Sadiq Public School

Distance Learning for I2

August-September 2020

Sadiq Public School

Do the right, fear no man

Distance Learning

July, 2020

Dear students and parents,

Assalam o aleikum.

Inshallah all of our students and their families are staying home, staying safe, and protecting themselves and their communities in this most unusual situation. We understand as well as anyone how difficult it is to be living in such a situation. If we all follow the government's very simple guidance the situation will improve very soon, as it has in many countries around the world, and our lives can get back to normal.

The Government has announced that Schools will likely be allowed to re-open on September 15th, 2020. Let me be clear – Sadiq Public School is planning for a full school year from September 15th 2020, i.e. with the appropriate number of school days to ensure our students complete their normal syllabuses well in time for their annual examinations without compromising too much on the remainder of our unique, holistic curriculum that includes sports, clubs, and community service – and self-discipline (doing the right thing at the right time).

After a considerable amount of thought and planning, after considering the many factors associated with distance learning including health and safety risks to children of being online for too long and unsupervised, costs of technology/devices/software, and the expected/likely outcomes, we have decided to offer a package of distance learning activities for students to do some school work. These activities are NOT intended to replace in-school, teacher-student learning activities and they are NOT compulsory for students to complete. The team of education experts at Sadiq Public School very strongly believe that education, i.e. meaningful learning, happens best when teachers and students interact, face to face, spontaneously.

This booklet has been prepared by a small team of subject teachers with help from the IT Department's staff. I am very grateful for their efforts!!

We also understand that the Sadiq Public School family is very diverse and what will work well for a K2 student living in Bahawalpur probably will not for a K2 student living in Quetta or a P6 student living in Karachi. This is a

self-contained, age-specific package of learning material prepared by SPS teachers for SPS students. You will not need to use the internet and you will not need textbooks or any other material except a normal, lined school notes book (a separate one for each subject) which you will bring back to school when lessons resume. We decided to create an e-booklet so it can be published and distributed to students and parents without needing to be printed and sent by post/courier out of concern for our environment. (There is an interesting hypothesis that the coronavirus outbreak is due to deforestation.)

Everyone's health is the top concern right now. Learning some mathematics right now is less important than protecting your health and your family's health. Not just your physical health, but also your mental health. We understand that these last few and next few months have been and will be difficult. It is very normal for everyone to be feeling worried and anxious. In such times, it is important to recognise your anxiety, understand what is causing it, and learn how to manage it by being kind to yourself, patient with others, eating well, sleeping well, doing some physical activity (there's a whole section about this later in the booklet), and trying to maintain a positive outlook. The virus outbreak will pass. We will all return to our normal lives. Inshallah!

Be happy. Not because everything is good, but because you can see some good in everything.

Yours Sincerely,

Mr Peter Giddens

Principal

Contents

How to achieve academic success at Sadiq Public School

How to achieve academic success at Sadiq Public School

Our approach to teaching and learning is based on the knowledge that learning only occurs when cognitive effort is generated to the extent that information is made into a long-term memory that can be readily recalled. We use traditional teaching methods informed by current research in education and pedagogical practices.

The Sadiq Public School approach is based on:

1. Teachers impart knowledge and skills using a variety of media – talking/lecturing, written notes and diagrams on a whiteboard, demonstrations, initiating practical activities for students to experience what is being learnt.

2. All lessons are taught on the assumption that as the course unfolds, students are creating their own class notes.

3. Students use one standard textbook for each subject; the book recommended by the School. Students possess and use one lined or gridded copy book per subject, into which class notes are created. (Thinner books with less pages are preferable, to minimise the weight being carried from lesson to lesson. If students require, additional copy books should be used – but always a separate book for separate subjects.

4. A student's class notes are created from a combination of teacher-guided media and student-created media.

5. The class notes should replicate/mirror the course outline and the textbook chapter headings so that students can clearly see that their class notes match the course and the examination.

6. Teachers will show students how to use note-taking/making techniques such as underlining, using different colours, diagrams, lists, boxes, etc.

7. In general, the first half of the copy book is for class notes and the second half, indicated with some form of marker is for practice activities, e.g. homework tasks, the questions at the end of a textbook chapter, etc.

8. Students MUST keep a complete and neatly presented set of class notes. If a student misses a lesson, it is his/her responsibility to add in missed work. This may be done by copying another student's copy book.

9. Frequently, teachers will check students' copy books for completion, neatness, accuracy, etc., and to write personalised / individualised feedback to students.

10. Occasional paper handouts may be trimmed and pasted neatly into a copy book, but this should be kept to a minimum because the act of writing/drawing the class notes into the copy book is the student's first step in learning the material being taught by the teacher. Pasting handouts into copy books teaches students how to use a glue stick and scissors; it does not teach a student anything about the material on the handout.

Writing class notes is the basis of our teaching and learning – but of course this is supported by other experiences such as demonstrations, practical activities, etc.

Examination preparation

In the weeks before examinations, students would typically use the class notes and text book to create a set of study notes by re-writing, often in short-hand/note form, using diagrams and mnemonics etc. Doing this reinforces and consolidates the student's class notes. Students would also complete the questions at the end of each chapter on their own. They would attend lessons and, under the teacher's supervision, complete individual exam questions from past papers, in such a way that the teacher 'unpacks' a question, clarifies the demands of the question, and students and teacher collectively create 'perfect' exam answers – all of which models how a student would take an examination, i.e. read the question, unpack the requirements of the question, clarify key terms/vocabulary in the question, pause, think, plan an answer, and then write an answer.

If you can, now is a good time to buy and prepare your notes books for each subject, ready for when you return to school.

You can use these notes books to write your answers/essays/responses to the activities in this booklet.

1. English Languag

Reading

1. Read another novel. Write a review. To whom would you recommend it?
2. Which character evoked positive or negative emotions in you?
3. Compare any two characters.

Writing

1. Prepare notes for a debate about whether the government should make cigarette smoking illegal in Pakistan. So there should be arguments for and arguments against.
2. Observe something that occurs naturally – perhaps clouds moving across the sky, perhaps eagles, a cat, the sunrise, the moon and write about how this natural phenomenon affects you and your emotions.
3. Write a fictional story with a moral (message) and the characters will be a mongoose, an eagle, and a squirrel.
4. Some people have been complaining that school has been closed for so long – but one day you will be able to tell stories to people about the time you had the longest summer vacation EVER!! What have been the highlights – what will you remember about this time 20 years from now?
5. Write a travel article for a magazine or newspaper about somewhere you have visited in Pakistan. Travel articles are always informative and positive and enthusiastic, aiming to encourage others to visit the place being written about. They usually include information about how to get there, where to stay, what specials things can be done or seen there and usually something interesting about the people there. Here are some possible places: Taxila, Mangala Dam, Tharparkar Desert, Cholistan Desert, Lake Khanpur, Lahore's Shalimar Gardens, the Wagha Border Crossing, Bahawalpur, Karachi, Bumburet Valley, the top of Tirich Mir…

2.   Urdu Language

1۔اپنے ضلعے کے ڈی پی او کے نام خط لکھ کر اپنے علاقے میں جرائم پیشہ افراد کی بڑھتی ہوئی کاروائیوں کے بارے میں آگاہ کریں۔

2۔ پاکستان میں 2005 کے زلزلے کی تباہ کاریوں پر ایک سیر حاصل مضمون تحریر کریں۔

3۔ان عنوانات پر آپ بیتیاں تحریر کریں۔ "ایک کتاب کی آپ بیتی"۔ "پانچ روپے کے نوٹ کی آپ بیتی"۔ "پھول کی آپ بیتی"

4۔اردو کے پانچ اہم شعراء کی پانچ پانچ نظمیں پڑھیں اور ان کا خلاصہ تحریر کریں۔

5۔اردو کے کوئی سے دو ناولوں کا مطالعہ کرنے کے بعد ان کا خلاصہ اپنے الفاظ میں تحریر کریں۔

6۔ آپ نے ٹی وی پر کوئی ٹاک شو دیکھا ہے۔اس میں میزبان کا رویہ انتہائی نامناسب تھا۔ اور سوالات کا معیار بھی ناقص تھا۔اس حوالے سے ٹی وی چینل کے منیجر کو خط تحریر کریں۔

7۔موسمی تبدیلیوں اور ٹڈی دل کے حملوں کی وجہ سے زراعت کی صورت حال پر ایک سیر حاصل مضمون تحریر کریں۔

8۔کروناوبا کے حوالے سے پاکستان کے اقدامات اور دنیا کے دیگر ممالک کے اقدامات کا جائزہ لیتے ہوئے ایک سیر حاصل مضمون تحریر کریں۔

9۔رویت ہلال کمیٹی کے چیئرمین کے نام خط لکھ کر رویت ہلال کے طریقہ کار،اس کی شرعی حیثیت،اسلام کی ہدایات اور جدید ذرائع کے استعمال کے حوالے سے استفسار کریں۔

10۔رموز او قاف کے لیے استعمال ہونے والی علامات پر تفصیلی نوٹ تحریر کریں۔

3. Mathematics

Unit 1: Functions and Limits

Activity: Circumference of a circle is a function of diameter:

- Student can measure the diameter and circumference of several round containers or lids and record that data in a table. If diameter is the input and circumference is the output, what's rule of the function?

As they divide each container's circumference by its diameter to find that rule, they should notice a constant ratio……
a rough approximation of π.

Concept of Functions:

Historically, the term function was first used by German mathematician Leibnitz (1646-1716) in 1673 to denote the dependence of one quantity on another e.g.
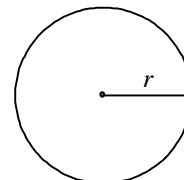
1)   The area "A" of a square of side "x" is given by the formula $A=x^2$.

As area depends on its side x, so we say that A is a function of x.
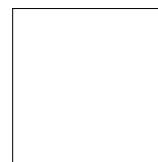
x

2)   The area "A" of a circular disc of radius "r" is given by the formula $A = \pi r^2$. As area depends on its radius r, so we say that A is a function of r.

r

3)   The volume "V" of a sphere of radius "r" is given by the formula

$V = \frac{4}{3}\pi r^3$. As volume V of a sphere depends on its radius r, so we say that

V is a function of r.

The Swiss mathematician, Leonard Euler conceived the idea of denoting function written as
$y = f(x)$ and read as y is equal to f of x. $f(x)$ is called the value of f at x or image of x under f.
The variable x is called independent variable and the variable y is called dependent variable of f.

If x and y are real numbers then f is called real valued function of real numbers.

Domain of the function: If the independent variable of a function is restricted to lie in some set, then this set is called the domain of the function.

e.g.   Dom of $f = \{0 \ x \ 5\}$
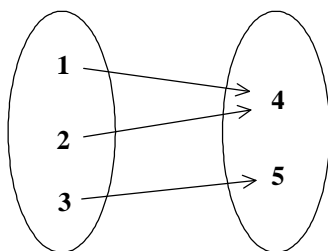
Range of the function:

The set of all possible values of $f(x)$ as x varies over the domain of f is called the range of f. e.g.   y = 100 − $4x^2$.

As x varies over the domain [0, 5] the values of y = 100 − $4x^2$ vary between y=0 (when x=5) and y = 100 (when x=0) Range of f = {0 y 100}

Definition:

  A function is a rule by which we relate two sets A and B (say) in such a way that each element of A is assigned with one and only one element of B. For example

 Domain = {1,2,3} and Range = {4,5}

Question: **Using following formulae** $\lim_{n \to \infty} \left(1 + \frac{1}{n}\right)^n = e$ **or** $\lim_{n \to 0}(1 + n)^{\frac{1}{n}} = e$ **and** $\lim_{x \to 0} \frac{\sin x}{x} =$ **1 , solve questions from 4 to 9**

1. Define function with an example.

2. Without finding the inverse, state the domain and range of $f^{1}(x)$, if $f(x) = x$ 5^2.

3. Evaluate

$$\lim_{x \to 0}\left(\frac{1 - \cos x}{x}\right).$$

4. Evaluate the limit:

$$\lim_{x \to \infty}\left(1 + \frac{3}{x}\right)^{2x}.$$

5.   Prove that

$$\lim_{x \to 0}\frac{a^x - 1}{x} = \log_e a.$$

6. Evaluate

$$\lim_{x \to 0}\frac{\sin ax}{\sin bx}.$$

7. Express in terms of e,

$$\lim_{x \to \infty}\left(\frac{x}{1 + x}\right)^x.$$

8. Evaluate

$$\lim_{h \to 0}\frac{\sqrt{x + h} - \sqrt{x}}{h}.$$

9. Evaluate

$$\lim_{n \to \infty} (1 - \frac{1}{n})^n$$

10. Define continuous function.

Unit #2: Differentiation

Differentiation: Instantaneous rate of change of one variable with respect to other variable is called Derivative or Differentiation. It is denoted by dy/dx .

Increasing function: A *function f,* defined on an interval [*a, b*] is said to be increasing function on [*a, b*] if $f(x_1) < f(x_2)$ whenever $x_1 < x_2$, where x_1 and x_2 are any numbers in the interval

[*a, b*].

Decreasing function: A function f, defined on an interval [*a, b*] is said to be decreasing function on [*a, b*] if $f(x_1) > f(x_2)$, whenever $x_1 < x_2$, where x_1 and x_2 are any numbers in the

Interval [*a, b*].

Critical point: If $c \in D_f$ and $f'(c) = 0$ or $f'(c)$ does not exist, then c is called critical value or point.

Stationary point: Those critical points on the graph of f at which $f' = 0$ are called stationary point of f.

Relative maxima: f has relative maxima at c if $f''(c) < 0$.

Relative minima: f has relative minima at c if $f''(c) > 0$.

Turning point: A stationary point is called turning point if it is either a maximum point or a minimum point.

Point of inflection: A stationary point is called point of inflection if a function has neither local maxima nor local minima at that point

Some important derivatives:

- $\dfrac{d}{dx} c = 0$ where c is constant

- $\dfrac{d}{dx} x^n = nx^{n-1}$

- $\dfrac{d}{dx} \sin x = \cos x$

- $\dfrac{d}{dx} \tan x = \sec^2 x$

- $\dfrac{d}{dx} \csc x = -\csc x \cot x$

- $\dfrac{d}{dx} \cos x = -\sin x$

- $\dfrac{d}{dx} \cot x = -\csc^2 x$

- $\dfrac{d}{dx} \sec x = \sec x \tan x$

- $\dfrac{d}{dx} \operatorname{Sin}^{-1} x = \dfrac{1}{\sqrt{1-x^2}}$

- $\dfrac{d}{dx} \operatorname{Tan}^{-1} x = \dfrac{1}{1+x^2}$

- $\dfrac{d}{dx} \operatorname{Sec}^{-1} x = \dfrac{1}{x\sqrt{x^2-1}}$

- $\dfrac{d}{dx} \operatorname{Cos}^{-1} x = \dfrac{-1}{\sqrt{1-x^2}}$

- $\dfrac{d}{dx} \operatorname{Cot}^{-1} x = \dfrac{-1}{1+x^2}$

- $\dfrac{d}{dx} \operatorname{Csc}^{-1} x = \dfrac{-1}{x\sqrt{x^2-1}}$

$$\bullet \frac{d}{dx}a^x = a^x \ln a \qquad \bullet \frac{d}{dx}\log_a x = \frac{1}{x \ln a}$$

$$\bullet \frac{d}{dx}e^x = e^x \qquad \bullet \frac{d}{dx}\ln x = \frac{1}{x}$$

$$\bullet \frac{d}{dx}\sinh x = \cosh x \qquad \bullet \frac{d}{dx}\tanh x = \operatorname{sech}^2 x \qquad \bullet \frac{d}{dx}\operatorname{sech} x = -\operatorname{sech} x \tanh x$$

$$\bullet \frac{d}{dx}\cosh x = \sinh x \qquad \bullet \frac{d}{dx}\coth x = -\operatorname{csch}^2 x \qquad \bullet \frac{d}{dx}\operatorname{csch} x = -\operatorname{csch} x \coth x$$

$$\bullet \frac{d}{dx}Sinh^{-1}x = \frac{1}{\sqrt{1+x^2}} \qquad \bullet \frac{d}{dx}Tanh^{-1}x = \frac{1}{1-x^2} \qquad \bullet \frac{d}{dx}Sech^{-1}x = \frac{-1}{x\sqrt{1-x^2}}$$

$$\bullet \frac{d}{dx}Cosh^{-1}x = \frac{1}{\sqrt{x^2-1}} \qquad \bullet \frac{d}{dx}Coth^{-1}x = \frac{1}{1-x^2} \qquad \bullet \frac{d}{dx}Csch^{-1}x = \frac{-1}{x\sqrt{1+x^2}}$$

Questions:

1. Define derivative of a function.

2. What is the geometrical interpretation of a derivative?

3. Prove that derivative of a constant is zero.

4. Find $\frac{dy}{dx}$ by definition if $y = \frac{1}{x^2}$

5. Differentiate $\frac{(1+\sqrt{x})(x-x^{\frac{3}{2}})}{\sqrt{x}}$ w.r.t. x.

6. Differentiate $\frac{\sqrt{a-x}}{a+x}$ w.r.t. x.

7. If $x = a\cos^3\theta$, $y = b\sin^3\theta$, show that $a\frac{dy}{dx} + b \tan\theta = 0$.

8. Find y_2 if $x^3 y^3 = a^3$.

9. Find $\frac{dy}{dx}$ if $y = \ln(e^x + e^x)$.

10. Find $\frac{dy}{dx}$ if $x = at^2$ and $y = 2at$.

11. Find y_2 if $y = x^5 + 3x^4 \ 4x^3 + x + 2$.

12. Find $\frac{dy}{dx}$ if $x = 1 \ t^2$, $y = 3t^2 \ 2t^3$.

13. Find $\frac{dy}{dx}$ if $y = (x \ 5)(3 \ x)$.

14. Find $\frac{dy}{dx}$ if $y = \ln(x^2 + 2x)$.

15. Determine the intervals in which $f(x) = x^2 + 3x + 2$, $x \in (\ 4, 1)$.

16. Find the extreme values of the function $f(x) = 3x^2$.

Unit #7: Vectors

Activity

Students use vector analysis to understand the concept of the dead reckoning.

They use vectors to plot a course based on time and speed. Then they correct the positions with   vectors representing winds and currents. How did ancient sea captains keep their ships on course   throughout their voyages?

Vector: A physical quantity defined by its magnitude and direction is also called vector.

e.g. force, length.

Scalar: A physical quantity which is defined only by its magnitude is called scalar.

e.g. mass, time.

Magnitude or length: Absolute value of vector is called magnitude or length. It is denoted by

$| \overrightarrow{AB} |$.

Unit Vector: A vector whose magnitude is unity or 1 . $\hat{v} = \frac{v}{|v|}$

Equal Vectors: Two vectors $| \overrightarrow{AB} |$ and $| \overrightarrow{PQ} |$ are equal if they have same magnitude and direction $| \overrightarrow{AB} | = | \overrightarrow{PQ} |$.

Parallel Vectors: Two vectors are parallel if and only if they are non-zero scalar multiple of each

$a = \alpha b.$

Position vector: The vector of whose initial point is the origin $O,$ and terminal point is P .

Questions:

1. If $\vec{v} = 3\hat{\imath} - 2\hat{\jmath} + 2\hat{k}$ and $\vec{w} = 5\hat{\imath} - \hat{\jmath} + 3\hat{k}$, find $|3\vec{v} + \vec{w}|$.

2. Find α so that $|\alpha\hat{\imath} + (\alpha + 1)\hat{\jmath} + 2\hat{k}| = 3$.

3. Find a unit vector in the direction of vector $\vec{v} = \frac{1}{2}\hat{\imath} + \frac{\sqrt{3}}{2}\hat{\jmath}.$

4. Prove that the vectors $\hat{\imath}$ $2\hat{\jmath} + \hat{k}$, $2\hat{\imath} + 3\hat{\jmath}$ $4\hat{k}$ and $\hat{\imath}$ $3\hat{\jmath} + 5\hat{k}$ are coplanar.

5. Find the direction cosines for $\overrightarrow{PQ}$ where P(2, 1, 5) and Q(1, 3, 1).

6. Define Dot Product of two vectors.

7. Find the angle between vectors $\vec{u} = 2\hat{\imath}$ $\hat{\jmath} + \hat{k}$ and $\vec{v} = \hat{\imath} + \hat{\jmath}$.

8. Find the volume of tetrahedron whose vertices are $A(2,1,8)$, $B(3,2,9)$, $C(2,1,4)$ and $D(3,3,10)$.

9. Find the area of the triangle with vertices $A(1, 1,1)$, $B(2,1, 1)$, $C(1,1,2)$.

10. Prove that $sin(\alpha + \beta) = sin\alpha\ cos\beta + cos\alpha\ sin\beta.$

11. Find a vector of length 5 in the direction opposite that of $\vec{v} = 2\hat{\imath}$ $2\hat{\jmath} + 3\hat{k}.$

12. Find the direction cosines of $\vec{v} = 2\hat{\imath}$ $\hat{\jmath} + 2\hat{k}.$

13. Find the value of α so that the vectors $\vec{v} = \hat{\imath}$ $2\hat{\jmath} + 3\hat{k}$ and $\vec{w} = \alpha\hat{\imath} + 6\hat{\jmath}$ $9\hat{k}$ are parallel.

14. Find the value of α so that the vectors $2\hat{\imath} + \alpha\hat{\jmath} + 5\hat{k}$ and $3\hat{\imath} + \hat{\jmath} + \alpha\hat{k}$ are perpendicular.

15. Find the value of α so that the vectors $\alpha\hat{\imath} + \hat{\jmath}$, $2\hat{\imath} + \hat{\jmath}$ $2\hat{k}$ and $\hat{\imath} + \hat{\jmath} + 3\hat{k}$ are coplanar.

16. Find the value of $[\hat{k}\ \hat{\imath}\ \ \hat{\jmath}]$

4.   Pakistan Studies

Assignment 1

Ch.1 explains the Two Nation Theory and Pakistan Movement from 1906-1947. The Two Nation Theory means Muslims and Hindus are two entirely different nations in the subcontinent. Muslims should be given a separate Muslim state in which Muslims should practise Islam independently.

Write a paragraph of 100-150 words explaining how Muslims are different form Hindus in individual and collective life?

Assignment 2

Pakistan Movement is a constitutional struggle of Muslims of India aimed at the creation of a separate Muslim state in Indian subcontinent (Pakistan).

Q. Make a timeline of events of Pakistan Movement from 1857-1947 with brief description of each event.
 Make headings to highlight the events.

Assignment 3

Ch2. Explain the gigantic early problems faced by nascent state in 1947-48 and the efforts of

Quaid-e-Azam and his government to tackle the problems.

Make a list of early problem of Pakistan. Explain any six.

Assignment 4

Read chapter 1and 2 and answer of the following questions .

Short Questions

    (1) Who did coin the word 'Pakistan', in 1933?

    (2) Write any three proposals from Cripps Mission.

    (3) When was all India Muslims League established and what were its objectives?

    (4) What was Indus water treaty?

    (5) What is Provincialism and Racialism?

    (6) What was khilafat Movement?

    (7) How did India occupy Junagarh and Kashmir?

    (8) Write any two points of Pakistan Resolution.

    (9) Write the names of 5 institutions established by Sir Syed Ahmed Khan.

    (10) Write sayings of Quaid-e-Azam and Allama Iqbal about ideology of Pakistan.

5.   Physics

Topic: Electrical Power The term electrical power can be defined in multiple ways as under:

- ❖ Electric power is the rate of energy consumption in an electrical circuit.

    OR

- ❖ It is the rate of transfer of electrical energy by an electric circuit.

    OR

- ❖ It is equal to the energy consumption divided by the consumption time t:

$$P = \frac{E}{t}$$

> P is the electric power in watt (W).
>
> E is the energy consumption in joule (J).
>
> t is the time in seconds (s)

Besides the above mentioned formula, there is another way to calculate the electrical power as:

$$P = V \cdot I \qquad OR \qquad P = I^2 \cdot R \qquad OR \qquad P = V^2 / R$$

> P is the electric power in watt (W).
>
> V is the voltage in volts (V).
>
> I is the current in amps (A).
>
> R is the resistance in ohms (Ω).

Q. Find the electric power of an electrical circuit that operates at 120 volts and 10 amperes.

Q. Find the electric power of an electrical circuit that consumes 120 joules for 20 seconds.

Q. Find the electric power of an electrical circuit which works at 12 amperes with 2.3 ohms.

Q. Find the electric power of an electrical circuit which operates at 12 volts and has 2 ohms.

Q. Find the operating voltage of an electrical circuit which has 10 ohms and 10 watts.

Activity: Calculate the electrical power consumption of your households.

Note: Before starting your activity you need to carefully read the literature given below for your help.

You have multiple appliances in your home that work on electrical power being supplied by **WAPDA.** The use of electrical power by any electrical appliance depends upon the time duration of its use. There may be some devices that you run for a longer time like the fans or T.Vs etc. Besides these, there may be some devices that you use for a shorter period of time like the use of microwave oven or water pump etc. Depending upon the time of usage each device will be using different magnitude of electrical power.

So, this is the activity for you to calculate the usage of electrical power of different devices in your home for its entire duration of use and share the results with your parents or elders. This calculation will also help you in managing the

cost of electricity (which will be discussed later). In this activity you need to have information about the operating voltage and current of concerned electrical device, like if you are looking to calculate the electrical power consumption of T.V then you must have information about its operating voltage and current and you can either ask from your parents or your elders to help you in getting this information because every electrical device in our homes is labeled with its operating voltage and current. *(However for your help and safety a table is given on the next page in which 01 hour usage electrical power consumption of devices is listed)*

Though this table will help you to know the electrical power usage of your home appliances for 01 hour of use, yet your activity is to calculate the electrical power consumption of home appliances for its entire duration of use for the whole day and then you can generalize it for the whole month by considering the average time of use for the whole month. So the important information you need is the running or usage time of your concerned device to finally calculate its electrical power consumption for the duration of its use. You can find the time of use by different devices that may be available to you like the wall clock, wrist watch or the stop watch. Once you have all the required information, use the formula P = V.I to find power and then multiply or divide (depends upon the time of use) the obtained result to finally calculate the electrical power consumption of your concerned electrical device for its entire duration of usage.

Appliance	Power (W)	Appliance	Power (W)
Energy Saver Lights	24	Laptop	40
LED Bulb	10	Electric Iron	1000
Tubelight	50	Ceiling Fan	80
LED Tubelight	18	Exhaust Fan	60
Spotlight	50	Bracket Fan	60
LED Spotlight	5	Deep Freezer	150
1 ton AC*	1500	Water Dispenser	100
1 ton Inverter AC	900	Washing Machine	900
1.5 ton AC*	2000	Laser Printer	450
1.5 ton Inverter AC	1200	Inkjet Printer	80
2 ton AC	2500	Toaster	1000
2 ton Inverter AC	1500	Microwave Oven	1200
Conventional fridge (12-15 cubic ft.)	180	Grinder/Juicer	400

Inverter Fridge	90	Coffee/Tea-maker	1000
Computer with all accessories	200	Heater	1500

Electrical devices at your home do cost you electricity bills so after this activity you will be able to know how you can manage the usage of electrical devices to control your cost, because higher electrical power consumption will cost you higher electrical bills and avoiding the unnecessary usage of electrical power you can help your parents or elders in managing the cost of electricity.

6.   Chemistry

Isomerism

Two or more compounds having same molecular formula, but different structural formula are called isomers. This phenomenon is called Isomerism.

Types of Isomerism

There are two types:

1- **Structural Isomerism**

2- **Cis -Trans or Geometric Isomerism**

1- Structural Isomerism: The isomerism in which atoms of molecules have different structural arrangements is called structural isomerism.

There are further five types

(i)   **Chain Isomerism**: It occurs due to difference in nature of Carbon Carbon chain.

Example: n- Pentane, C_5H_{12} Iso-Pentane, $(CH_3)_2CH-CH_2-CH_3$ and neo-pentane, $(CH_3)_4C$.

(ii)   **Position Isomerism**: It occurs due to difference in position of same functional group on Carbon chain. Example: 1-Chloropropane $CH_3-CH_2-CH_2-Cl$ and 2-Chloropropane,

(iii)   **Functional Group Isomerism**: The compounds having same molecular formula but different functional groups.

Example : Dimethyl ether CH_3-O-CH_3 and Ethyl alcohol CH_3-CH_2-OH

(iv)   **Metamerism**: It arises due to inequal distribution of Carbon atoms on either side of functional groups belong to same Homologous series.

Example: Diethyl ether $CH_3-CH_2-O- CH_2-CH_3$ and Methyl n- propyl ether.

$CH_3-O- CH_2-CH_2-CH_3$

(v)   **Tautomerism**: It arises due to shifting of proton from one atom to another within the same molecule.

Example: Zwitter Ion.

2- **Cis** Trans **or Geometric Isomerism**: The compounds have same structural formula , but differ due to position of identical groups in space .

Cis form: Similar groups lie on the same side of double bond.

Trans form: Similar groups lie on the opposite side of double bond.

Example: 2- Butene can exist in the form of Cis and Trans isomers.

Activity

By reading all above, you will be able to give the following answers.

Short Questions

a)   Define the following with one example: Position and Functional group isomerism.

b)   Define Tautomerism with example.

c)   What is Isomerism? Give the names of any four structural isomerism.

d)   Write a brief note on Geometric isomerism.

e)   What type of structural isomerism is shown by Ethers?

f)   How functional group differs from metamerism?

g) Explain Tautomerism with an example.

Long Questions

1. What is the difference between metamerism and Cis-Trans Isomers? Illustrate with example.

2. What are Position, Chain, and Metamerism? Give at least one example of each.

3. Discuss Geometric isomerism with at least one example.

4. What is Chain Isomerism? Draw all possible skeletal formulae of Hexane and write down IUPAC names.

Match the statements given in Column I and Column2

Column 1	Column2
Example of chain isomerism	There are 2 types
Functional group isomerism	Butane and iso-Butane
Tautomerism is	1.Bromo Propane and 2-Bromo Propane
Types of isomerism	2-Butene
Examples of Cis-Trans	Transfer or shifting of proton
Chain isomers are	Dimethyl Ether and Ethanol

Periodic Classification of Elements and Periodicity

Periods: Horizontal rows , Seven periods

Groups: Vertical rows, Eight groups

There are four blocks of Periodic Table

s, p, d and f block elements

Match Column1 (Atomic number of elements) with Column II (Position of element in the Periodic Table)

Column I	Column II
A) 19	p-block
B) 22	f- block
C)32	d-block
D)64	s-block

Solve like this $19 \rightarrow [Ar]4s^1$ so it is s-block element.

Questions

1- What are periods and groups?

2- What are sub-groups A and B?

3- Write down name of blocks of elements?

4- How classifications of elements in different blocks help in understanding chemistry?

5- What are the long periods?

Activity: Write as many examples as you can of:

i.)   Strong alkali

ii.)   Strong acid

iii.)   Weak acid

iv.)   Weak alkali

v.)   Neutral compounds

7.   Biology

Glycolysis And Fermentation

Vocabulary Review :

Q1. Define the following terms.

1. Cellular respiration

2. Glycolysis

3. Lactic acid fermentation

4. Alcoholic fermentation

5. Why are the fermentation pathways referred to as "anaerobic" pathways?

6. What are the energy-containing products of glycolysis?

7. Of what importance are lactic acid fermentation and alcoholic fermentation to the cells that use these pathways?

Critical Thinking

The vitamin niacin is an essential component of NAD_. Niacin can be consumed in food or manufactured in the body from tryptophan, an amino acid. How would a person's ability to break down glucose through glycolysis be affected if the person's diet were deficient in both niacin and tryptophan? Explain your answer.
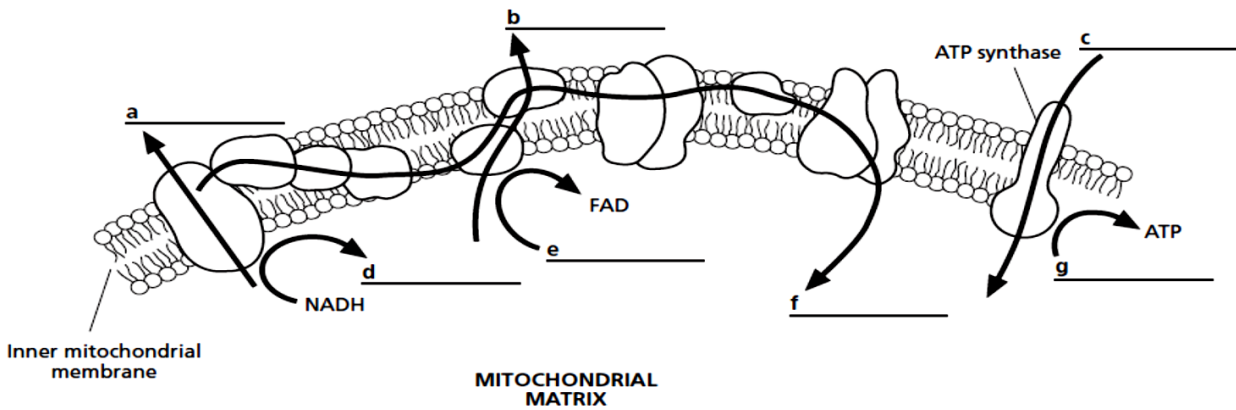
Q2. Structures and functions

The diagram below depicts the stages of fermentation.

Complete the diagram by writing the names of the pathways in the ovals and the names of the molecules in the boxes.
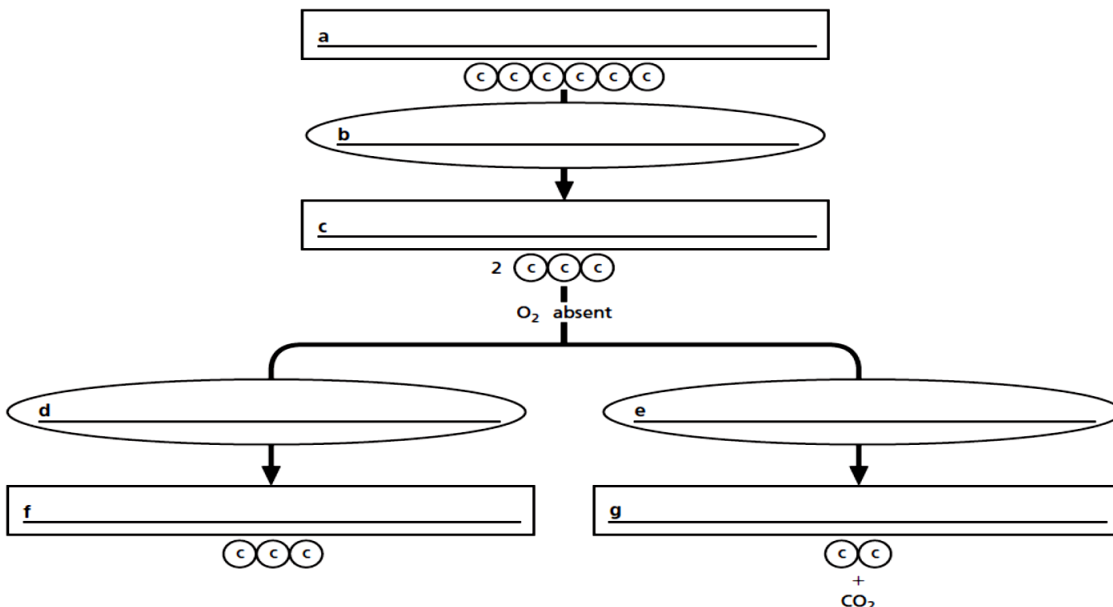
Q3.The diagram below summarizes the electron transport chain and chemiosmosis in aerobic respiration. Label the substances that are transported along the arrows labeled *a–d* in the spaces provided. Label the reactants or products that are represented by *e–g* in the spaces provided

b _____

ATP synthase   c _____

a _____

FAD

ATP

e _____

d _____

NADH

g _____

f _____

Inner mitochondrial
membrane

MITOCHONDRIAL
MATRIX

Q4 Structures and functions

In the table below, write the type of sensory receptor— mechanoreceptor, photoreceptor, thermo receptor, pain receptor, or chemoreceptor— that is associated with each sensory system. There may be more than one answer for each system.

Sensory System	Receptor Type
Vision	1.
Balance	2.
Hearing	3.
Smell	4.
Touch	5.
Temperature	6.
Taste	7.

%. Structures & functions

The drawings below show the appearance of a red blood cell and a plant cell in isotonic, hypotonic, and hypertonic environments. Label each environment in the spaces provided.
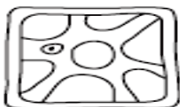
RED BLOOD CELL

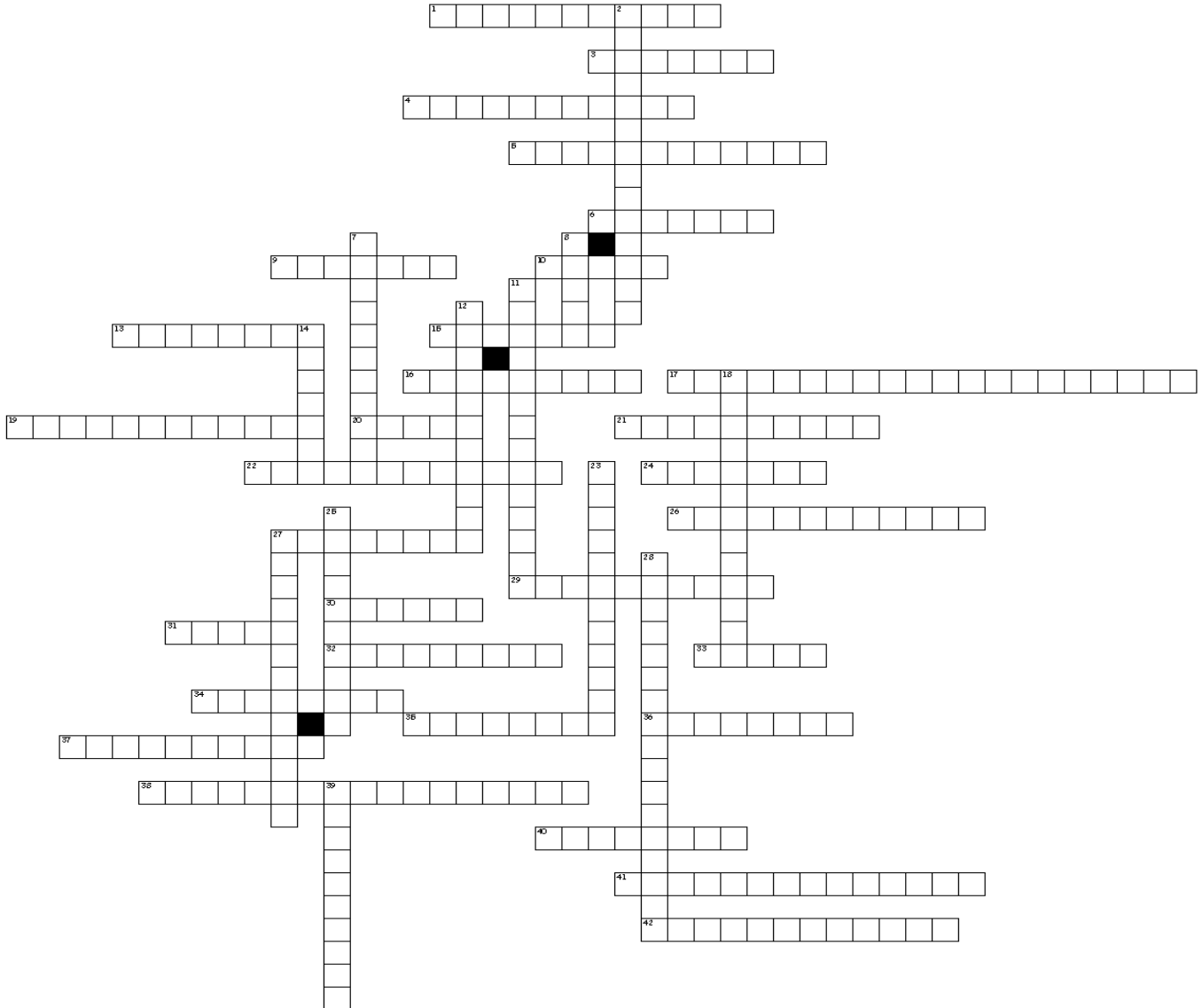a _____

b _____

c _____

PLANT CELL

d _____

e _____

f _____

CROSSWORD

Bacteria

Across

1. Sexual reproduction of bacteria

3. Outer polysaccharide covering over the cell wall of some bacteria for protection

4. Specialized cells of cyanobacteria that contain enzymes for fixing nitrogen for aquatic plants

5. Bacteria in milk that produce yogurt and buttermilk

6. Rod shaped bacteria

9. Prefix found in bacteria that grow as chains

10. Poison produced by some bacteria

13. Spiral shaped bacteria

15. Bacteria that live in the intestines of animals

16. Genus of bacteria that live on the roots of legumes and fix nitrogen for the plants

17. Bacteria that can live with or without oxygen

19. Bacteria that move by forming slime and using a wave-like motion of their plasma membrane

20. A bacteria that lives in the intestines of humans

21. Bacteria lacking a nucleus

22. Where bacteria pick up other pieces of DNA after being infected by viruses

24. A source of nitrogen in the soil made by bacteria

26. Bacteria with complex cell walls with little peptidoglycan; stain pink

27. Small, circular DNA rings in some bacteria capable of self-replicating

29. Bacteria that live in salty water like the Dead Sea

30. Gas first produced on earth by cyanobacteria

31. Short, hair-like structures on the surface of some bacteria used for attachment & sexual reproduction

32. Thick coated resistant structure made by some gram positive bacteria to protect against harsh environments

33. Movement toward or away from a stimulus

34. Long, whip-like structures on some bacteria for movement

35. Aerobes bacteria that require oxygen such as the TB bacterium

36. surrounds the outside of bacteria

37. Capsule made of sticky or fuzzy sugars for attaching to the host cell

38. Bacteria that cannot live in the presence of oxygen

40. Prefix for bacteria living in grape-like clusters

41. Early name for the cyanobacteria

42. Spiral shaped bacteria that move by a corkscrew motion and may cause syphilis or Lyme disease

Down

2. When a bacterium picks up a piece of DNA from another dead bacterium

7. Bacteria that produce marsh gas in swamps and sewage treatment plants

8. Spherical shaped bacteria

11. Bacteria that obtains energy from inorganic compounds and its carbon from CO_2

12. Chemicals made by some bacteria to inhibit the growth of microorganisms

14. Ancient bacteria

18. Bacteria capable of photosynthesis

23. Bacteria that keep the crystal violet stain and have simpler cell walls

25. Bacteria that may cause food poisoning

27. Carbohydrate found in the cell walls of most bacteria

28. Bacteria that like hot, acid water like hydrothermal vents on the ocean floor

39. True bacteria

Biochemistry
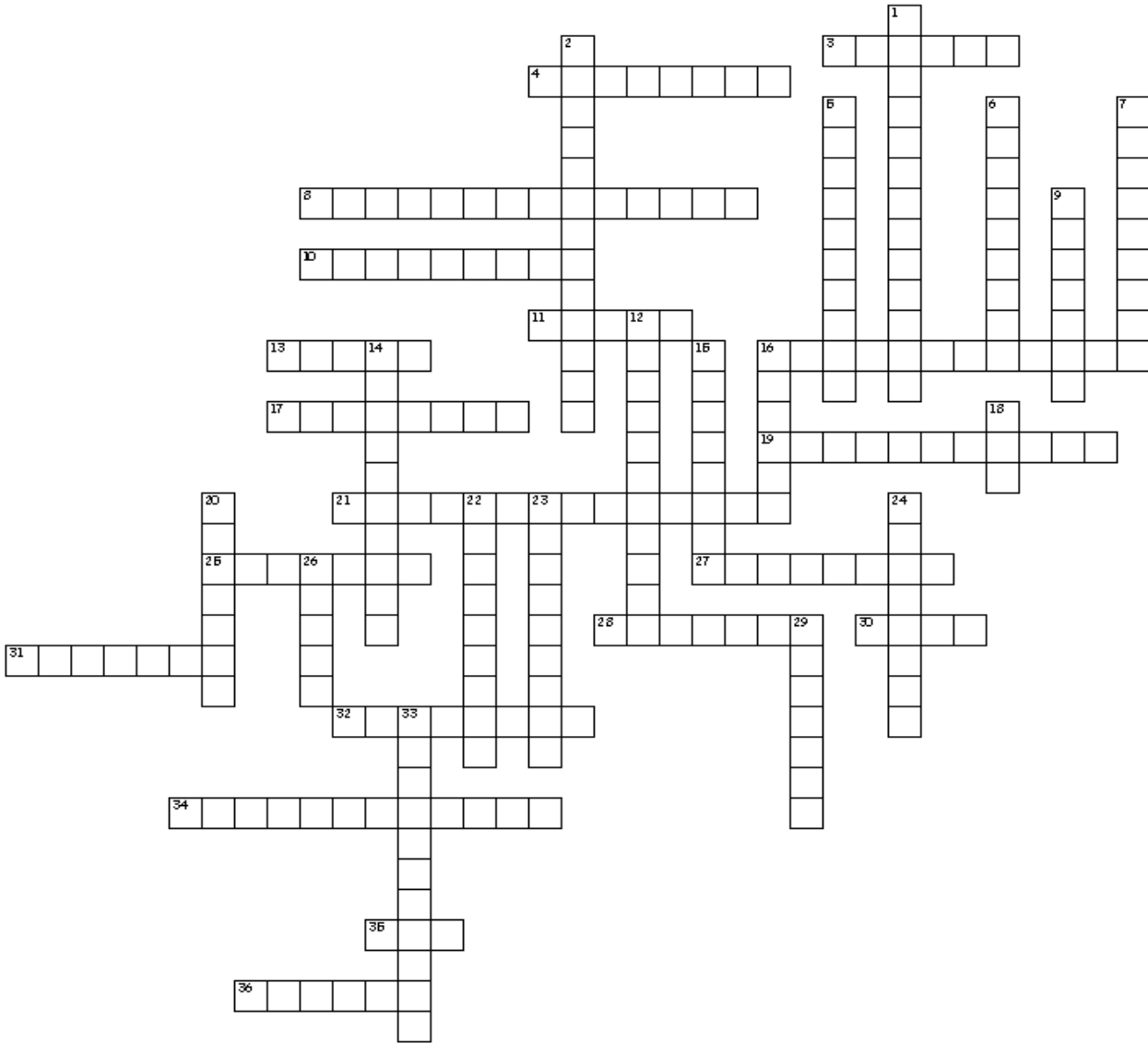
Across

3. straight or branched structures formed by carbon atoms linked together

4. -COOH functional group

8. simple sugar or monomer of a carbohydrate

10. fatty acid chains with all single bonds between carbon and hydrogens

11. type of acids making up lipids

13. -NH2 functional group

16. monomer of a lipid

17. alcohol in a triglyceride that 3 fatty acid chains attach to

19. chain of amino acids

21. starch or glycogen are examples

25. acid such as DNA and RNA

27. lipid made of 4 rings of carbon such as estrogen and testosterone

28. bond that joins amino acids together

30. number of outer electrons in carbon

31. one of two monosaccharides made by plants

32. simple sugar found in fruits

34. removal of water molecule to help link monomers together

35. waterproof lipids that cover the surfaces of plants

36. bond formed by sharing a pair of electrons

Down

1. large polymers found in living things

2. made of carbon, hydrogen, and oxygen in a 1:2:1 ratio

5. addition of water to break down a polymer

6. simple sugar found in milk

7. -PO4 functional group

9. compounds containing carbon found in living things

12. changing this can denature or unfold an enzyme so it no longer works

14. monomer of nucleic acids

15. macromolecule made of amino acids

16. bond represented by three parallel lines

18. energy molecule made and used by cells

20. subunits making up polymers

22. substance that joins the active site of an enzyme

23. polysaccharide making up the cell wall of plants

24. functional group -OH

26. large nonpolar macromolecules that have a greater amount of carbon and hydrogen than oxygen

29. proteins that act as biological catalysts in a cell

33. have a double bond in the fatty acid chain

8.   Economics

Activity 1:

1. Which one is the better method of economic development measurement?

2. Explain four reasons for the low living standard of the people of Pakistan.

3. Explain difficulties in the measurement of national income of Pakistan.

4. How per capita income is calculated?

5. Give four suggestions for the improvement in living standard in Pakistan.

6. Discuss four features of tax culture in Pakistan.

7. Give concrete reasons for reducing poverty in Pakistan.

8. Explain the steps taken by Govt. for the acceleration of capital formation in Pakistan.

9. Write down four factors of economic development.

10. What is a developing country?

Long Questions

1. Explain different concepts of national income.

2. What is meant by national income? How it can be measured?

3. Explain the circular flow of national income with the help of diagram.

Activity 2:

1 Give the definition of national income given by Dr. Marshall.

2 Define Gross Domestic Product in three lines.

3 What is meant by Net National Product?

4 Name different methods used in the measurement of national income.

5 What is meant by Per Capita income?

6 Differentiate between real and nominal income.

7 What is meant by Marginal propensity to consume?

8 What is meant by Equilibrium level of national income?

9 What is meant by transfer payment?

10 What is meant by depreciation allowance?

Long Questions

1.   What is meant by per capita income? Why is per capita income low in Pakistan?

2.   Explain the difficulties in the measurement of national income.

Activity 3:

1. What is barter system?

2. Define money.

3. Write down four functions of money.

4. Write down four qualities of money.

5. Explain the meaning of supply of money.

6. Write down four sources of supply of money.

7. Write down important causes of liquidity preference.

8. What is meant by transaction demand for money?

9. Name important kinds of money.

10. What is meant by token money?

Long Questions

1. Explain the difficulties of barter system.

2. Define money and discuss its various functions.

3. Explain different kinds of money.

Activity 4:

1. Explain limited legal tender money.

2. Write down four merits of paper money.

3 Write down important instruments of credit money.

4. What is near money?

5. Write down four types of bill of exchange.

6. Name four difficulties of barter system.

7. Differentiate between bearer and cross cheque.

8. What is the meaning of transaction velocity of money in circulation?

9. Explain income velocity of money in circulation.

10. Definition of Quantity Theory of Money presented by Prof. Tausing.

Long Questions

1. What is meant by demand for money? Explain different motives behind the demand for money.

2. Explain Quantity Theory of Money and also criticize it.

Activity 5:

1. Define bank in three lines.

2. Differentiate between scheduled and non-scheduled banks.

3. Write down four important functions of commercial banks.

4. Write down stages of cooperative banks according to administration.

5. Name different kinds of deposits in commercial banks.

6. Name the limitations of credit creation.

7. What is a credit card?

8. What is meant by T.T?

9. What is the justification of privatization of banks in three lines?

10. Write down the formula of credit creation.

Long Questions

1. What is meant by commercial bank? Explain the different functions of commercial banks.

2. Discuss different kinds of banks.

3. Explain different functions of central banks.

9.   Statistics

Normal Distribution

Definitions, Equations, Properties, Standard Normal Distribution, Practice Questions.

Normal Distribution.

If number of trials in a binomial distribution is very large neither p nor q is very small , then this approaches to a continuous distribution which is known as Normal Distribution.
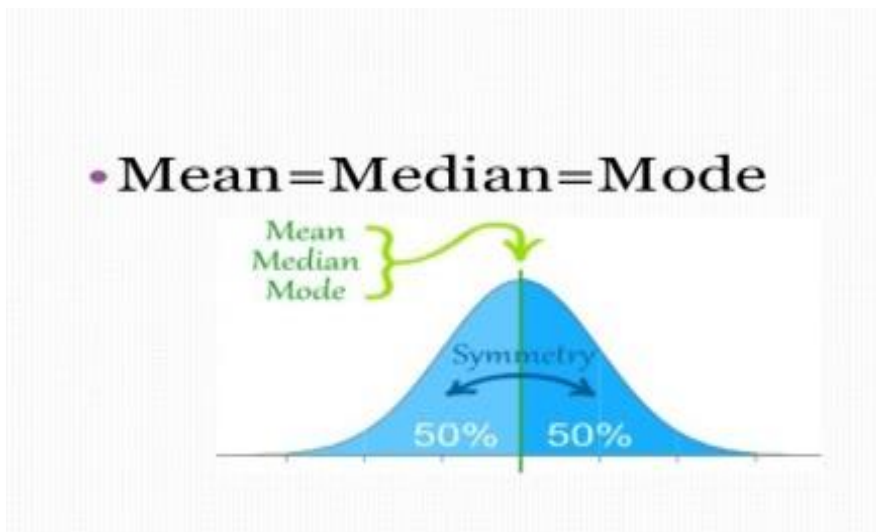
Equation of Normal Distribution.

The equation of normal curve is $= \frac{1}{\sigma\sqrt{2\pi}} \bar{e}^{\frac{1}{2}} (x-\mu)2 / \sigma^2$ - ∞ to + ∞

Standard Normal Distribution.

The variable Z is known as standard normal variate if its mean is zero and its Standard Deviation is one .

Properties of normal distribution.

Its shape is bell shape. Its mean, median and mode all are same . Total area under the normal curve is one. All odd order moments about mean   are zero.
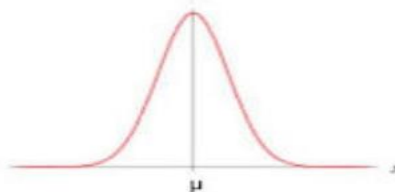
Practice Questions:

Q.1 Write down the Equation of Normal Distribution.

Q.2 Define Normal frequency Distribution.

Q.3   What would be the value of lower and upper quartiles in Standard Normal Distribution?

 Q.4 In a Standard Normal Distribution, find **M.D and Q.D**.

Q.5 In a Normal Distribution, $\mu_2 = $ **4** . Find **3rd and 4th** moment about mean .

Q.6   Write down any 4 properties of Normal Distribution.

Q.7 Define points of inflection in Normal Distribution.

Q.8 If $X \sim N(40, 25)$,find **Q.D.**

Q.9 What is the range of Normal Distribution .

Q.10 What are the parameters of Normal Distribution ?

Sampling and sampling distribution

Probability sampling:

a) Simple Random Sampling b)Systematic Sampling c)Stratified Random Sampling

 d) Cluster Sampling

Non probability sampling:

a) Quota Sampling

 b) Purposive Sampling

Practice Questions

Q.1 What is a frame?

Q.2 What is a sampling survey?

Q.3 Define purpose of sampling.

Q.4 Define sample design .

Q. 5 Distinguish between Random and Non –random sampling .

Q.6 Define Systematic sampling with example .

Q. 7 What is Stratified Random Sampling?

Q.8 Define standard error.

Q.9 What are two objects of sampling?

Q.10 Write two disadvantages of sampling .

Q.11 What are two main types of sampling design?

Q.12   What is the difference between stratum and cluster?

Basic Terminology

1) Sample size $= n$

2) Population size $= N$

3) Sample mean $= \overline{x} = \dfrac{\Sigma x}{n}$

4) Population mean $= \mu = \dfrac{\Sigma X}{N}$

5) Sample variance $= s^2 = \dfrac{\Sigma(x-\overline{\overline{x}})^2}{n}$; (Biased)

6) Sample variance $= s^2 = \dfrac{\Sigma(x-\overline{\overline{x}})^2}{n-1}$; (Unbiased)

7) Population variance $= \sigma^2 = \dfrac{\Sigma(X-\bar{X})^2}{N}$

$$\sigma^2 = \dfrac{\Sigma X^2}{N} - \left(\dfrac{\Sigma X}{N}\right)^2$$

8) $\mu_{\overline{x}} =$ Mean of sampling Distribution of mean

9) $\sigma^2{}_{\overline{x}} =$ Variance of sampling distribution of mean

10) $\sigma_X =$ S.D of sampling distribution of mean.

      OR S.E(Standard Error)

11) $\mu_{\overline{x}1-\overline{x}2} =$ Mean of sampling distribution of differences of mean $= u_{\overline{x}1-\overline{x}2} = \dfrac{\Sigma f(\overline{\overline{x}}1-\overline{\overline{x}}2)}{\Sigma f}$

12) $\sigma^2{}_{\overline{x}1-\overline{x}2} =$ Variance of sampling distribution of differences of mean

$= \sigma^2{}_{\overline{x}1-\overline{x}2} = \dfrac{\Sigma f(\overline{\overline{x}}1-\overline{\overline{x}}2)^2}{\Sigma f} - \left(\dfrac{\Sigma f(\overline{x}1-\overline{x}2)}{\Sigma f}\right)^2$

13) $\sigma_{\overline{x}1-\overline{x}2} =$ S.D. of sampling distributions of differences of mean.(S.E)

$\sigma_{\overline{x}1-\overline{x}2} = \sqrt{\dfrac{\Sigma f(\bar{X}1-\bar{X}2)^2}{\Sigma f} - \left(\dfrac{\Sigma f(\bar{X}1-\bar{X}2)}{\Sigma f}\right)^2}$

14) Population Proportion $= P = \dfrac{X}{N}$

15) Mean of Sampling distribution of proportion.

$$\mu_P = \dfrac{\Sigma f p}{\Sigma f}$$

16) $\sigma^2{}_P =$ Variance of sampling distribution of proportion

$\sigma^2{}_P = \dfrac{\Sigma f p^2}{\Sigma f} - \left(\dfrac{\Sigma f p}{\Sigma f}\right)^2$

17) $\mu_{s2} =$ Mean of sampling distribution of variance

18) $\mu_{s2} = \dfrac{\Sigma f s2}{\Sigma f}$

Statistical Inference Estimation:

Confidence Intervals

A confidence interval is an interval that a statistician hopes will contain the true parameter value. **A level C confidence interval means that C% of all intervals created by random samples on n will contain the parameter.** A confidence interval looks like:

estimate ± margin of error

or

statistic ± (critical value)(sampling error)

Specifically, for a sample proportion a confidence interval is: $\hat{p} \pm z^* (SE)$

One sample z-statistic (THE FORMULA)

- This only works when the parameter of interest is μ.

$$z = \frac{\bar{x} - \mu_0}{\frac{\sigma}{\sqrt{n}}}$$

Practice Questions:

Q1 Define statistical inference .

Q.2 Describe paired observation.

Q.3 Define confidence limits.

Q.4 Define biased estimator.

Q.5 Define best estimator.

Q.6 Name any two unbiased estimators.

Q.7 Write down the formulae of biased and unbiased estimator .

Q.8 Define consistency.

Q.9 Distinguish between estimation bias and selection bias.

Q.10 Define pooled estimate of population variance.

Q.11 What is level of confidence?

Q.12   What is interval estimation?

Q.13 What is meant by point estimation?

FOUR STEPS TO HYPOTHESIS TESTING

The goal of hypothesis testing is to determine the likelihood that a population parameter, such as the mean, is likely to be true.

Step 1: State the hypotheses.
Step 2: Set the criteria for a decision.
Step 3: Compute the test statistic.
Step 4: Make a decision.

3. Compute Test Statistic.

Sample mean = 7.1
Population mean = 7.5
σ = 1.2
n = 50

This is the test statistic which is a z –score (unit: standard deviation)

$$Z = \frac{\bar{x} - \mu}{\sigma / \sqrt{n}} = \frac{7.1 - 7.5}{1.2 / \sqrt{50}} = \frac{-.40}{1.2 / \sqrt{50}} = -2.36$$

Statistical inference tests of hypothesis:

TESTING THE SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS

- "n is large or when n ≥ 30 and σ is known"
- Sample mean 1 vs Sample mean 2 and population standard deviation is known.

$$Z = \frac{\bar{x_1} - \bar{x_2}}{\sigma \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$\bar{x_1}$ - mean of sample 1
$\bar{x_2}$ - mean of sample 2
n_1 and n_2 - sample sizes
σ - population standard deviation

Practice Questions

Q.1 What is a degree of freedom?

Q.2 Define level of significance .

Q.3 Define type- II error with example.

Q.4 Elaborate type-I error.

Q.5 Define one tailed and two tailed tests.

Q.6 Define two- sample test.

Regression and co-relation:

Regression Equation: Y=a+bx   The computation of a and b is as: $b = \frac{\sum(X-\overline{X})(Y-\overline{Y})}{\sum(X-\overline{X})^2}$ $a = \overline{Y} - b\,\overline{X}$

Correlation analysis examines the relationship between two or more variables.

The Coefficient of Correlation

$$r = \frac{n\Sigma xy - (\Sigma x)(\Sigma y)}{\sqrt{n(\Sigma x^2)-(\Sigma x)^2}\,\sqrt{n(\Sigma y^2)-(\Sigma y)^2}}$$
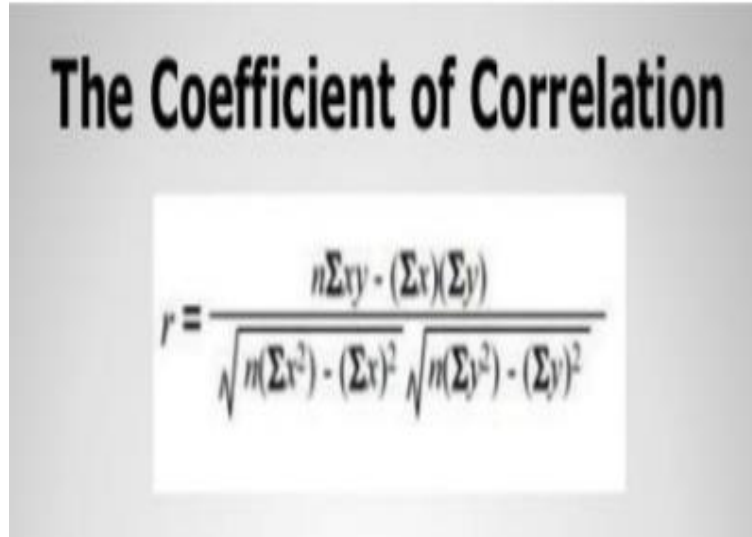
Time Series:

Definition: . An arrangement of data by successive time periods is a time series. Annual yield of a crop in a country for a number of years is an example of a time series.

Components of time series:

1)Secular trend   2)Seasonal Variation   3) Cyclical Variation   4) Irregular Variation.

Computation of secular trends:

1) Free hand curve method   2) Method of moving averages   3)Semi-average method   4)Method of least squares.

Practice Questions:

Q1.Define scatter diagram with examples.

Q.2 Define slope and intercept of the straight line .

Q.3 Write down two properties of least square line.

Q.4 What is meant by residual in regression model?

 Q.5What is meant by curve fitting?   Q.6 what is residual?

Q.7What is the relationship between regression coefficient and correlation coefficient?

Q.8 Define negative association.   Q.9 Define chi- square.

Q.10 Define dichotomy.   Q11.What is a time series?

Q12.What are the main components of a time series?

Q13.Define "signal" and "noise".   Q14.Define historigram.

Q15.What is analysis of time series?   Q16.What is multiplicative law?

Q17.What do you mean by decomposition of a time series?

Q18.What are the various methods of measuring secular trend in a time series?

 Q19.What are moving averages?

10.   Computer Science

Task 1. Explore Microsoft Access Software.

Task 2.   Projects:

  ➢   Create a document of your home budget system using **SDLC phases.**

  ➢   Create a document on Admission System at SPS using **SDLC phases**.

Note: Students should create a report after every phase.

Task 3. Prepare presentation on

  ➢   Why do we need a language to code?

  ➢   Elements of C-Language: why do we need it?

  ➢   List different types of computer languages.

  ➢   How can one computer language be converted to another language and why do we need it?

Reflect and answer the following questions:

Task 4. How can Computer Science contribute to stop **COVID-19** pandemic?

Hint: Bioinformatics **or** Role of Computer Science in Medical. (Already discussed in detail in First Year Program)

Task 5. Create a presentation on 'How is our life surrounded by **IOT (Internet of Things)?'**

Task 6. Create a presentation using MS POWER POINT on Applications of Computer Science and IT.

Task 7. Microsoft Word Excel semi Projects

  ➢   Prepare a home budget system.

  ➢   Generate the electricity bill.

  ➢   Prepare your own result card.

Task 8. Computer Architecture

Create a model of computer architecture which shows different components of computer system and label them.

Task 9. Microsoft word Semi Projects

  ➢   Design an invitation card of birthday party at home.

  ➢   Design any monogram in MS Word.

  ➢   Make post cards in MS Word.

  ➢   Create your daily time table in MS Word.

  ➢   Apply mail merge feature of MS WORD.

  ➢   Create a document that includes following features of MS Word:

    Paragraph Formatting

    Page Orientation

    Applying Different Fonts and Styles

    Applying Header Footer and page numbering

    Spell Checker

11.   Critical Thinking

Thinking critically means to question new information before accepting it as true. If you are told something new or read something new, here are some questions that you can ask before accepting the new information as true…

What: -is the source of the information and is it a reputable and reliable source?
- are some alternative explanations/perspectives?

Who: -benefits (or could benefit) from this information?
-else have you heard discuss this?
-is this harmful to?
-would be best to ask for more information about this topic?
-is the person generating this information and what is their expertise in the matter?

Where: -could we search for supporting information or information to refute the information?
-are similar concepts/information available?
-has this information come from to you?

When: -was this information created?
-was the information received (compared to when it was created)?

Why: -is the information relevant to you/others?
-has the information been created and communicated?
-are people influenced by this information?
-is this information needed now?

How: -is this information similar to other information?
-can this information be used?

Read the following 3 news article and apply some critical thinking questions to answer the basic question: should I believe this new information? Which articles do you think are true, not true, not sure and would want more information before deciding? Does the source (where you receive information from) matter in your critical thinking?

Article 1:

The first Arab space mission to Mars has blasted off aboard a rocket from Japan, with its unmanned probe – called Al-Amal, or Hope – successfully separating about an hour after liftoff.

A live feed of the launch showed the rocket carrying the probe lifting off from the Tanegashima Space Centre in southern Japan at 6.58am (9.58pm GMT).

Almost exactly one hour later, the feed showed people applauding in the Japanese control room as the probe successfully detached.

In Dubai, the launch was met with rapturous excitement, with the UAE Mars mission's deputy project manager Sarah al-Amiri declaring it "an indescribable feeling" to see the probe blasting off.

"This is the future of the UAE," Amiri, who is also minister of state for advanced sciences, told Dubai TV from the launch site.

The Emirati project is one of three racing to Mars, including Tianwen-1 from China and Mars 2020 from the United States, taking advantage of a period when the Earth and Mars are nearest.

In October, Mars will be a comparatively short 38.6m miles (62m km) from Earth, according to Nasa.

Hope is expected to reach Mars's orbit by February 2021, marking the 50th anniversary of the unification of the UAE, an alliance of seven emirates.

Unlike the two other Mars ventures scheduled for this year, it will not land on the planet, but instead orbit it for a whole Martian year, or 687 days.

While the objective of the Mars mission is to provide a comprehensive image of the weather dynamics in the red planet's atmosphere, the probe is a foundation for a much bigger goal – building a human settlement on Mars within the next 100 years.

The UAE also wants the project to serve as a source of inspiration for Arab youth, in a region too often wracked by sectarian conflicts and economic crises.

On Twitter, the UAE's government declared the probe launch a "message of pride, hope and peace to the Arab region, in which we renew the golden age of Arab and Islamic discoveries."

Source: The Guardian (July 20, 2020),

https://www.theguardian.com/science/2020/jul/20/uae-mission-mars-al-amal-hope-space

Article 2:

A couple living on the South Island's Otago Peninsula in New Zealand are not giving up hope of finding their beloved dogs – despite having spent $20,000 (£10,400) and nine months scouring the country for them, to no avail.

Nine-year-old black poodle Dice and three-year-old fox terrier Weed went missing from Alan Funnell and Louisa Andrew's home in October last year.

Since then, Funnell has spent one weekend a month traversing the South Island searching for them.

He and Andrew say they have put up about 400 signs and spent at least NZ$20,000 in their mission.

"Our dogs to us are like our family, we just know they are out there somewhere," Funnell said. "New Zealand is really not that big a place."

The saga started when Andrew went to feed the couple's chickens and let the dogs out of the car. They ran off, perhaps chasing a rabbit, and did not return.

"We called and called, and they didn't come," said Funnell. "We love our animals. They are great wee dogs. We are not going to give up until we find them."

Members of the public have helped with putting up signs which are now spread throughout country – from the tip of the North Island to the bottom of the South Island.

The couple have raised more than $10,000 to help with the search from almost 300 donors. "We got a huge amount of support throughout New Zealand and we are lucky to have that," Funnell said.

Funnell thinks the dogs were picked up by tourists after a sighting came through of two dogs being tied to a campervan in the area.

"We have been through a rollercoaster of emotions in the process of it all. We are sure they are alive. We have come to being positive about things," said Funnell.

"We can feel them out there."

Source: The Guardian (July 20, 2020),

https://www.theguardian.com/world/2020/jul/20/new-zealand-is-not-that-big-a-place-the-nine-month-20000-search-for-two-lost-dogs

Article 3:

American Airlines To Phase Out Complimentary Cabin Pressurization

FT. WORTH, TX—Explaining that the costs of the service have grown too high in recent years, American Airlines announced Tuesday that it will no longer offer free cabin pressurization to passengers starting March 15. "Unfortunately, to stay competitive as a legacy carrier in today's air travel market, it no longer makes economic sense for us to provide breathable air at altitude," said American Airlines CEO Doug Parker, noting that despite the cutbacks, air pressurization would still be available to first- and business-class travelers as well as those willing to pay an additional fee. "While we regret any altitude sickness, blood problems, dimmed vision, or hyperventilation that may result from air pressure less than a third normal levels, we remind our customers that such effects will diminish as soon as the aircraft descends below 10,000 feet." Parker added that the company is also planning to discontinue complimentary landing gear on flights under four hours.

The Onion (25 February, 2014)

https://www.theonion.com/american-airlines-to-phase-out-complimentary-cabin-pres-1819576190

Article 4:

Nutritionists Admit You Can Just Eat Hotdogs And Live Like That For Basically Decades

DENVER—Conceding that people can, in fact, survive indefinitely on a daily diet consisting solely of hotdogs, top nutritionists admitted Wednesday that you could just eat hotdogs and live for basically decades. "We put a lot of work into formulating dietary guidelines based on discoveries and advancements in the field of food science, but honestly, if you just ate hotdogs three times a day every day, you'd be okay," said nutritionist Alison Lawler, noting begrudgingly that a supermarket hotdog contains sufficient proteins, carbohydrates, and minerals to sustain an average human well into their 80s. "You won't be healthy per se, but you'd last on hot dogs for years and years. You wouldn't feel great, you'd be a bit weak and tired, but that's about it. And you'd most likely be reasonably happy, because hot dogs are tasty and satisfying. Now, by no means are we recommending that you stock your pantry full of hot dogs, but we have to admit, that wouldn't be the end of the world." At press time, the nutritionists were not available for further comment as they had all gone out for hotdogs.

The Onion (20 July, 2020).

https://www.theonion.com/nutritionists-admit-you-can-just-eat-hot-dogs-and-live-1844383727

-

12. Sports

Sadiq Public School's curriculum is more than just academic subjects. This is one of the main ways that Sadiq Public School is so unique. We aim for all students to learn the value of team sports sportsmanship and good health through regular physical activity. You can learn some of these even while at home.

1. Choose 2-3 physical exercises and practice doing these every day. It may be press ups, step ups (walking up and down 3-4 stairs repeatedly), star-jumps, squats… You should do 2-3 of these every day for about 30 minutes every day. Early in the morning is probably better. You are aiming to make it a daily habit that you will still be doing when you're 50 years old. You can challenge yourself to do more each day or more in the 30 minute session. You can challenge your parents (but remember that they're very old and so be gentle with them).

2. Think of a skill-based physical activity that involves some coordination, such as jugging three balls or skipping rope. Now teach yourself how to do this. And when you're proficient, teach someone else. Why? Doing these things occupies your brain and that means you're not thinking about other things – so these activities become a good way to relax, distract your brain from things that are causing you stress (like exams!)

3. Ball games are good for reducing stress, and sneakily using up energy and so keeping you for and healthy and helping you to sleep properly. If you have brothers and sisters at home you can ball games like mini-cricket, catching & throwing, bouncing a ball against a wall and catching it (who knows you may be selected as wicket-keeper for the 1st XI).

4. Hop-scotch. You might have to ask your parents how to play this. With chalk, draw a grid of 9 squares on a paved area…
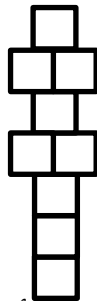
Stand at the bottom of the grid. Each square has a number 1-9 in it (I can't draw the number with my computer, but you can with chalk.) Use a small stone and slide it first to the 1st square. Hopping, jump over the square with the stone in it, continue hopping up the grid in the correct order, torn around, hop back to the 2 square, bend down and pick up the stone (you're not to put your other foot on the ground otherwise it's too easy), and then back to the start. If you succeed, now slide the stone to the 2 square and hop away, and back, bend down pick up the stone, hop to the start… etc. If you miss the square with you stone, or you put your non-hopping foot down your turn has ended and the next player starts. Yes, parents can play too, but not your neighbours or your cousins who live in Lahore because they're staying home and staying safe. If you don't like my rules, make your own. But once you make the rules, no cheating.

13.   Community service

Community service simply means serving our community – doing something to help the community. In the current situation we can all serve our community by staying at home / staying away from other people and washing our hands frequently with soap because when we do this we stop the virus being passed from one person to another. If we all do this, our whole community will be helped.

You can help the whole world's community by doing what you can to reduce plastic waste. You can do this by refusing plastic bags at shops. Make your own paper bags at home and take these to the shops and so not use plastic bags. Buy less (or even none) products that have plastic packaging. Glass can be recycled and so that's fine.

Bury biodegradable waste in your garden rather than send it by rubbish truck to a dump somewhere. Fruit, vegetable scraps, leftover food etc. will rot in your garden and so quickly convert back into soil and return nutrients to plants. Paper waste will do the same.

Turn off lights and other electricity-users when not needed and do not let water taps run needlessly.

Look for ways to help others. Practise saying, 'can I help you?' with family members and then helping will become part of who you are.

There is an interesting theory that the virus that has caused this current situation was passed to humans because animal habitats, especially forests, are being destroyed. Destroying forests, whether for the timber, for clearing land to use for agriculture, or simply to burn the wood as fuel, is called deforestation and it is the main cause of climate change. The next few pages will help you learn more about deforestation and its very bad effects on the planet and human life.

THERE IS ONLY ONE PLANET EARTH

Lesson 2. Deforestation

Deforestation is the removal of forest from land which is then converted to agricultural or urban use. Most deforestation occurs in tropical rainforests such as the Amazon Rainforest.

Between 2000 and 2012, about 890,000 square miles of forests around the world were cut down. Only about 2.4 million square miles of the Earth's original 6 million square miles of forest remains. An area about size of a football field is cleared from the Amazon rainforest every minute for agriculture.

Deforestation is a significant contributor to global warming because it is responsible for about 20% of all greenhouse gas emissions.

According to the UN's Food and Agriculture Organization, almost 80% of all deforestation is driven by agriculture. The UN Framework Convention on Climate Change says the primary cause of deforestation is agriculture.

Subsistence farming is responsible for almost half of all deforestation (48%), with commercial agriculture (32%; logging (14%), and fuel wood (5%) the other causes.

The EU is a major importer of agricultural products, such as palm oil, soy, and cocoa, products commonly associated with agricultural land that was recently forested land. EU countries are keen to reduce the impact of their commercial activities on forests and deforestation. France's government, for example, announced it will 'encourage every actor (producers, businesses, investors, and consumers), to change their practices in order to reduce deforestation.' The French government passed a law stating that palm oil is not considered a biofuel.

In 2008, the EU agreed to stop global forest cover loss by 2030. The UN declared a Sustainable Development Goal of ending deforestation by 2030.

THERE IS ONLY ONE PLANET EARTH

Which countries are worst affected by deforestation?

South & Central America
Large areas of Brazil's share of the Amazon rainforest is being destroyed by illegal logging, exacerbated by government corruption. Deforestation in Peru's share of the Amazon rainforest is due to illegal logging and clearing forests for use as agricultural land. Bolivia's large soya industry and cattle-ranching are the country's main causes of deforestation and the Bolivian government is unlikely to risk the country's food security. Mexico's avocado industry is responsible for the loss of tropical and pine forests.

Asia Pacific
Indonesia's palm oil industry has driven destruction of its rainforest and also its wetlands, with more than 5000 square miles cut down annually to supply palm oil. More than 2000 square miles of Russia's vast forests are lost to wildfires annually. Logging and the palm oil industry account for about 1000 square miles of trees lost in Papua New Guinea annually.

Africa
In Sudan, about 500 square miles of trees are cut down every year to be used as household cooking fuel and heating, and for commercial production of steam-generated electricity. Just 6% of Nigeria's original forests remain because of trees being cut for household cooking fuel and heating.

While these countries are where deforestation is occurring the most, all countries are affected by deforestation because it is a significant factor in global warming and therefore climate change.

Activities

1. Write the following words into your book and then write an explanation of the word.
     deforestation
     agricultural
     rainforest
     greenhouse gas
     primary cause
     subsistence farming
     logging
     fuel wood
     palm oil
     sustainable
     corruption
     food security

2. Explain why deforestation is a problem for our environment.

3. Explain which countries/regions are most affected by deforestation.

4. Describe the main causes of deforestation.

5. Research: Explain how cutting a tree down contributes to green house gas emissions and therefore global warming.

6. Create: Write a letter to Bolivia's President asking for Bolivia's government to please stop deforestation.

7. Critical thinking: Describe how might you check this article to be sure it is accurate.

8. Reflect: List at least three things you learnt about deforestation from this material.

9. List 3 questions related to information in this article to which you would like answers. Describe how could you find the answers to your questions and how you can be sure they are accurate.

K
C

What can I do?

1. Learn more about the forests near where you live. Learn what plants and animals live in the forest. When you know about a forest, you will be more inclined to take care of it.
2. Ask your friends to visit a forest so they can learn about it. Is there anything you and your friends can do? Gathering plastic trash from the forest, for example.
3. Palm oil, soy, beef, and cocoa are the main agricultural products that are responsible for global deforestation. Use the internet to find out what products these ingredients are used to make, for example palm oil is used in the production of some low-quality chocolate and soap. Find out which companies use it and stop buying their products.
4. Write to the companies that use these products and tell them you have stopped buying their products because they are major causes of deforestation.
5. Use your social media accounts to tell your friends about deforestation, what its effects are, what causes it, and what they can do to help.
6. Send emails to government officials and tell them you do not want your country contributing to deforestation by buying these products.
7. Find a local organization that plants trees and help.
8. Grow seedlings and when they are big enough, plant them around your neighborhood. Encourage your teachers to start a program in your school in which students grow seedlings and plant them in an area that needs trees.

THERE IS ONLY ONE PLANET EARTH
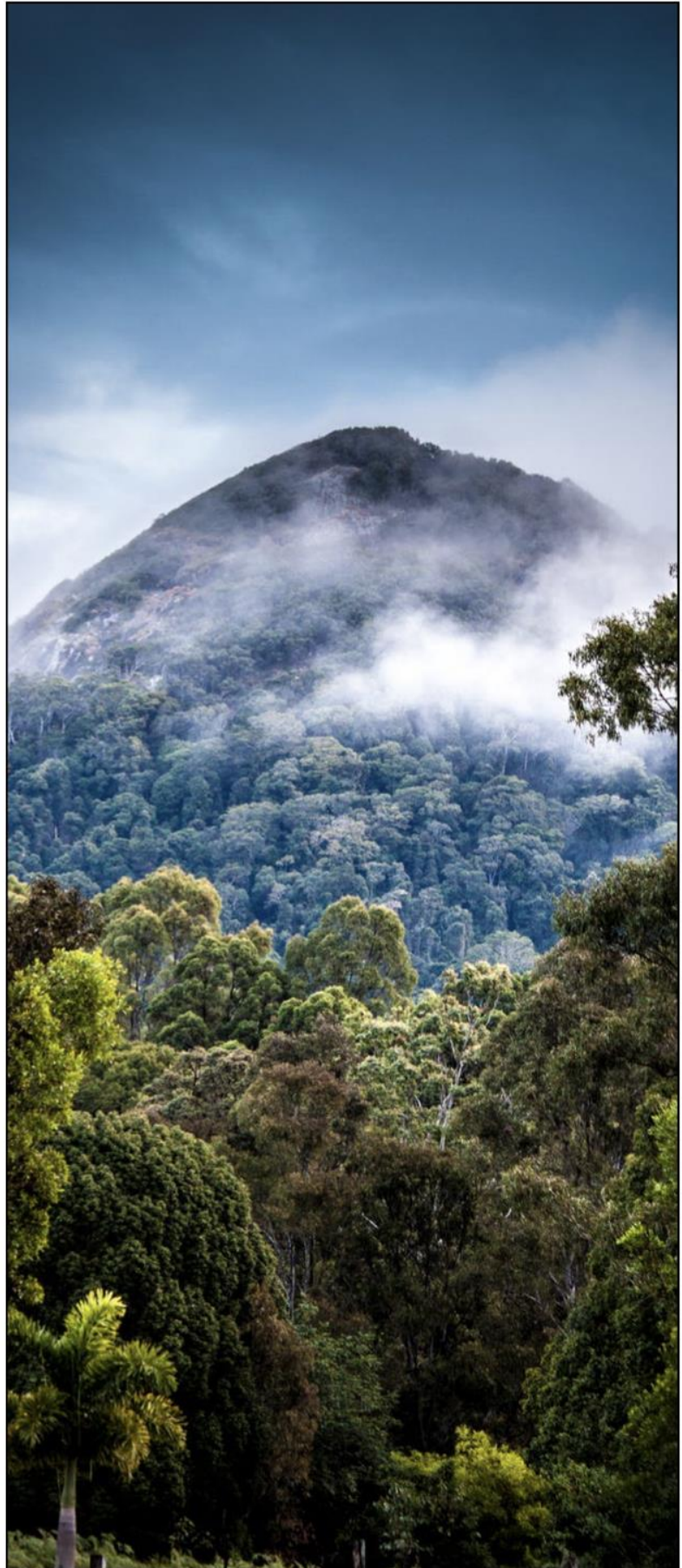
Deforestation 1

Answer the crossword using information from the article.
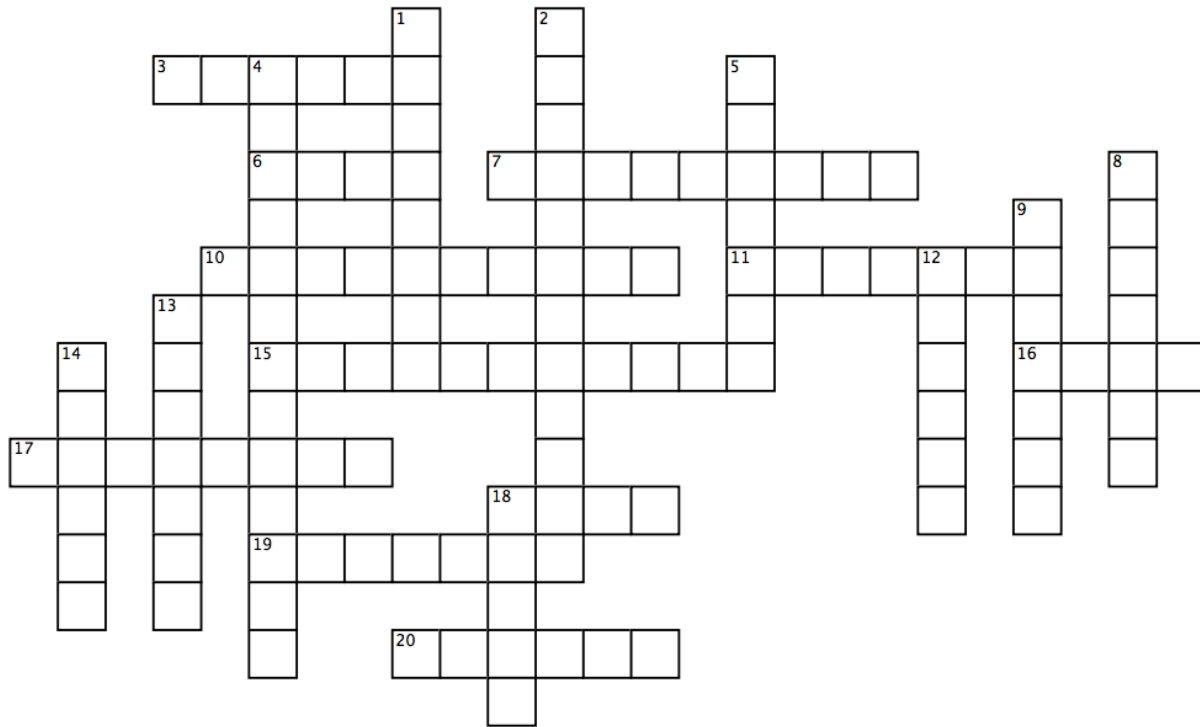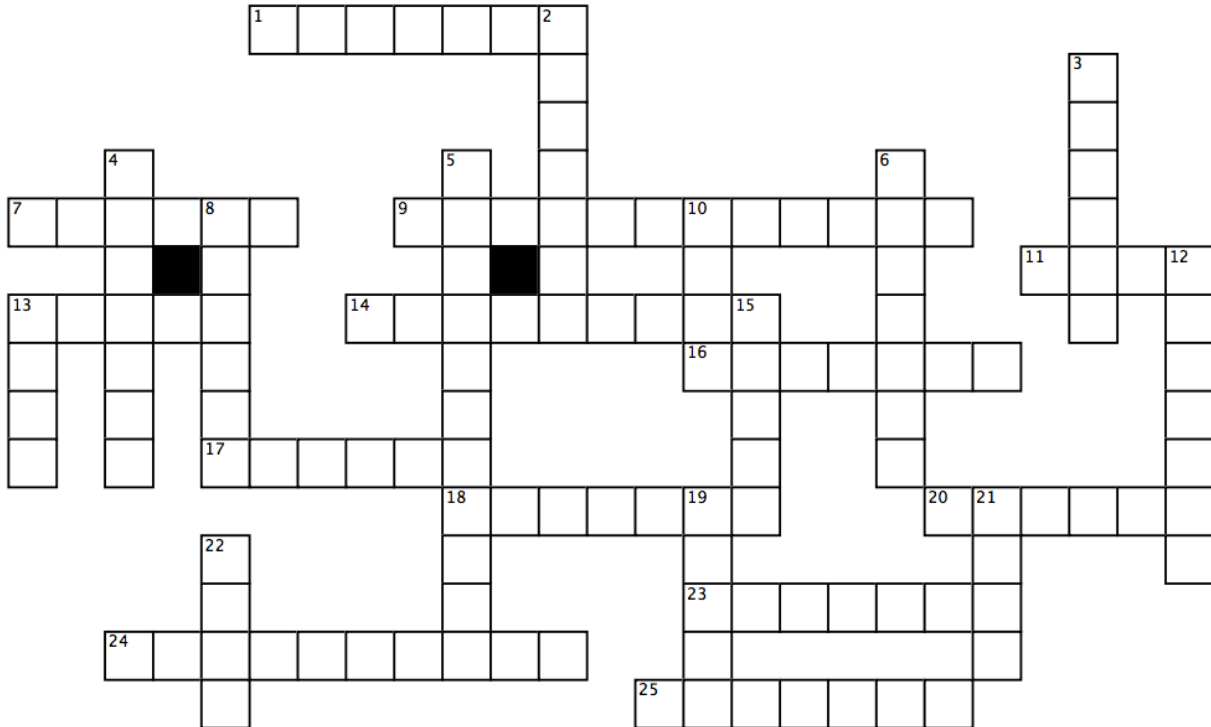
Across

3. France's government announced it will 'encourage every actor (producers, businesses, investors, and consumers), to change their practices in order to _____ deforestation.'
6. In Sudan, trees are cut down to be used as household cooking _____ and heating, and for commercial production of steam-generated electricity.
7. More than 2000 square miles of Russia's vast forests are lost to _____ annually.
10. Deforestation is responsible for about 20% of all _____ gas emissions.
11. Mexico's _____ industry is responsible for the loss of tropical and pine forests.
15. _____ farming is responsible for almost half of all deforestation.
16. The UN declared a Sustainable Development _____ of ending deforestation by 2030.
17. An area about size of a _____ field is cleared from the Amazon rainforest every minute for agriculture.
18. The French government passed a law stating that _____ oil is not considered a biofuel.
19. Deforestation in Peru's share of the Amazon rainforest is due to _____ logging and clearing forests for use as agricultural land.
20. Only about 2.4 million _____ miles of the Earth's original 6 million _____ miles of forest remains.

Down

1. Indonesia's palm oil industry has driven destruction of its rainforest and also its _____.
2. The EU is a major importer of _____ products, such as palm oil, soy, and cocoa.
4. _____ is the removal of forest from land which is then converted to agricultural or urban use.
5. All countries are affected by deforestation because it is a significant factor in global warming and therefore _____ change.
8. The _____ cause of deforestation is agriculture.
9. Large areas of Brazil's share of the Amazon rainforest is being destroyed by illegal _____, exacerbated by government corruption.
12. Most deforestation occurs in tropical rainforests such as the _____ Rainforest.
13. Just 6% of Nigeria's original forests remain because of trees being cut for household cooking fuel and _____.
14. Deforestation is a significant contributor to _____ warming.
18. Logging and the palm oil industry account for about 1000 square miles of trees lost in _____ New Guinea annually.

K
C

THERE IS ONLY ONE PLANET EARTH

Deforestation 2

Across

1. 80% of all land _____ and plants live in forests.
7. Forests absorb greenhouse gases that would otherwise fuel _____ warming.
9. Deforestation occurs because people clear forested land to make space for _____ activities such as cattle ranching.
11. Forests keep the _____ moist by blocking the sun and inhibiting evaporation.
13. Cutting down _____ releases carbon dioxide into the atmosphere.
14. Deforestation of tropical rainforests adds more carbon dioxide to the atmosphere than all cars' and trucks' _____.
16. Forests absorb carbon _____ and release oxygen.
17. _____ has the largest area of land deforested.
18. Most deforestation occurs in rainforests which are concentrated in the _____.
20. Deforestation results in more than 1.5 billion tons of _____ dioxide being released into the atmosphere every year.
23. Forests absorb and store carbon, so that when trees are cut down, the carbon is released into the atmosphere contributing to the greenhouse effect whihc causes global warming which causes _____ change.
24. If the current rate of deforestation continues, 100 years from now there will be no more _____.
25. Deforestation occurs because people take wood for household fuel and _____.

Down

2. Forests are home to millions of plant and animal _____.
3. The _____ rainforest is one of the Earth's most threatened forests.
4. _____ are one the main natural factors that regulate and determine the Earth's climate.
5. _____ is one of the most significant causes of deforestation.
6. Deforestation is the main cause of global _____ and therefore climate change.
8. Deforestation has a double effect: it releases carbon dioxide and there are less trees to _____ carbon dioxide.
10. Forests cover a large proportion of the world's _____ area, but large areas of forest are being lost each year.
12. Deforestation is caused by household fuel burning, agriculture, and unsustainable _____.
13. Deforestation is the loss of _____ cover, due to forests being cleared.
15. Forests are called 'carbon _____' because they trap or hold carbon.
19. Forests play a significant role in the water _____ by releasing water vapor into the atmosphere.
21. Although Brazil has lost the largest _____ of forest, Comoros has lost 50% of its forests.
22. Forests prevent _____ erosion.

THERE IS ONLY ONE PLANET EARTH

Brazil
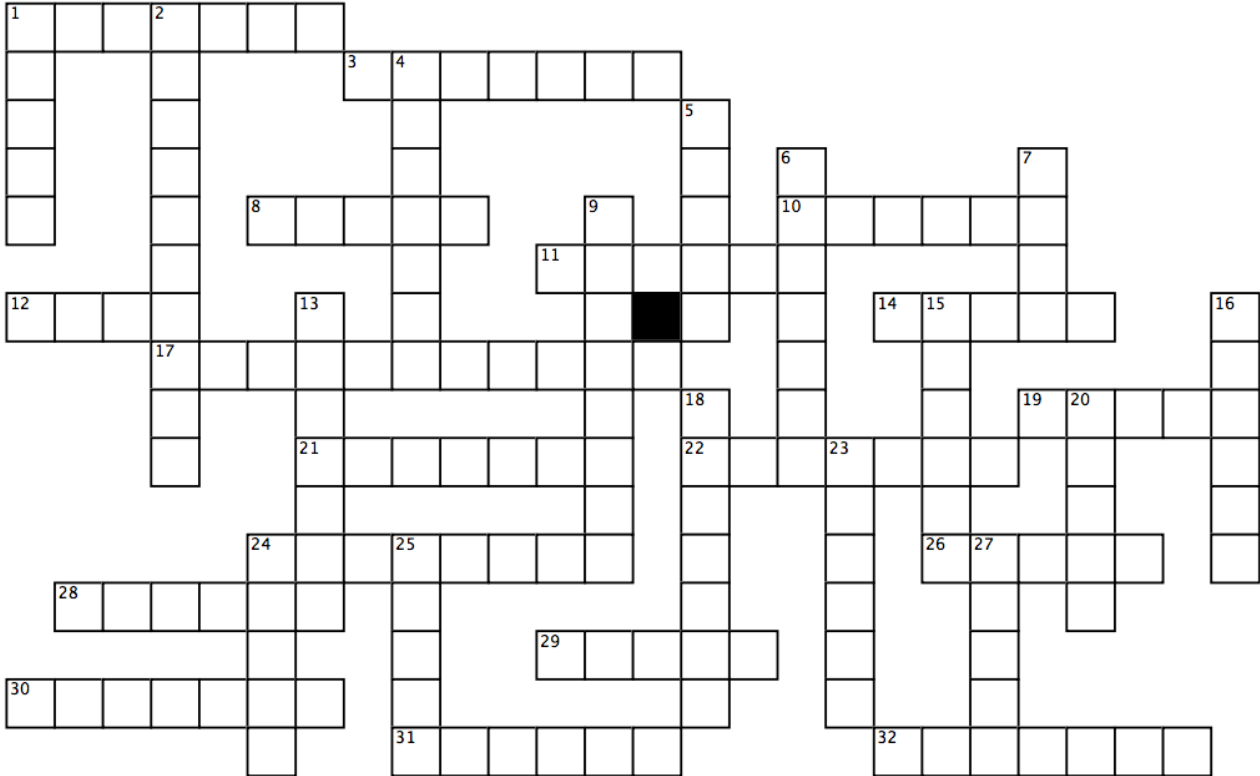
Across

1. Early sailors often called Brazil Terra di Papaga (Land of _____).
3. Rio de Janeiro is home to two well known _____, the Ipanema and the Copacabana.
8. The predominant religion throughout Brazil is _____ Catholic.
10. Brazil has been the world's largest producer of _____ for more than 150 years.
11. The Alchemist, by the Brazilian author Paulo _____ de Souza, has sold over 83 million copies, and so is one of the most sold books ever.
12. Brazil spans _____ time zones.
14. Sao _____ is the most populous city in the southern hemisphere.
17. Brazil's Itaipu Dam generates the most _____- of all the world's hydroelectric plants.
19. In the 16th century Brazil's major export was _____, but in the 17th century it was gold.
21. Brazil is the largest country in South _____.
22. Rio de Janeiro hosted the 2016 _____ Games and 2016 Paralympic Games.
24. In September 1822 Brazil declared independence from _____ and declared Prince Pedro de Alcântara the first Emperor of the Brazilian Empire.
26. Most Brazilians _____ Portuguese.
28. The Iguazu Falls are on the Brazil-Argentina _____.
29. The Amazon River _____ includes the vast Amazon rainforest.
30. Brasilia was planned and developed in 1956 to move the capital from Rio de _____ to a more central location.
31. Deforestation of the _____ rainforest has a double-effect on the greenhouse effect and therefore climate change: living trees store CO2 and dead trees release CO2 into the atmosphere.
32. In 2014-2016 a severe _____, caused by El Nino, had a significant impact on Sao Paulo and Rio de Janeiro.

Down

1. In 1831, Brazil's Emperor, Pedro I abdicated, returned to Portugal, and passed the monarchy to his five year old son, _____ II who was eventually crowned in 1841.
2. The Amazon _____ has the greatest biological diversity in the world.
4. Brazil is the only country with the _____ and the Tropic of Capricorn running through it.
5. The final of the 2014 football _____ Cup was played at the Maracana Stadium in Rio de Janeiro
6. Brazil's _____ is eighth-largest by GDP.
7. Brazil's currency, the _____, is pegged to the US dollar.
9. Brazil's national sport is _____ and the men's national team has won the World Cup 5 times.
13. Brazil borders all South American countries except _____ and Chile.
15. Brazil remained neutral in World War 2 until 1942, at which time it joined the _____.
16. The _____ the Redeemer statue overlooking Rio de Janeiro is 30 metres tall and was built in 1931.
18. The Amazon basin includes land in Brazil as well as _____, Colombia, Ecuador, Guyana, Peru, Suriname, and Venezuela.
20. 85% of Brazil's population live in _____ areas.
23. The Christ the Redeemer statue overlooking Rio de Janeiro is 30 _____ tall and was built in 1931.
24. In 1500 _____ Alvares Cabral claimed the area of Brazil for the Portuguese Empire and it remained a Portuguese colony until 1808.
25. Brazil's original official name was _____ da Santa Cruz (Land of the Holy Cross).
27. Brazil's capital city is Brasilia, but the largest city is Sao _____.