1670, 1680, 1690, 1700, 1710, 1720, 1730, 1740, 1750, 1760, 1770, 1780, 1790, 1800, 1810, 1820, 1830, 1840, 1850, 1860, 1870, 1880, 1890, 1900, 1910, 1920, 1930, 1940, 1950, 1960, 1970, 1980, 1990, 2000, 2010, 2020, 2030, 2040, 2050, 2060, 2070, 2080, 2090, 2100, 2110, 2120, 2130, 2140, 2150, 2160, 2170, 2180, 2190, 2200, 2210, 2220, 2230, 2240, 2250, 2260, 2270, 2280, 2290, 2300, 2310, 2320, 2330, 2340, 2350, 2360, 2370, 2380, 2390, 2400, 2410, 2420, 2430, 2440, 2450, 2460, 2470, 2480, 2490, 2500, 2510, 2520, 2530, 2540, 2550, 2560, 2570, 2580, 2590, 2600, 2610, 2620, 2630, 2640, 2650, 2660, 2670, 2680, 2690, 2700, 2710, 2720, 2730, 2740, 2750, 2760, 2770, 2780, 2790, 2800, 2810, 2820, 2830, 2840, 2850, 2860, 2870, 2880, 2890, 2900, 2910, 2920, 2930, 2940, 2950, 2960, 2970, 2980, 2990, 3000, 3010, 3020, 3030, 3040, 3050, 3060, 3070, 3080, 3090, 3100, 3110, 3120, 3130, 3140, 3150, 3160, 3170, 3180, 3190, 3200, 3210, 3220, 3230, 3240, 3250, 3260, 3270, 3280, 3290, 3300, 3310, 3320, 3330, 3340, 3350, 3360, 3370, 3380, 3390, 3400, 3410, 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ME09 : Impact of Environment Degradation on Humans

IMPACT OF ENVIRONMENT DEGRADATION ON HUMANS

Greenhouse Effect: The greenhouse effect is the process by which the Earth's surface is warmed by the atmosphere. The sun's rays hit the Earth's surface and are reflected back up. The atmosphere traps some of this heat, warming the surface. This is why the Earth is warm enough to support life.

Air Pollution: Air pollution is the presence of substances in the atmosphere that are harmful to the health of humans and animals, or cause damage to the built environment and natural resources. Air pollution is a major environmental problem in many cities around the world.

Water Pollution: Water pollution is the contamination of water bodies. This includes surface water and groundwater. Pollution can be caused by a wide range of sources, including industrial and agricultural runoff, sewage, and plastic waste.

Health Impacts: Environmental degradation can lead to various health problems. Air pollution can cause respiratory issues, while water pollution can lead to gastrointestinal diseases. The loss of natural resources can also impact mental health.

ME10 : Non-Conventional Sources of Energy

NON - CONVENTIONAL SOURCES OF ENERGY

WIND ENERGY: Wind energy is the energy created by the wind. It is a clean, renewable source of energy that can be used to generate electricity or power mechanical systems.

SOLAR ENERGY: Solar energy is the energy that comes from the sun. It can be used to generate electricity or heat water. Solar panels are used to capture solar energy and convert it into electricity.

HYDRO ENERGY: Hydro energy is the energy that is generated from the movement of water. It is a clean, renewable source of energy that can be used to generate electricity.

BIOMASS ENERGY: Biomass energy is the energy that is generated from organic materials. It is a clean, renewable source of energy that can be used to generate electricity or heat.

GEOTHERMAL ENERGY: Geothermal energy is the energy that is generated from the Earth's internal heat. It is a clean, renewable source of energy that can be used to generate electricity or heat water.

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Globe



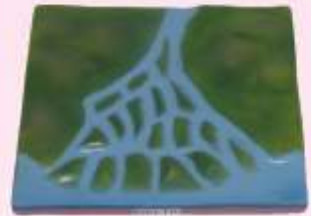
Maps



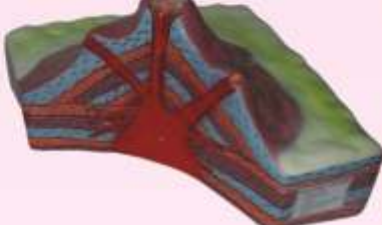
Outline Maps



Tourist Maps



Delta Model



Volcano Model



Specimens Rocks & Minerals



Solar System



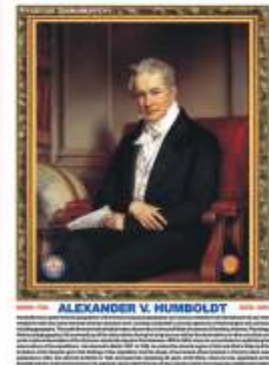
GPS



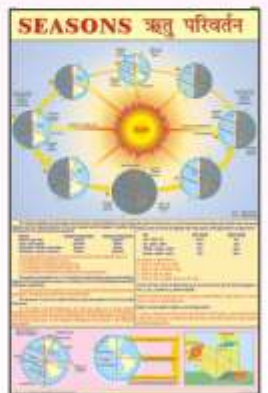
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WMI01 : Weather Map of India (January)



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WMI03 : Weather Map of India (March)



WMI04 : Weather Map of India (April)



WMI05 : Weather Map of India (May)



WMI06 : Weather Map of India (June)



WMI07 : Weather Map of India (July)



WMI08 : Weather Map of India (August)



WMI09 : Weather Map of India (September)



WMI10 : Weather Map of India (October)



WMI11 : Weather Map of India (November)



WMI12 : Weather Map of India (December)



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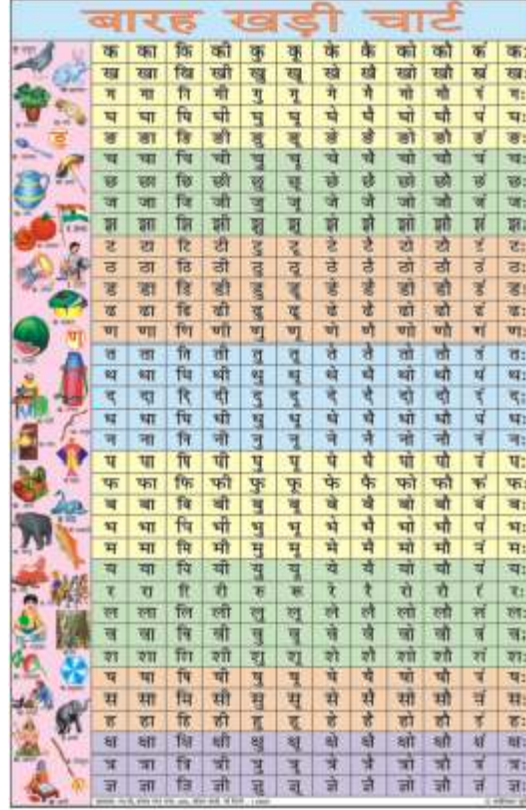
AC01 : English Alphabet



AC02 : Hindi Varnamala



AC03 : Barakhari Chart



AC04 : Tamil Alphabet



CC01 : Animals



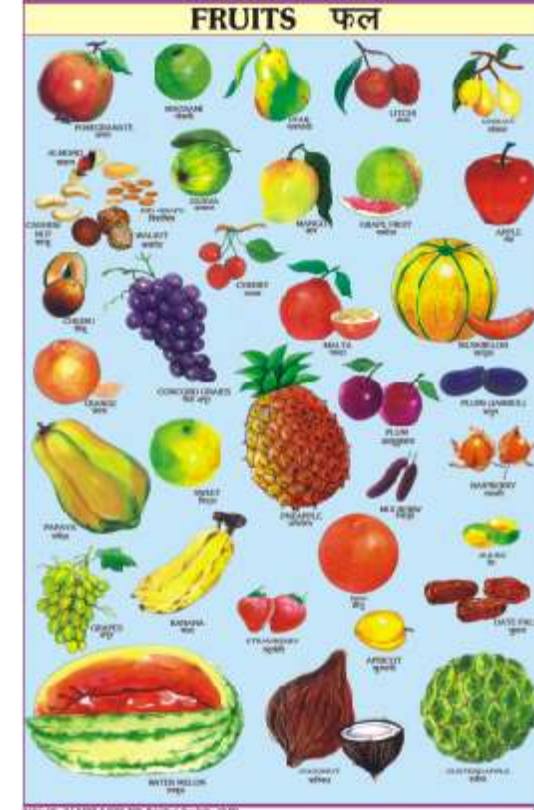
CC03 : Birds



CC05 : Vegetables



CC06 : Fruits



CC07 : Symbols of National Unity

Symbols of National Unity राष्ट्रीय एकता के चिन्ह

NATIONAL ANTHEM राष्ट्रगान **NATIONAL SONG राष्ट्रगीत**

जन-गण-मन अधिष्ठाताक जय हे
भारत-भार्य विधाता।
पंजाब-सिंध-गुजरात-मराठा-
राजिंद्र तन्कात जंग,
विन्ध्य-हिमालय-समुद्र-गंगा
उदालत-जलधि-नरंग।
तव शुभ नमो जगो,
तव शुभ आशिस मागो,
गाहे तव जय गाथा।
जन-गण-मंगलदाक जय हे,
भारत-भार्य विधाता।
जय हे, जय हे,
जय जय जय जय हे॥

वंदे मातरम्।
सुजलां सुफलां
मलाजय रीजलाम्
शस्यशयानलां मातरम् ।
शुभ ज्योत्सनां-पुलकित यमिनीम्,
फुल्लकुसुमित-द्रुमलसोभिनीम्
सुहासिनीं सुमधुर भषिणीम्
सुखार्चा, वरदां मातरम् ॥
वंदे मातरम् - - -

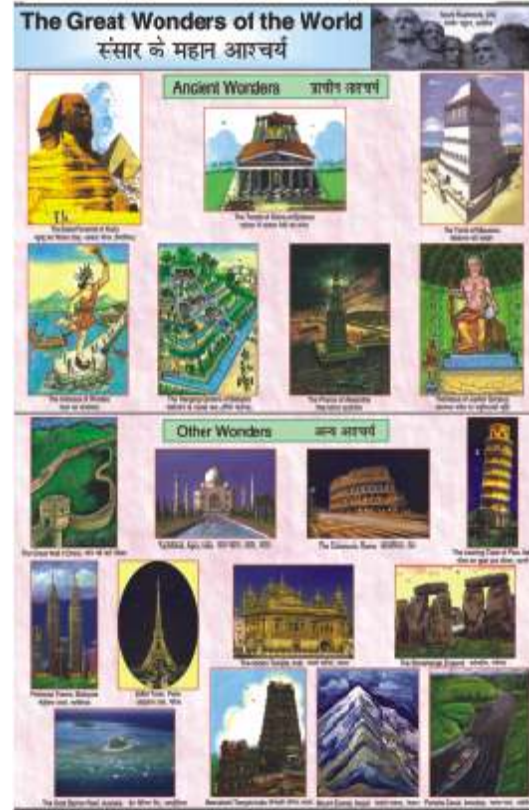
National Flag **राष्ट्रीय ध्वज**
National Emblem **राष्ट्रीय चिन्ह**

National Animal **राष्ट्रीय प्राणी**
National Bird **राष्ट्रीय पक्षी**
National Tree **राष्ट्रीय वृक्ष**
National Fruit **राष्ट्रीय फल**

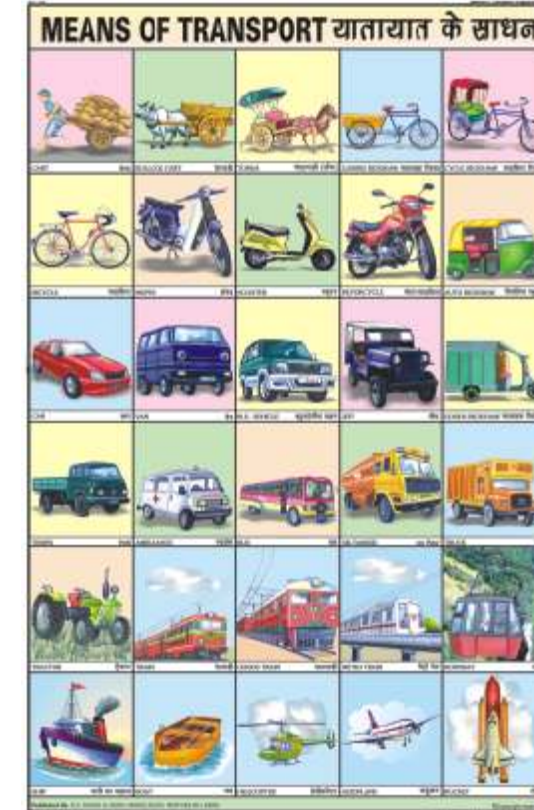
CC08 : Flowers



CC09 : The Great Wonders of the World



CC10 : Means of Transport



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NR01 : Nursery Rhymes - 1

NURSERY RHYMES - 1



BAA, BAA, BLACK SHEEP

Baa, Baa, black sheep,
Have you any wool?
Yes sir, yes sir,
Three bags full
One for my master,
One for his dame,
And one for the little boy,
Who lives down the lane.




HUMPTY DUMPTY

Humpty Dumpty sat
on a wall,
Humpty Dumpty had
a great fall.
All the king's horses
And all the king's men
Couldn't put Humpty
Dumpty together again.


NR02 : Nursery Rhymes - 2

NURSERY RHYMES - 2



ONE, TWO, BUCKLE MY SHOE

One - two,
buckle my shoe ;
Three - four,
shut the door ;
Five - six,
pick up sticks.
Seven - eight
lay them straight ;
Nine - ten,
a big fat hen ;
Eleven - twelve,
dig and delve.




FUSSY CAT, FUSSY CAT

Pussy cat, Pussy cat,
Where have you been ?
I've been to London
To look at the queen.
Pussy cat, Pussy cat,
What did you there ?
I frightened a little mouse
under the chair.


NR03 : Nursery Rhymes - 3

NURSERY RHYMES - 3



TWINKLE, TWINKLE

Twinkle, Twinkle, little star,
How I wonder what you are ?
Up above the world so high,
Like a diamond in the sky.
When the blazing Sun is gone,
When there nothing shines upon,
Then you show your little light,
Twinkle, Twinkle, all the night.




HICKORY, DICKORY, DOCK !

Hickory, Dickory, Dock,
The mouse ran up the clock ;
The clock struck one,
The mouse ran down,
Hickory, dickory, dock !


NR04 : Nursery Rhymes - 4

NURSERY RHYMES - 4



JOHNNY ! JOHNNY

" Johnny ! Johnny !"
" Yes Papa "
" Eating sugar ? "
" No Papa "
" Telling a lie ? "
" No Papa "
" Open your mouth "
" Ha, Ha, Ha. "




CHUBBY CHEEKS

Chubby cheeks, dimpled chin,
Rosy lips, teeth within.
Curly hair, very fair,
Eyes are blue, lovely two,
Teacher's pet, is that you ?
Yes ! Yes ! Yes !


NR05 : Nursery Rhymes - 5

NURSERY RHYMES - 5



JACK & JILL

Jack & Jill,
Went up the hill
To fetch a pail of water ;
Jack fell down,
And broke his crown
And Jill came tumbling after.



DING, DONG, BELL

Ding, dong, bell,
Pussy's in the well !
Who put her in ?
Little Johnny Chin.
Who pulled her out ?
Little Johnny Stout.
What a naughty boy was that !
To worry poor Pussy Cat.