**CRITIRCAL AND CREATIVE THINKING ITEMS**

**CLASS VIII : CHAPTER 5 : DATA HANDLING**

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**ITEM 1 : BRIDGING THE GAP**

|  |  |  |
| --- | --- | --- |
| Domain : Mathematical Literacy | Topic: Data Handling  Learning Outcome :Understand, Interpret data  (As per NCERT) | Class: VIII  Expected Time : 10-15  Total Credit:10 |
| Description of item: | Understand , analyse and evaluate the data provided | |

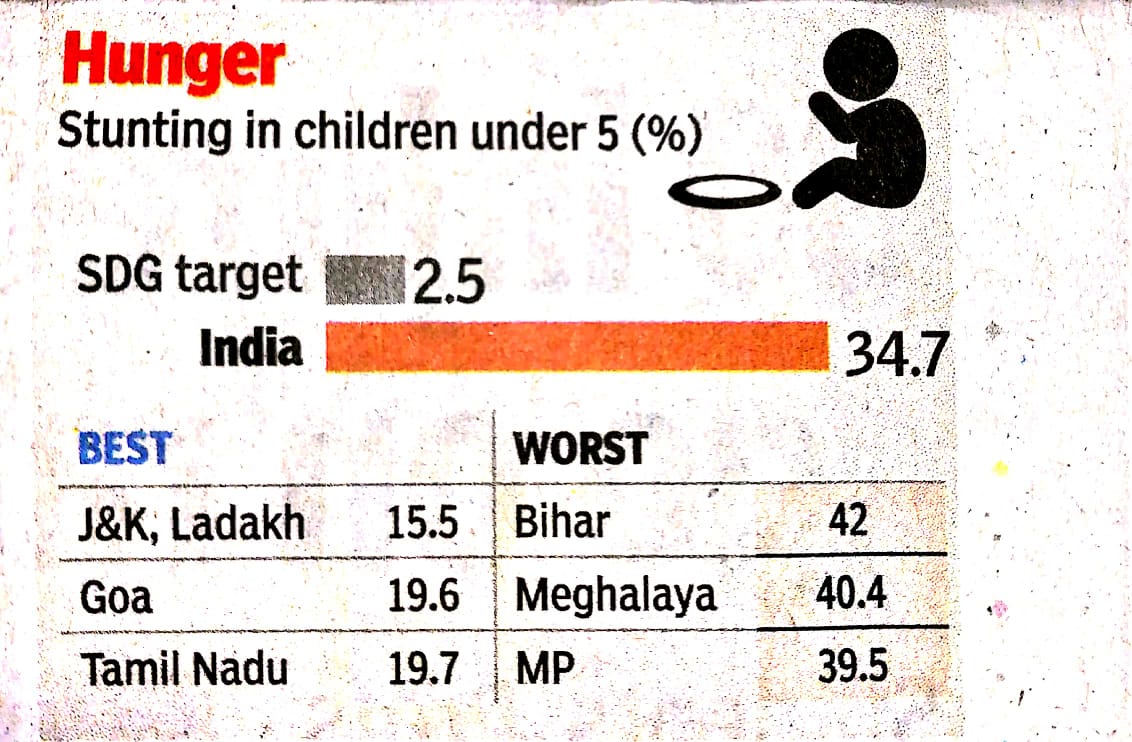
Mal -Nutrition under 5 years of age is one of the biggest challenges that we face in India today. A large number of children below 5 years do not get proper food due to various socio-economic factors.

Different programmes are taken up both by the central and the state Governments to eradicate mal nutrition among children.

The United Nations has set a target to end this problem by 2030 under Sustainable Development Goals(SDG). The following data by NITI AYOG gives a brief idea of India’s progress in the matter.

Read the report and answer the questions .

**( Source: Times of India Dated January 6, 2020) All the figures given below are in terms of percentages.**



Q1. By 2030 ,the SDG target to be achieved shows that only 2.5% of children would be hunger prone. But what is the actual % today?

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Q2. Name the state which fared the best in preventing hunger among children?

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Q3. By what percentage is Bihar more than India’s percentage of hungry children below age 5?

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Q4. Read the 2 sentences below and choose the correct options:

1. Goa and Tamil Nadu have the same percentage in the given data.
2. The % of hungry children in the state of Bihar is found to be alarmingly high.
3. Both (I) and(II) are true
4. Both (I) and(II) are false
5. Only (II) is true but (I) is false
6. Only (I) is true but (II) is false

Q5. If India has to reach the target set by United Nations by 2030,

approximately how much % decrease should we achieve every year, assuming the percentage of decrease remains the same?

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**ITEM 2 : TRASH MATTERS**

|  |  |  |
| --- | --- | --- |
| Domain : Mathematical Literacy | Topic: Data Handling  Learning Outcome :Understand, Interpret data  (As per NCERT) | Class: VIII  Expected Time :10-15  Total Credit:10 |
| Description of item: | Understand , analyse and evaluate the data provided | |

Modernisation has made our life easier . Machines and gadgets have become our extended hands , making day to day work easier and faster .

One of the biggest problems of modernisation is waste management. Cities are struggling how to keep themselves free of garbage. Our coastal cities are flooded with garbage both on land and water which is affecting all living forms.

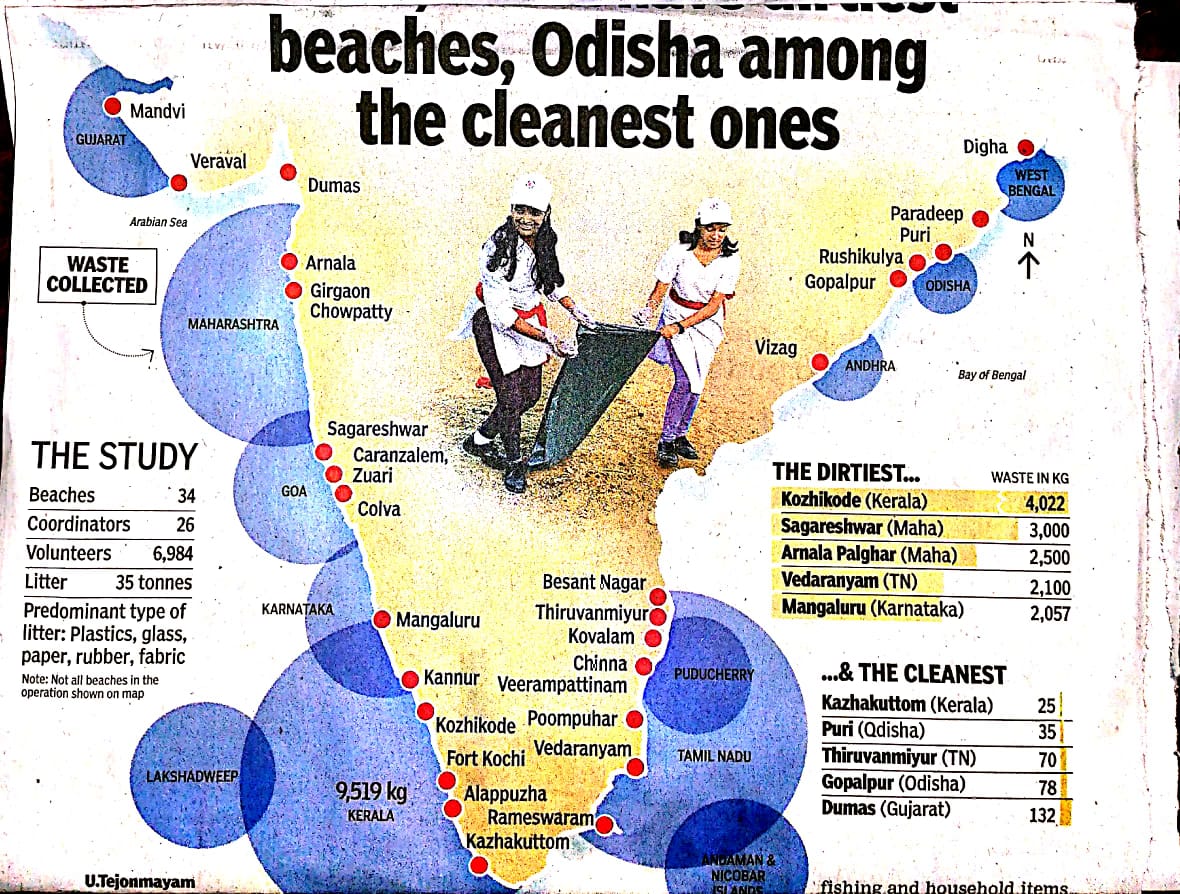
A research was conducted by a group of volunteers of National Centre for Coastal Research in September 2019. They went on a clean-up drive on the beaches. Ashika , a class VIII student also volunteered in the clean-up drive.

She was shocked to see tons of waste piled up .( 1 ton = 1000kg approx.)

She found that waste collected mainly comprised of plastic, glass, paper and general waste left behind by tourists. It also had pieces of fishing nets and waste flowing down the backwaters from different areas.

The group tried to rate the cleanest and the dirtiest of our beaches based on the amount of waste collected on a particular day in 2 hours. The findings are shown below.

**(Source: Times of India Dated 9th January 2020)**



Q1. What was the study about?

1. To find out which beach was the cleanest.
2. To find out which beach was the dirtiest.
3. To rate the beaches based on the waste generated there.
4. All of the above.

Q2. Which state has 2 beaches rated among the top 5 cleanest places?

----------------------------------------------------------------------

Q3. How many beaches did the volunteers collect waste from?

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Q4. According to the survey, which beach generated the maximum waste?

What are the predominant type of waste collected?

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Q5. As a volunteer, how much waste each one must have collected on an

average?

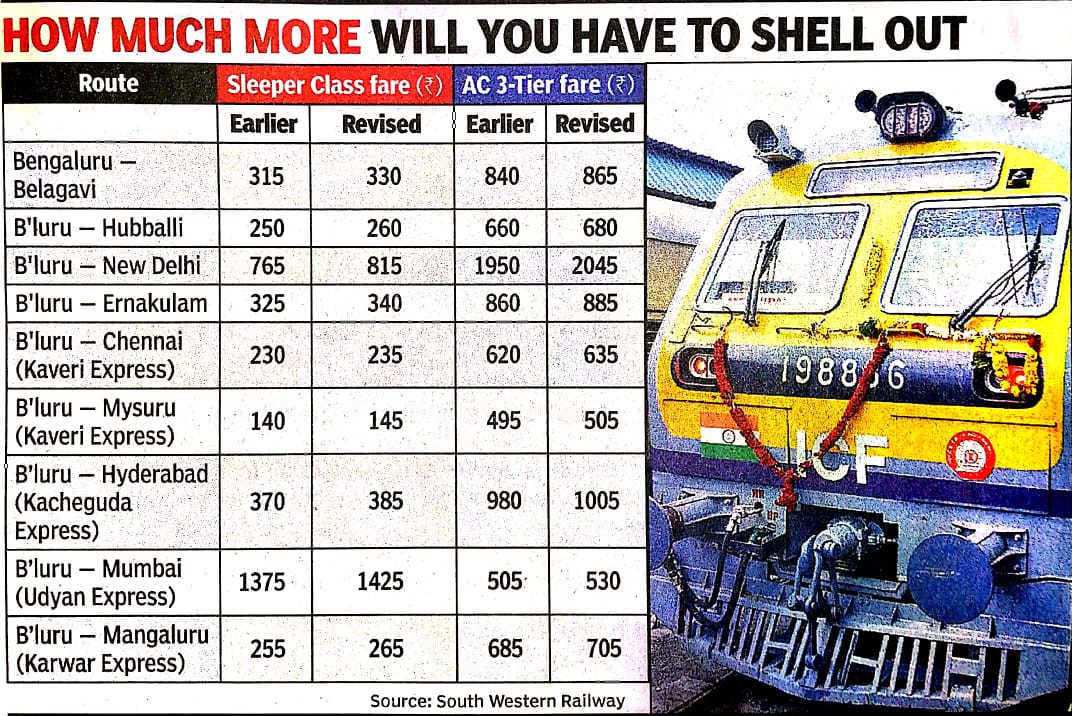
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**ITEM 3 : FARE HIKE IS FAIR ENOUGH !**

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| --- | --- | --- |
| Domain : Mathematical Literacy | Topic: Data Handling  Learning Outcome :Understand, Interpret data  (As per NCERT) | Class: VIII  Expected Time :10-15  Total Credit:15 |
| Description of item: | Understand , analyse and evaluate the data provided | |

Recently, the Indian Railways increased the cost of tickets in many of its routes. Although it is an extra burden for the common man, such an increase is unavoidable for the Railways if they want to take up new projects, improve safety of passengers and modernise the equipment.

Read the data given below. **(Source: Times of India Dated 2nd January 2020)**



Q1. How many trains in the given list originate from Bengaluru/B’luru?

-----------------------------------------------------------------

Q2. Lekhashree had booked a ticket in AC class in Karwar Express before the

fare was increased. What is the difference amount she has to pay to travel

as per the new fare?

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Q3. Shreya had booked a ticket from B’luru to Delhi in sleeper class before

revision of fares . But now wants to upgrade to AC coach. What is the extra

amount she needs to spend ?

---------------------------------------------------------------------------------

Q4. Which train has the maximum increase in fare in AC class and by how

much?

---------------------------------------------------------------------------------------

Q5. Vinu’s family of 6 members who had bought sleeper class tickets(old fare)

to travel from B’luru to Belagavi has to upgrade to AC coach in the revised

fare. What is the extra amount they have to spend now?

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**ITEM 4 : THE BROKEN LADDER**

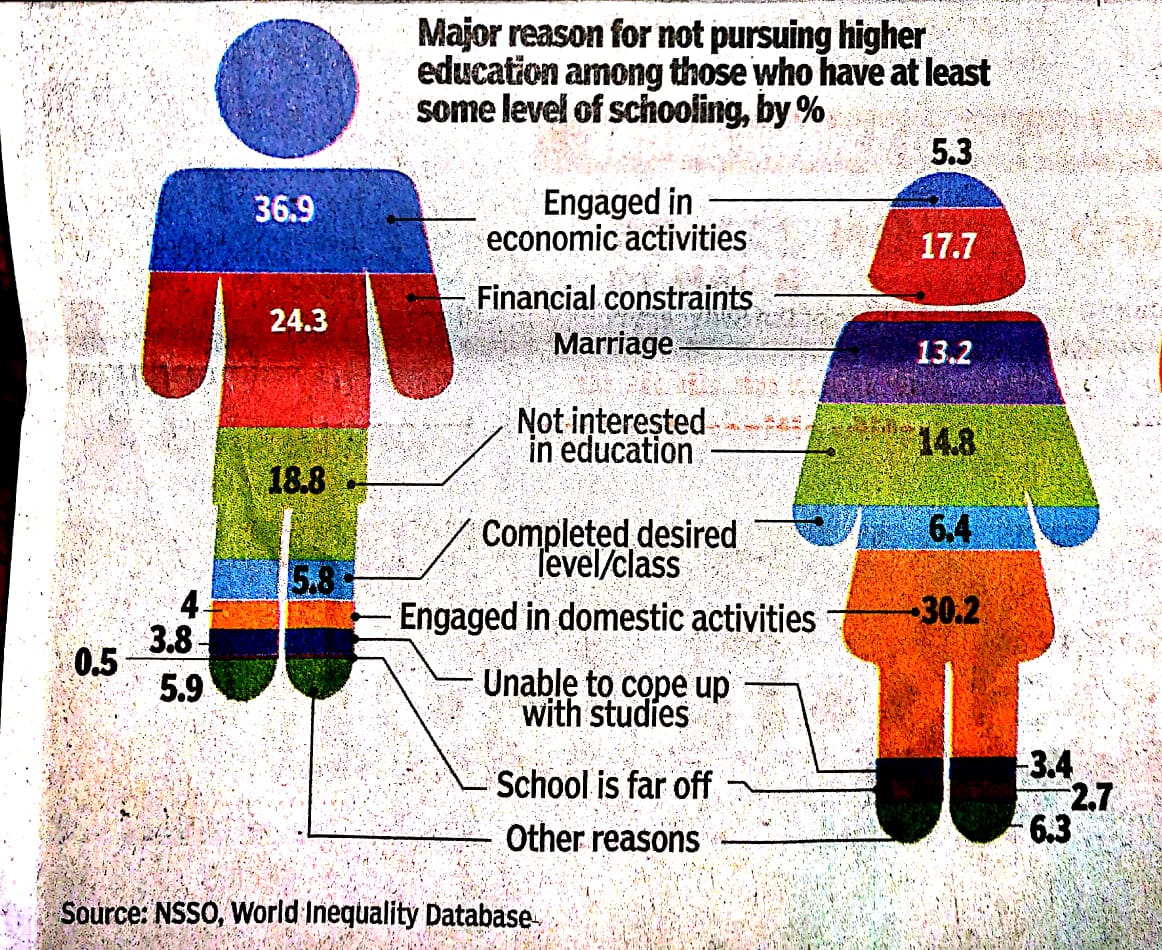
|  |  |  |
| --- | --- | --- |
| Domain : Mathematical Literacy | Topic: Data Handling  Learning Outcome :Understand, Interpret data  (As per NCERT) | Class: VIII  Expected Time :10-15  Total Credit:15 |
| Description of item: | Understand , analyse and evaluate the data provided | |

Indians are among the most sought after workforce in all areas across the globe. Areas like scientific research, medicine or Information technology has a large number of our young generation taking keen interest.

A recent survey report published by the **Times Of India ( Dated January 5th 2020)** points out the situation may not be so good anymore. A lot of students do not or cannot pursue higher education because of various reasons. So what’s stopping them from pursuing education after graduation?

Inspite of subsidies and initiatives by the Government to encourage students there are other socio -economic factors that affect the decision to do higher studies.

Compare the inequality data given below and answer the questions.



Q1. Compare the reasons for not pursuing higher studies in

boys and girls. Answer true or false against these statements .

1. All the reasons are common to both genders.--------------
2. More girls than boys drop out of higher education because school is far off.-------------

Q2. Which of these reasons is preventing only girls from higher education but

not boys?

1. Financial constraints
2. Marriage
3. Engaged in economic activities
4. Completed desired level.

Q3. Answer True or False.

1. The biggest reason for girls not able to pursue higher studies is that they are not interested in studies.
2. Approximately, one fourth of boys discontinue because of financial reasons.
3. Boys are more engaged in economic activities compared to girls.
4. The percentage of boys and girls engaged in domestic activities is the same.

Q4. What is the percentage of boys and girls together who do not continue studies due to financial constraints?

---------------------------------------------------------------------------------

Q5. According to the survey, 30.2% of girls did not go for higher education because they were engaged in domestic activities( household duties such as maids, housekeeping and baby sitting) but among boys it was only 4% .

Which one of these options is the most appropriate reason for this situation?

1. Girls themselves choose domestic work because they like it
2. Boys are not capable of any domestic work
3. Gender bias in society that girls should take care of house hold chores than take up studies.
4. Boys perform better in studies than girls.

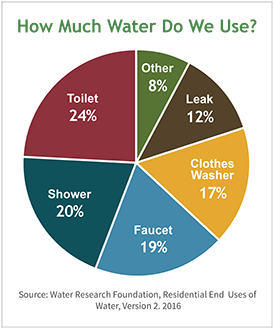
**ITEM 5 :** WOTTA CRISIS!!

|  |  |  |
| --- | --- | --- |
| Domain : Mathematical Literacy | Topic: Data Handling  Learning Outcome :Understand, Interpret data  (As per NCERT) | Class: VIII  Expected Time :10-15  Total Credit:10 |
| Description of item: | Understand , analyse and evaluate the data provided | |

Water is the basic necessity of all life. In recent years , people are facing severe water shortage due to various factors . Srihari , a student of class VIII observed the usage pattern of water at his home. On normal days the daily supply of water was 1200 litres and all of it was used up. In summer, the Water Board of the city decreased the amount supplied daily to only 1000 litres per household .

He realised that the only way to solve water crisis is to manage whatever water is available as the supply of water will be limited. He made a study of the amount of water used for various purposes in his house and came out with a data as follows.

Then he would analyse how to save or minimise wastage of water.



Q1. For which purpose Srihari’s family is using up maximum water among the data given?

--------------------------------------------------------------------

Q2. Srihari found that 12% of water was getting leaked through different taps on a normal day. By fixing leaking taps, one could save water. How many litres would he save?

-------------------------------------------------------------------

Q3. During summer when the water supply is reduced to only 1000 litres per

day, What is the volume of water his family needs for :

1. Shower

------------------------------------

1. Faucet (taps in kitchen , hand wash etc)

--------------------------------------------

Q4. What is the central angle for the part shown as ‘shower’ in the pie chart?

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Q5. Water management involves recycling of water which can be re used for

other purposes like gardening, cleaning floor or outdoors.

If water used for washing clothes and faucet were recycled during summer how many litres of water would be available?

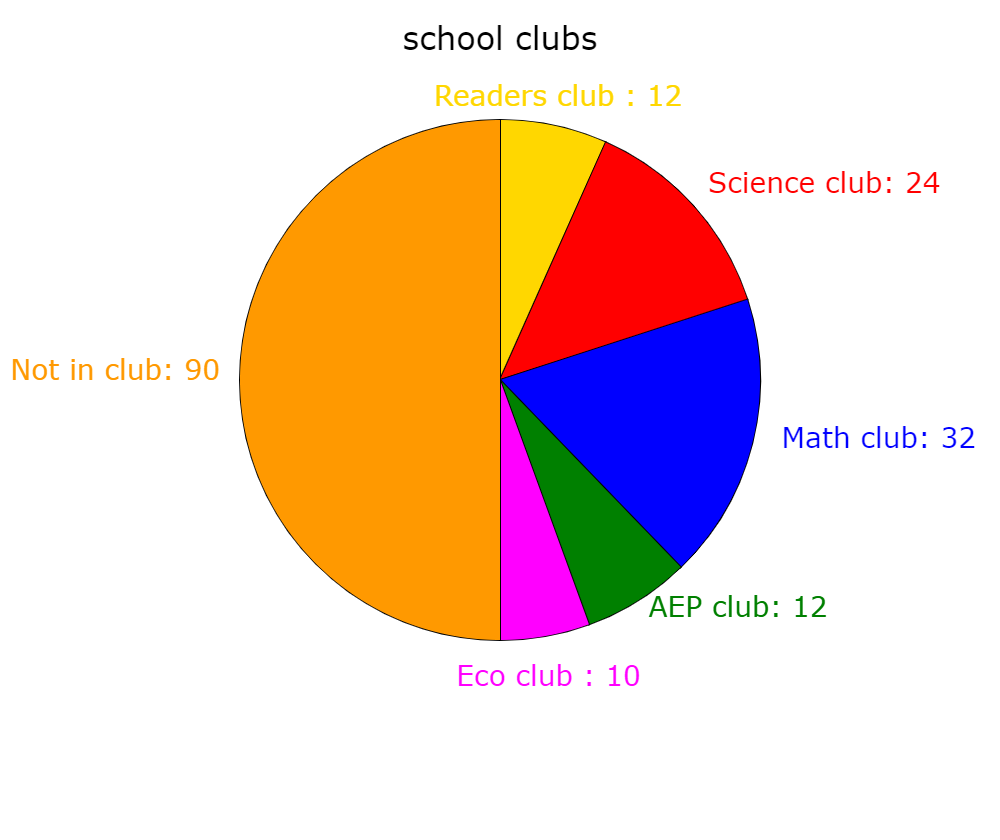
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**ITEM 6 :** ACTIVITIES OF SCHOOL

|  |  |  |
| --- | --- | --- |
| Domain : Mathematical Literacy | Topic: Data Handling  Learning Outcome :Understand, Interpret data  (As per NCERT) | Class: VIII  Expected Time :20 min  Total Credit: 8 |
| Description of item: | Understand , analyse and evaluate the data provided | |

A school has formed 5 clubs to conduct various co curricular activities. Students were told to join the clubs of their choice. The same data is shown in the form of a pie chart.

|  |  |
| --- | --- |
| Club name | Number of students |
| Math club | 32 |
| Science club | 24 |
| Eco club | 10 |
| AEP club | 12 |
| Readers club | 12 |
| Not in any club | 90 |
| Total | 180 |



Q1. Among the 5 clubs , which club has highest number of students?

---------------------------------------------------------

Q2. Read the statements and write True or False

1. Half of the total students have not joined any club. ---------
2. Eco club has 10% of the students.----------------

Q3. What is the measure of the central angle for Science club ?

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Q4. Which two clubs have the same number of students?

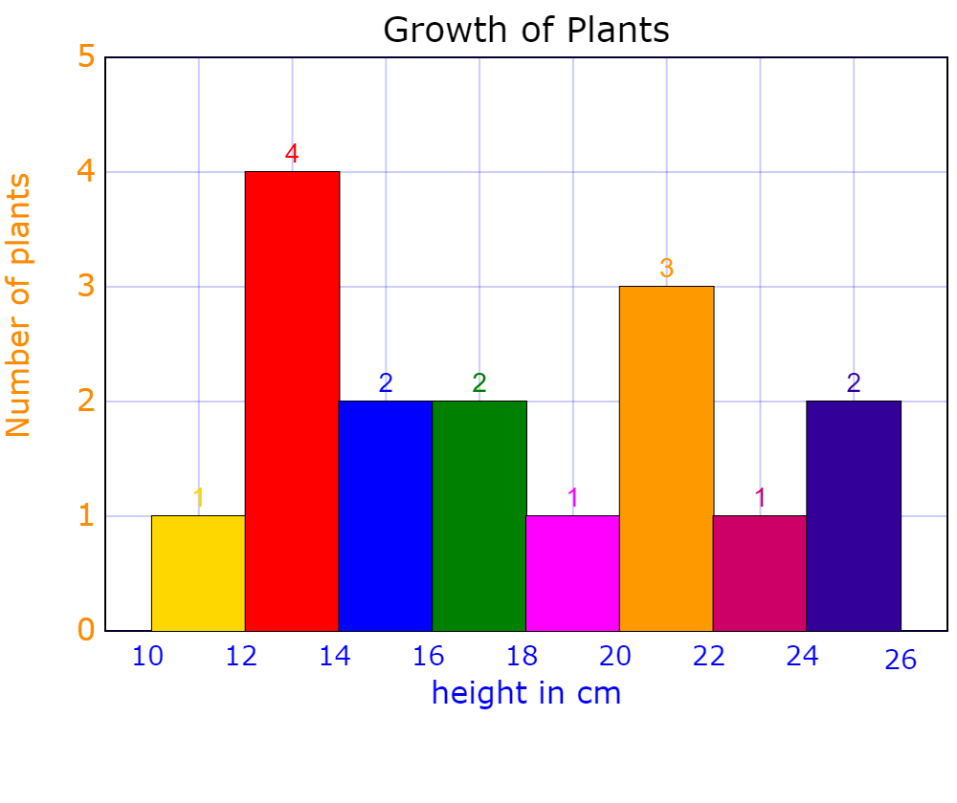
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**ITEM 7 : GROWTH OF PLANTS**

|  |  |  |
| --- | --- | --- |
| Domain : Mathematical Literacy | Topic: Data Handling  Learning Outcome :Understand, Interpret data  (As per NCERT) | Class: VIII  Expected Time :20min  Total Credit: 8 |
| Description of item: | Understand , analyse and evaluate the data provided | |

In order to create awareness about environment, a group of students of Eco Club were told to grow one plant each in the space allotted in the school garden.

They recorded the height of plants at the end of the month and prepared a graph of the data.



Q1. What name is given to this type of graph?

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Q2. What is the total number of students shown in the data?

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Q3. What is the range of height of plants ?

-----------------------------------------------------

Q4. How many plants are there whose height is more than 20cm?

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**ITEM -8 UNDERSTANDING HEART RATE AND HEALTH**

|  |  |  |
| --- | --- | --- |
| Domain : Mathematical Literacy | Topic: Data Handling  Learning Outcome :Understand, Interpret data  (As per NCERT) | Class: VIII  Expected Time : 10 min  Total Credit: 6 |
| Description of item: | Understand , Analyses and evaluate the data provided | |

**Taxonomy of Objective: The child develops the ability of understand and interpret the results related to the given data.**

****

1. If heart rate readings seem like a jumble of numbers, cardiologist El Shahawy is here to help dispel your confusion and arm you with knowledge.

***What can your heart rate really even tell you?***

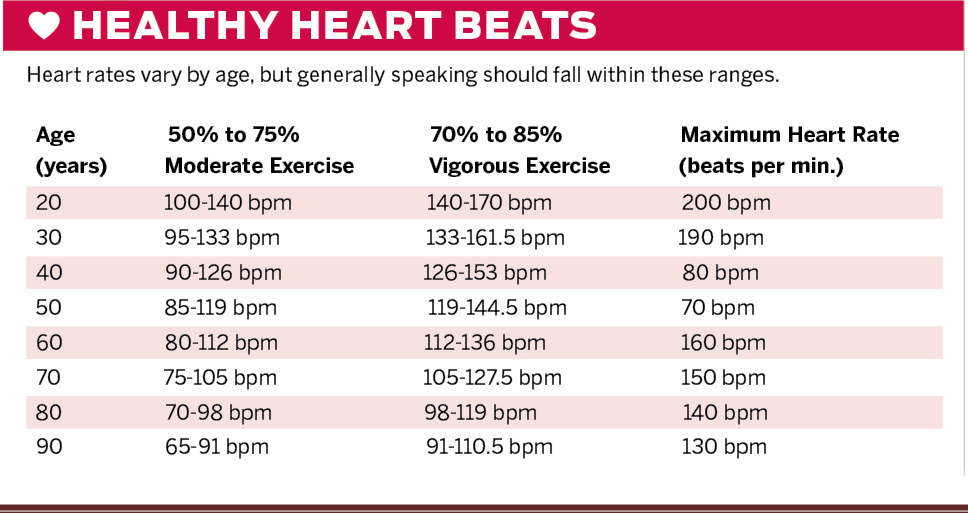
A person’s resting heart rate is how many times their heart beats per minute when they are otherwise resting or inactive.

A healthy resting heart range, according to local Sarasota cardiologist Dr. El Shahawy, is anywhere from about 50 to 75 beats per minute.

Maximum heart rate is the maximum number of times the heart should beat per minute while engaged in exercise. To calculate this number, Shahawy says a person can typically subtract their age from 220.

If a person exceeds their maximum heart rate, they could be at risk of having a heart attack or otherwise injuring their cardiovascular system.

(**Source from cardiologic centre**)



(i) According to Dr Shahawy, For example, if somebody is 50 years old, they wouldn’t want their heart rate to exceed how many beats per minute while exercising

1. 170 beats per minute
2. 70 beats per minute
3. 100 beats per minute
4. None of the above

(ii)Which age group gets highest variation of maximum Heart beat rate

a) 20 to 30 years b) 80 to 90 years c) 30 to 40 years d) 50 to 60 years

(iii) From what age does the maximum heart rate decrease?

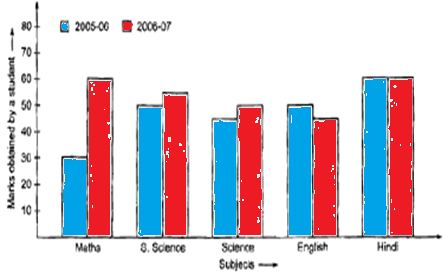
a) From 20 years b) From 40 years c) From 60 years

d) Cannot be explained

**ITEM -9 : GOLU’S ACADEMIC PERFORMANCE**

|  |  |  |
| --- | --- | --- |
| Domain : Mathematical Literacy | Topic: Data Handling  Learning Outcome: Understand, Interpret data  (As per NCERT) | Class: VIII  Expected Time : 20min  Total Credit: 8 |
| Description of item: | Understand , Analyses and evaluate the data provided | |

**Read the following bar graph and answer the following questions.**

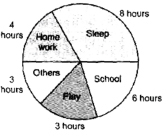
****(Source: Class VIII reference book)

1. What is the information given by the double bar graph?
2. In which subject has the performance improved the most?
3. In which subject the performance deteriorated?
4. In which subject is the performance at par?

ITEM -10 : **TARUN’S TIMETABLE**

|  |  |  |
| --- | --- | --- |
| Domain : Mathematical Literacy | Topic: Data Handling  Learning Outcome: Understand, Interpret data  (As per NCERT) | Class: VIII  Expected Time : 20 min  Total Credit: 8 |
| Description of item: | Understand , Analyses and evaluate the data provided | |

**Look at the following pie chart and answer the questions given below:**

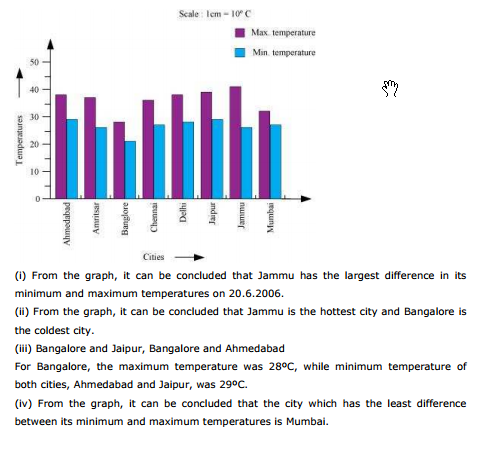


1. What is the central angle corresponding to the activities “Play and Home work”?
2. On which activity Tarun spends maximum time?
3. On which two activities Tarun spends same time?
4. Find the fraction for the time Tarun sleeps?

ITEM -11 : **MIN -MAX TEMPERATURE OF INDIAN CITIES**

|  |  |  |
| --- | --- | --- |
| Domain : Mathematical Literacy | Topic: Data Handling  Learning Outcome: Understand, Interpret data  (As per NCERT) | Class: VIII  Expected Time : 20 min  Total Credit: 8 |
| Description of item: | Understand , Analyses and evaluate the data provided | |

Read the following bar graph and answer the following questions

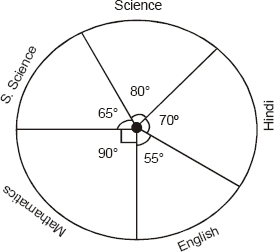


1. Which city has maximum difference in temperature
2. Which city is hottest and which is coldest?
3. Which two cities are having same minimum temperature?
4. Which city has the least difference in its maximum and minimum temperature?

ITEM -12 : **MARKS COMPARISON**

|  |  |  |
| --- | --- | --- |
| Domain : Mathematical Literacy | Topic: Data Handling  Learning Outcome: Understand, Interpret data  (As per NCERT) | Class: VIII  Expected Time : 20 min  Total Credit: 6 |
| Description of item: | Understand , Analyses and evaluate the data provided | |

The adjoining pie chart gives the marks scored in an examination by a student in Hindi, English, Mathemahcs, Social Science and Science. If the total marks obtained by the students were 540 answer the following questions.



   (i)   In which subject did the student score 105 marks?

        (ii)  How many more marks were obtained by the student in Mathematics

than in Hindi?

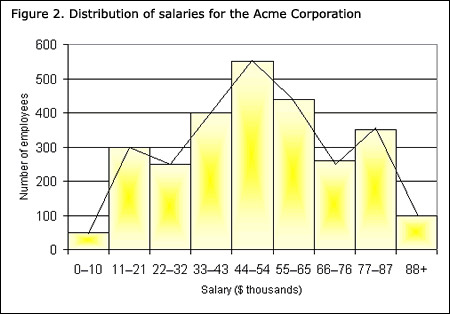
        (iii) Examine whether the sum of the marks obtained in Social Science and

Mathematics is more than that in Science and Hindi.

ITEM -13 : **DISTRIBUTION OF SALARIES**

|  |  |  |
| --- | --- | --- |
| Domain : Mathematical Literacy | Topic: Data Handling  (Histogram)  Learning Outcome: Understand, Interpret data  (As per NCERT) | Class: VIII  Expected Time : 20 min  Total Credit: 12 |
| Description of item: | Understand , Analyses and evaluate the data provided | |

Taxonomy of Objective: The child develops the ability to understand the given Histogram and interpret the results related to the given data.

(Source Aceme Corporation Wikipedia )

1. What is the highest range of the salary scale which is paid to the maximum number of employees?
2. 33-43 $ thousands
3. 44-54 $ thousands
4. 77-87 $ thousands
5. Cannot predict
6. Which range of salaries is nearly equal?
7. 11-21 $ and 66-76 $
8. 22-32 $ and 66-76 $
9. 11-21 $ and 44-54$
10. None of above

3. How many employees are drawing the salary upto $32 thousads?

a) Nearly 100 employees

b) Nearly 300 employees

c) Nearly 600 employees

d) All employees

4) What is the difference of the number of employees drawing the highest salary and the

lowest salary?

a) 50 employees

b) 500 employees

c) 400 employees

d) None of above

5) What is the least number of employees who are paid the lowest salary?

a) 250 employees with 22-32 $ thousands

b) 100 employees with $88 thousands

c) Nearly 50 employees 0-10 $ thousands

d) 50 employees with 12-22 $ thousands

6) How many employees do you feel are drawing each scale of salary?

a) 50 employees

b)100 employees

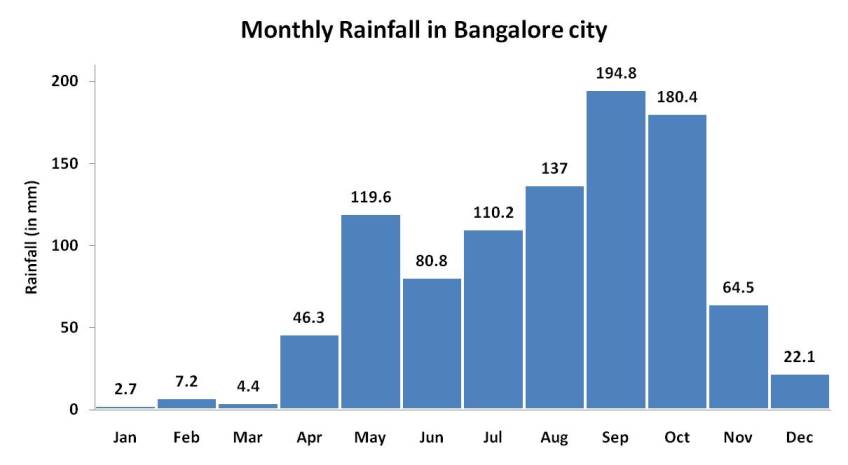
c)500 employees

d) Cannot infer

ITEM -14 : **MONTHLY RAINFALL IN BANGALORE**

|  |  |  |
| --- | --- | --- |
| Domain : Mathematical Literacy | Topic: Data Handling  Learning Outcome: Understand, Interpret data and compute  (As per NCERT) | Class: VIII  Expected Time : 20 min  Total Credit: 10 |
| Description of item: | Understand , Analyses and evaluate the data provided | |

**The following is a table showing rainfall in the city of Bangalore. Read the table and answer the questions that follow.**



**(Source: Deccan Herald - year 2018)**

1. In which month was the rainfall the maximum and in which month was it minimum?
2. Which month recorded almost double the rainfall of the month of December?
3. This month recorded rainfall that was the same as that received in the months of April and November. Which month is this?
4. Which quarter of the year received most rainfall?
5. Which three months gave maximum business to the umbrella manufacturers?

ITEM -15 : **TRAIN TO DELHI**

|  |  |  |
| --- | --- | --- |
| Domain : Mathematical Literacy | Topic: Data Handling  Learning Outcome: Understand, Interpret data  (As per NCERT) | Class: VIII  Expected Time : 20 min  Total Credit: 10 |
| Description of item: | Understand , Analyses and evaluate the data provided | |

The following is the schedule for train from Bangalore to Delhi.

| **S. No.** | **Station Code** | **Station Name** | **Route No.** | **Arrival Time** | **Departure Time** | **Halt Time (In Minutes)** | **Distance** | **Day** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | YPR | YESVANTPUR JN | 1 | Source | 22:00 | -- | 0 | 1 |
| 2 | DMM | DHARMAVARAM JN | 1 | 00:35 | 00:40 | 05:00 | 175 | 2 |
| 3 | KRNT | KURNOOL CITY | 1 | 04:25 | 04:27 | 02:00 | 374 | 2 |
| 4 | KCG | KACHEGUDA | 1 | 08:20 | 08:30 | 10:00 | 610 | 2 |
| 5 | BPQ | BALHARSHAH | 1 | 14:00 | 14:05 | 05:00 | 984 | 2 |
| 6 | NGP | NAGPUR | 1 | 17:10 | 17:15 | 05:00 | 1195 | 2 |
| 7 | BPL | BHOPAL JN | 1 | 23:00 | 23:10 | 10:00 | 1590 | 2 |
| 8 | JHS | JHANSI JN | 1 | 02:50 | 03:00 | 10:00 | 1881 | 3 |
| 9 | GWL | GWALIOR | 1 | 04:09 | 04:11 | 02:00 | 1978 | 3 |
| 10 | NZM | H NIZAMUDDIN | 1 | 09:15 | -- | -- | 2284 | 3 |

**(Source:Indian Railways website)**

1. What is the total duration of the journey?
2. Which stations have the minimum halt time?
3. Bhasker is going to Gwalior. He boarded the train at Balharshah. How

long was he in the train?

1. What is the distance between Kurnool City and Bhopal?
2. What is the total distance the train covers?

Prepared By

Items 1 to 7

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Items 8 to 15

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