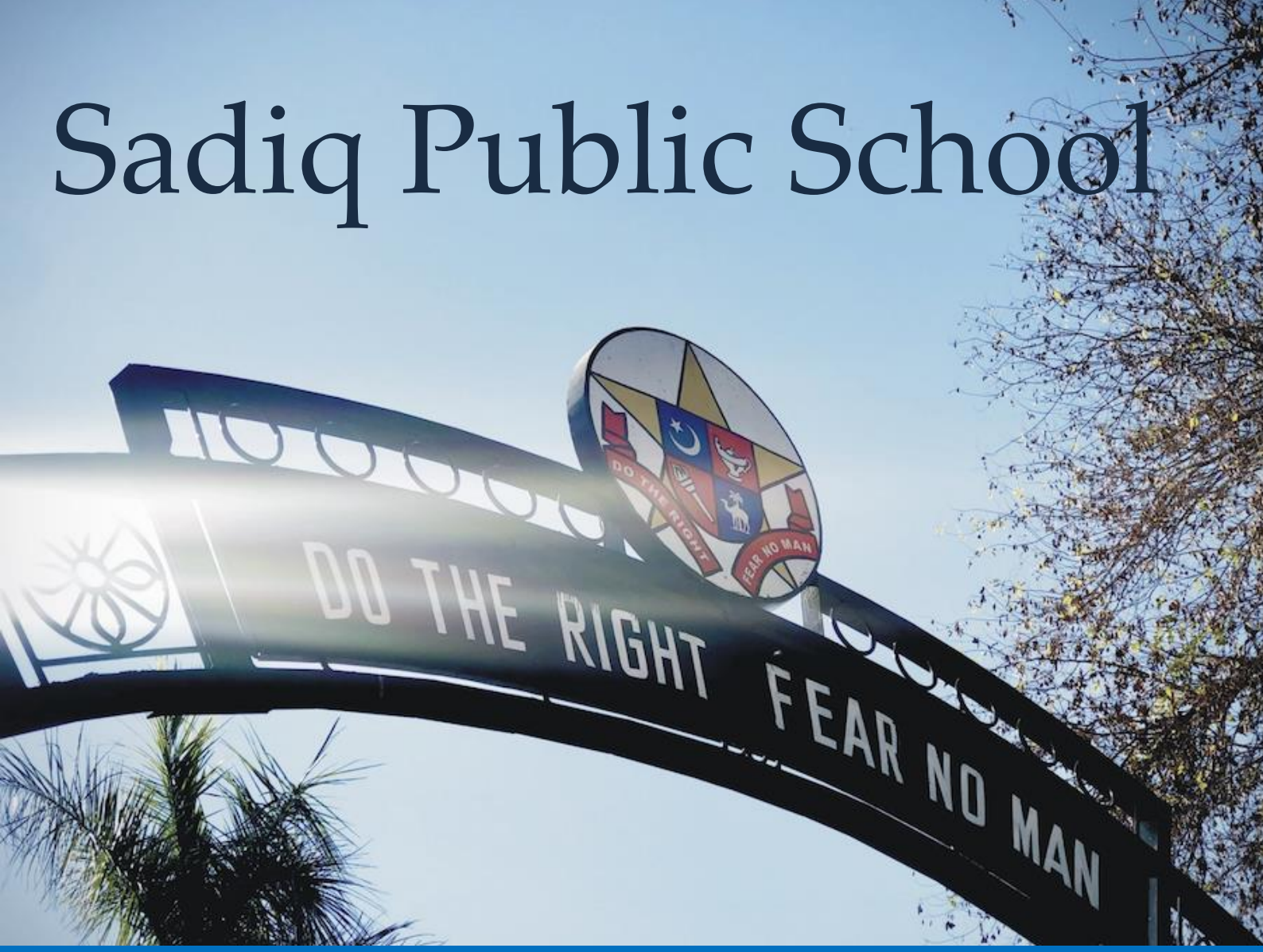
Sadiq Public School



Distance Learning for S2

August-September 2020

Sadiq Public School

Do the right, fear no man

Distance Learning

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.

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

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 Language

Reading

1. Read any three books/novels (ie fiction).
    i. Write a book review for each book of 250 words
    ii. Discuss the book's plot, characters, theme, and setting.
    iii. Would you recommend the book to anyone else to read? Why? Why not?

Writing

1. Observe something that occurs naturally – perhaps clouds moving across the sky, perhaps eagles, a cat, the sunrise, or the moon and write about how this natural phenomenon affects you and your emotions.
2. A fable tells a story with a message and it involve uses animals as its characters, but they represent people. Write a fictional story with a moral (message) and the characters will be a mongoose, an eagle, and a squirrel. Think of a message/moral and work backwards from there. But think of a modern moral, for example something about fake news, or doubtful sources such as rubbishy newspapers or social media. Maybe the message will be about cyber-bullying or playing team sports to learn about trust and reliability or not using plastics…
3. 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?
4. 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۔ موجودہ حالات میں ڈاکٹر صاحبان اور ہسپتال کا دیگر عملہ کن مسائل کا سامنا کر رہا ہے۔ اس حوالے سے ایک ڈاکٹر اور صحافی کے درمیان تفصیلی مکالمہ تحریر کریں۔

2۔ آپ کے گھر کا بجلی کا میٹر جل گیا ہے۔ نئے میٹر کی تنصیب کے لیے ایکسیئن واپڈا کے نام درخواست تحریر کریں۔

3۔ لاک ڈاون کی وجہ سے جہاں زندگی میں اور بہت سی تبدیلیاں آئی ہیں، وہاں سفر کم ہونے کی وجہ سے ماحولیاتی آلودگی میں کمی آئی ہے۔ اس حوالے سے اپنے دوست کو خط لکھ کر اپنی رائے سے آگاہ کریں۔

4۔ ان چھٹیوں کے دوران آپ نے جن کتابوں کا مطالعہ کیا ہے، ان میں سے کوئی سی تین کتابوں پر تبصرہ تحریر کریں۔

5۔ اردو کے پانچ اہم شعراء کے حالات زندگی اور ان کے کلام کے بارے میں مختصر نوٹ تحریر کریں۔

6۔ مختلف اخبارات میں شائع ہونے والے اردو آرٹیکلز میں سے کوئی سے تین آرٹیکلز کا خلاصہ اپنے الفاظ میں تحریر کریں۔

7۔ اپنے سلیبس میں سے دس محاورات اور دس ضرب الامثال منتخب کر کے ان کے معانی کاپی پر لکھیں۔

8۔ رمضان المبارک اور عید کے مواقع پر ذخیرہ اندوزی کی وجہ سے مہنگائی اور کھانے پینے کی اشیاء کی قلت کے حوالے سے استاد اور شاگرد کے درمیان مکالمہ تحریر کریں۔

9۔ اپنی پسندیدہ شخصیت کے بارے میں تفصیل سے نوٹ تحریر کریں۔

10۔ اپنے ناپسندیدہ ٹی وی پروگرام کے بارے میں تحریر کریں اور ناپسندیدگی کی وجوہات بھی بتائیں۔

3. Mathematics

1. Define the following terms:

1. common and natural logarithm,
2. rectangular matrix,
3. square matrix,
4. diagonal matrix,
5. unit matrix
6. symmetric and skew symmetric matrix,
7. row matrix,
8. column matrix,
9. Null matrix,
10. transpose of a matrix,
11. Hermitian and skew Hermitian matrix,
12. conjugate of a complex number
13. adjoint of a matrix,
14. Inverse of a matrix,
15. equal matrices.

2. Answer the following questions

1. Find the conjugate of $5 + 4i$.
2. Write $\sqrt[3]{35}$ in the exponential form.
3. Write $\sqrt[7]{x}$ in exponential form.
4. Write $4^{2/3}$ with radical sign.
5. Find the value of i^9.
6. What is the logarithm of unity to any base?
7. What is the logarithm of any number to itself as base?
8. Find the value of $\log\frac{p}{q}$.
9. Write $\log m^n$ in expanded form.
10. Write the order of matrix [2 1].
11. Find the adjoint of $\begin{bmatrix} 1 & 2 \\ 0 & -1 \end{bmatrix}$.
12. If $\begin{vmatrix} 2 & 6 \\ 3 & x \end{vmatrix} = 0$, then find x.
13. Separate the real and imaginary part of $(2 + 2i) + (7 - 1i)$.

14. Find the values of a, b, c and d which satisfy the matrix equation.

$$\begin{bmatrix} a+c & a+2b \\ c-1 & 4d-6 \end{bmatrix} = \begin{bmatrix} 0 & -7 \\ 3 & 2d \end{bmatrix}$$

15. Determine whether $\begin{bmatrix} 3 & 5 \\ 4 & 7 \end{bmatrix}$ and $\begin{bmatrix} 7 & -5 \\ -4 & 3 \end{bmatrix}$ are multiplicative inverse of each other.

16. If $B = \begin{bmatrix} 1 & 1 \\ 2 & 0 \end{bmatrix}$ then verify that B-B^t is skew symmetric.

17. If $\begin{bmatrix} 3 & 2 & 1 \\ 0 & 1 & -1 \end{bmatrix}\begin{bmatrix} 1 & -1 \\ 0 & 2 \\ -2 & 3 \end{bmatrix}$ is conformable for multiplication then find the product.

18. Find C^t if $C = [5 \quad 1 \quad -6]$.

19. Verify that if $B = \begin{bmatrix} 1 & 1 \\ 2 & 0 \end{bmatrix}$, then $(B^t)^t = B$.

20. If $2\begin{bmatrix} 2 & 4 \\ -3 & a \end{bmatrix} + 3\begin{bmatrix} 1 & b \\ 8 & -4 \end{bmatrix} = \begin{bmatrix} 7 & 10 \\ 18 & 1 \end{bmatrix}$, then find a and b.

21. Multiply. $\begin{bmatrix} 2 & 3 \\ 1 & 1 \\ 0 & -2 \end{bmatrix}\begin{bmatrix} 2 & -1 \\ 3 & 0 \end{bmatrix}$

22. Find $\det(A)$ if $A = \begin{bmatrix} -1 & 1 \\ 2 & 0 \end{bmatrix}$

23. Find whether D is singular or non-singular. $D = \begin{bmatrix} 5 & -10 \\ -2 & 4 \end{bmatrix}$

24. Find multiplicative inverse of $A = \begin{bmatrix} -1 & 3 \\ 2 & 0 \end{bmatrix}$

25. Find the product $\begin{bmatrix} 1 & 2 \\ -3 & 0 \\ 6 & -1 \end{bmatrix}\begin{bmatrix} 4 & 5 \\ 0 & -4 \end{bmatrix}$

26. If $A = \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$, then verify that $(A^t)^t = A$

27. Find whether$A = \begin{bmatrix} 7 & -9 \\ 3 & 5 \end{bmatrix}$, is a singular or non-singular matrix.

28. Solve with the help of Cramer Rule $2x + y = 3$

$6x + 5y = 1$

29. If $= \begin{bmatrix} 1 & 2 \\ 4 & 6 \end{bmatrix}$, then show that $A(AdjA) = (AdjA)A$

30. For the matrices $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 1 \\ 1 & -1 & 0 \end{bmatrix}, B = \begin{bmatrix} 1 & -1 & 1 \\ 2 & -2 & 2 \\ 3 & 1 & 3 \end{bmatrix}$, then verify that $A + B = B + A$

31. If$A = \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$, then verify that $A - A^t$ is skew-symmetric.

32. Find the values of a, b, c and which satisfy the matrix equation.

$$\begin{bmatrix} a+b & a+2b \\ c-1 & 4d-6 \end{bmatrix} = \begin{bmatrix} 0 & -7 \\ 3 & 2d \end{bmatrix}$$

33. Give a rational number between $\frac{3}{4}$ and $\frac{5}{9}$.

34. Simplify $\sqrt[4]{32}$

35. Simplify $(2x^5y^{-4})(-8x^{-3}y^2)$

36. Show that $\left(\frac{x^a}{x^b}\right)^{a+b} \times \left(\frac{x^b}{x^c}\right)^{b+c} \times \left(\frac{x^c}{x^a}\right)^{c+a} = 1$

37. Simplify $5^{2^3} \div (5^2)^3$

38. Evaluate i) i^{50} ii) i^{29}

39. Write the real and imaginary part of $-2 - 2i$.

40. Write $(\sqrt{5} - 3i)^2$ in the form $a + i\,b$

41. Find the value of x and y if $x + i\,y + 1 = 4 - 3i$

42. Simplify $(2 + 3i) + (7 - 2i)$

43. Express the recurring decimal $0.\overline{67}$ as the rational number.

44. Write real and imaginary parts of $3 - 5i$

45. Find the value of x and y if $x + iy = 6 - 2i$.

46. Simplify $\frac{2^{1/3} \times (27)^{1/3} \times (60)^{1/2}}{(180)^{1/2} \times (4)^{-1/3} \times (9)^{1/4}}$

47. Express $2(5 + 4i) - 3(7 + 4i)$ in the form of $a + bi$.

48. If $z = 2 + 32$, show that $\frac{1}{2i}(z - z)$ is the imaginary part of z.

49. Express $\frac{275000}{0.0025}$ in scientific notation.

50. Express 7.865×10^8 in ordinary notation.

51. Find the common logarithm of 232.92

52. Write in scientific notation$\frac{275}{0.0025}$.

53. Write in the form of single logarithm$\log 5 + \log 6 - \log 2$.

54. Find the value of x if $\log_3 x = 5$

55. Write in the form of sum and difference of the following $log(A \times B)$.

56. Write down and prove the four laws of logarithm.

57. Use log to find $\frac{0.678 \times 9.01}{0{,}0234}$

58. Calculate $\log_3 2 \log_2 81$

59. Find the value of x if $\log_x 64 = 2$

60. If $\log 31.09 = 1.4926$, find the value of $\log 3.109$.

61. Express $\log x - 2\log x + 3\log(x + 1) - \log(x^2 - 1)$ as a single logarithm.

62. If $\log 31.09 = 1.4926$, find the value of $\log 0.003109$

63. Find the value of x from $\log_x 64 = 2$.

64. Write $\log \frac{21 \times 5}{8}$ into sum or difference.

65. Write $2\log x - 3\log y$ in the form of single logarithm.

66. If $\log 2 = 0.3010, \log 3 = 0.4771, \log 5 = 0.6990$, then find the value of $\log 30$.

67. If $x + \frac{1}{x} = 3$, find (i) $x^2 + \frac{1}{x^2}$ (ii) $x^4 + \frac{1}{x^4}$

68. Find the value of $x^3 + y^3$ and xy if $x + y = 5$ and $x - y = 3$

69. If $p = 2 + \sqrt{3}$, find

(i) $p + \frac{1}{p}$, (ii) $p - \frac{1}{p}$ (iii) $p^2 + \frac{1}{p^2}$ (iv) $p^2 - \frac{1}{p^2}$

70. If $q = \sqrt{5} + 2$, find

(i) $q + \frac{1}{q}$ (ii) $q - \frac{1}{q}$ (iii) $q^2 + \frac{1}{q^2}$ (iv) $q^2 - \frac{1}{q^2}$

4. Islamiat

1۔ Covid-19 کے دوران آپ کو کیا کیا احتیاطی تدابیر اختیار کرنی چاہییں؟

2۔ نماز کے فوائد بیان کریں۔

3۔ نماز کی رکعات کا چارٹ بنائیں۔

4۔ حج کے کیا فائدے ہیں اس پر ایک پیراگراف لکھیں۔

5۔ جنگ بدر کی مختصر کہانی بیان کریں۔

6۔ قرآن مجید پڑھنے کے کیا فائدے ہیں؟

7۔ علم کی اہمیت سے متعلق کوئی سی دو احادیث لکھیں۔

8۔ والدین کے حقوق و فرائض کیا ہیں؟

9۔ Covid-19 کے دوران آپ نے غریب لوگوں کی مدد کس طرح کی اس کے بارے میں بتائیں۔

10۔ حضور ﷺ کی زندگی سے یتیموں کے ساتھ حسن سلوک کا کوئی واقعہ بیان کریں۔

11۔ اولاد کے کوئی سے پانچ فرائض لکھیں۔

12۔ اسلامی معاشرے میں مسجد کا کیا خاص مقام ہے؟

13۔ بطور مسلمان آپ کو غیر مسلموں سے کیسا سلوک کرنا چاہیے؟

14۔ ہمیں اللہ اور اس کے رسول ﷺ سے محبت کا اظہار کس طرح کرنا چاہیئے؟

15۔ آیت الکرسی زبانی یاد کریں اور اس کا ترجمہ لکھیں۔

16۔ سورۃ الانفال میں مومنوں کی کیا خصوصیات بیان کی گئی ہیں۔

17۔ کیا آپ نے کبھی نماز جنازہ ادا کی ہے؟ اس کے بارے میں لکھیں۔

18۔ روزے کے دوران ایک مسلمان کو کن چیزوں سے بچنا چاہیئے؟

19۔ ایک اچھے مسلمان میں کونسی خوبیاں ہونی چاہئیں؟

20۔ رزق حلال کے فوائد کیا ہوتے ہیں؟ ان کے بارے میں لکھیں۔

21۔ عشرہ مبشرہ میں سے کسی دو کے بارے میں لکھیں۔

5. Pakistan Studies

Assignment 1: Ideology of Pakistan

1. Evaluate the Islamic values that are the basis of the Ideology of Pakistan.
2. What is meant by "Touheed".
3. What do you mean by the Faith in Prophethood?
4. What is the saying of Hazrat Muhammad PBUH about brotherhood?
5. What is meant by the Ideology of Pakistan?

Assignment 2: The Ideology of Pakistan and Allama Iqbal

1. Elaborate the Ideology of Pakistan in the light of the pronouncements of Allama Muhammad Iqbal.
2. What did Allama Muhammad Iqbal say about the foundation of Muslim Millat?
3. What did Allama Muhammad Iqbal mention in his famous Allahabad address?

Assignment 3: The Ideology of Pakistan and Quaid e Azam

1. Describe the Ideology of Pakistan in the light of the pronouncements of Quaid-e-Azam.
2. What did Quaid-e-Azam say about Nationalism?
3. What did Quaid-e-Azam say about the security of minorities?
4. While inaugurating the State bank, what did Quaid-e-Azam say?

Assignment 4: Two Nation Theory

1. What is meant by the Two Nation Theory in the historical perspective of the Sub-continent?
2. When did Chaudhary Rehmat Ali propose the word "Pakistan"?

Assignment 5: Significance of Ideology

1. What is meant by the term ideology?
2. Explain origin of ideology and its significance.

6. Physics

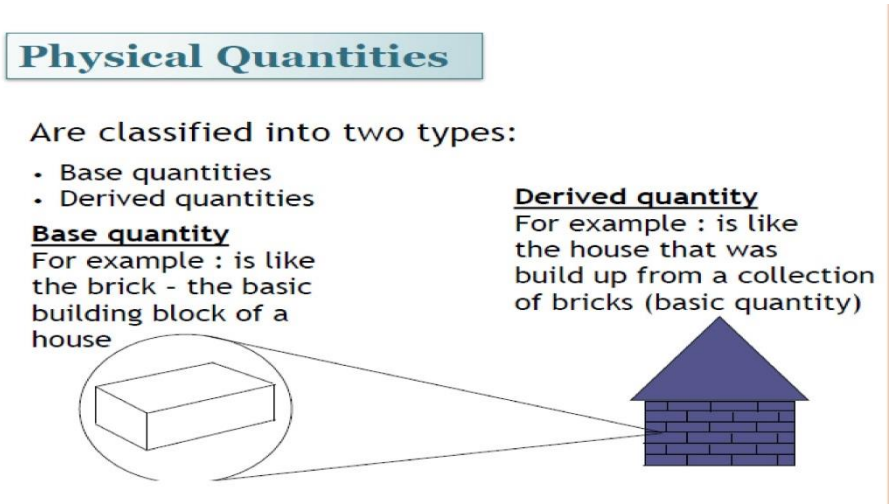
Measurement of Physical quantities

Introduction:

The earliest recorded systems of weights and measures originate in the 3rd or 4th millennium BC. Even the very earliest civilizations needed measurement for purposes of agriculture, construction, and trade. Early standard units might only have applied to a single community or small region, with every area developing its own standards for lengths, areas, volumes and masses.

A physical quantity is a property of a material or system that can be quantified by measurement. A physical quantity can be expressed as the combination of a numerical value and a unit. For example, the physical quantity mass can be quantified as n kg, where n is the numerical value and kg is the unit.

Types of Physical quantities



Base quantity

Base Quantity	SI units
Length, l	metres, m
Mass, m	kilogram, kg
Time, t	second, s
Temperature, T	Kelvin, k
Electrical current, I	Ampere, A

Derived quantity

Derived Quantity	Units
Volume, V	m^3
Density, ρ	kgm^{-3}
Velocity, v	ms^{-1}
Force, F	N
Acceleration, a	ms^{-2}

SI-Units:

The International System of Units is the modern form of the metric system. It is the only system of measurement with an official status in nearly every country in the world.

Assignment 1:

Triple Beam Balance

Electronic Mass Balance

Lever Balance

Q1: Identify the instrument and write the use of these instruments.

Q#2: Write the differences between base and derive quantities.

Activity:

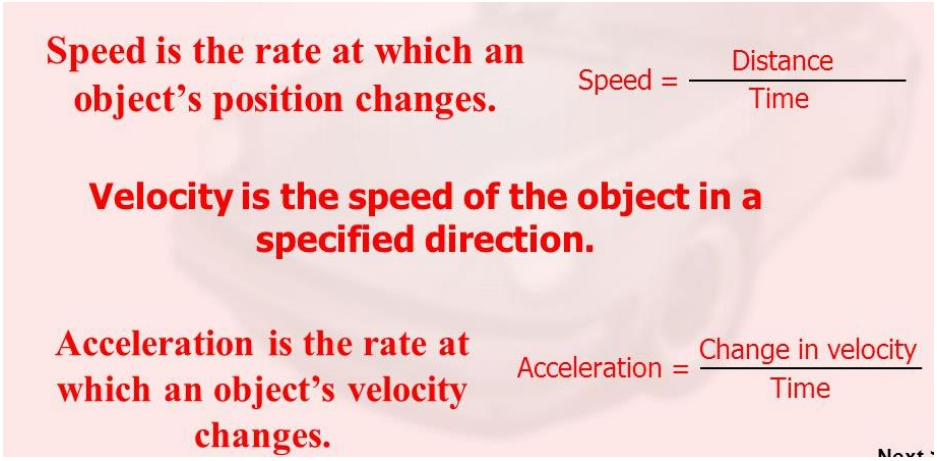
- Measure mass of your family members using balance and note down. Also measure the height with the help of measuring tape.
- Use time clock to note down time duration of your different activities that you do on daily basis.

Distance:

Total path covered by the body is called distance

Displacement:

The shortest distance between the two points is called displacement.



Formulae

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\text{Speed} = \frac{d}{t}$$

$$a = \frac{\Delta v}{\Delta t} = \frac{v_f - v_o}{t}$$

Assignment:

Q 1: Write down differences between distance and displacement.

Q 2: Write the units of speed velocity and acceleration.

Q3: Using above formulae solve these

1. An airplane accelerates down a runway at 3.20 m/s2 for 32.8 s until it finally lifts off the ground. Determine the distance traveled before takeoff.
2. A car starts from rest and accelerates uniformly over a time of 5.21 seconds for a distance of 110 m. Determine the acceleration of the car.

3. Upton Chuck is riding the Giant Drop at Great America. If Upton free falls for 2.60 seconds, what will be his final velocity and how far will he fall?
4. A race car accelerates uniformly from 18.5 m/s to 46.1 m/s in 2.47 seconds. Determine the acceleration of the car and the distance traveled.
5. A bike accelerates uniformly from rest to a speed of 7.10 m/s over a distance of 35.4 m. Determine the acceleration of the bike.

What is Work?

Work is said to be done when a body or object moves with the application of external force. We can define work as an activity involving a movement and force in the direction of the force. For example, a force of 30 newtons (N) pushing an object 3 meters in the same direction of the force will do 90 joules (J) of work.

Formula of Work

When we kick a football, we are exerting an external force called F, and due to this force (kick), the ball moves to a certain distance. This disposition of ball from position A to B is known as displacement (d). This work is said to be done and can be calculated as W = F × d

Work = Force × Displacement = **F × d**

Unit of Work IS JOULE (J)

If a force of 5 newtons is applied to an object and it moves 2 meters, the work will be 10 newton-meter. Newton meter is termed as Joules and it is the unit of Work.

A man has pulled a cart through a 35 m street applying a force of 300 N. Find work done by the man.

What is Energy?

Energy is the ability to perform work. Energy can neither be created nor destroyed. It can only be transformed from one kind to another. The unit of Energy is same as of Work i.e. Joules. Energy is found in many things and thus there are different types of energy.

All forms of energy are either kinetic or potential. The energy in motion is known as Kinetic Energy whereas Potential Energy is the energy stored in an object and is measured by the amount of work done.

Types of energy

Some other types of energy are given below:

- Mechanical energy (Kinetic energy, potential Energy)
- Mechanical wave energy
- Chemical energy
- Electric energy
- Magnetic energy
- Radiant energy
- Nuclear energy
- Ionization energy
- Elastic energy
- Gravitational energy
- Thermal energy
- Heat Energy

$P.E = mgh$, $K.E = \frac{1}{2} mv^2$

Example of potential Energy

A body of mass 50 kg is raised to a height of 3m. Calculate the Potential Energy.

(if $g=10ms^{-2}$)

Solution:

Unit of energy

The SI unit of energy is joules (J), which is named in honor of James Prescott Joule.

Related Concepts

What is Power?

Power is a physical concept that has several different meanings, depending on the context and the information that is available. We can define power is the rate of doing work. It is the amount of energy consumed per unit time.

Formula of power

As discussed, power is the rate of doing work. Therefore, it can be calculated by dividing work done by time. The formula for power is given below. P= W/t

Unit of Power

As power doesn't have any direction, it is a scalar quantity. The SI unit of power is Joules per Second (J/s), which is termed as Watt. Watt can be defined as the power taken to do one joule of work in one second. The unit Watt is dedicated in the honour of So James Watt, the developer of the steam engine.

Click on the link provided below to learn the SI unit of power in detail.

1. Calculate the power of a pump which can lift 200kg of water through a height of 6m in 10 seconds.
2. A stone of 500 g is thrown up with a velocity of 15ms-1. Calculate its K.E when it hits the ground.
3. What do you know about the term Work? Write its S.I unit.
4. What do you know about the term power? Write its formula.
5. Which of the following have same units work, power and energy?

7. Chemistry

Activity 1:

Draw the model that shows the production of cathode rays and label the diagram by reading from topic Structure of Atom.

Activity 2:

Try to perform the activity after reading topic Structure of Molecules. Make the atomic structure of sodium atom and chlorine atom and show how ionic bond is formed between them.

Activity 3:

Ammonia molecule has lone pair electron and forms coordinate covalent bond with boron trifluride molecule. Attempt the activity by consulting the topic Structure of Molecules.

Activity 4:

Why HCl has dipole-dipole forces of attraction? Solve it after reading the topic Structure of Molecules.

Activity 5:

Why shielding effect can make ion formation easy? Explain it with the reference to Periodic table and periodicity of properties.

Activity 6:

Differentiate shell and subshell with examples of each. Take help from the topic Structure of Atom.

Activity 7: Write the electronic configuration of Al^{3+}. How many electrons are present in its outermost shell? Draw structure of Aluminium atom and ion after reading the topic structure of atom.

Activity 8:

Perform an experiment which shows the floating of ice on water. Try to solve the activity after consulting the topic Structure of Molecules.

Activity 9:

Adjust how many electrons in K, L and M shells of the atom having atomic number 17? Solve the activity after reading then topic Structure of Atom.

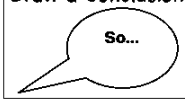
Activity 10:

Find out five metals and five nonmetals from periodic table. You can take help from the topic Periodic Table.

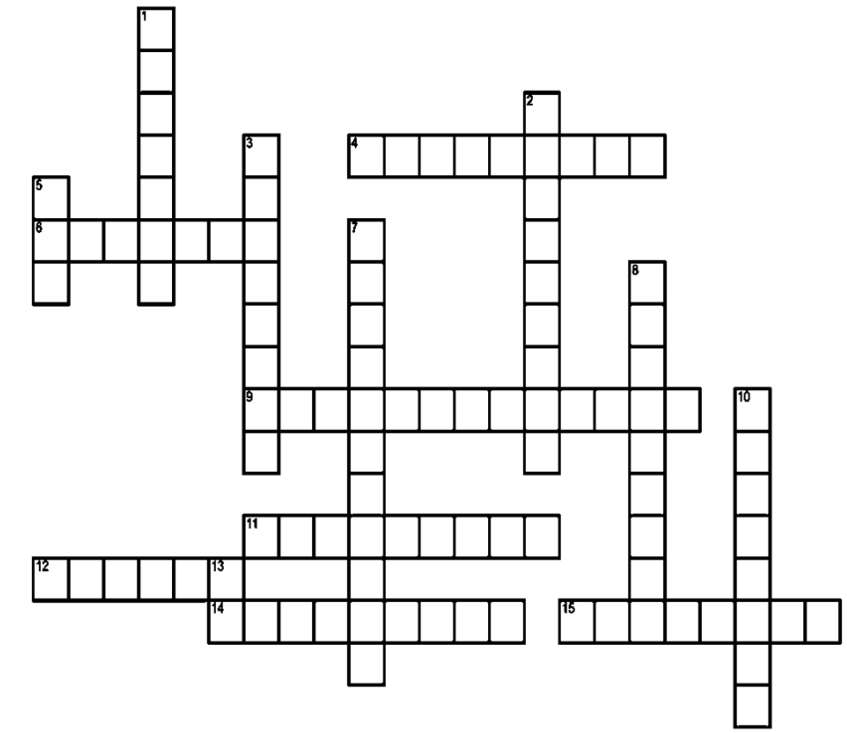
8. Biology

Activity 1: The Scientific Method

Use the table below to conduct several biological investigations:

Ask a Question 	
Make a Prediction 	
Make a Plan and Follow it 	
Observe 	Draw what you observed.
Record the Results 	
Draw a Conclusion 	

Activity 2: Cell Organelles



Across

4 A ORGANELLE THATS DESTROYS OLD CELLS OR OLD ORGANELLES

6 A ORGANELLE THAT REGULATES THE ACTIONS IN THE CELL

9 A ORGANELLE THAT CONVERTS FOOD INTO ENERGY

11 THE ORGANELLE THAT MAKES DIPLOIP OR MITOSIS

12 A ORGANELLE THAT STORES WATER

14 AN ORGANELLE THAT MAKES PROTEIN

15 LIKE A FENCE IT PROTECTS AND LETS THINGS IN

Down

1 A ORGANELLE THAT MOVES MATERIALS I AND OUT THE CELL

2 A PANCAKE LIKE ORGANELLE THAT STORES MATERIALS AND PROTEINS

3 AN ORGANELLE THA DESTROYS OLD CELLS AND OLD ORGANELLE

5 THE CODE FOR CELL

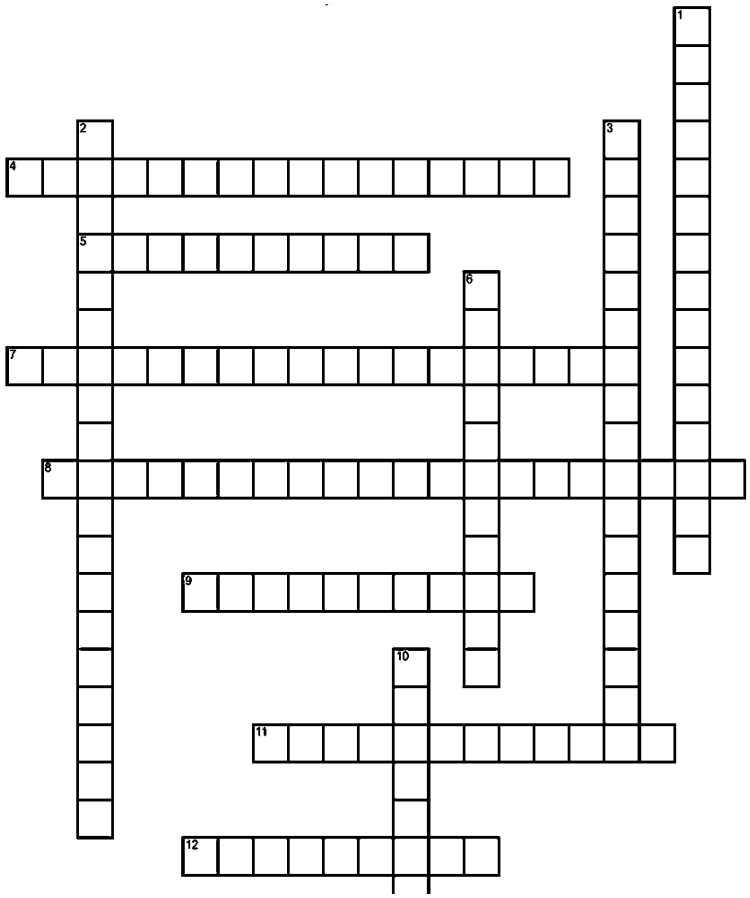
7 AN ORGANELLE THA CONVERTS LIGHT INTO SUGAR

8 A JELL LIKE ORGANELLE THAT HOLDS OTHER ORANELLES

10 A ORGANELLEN THA PROTECTS AND FORMS THE CELL

13 THE ORGANELLE THAT MOVES MATERALS

Activity 3: Cell Membrane



Across

4 SAME CONCENTRATION INSIDE AND OUTSIDE THE CELL

5 TRANSPORT PROTEIN THROUGH WHICH A CHARGED ATOM CAN PASS

7 CAUSES A CELL TO SHRINK DUE TO OSMOSIS

8 PASSIVE MOVEMENT ACROSS A MEMBRANE THROUGH TRANSPORT PROTEINS

9 MOVEMENT OF A SUBSTANCE OUT OF A CELL, USING A VESICLE

11 STRUCTURE THAT DETERMINES WHAT ENTERS OR LEAVES A CELL

12 MOVEMENT OF A SUBSTANCE FROM HIGH TO LOW CONCENTRATION

Down

1 MOVES A SUBS AGAINST THE CONCENTRATIO GRADIENT

2 PROTEIN THAT U ATP TO MOVE T IONS ACROSS T CELL MEMBRA OPPOSITE DIRECTIONS

3 CAUSES A CELL SWELL DUE TO OSMOSIS

6 CONCENTRATIO A SUBSTANCE I EQUAL THROUG SPACE

10 DIFFUSION OF W THROUGH A CE MEMBRANE

Make a Suggestion

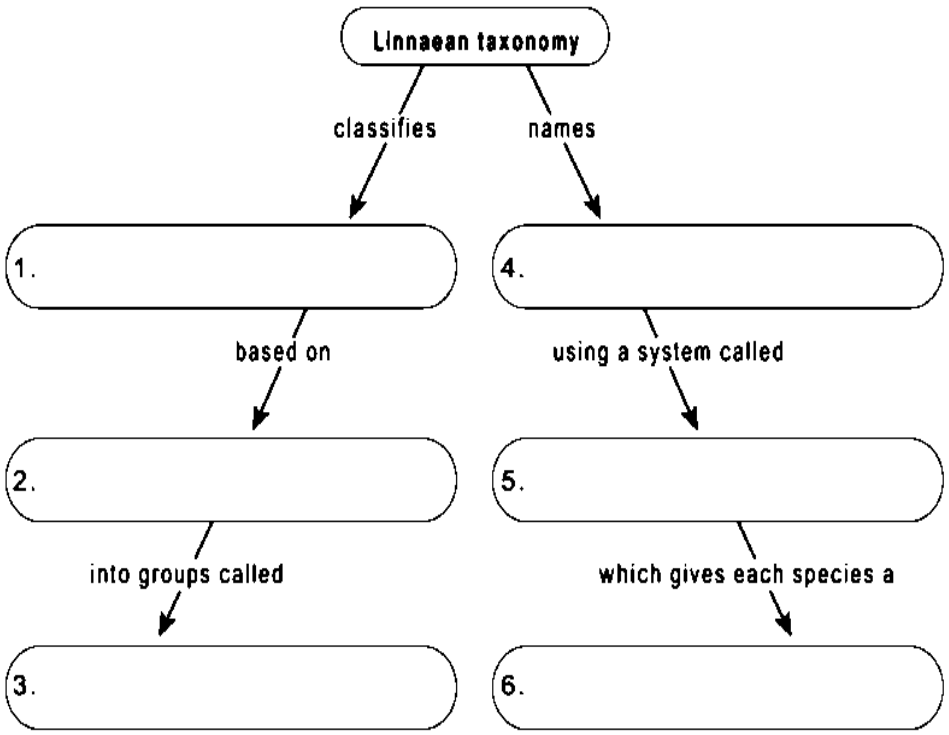
Activity 4: Binomial Nomenclature

KEY CONCEPT

Organisms can be classified based on physical similarities.

VOCABULARY	
taxonomy	binomial nomenclature
taxon	genus

MAIN IDEA: Linnaeus developed the scientific naming system still used today.
Fill in the concept map with details about Linnaean taxonomy.



MAIN IDEA: Linnaeus' classification system has seven levels.

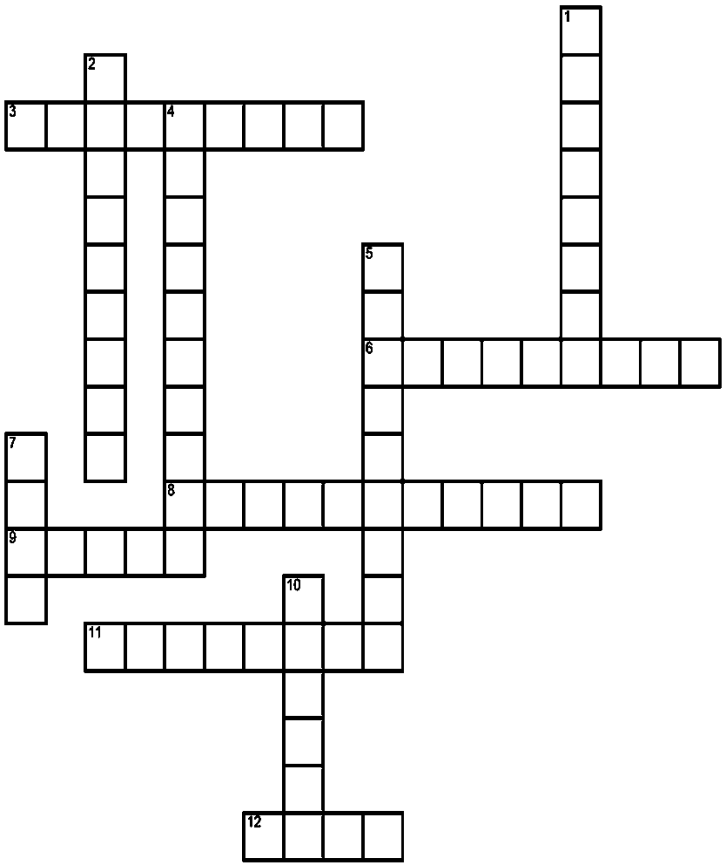
7. How are the seven levels of Linnaeus' classification system organized?

_____

8. Describe the trend in the levels, or taxa, as you move down from kingdom to species.

_____

Activity 5: Levels of biological organisation



Across

lives, the global ecosystem

6 A membrane bound structure with a specialized function within a eukaryotic cell

8 A group of organs that work together in performing vital body functions

9 A structure consisting of 2 or more tissues that coordinate to perform specific functions

11 An individual living thing, such as a bacterium, fungus, protist, plant, or animal

12 The basic unit of live, contained in a plasma membrane

Down

atoms held together by covalent bonds

2 All the organisms inhabiting and potentially interacting in a particular area

4 A group of interacting individuals belonging to one species and living in the same geographic acrea

5 All the organisms along with the nonliving factors in a given area

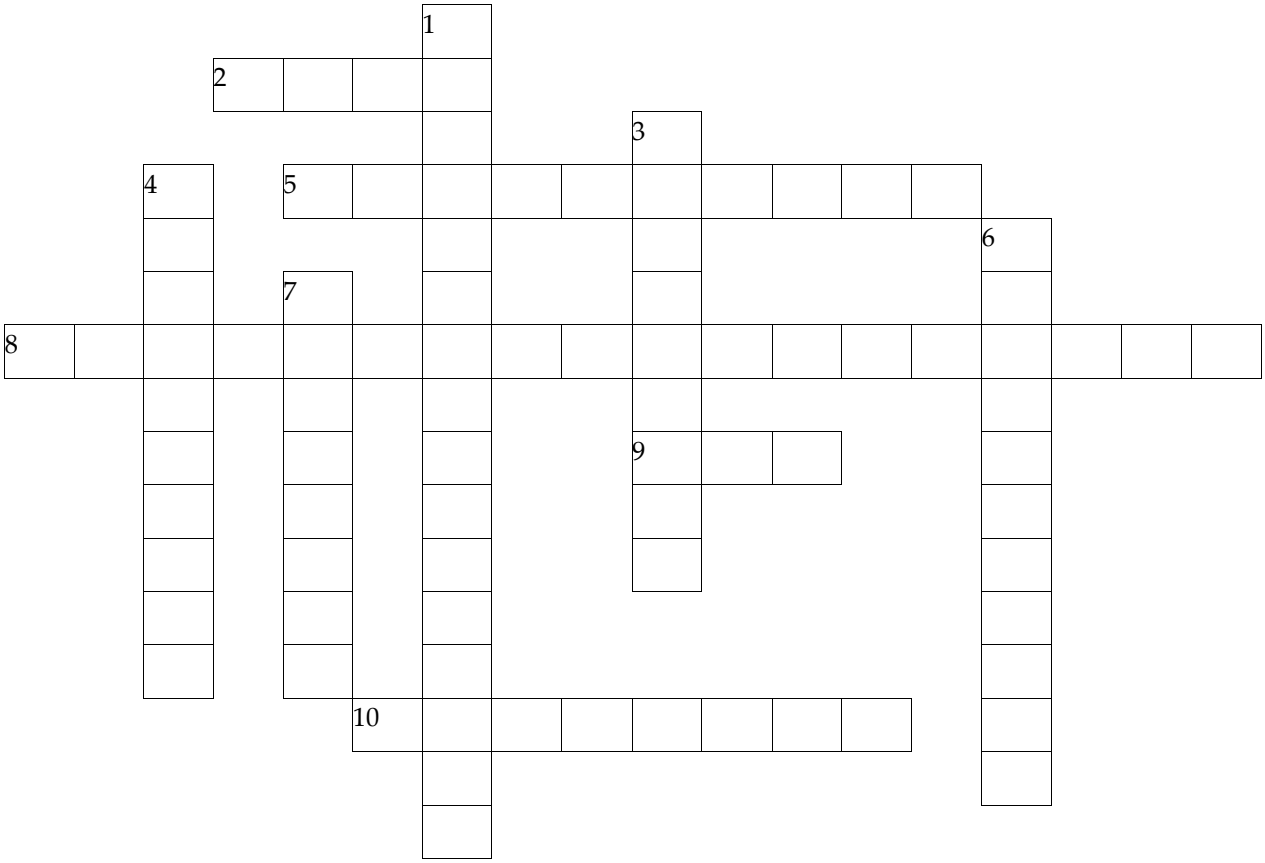
7 The smallest unit of matter that retains the properties of an element

10 A group of similar cells that performs a specific function in a multicellular organism

9. Computer

Assignment 1: Storage Devices

Read the basic concept of computer storage devices from any available resource and complete the below mentioned task.



Across

2. _____ is known as collection of bytes.

5. _____ is the magnetic storage medium used for mass storage and casual backup of data.

8. _____ is the primary storage device.

9. Basic unit of memory is _____.

10. _____ is the essential secondary storage device in each computer.

Down

1. _____ storage is required to save the data permanently.

3. Main memory and CPU are connected via _____.

4. _____ is the working area of computer.

6. Most common optical storage device is _____.

7. The contents of the RAM are _____.

Assignment 2: Number System

Recall the basic concept of number system studied in junior classes. Now use your knowledge of binary and decimal number conversion to solve the task given below.

Scenario: A clock in your room is showing the below mentioned time. Calculate the value of time stored in 8-bit register of the clock. (Register is the smallest memory storage unit that stores the data in binary form.)

Hours	Minutes
12	48

Hours:

Minutes:

If the 8 Bit Register saves the below mentioned binary value, what decimal value will be displayed on the clock.

Hours:

1	1	1	0	0	1	0	1

Minutes:

1	0	0	0	1	1	1	1

Hours	Minutes

Assignment 3: Operating System

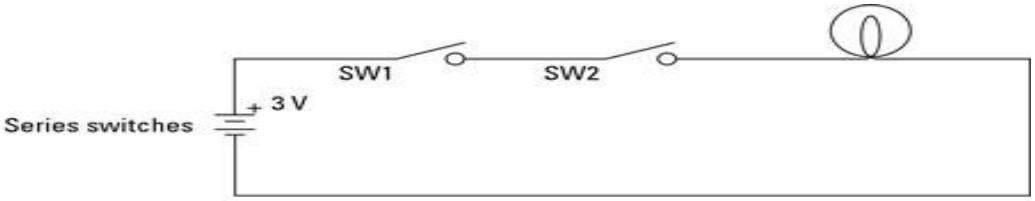
Solve the word puzzle for the terms given below and based on your knowledge state their function in one line.
Real Time Operating System Batch Files Disk Operating System Graphical User Interface, compiler, Assembler, Memory Management, Operating System, System Software, Application Software

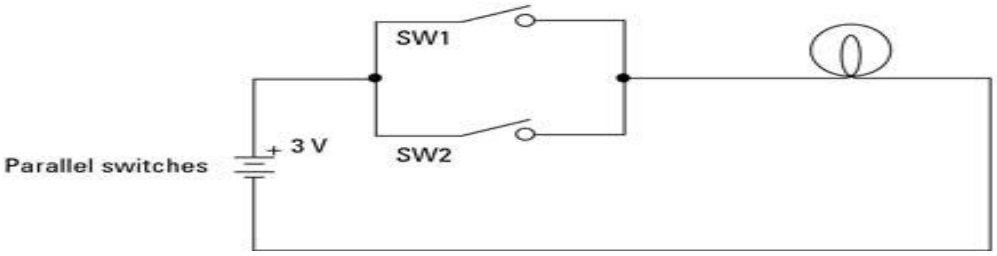
P I S V O V F U F S I M I A I F Y Y Z Z Y A C B
Z M A P P L I C A T I O N S O F T W A R E F X R
P X W I S K X X E M T L C V O C I R T R Q B J V
R T Q H H Z D D Z C F U Y N E A C M M J Q H N T
D D E N T M V E U H W R M T D I N J M E Z M W Z
O D K M Z M E T S Y S G N I T A R E P O K S I D
P X G A O S S M F D U W B A S O X G J B G M L D
E E D L Y P C E O K L I V D P E W Q K F M F D F
R K S S I D L C N R T K X N F K L F X Q C G D N
A O M F C M D D O L Y C M Z W Z F I S E O J R J
T G G U W L S E V O K M D S U S E I F X N Y G O
I R B D Y G I X B H K D A J I J C Z V H L D G F
N E O N H V T Y I X B Q F N K S Q T N I C V B G
G L R A I S D A R G E W P M A J V K N B P T D E
S I W N S O D W S D E L X S D G Z Y D Z A H A D
Y P N T V S F C M P I D B U M L E W J P B F I B
S M S R G G E M K I O L R I E F V M C G M R V M
T O O O C G W M O Y Q M P K H Z Y X E V D B P H
E C L M D Z H O B J F M K P Y S H L H N Y Q H D
M D N Z G R J J C L E S I S L J E A Z Y T U W W
E C A F R E T N I R E S U L A C I H P A R G B Q
R E A L T I M E O P E R A T I N G S Y S T E M V
R U Y B S T F K W T F F E R O T A J M E Z F Z U
I O A Y J C Z J T K E R A W T F O S M E T S Y S

Operating System	
System Software	
Application Software	
Real Time Operating System	
Disk Operating System	
Batch Files	
Compiler	
Assembler	

Assignment 4: Boolean Algebra

Based on your observation on the working of the circuits given below, answer the questions and trace the values in the truth table.





SW1	SW2	Output (Bulb) Serial Switches
ON	ON	
ON	OFF	
OFF	ON	
OFF	OFF	

SW1	SW2	Output (Bulb) Parallel Switches
ON	ON	
ON	OFF	
OFF	ON	
OFF	OFF	

Based on your observation answer the below mentioned questions in reference to the working of serial and parallel circuit.

1. What is the difference between arrangements of the bulbs in serial and parallel circuit?
2. Name advantages and disadvantages of using Parallel switches.

General quesitons

1. Why do computers have fans in them? And how does the fan work?
2. What is software and what is the difference between an operating system and an application?
3. What are pixels and how are they used to make pictures and videos on a computer's monitor?
4. What is cyber-bullying? Why do you think people post humiliating/cruel/nasty/false information about other people on public websites like Youtube and social media such as Facebook? How does cyber-bullying affect the target/victim?
5. Write an essay that describes 3 ways in which computers have made people's lives better – and 3 ways in which people's lives have been made worse by computers.
6. Are computer games good or bad? Explain your answer with at least 3 arguments for and 3 arguments against.
7. Why are the letters on the keyboard laid out in such a strange pattern? And why is the space bar so large? Are keyboards the same in all countries? China? Germany?
8. How can you know if something you see or read on a website is true or not?
9. Would you feel safe traveling in a car that was being driven by a computer and not a person? Why/why not?
10. Describe what happens to all the elements that make up a computer when a computer is 'thrown away'.
11. What do you think will be the next really big, new thing with technology? Time travel? 3-D printing of food? A computer that asks you questions when you are sick, measures your blood pressure and

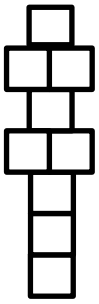
heart rate, tests your blood… and then 3-D prints a pill to make you feel better? Robots to do your homework.

12. Roald Dahl wrote a short story about a computer that wrote books. Do you think computers can write books/stories or create art? Why/why not?
13. If you traveled back in time to when you grandparents were at school, and you tried to explain to someone what a computer is, what would you say – and what questions do you think they would ask you about computers?

10. 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.

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. 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.

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.

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.

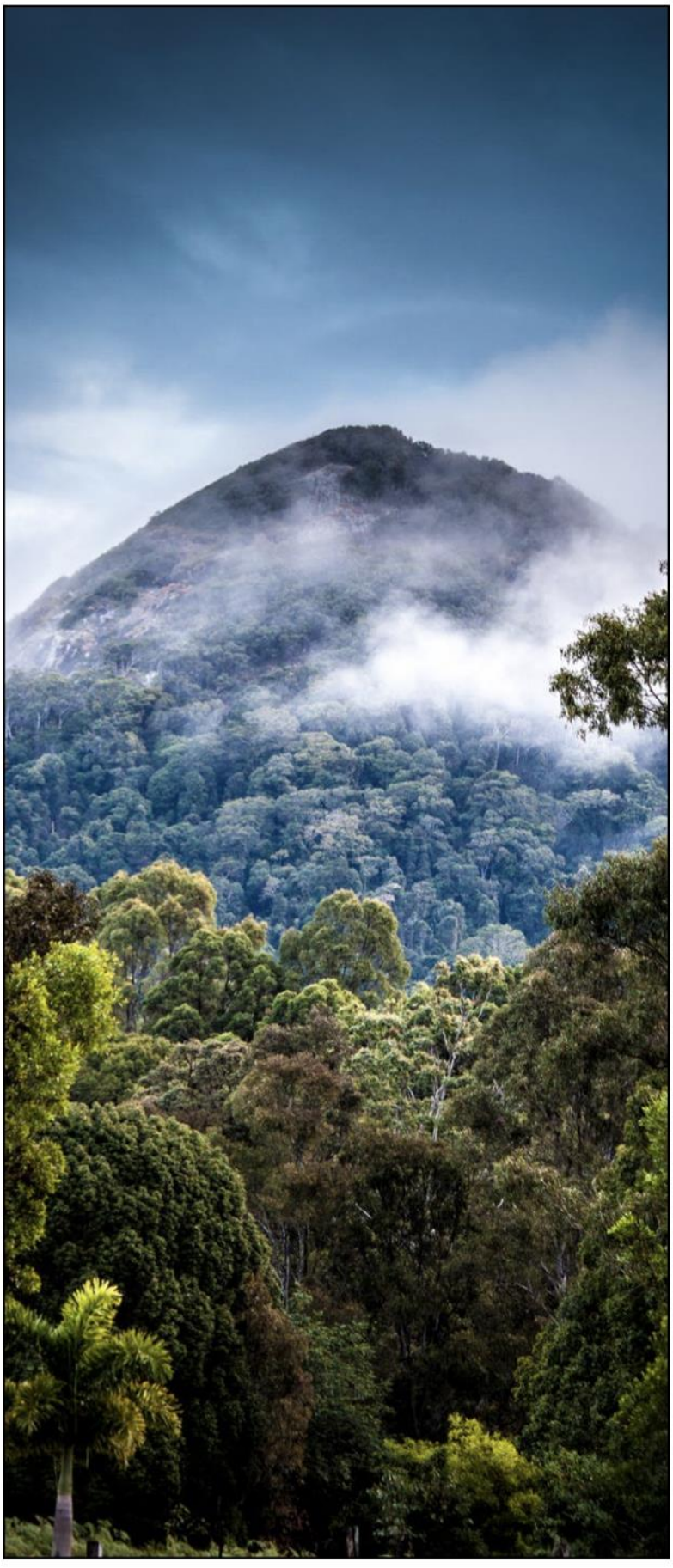
7. Critical thinking: Describe how might you check this article to be sure it is accurate.

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.

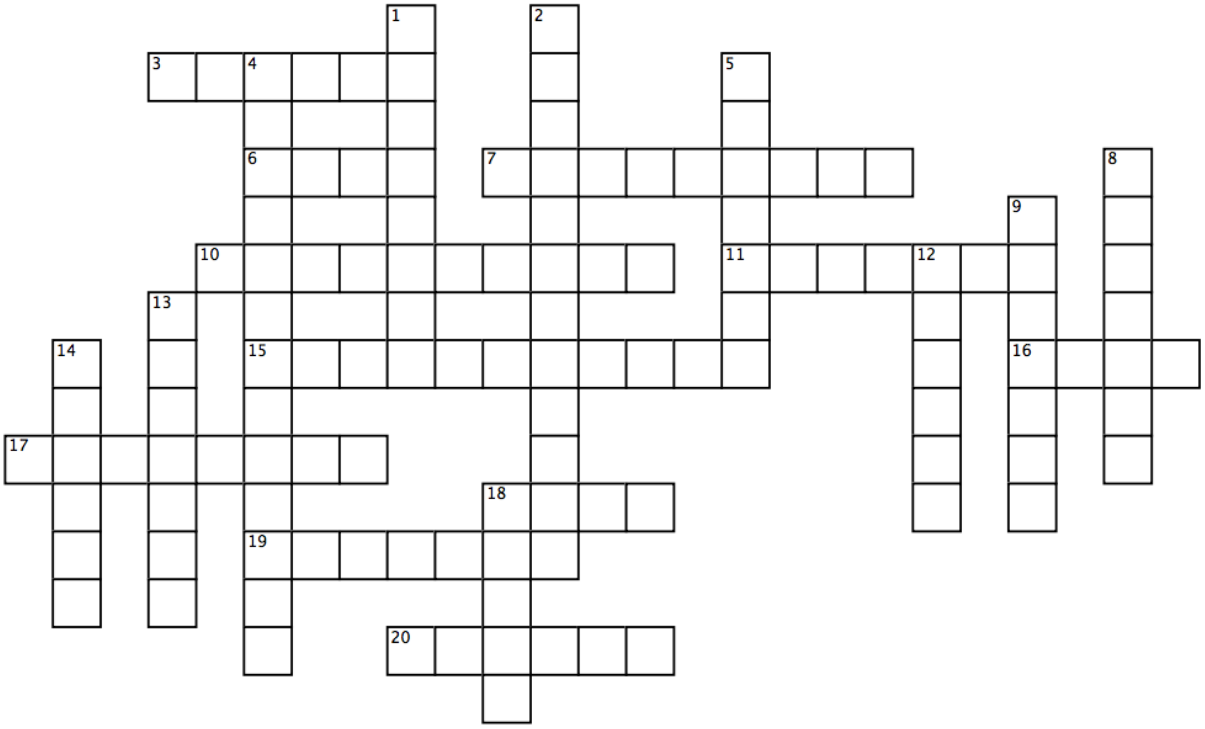
What can I do?

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.



Deforestation 1

Answer the crossword using information from the article.



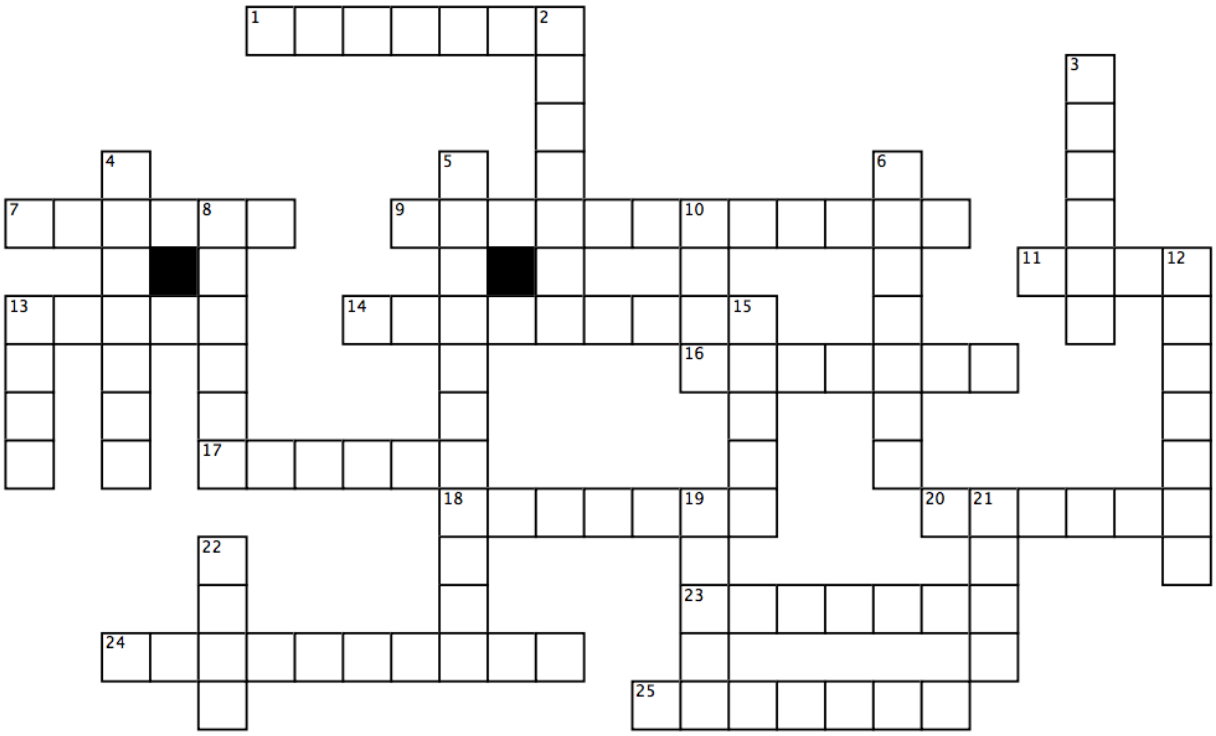
Across

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.

Deforestation 2



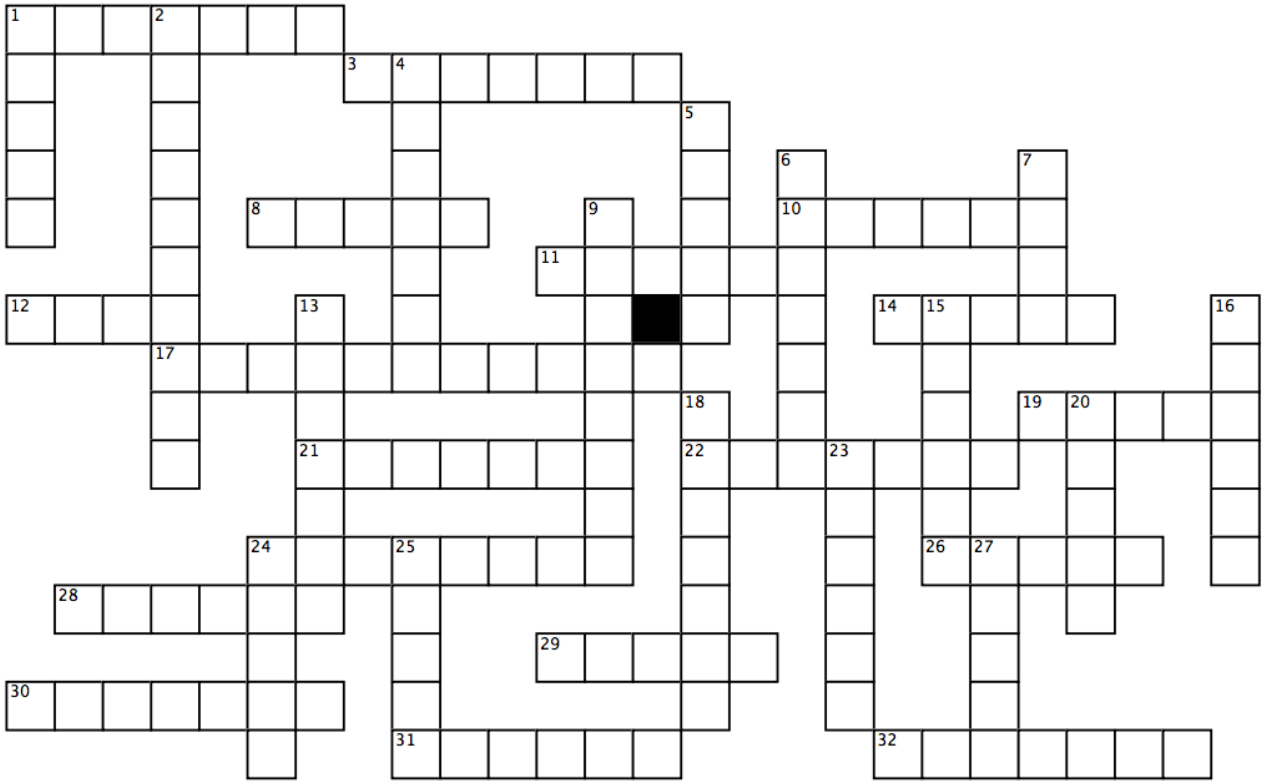
Across

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.

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 _____.