

Sadiq Public School



Distance Learning for C3

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.

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

1. English Language
2. Urdu language
3. Mathematics
4. Islamiat
5. Pakistan Studies
6. Physics
7. Chemistry
8. Biology
9. Business Studies
10. Accounting
11. Economics
12. Computer
13. Critical Thinking
14. Sports
15. Community Service

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

Task 1:

Directed Writing

- 1- You are walking along a busy road and you see a car drive very close to someone on a bicycle. The car almost knocks the cyclist off the bicycle. You are very concerned about the way that car driver behaves towards the cyclist. You decide to write a letter to the Editor of the local newspaper to complain about the problem.

Write your **letter**. You must include the following:

- when **and** where the incident took place
- what exactly happened, including how the car driver was to blame
- what you think should happen to improve the situation for cyclists on the roads.

Cover all three points above **in detail**. You should make your letter polite and informative. Start your letter 'Dear Editor', and remember to supply an appropriate ending.

- 2- Many new students join your school every year. Your Principal wants to make starting at the school as easy as possible for these new students and he asks you to write a report for him about how to do this.

Write your **report**. You must include the following:

- some of the difficulties that you and other students had when you joined the school
- suggestions about what the school can do to help new students
- how the students **and** the school will benefit.

Cover all three points above **in detail**. You should make your report polite and informative. Start your report 'To the Principal'. Remember to give a name and a date.

- 3- Your school has built a new sports centre. A former pupil of your school, now a famous sports star, has been invited to open the new centre. Your Principal has asked you to make a speech at the official opening to welcome the sports star and introduce the centre to teachers and pupils.

Write your **speech**. You must include the following:

- an introduction to the sports star **and** his or her achievements
- a description of the new centre and its facilities
- the benefits to the school that the centre will bring **and** an expression of thanks to the sports star.

Cover all three points above **in detail**. You should make sure your speech is polite and informative.

Start your speech 'Teachers and fellow students,...'.

- 4- Recently, a foreign student spent one month as a member of your class in order to learn about your country. You decide to write an article for your school magazine about the visit.

Write your **magazine article**. You must include the following:

- the student's name **and** other details about the student
- what the student did during the visit both in and out of school
- why you feel the visit was of benefit to the student and to your school.

Cover all three points above **in detail**. You should make sure your article is lively and informative. Start your article with a suitable headline.

Task 2

Descriptive Writing

1. Describe a place where you go to relax and enjoy some free time. (Remember you can describe the place itself, what happens there and other people you see there.)
2. Describe **two** places near where you live which are beautiful in different ways. (Remember you can describe the places, the atmosphere and what makes the places so special.)
3. Describe the best meal you have ever eaten. (Remember you must describe the place, the atmosphere and the people you were with as well as the food itself.) Describe your favourite holiday location. (Remember you can describe the surroundings and the local people, as well as the place.)

Task 3

Argumentative Writing

1. Would you prefer to live in the centre of a busy city or in a quiet neighbourhood? Give reasons and examples to support your view.
2. What are the arguments for and against space travel to other planets? Give reasons and examples to support your view.
3. Some people say that we learn more outside the classroom than inside it. Do you agree? Give reasons and examples to support your point of view.

Task 4

Narrative Writing

1. Write a story which includes the sentence: 'When she tried to open the door, she was surprised that the key didn't fit.'
2. Write a story in which a science laboratory plays an important part.
3. Write a story which includes the sentence: 'There were two very different opportunities and he knew he had to choose the right one.'
4. Write a story in which a broken light plays an important part.

Task 5

Paper 2 (Reading)

Practice the following past papers

1. 2019 May –June, Oct- Nov
2. 2018 May –June, Oct- Nov
3. 2017 May –June, Oct- Nov

Task 6

Read any available book and write its review.

Task 7: Creative writing

1. Fables have been used for years to entertain and teach. Write a fictional story with a moral (message) and the characters will be a mongoose, an eagle, and a squirrel. It will help to think of a message or moral before you start writing. But be adventurous – instead of a simple message like, 'be nice to everyone' or 'it's important to

be helpful', how about the message being something about cyber-bullying or thinking critically and therefore detecting fake or distorted/biased news?

2. Some people have been complaining that school has been closed for too long – but one day you will be able to tell stories to people about the year when you had the longest summer vacation EVER!! What have been the highlights – what will you remember about this time 20 years from now? Write a letter to yourself, seal it in an envelope and put it somewhere where you can find it 20 years from now.
3. Pakistan is much more accessible to tourists from other countries now. 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 special 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 summit of Tirich Mir...

2. Urdu Language

- 1- "پاکستان میں ذرائع آمدورفت کی سہولیات"۔ اس موضوع پر 150 الفاظ پر مشتمل مضمون تحریر کریں۔
- 2- اپنے سکول میں منعقدہ سالانہ کھیلوں کے مقابلوں کی رپورٹ تحریر کریں جو 200 الفاظ پر مشتمل ہو۔
- 3- سکول کی چھٹیوں کو موثر بنانے کے لیے ماں اور بیٹی کے درمیان 200 الفاظ پر مشتمل مکالمہ تحریر کریں۔
- 4- آپ کے چچا جان کسی دوسرے ملک میں رہائش پذیر ہیں۔ ان کو خط لکھ کر پاکستان میں کرونا وائرس کی موجودہ صورت حال کے بارے میں آگاہ کریں اور ان سے ان کے ملک کی صورت حال کے بارے میں دریافت کریں۔
- 5- مختلف رسالوں میں شائع ہونے والے آرٹیکلز میں سے کوئی سے تین پسندیدہ آرٹیکلز کا خلاصہ اپنے الفاظ میں تحریر کریں جو 100 الفاظ پر مشتمل ہو۔
- 6- "کارٹون دیکھنا وقت کا ضیاع ہے"۔ اس موضوع پر دو بچوں کے درمیان 200 الفاظ پر مشتمل مکالمہ تحریر کریں۔
- 7- کرونا وائرس، اس کی علامات، احتیاط اور آئندہ صورت حال کے بارے میں رپورٹ تحریر کریں جو 200 الفاظ پر مشتمل ہو۔
- 8- کسی انگریزی اخبار، رسالے یا کتاب کے چھ پیرا گراف کا اردو میں ترجمہ کریں۔
- 9- "ایمانداری بہترین حکمت عملی ہے" اس موضوع پر ایک مضمون تحریر کریں جو 150 الفاظ پر مشتمل ہو۔
- 10- "مجھے اپنے وطن عزیز سے محبت ہے"۔ اس موضوع پر 200 الفاظ پر مشتمل تقریر تحریر کریں۔

3. Mathematics

Q1. Mr. Lin buys an article and sells it to Mr. Chen at a gain of 25% on cost. Mr. Chen sells the article to Mr. Ang at a gain of 20% on the cost. How much money did Mr. Lin pay for the article, if Mr. Ang pays \$360 for it?

Q2. Mr. Chen deposits a certain sum of money in a bank. If the interest rate of the bank decreases from $3\frac{3}{4}\%$ per annum to $3\frac{1}{2}\%$ per annum, Mr. Chen's interest will decrease by \$50 in a year. Find the sum of money he deposits.

Q3. Roger put S\$8500 in a 1-year US\$ fixed deposit account with a bank at 4% simple interest per annum when the exchange rate was at US\$1 = S\$1.70

(a) How much did he invest in US dollars?

(b) At the end of one year, he withdrew all his money when the exchange rate was US\$1 = S\$1.65. Calculate the number of Singapore dollars he made from his investment.

Q4. A fish merchant bought a container of fish for \$3600. He sold $\frac{1}{2}$ of the fish at a profit of 20% and $\frac{1}{6}$ of it at a loss of 10%. at what price must he sell the remaining fish in order to make a profit of 15% on the whole?

Q5 Simplify the following

a) $\frac{5(xy)^2}{15xy^2}$

b) $\frac{8a^2bc^3}{48a^3b^2c}$

c) $\frac{(a-c)^2}{a^2-ac}$

d) $\frac{12a^3b}{3ab^2} \div \frac{4abc}{3ad} \times \frac{14d^2}{7bc}$

Q6 Simplify the following.

$$\frac{3}{4x-5} - \frac{7x}{16x^2-25}$$

Q7. Solve the following equation.

$$\frac{5}{6x} - \frac{6}{7x} - \frac{9}{14x} = 4$$

Q8. A mother is 21 years older than her new born daughter. How old will the daughter be when her age is $\frac{1}{4}$ that of her mother's.

Q9. A man cycled for some time at $16\frac{km}{h}$ and returned at $15\frac{km}{h}$. The total time taken was $7\frac{3}{4}h$. Find the total distance he travelled.

Q9. Make h the subject of formula in $\frac{p}{q} = \frac{1}{3n} \sqrt{\frac{h+2k}{3h+k}}$

Q10. Given that $a = \sqrt{\frac{3b+c}{b-c}}$

Find c when $b = 9$ and $a = 4$.

Q11 The mean of 6 numbers is 41. Three of the numbers are 32, 31 and 42. The remaining three numbers each equals to a .

- What is the sum of six numbers?
- Find the value of a .

Q12. The mean of three numbers x, y and z is 6 and the mean of five numbers x, y, z, a and b is 8. find the mean of a and b .

Q13. The table below shows the frequency distribution of the number of spelling mistakes in a composition made by each pupil in a class of 36.

No. of Mistakes (X)	No. of Pupils (f)
0	3
1	7
2	10
3	6
4	5
5	3
6	1
7	1

- The mean
- The median
- The mode.

Q.14 Some children were asked the number of books they read in a week. Their feedback is shown in the table below.

No. of books read	0	1	2	3
No. of children	5	6	3	x

- Write down the greatest possible value of x given that the median is 1.
- Write down the greatest possible value of x given that the mode is 1.
- Calculate the value of x given that the mean is 1.

Q15. Solve the following simultaneous equations.

(a) $7x - 3y = 8$

(b) $5x - 4y = 17$

$11x - 3y = 21$

$2x - 3y = 11$

Q16. Use substitution method to solve the following simultaneous equations.

$7x - 2y = 8$

$4x + 3y = 5$

Q17. A fraction equals $\frac{1}{2}$ if 1 is subtracted from both the numerator and denominator. It is equal to $\frac{2}{3}$ if 1 is added to both the numerator and denominator. Find the fraction.

Q18. The diagonal of a rhombus are of length 16 cm and 12cm. Find the length of its sides.

Q19. The sides of a rectangular swimming pool are 50m and 30m. what is the length between opposite corners.

Q20. Some children were asked the number of books they read in a week. Their feedback is shown in the table below.

No. of books read	0	1	2	3
No. of children	5	6	3	x

(a) Write down the greatest possible value of x given that the median is 1.

(b) Write down the greatest possible value of x given that the mode is 1.

(c) Calculate the value of x given that the mean is 1.

Q21. A cylindrical tin has an internal diameter of 18cm. It contains water to a height of 13.2 cm. When a heavy spherical ball of diameter 9.3cm is immersed in it, what is the new height of water level.

Q22. Given that the volume of the pyramid with a square base of side 5m each is $75m^3$. Find its height.

Q23. A conical funnel of diameter 23.2cm and depth 42cm is full of water. If the water is poured into a cylindrical tin of diameter 16.2cm, find the least possible height of the tin if it must contain all the liquid.

Q24. A cone has a circular base of radius 14cm and a total surface area of $1012cm^2$. find the slant height of the cone.

Q25. Given that $a + b = 10$ and $a^2 - b^2 = 40$ find the value of $a - b$.

Q26. Using algebraic rules, and without using calculator, evaluate

$$\frac{18 \times 164}{164^2 - 161 \times 167}$$

Q27. Factorize $3bc - bd + 6ac - 2ad$

Q28. Factorize completely

(a) $3x^2 - 147$

(b) $4x^2 + 32x + 64$

Q29. Evaluate by factorization.

$659^2 - 341^2$

Q30 Factorize each of the following expressions:

- (a) $a^2 - 9a + 14$
 (b) $12x^2 + 10x + 2$

Q31. Solve the following equation

$$5x^2 - 15x = 0$$

Q32.If $x = 5$ is a solution of the equation $x^2 - hx + 10 = 0$, find the value of h . Hence find the other solution of the equation.

Q33. The length of a rectangle is 5cm longer than its width and its area is 66 cm^2 . Find the perimeter of the rectangle.

Q34. A piece of wire 44cm long is cut into two parts and each part is bent to form a square. If the total area of the two squares is 65cm^2 , find the perimeter of the two squares.

Q35. Round off the following.

- (a) 456 g to the nearest 10g. = -----
 (b) 722 g to the nearest 100g. = -----
 (c) 3.27 cm to the nearest cm. = -----
 (d) 123.452 cm to 1 decimal place. = -----
 (e) 18.2 to the nearest whole number. = -----
 (f) 31.256m to the nearest 10m. = -----
 (g) 12.35cm to the nearest 0.1cm= -----
 (h) 4325 pupils to the nearest 100 pupils. = -----
 (i) 845km to the nearest 10km. = -----
 (j) 22.58mm to the nearest $\frac{1}{10}$ mm. = -----

Q36 Express 28.136275 correct to two significant figures. How many decimal places are there in the result.

Q37 Estimate the value of $\frac{7.94}{2.01}$ correct to 1 significant figure. Use your result to estimate the value of $\frac{79400}{0.000201}$.

Q38. Estimate the value of $\frac{21.83 \times 498}{220.1}$, giving your answer correct to 1 significant figure.

Q39. Express 117.9648 correct to two decimal places. How many significant figures are there in the answer?

Q40. Consider the pattern.

$$1 = \frac{1 \times (1+1)}{2}$$

$$1 + 2 = 3 = \frac{2 \times (2+1)}{2}$$

$$1 + 2 + 3 = 6 = \frac{3 \times (3+1)}{2}$$

$$1 + 2 + 3 + 4 = 10 = \frac{4 \times (4+1)}{2}$$

$$1 + 2 + 3 + 4 + \dots + k = 45 = \frac{k \times (k+1)}{2}$$

- (a) Write down the 7th line in the pattern.
 (b) Find the value of k .

- Q41. A paper box without a lid is 25 cm long, 16 cm wide and 5 cm deep. How many square centimeters of paper have been used to make the box?
- Q42. The length of a rectangle is 8 cm more than its width. If its perimeter is 56 cm , find its length and its area.
- Q43 A lorry travels at $50\frac{\text{km}}{\text{h}}$. Given that the diameter of its wheel is 88 cm . Find how many revolutions per minute the wheel is turning. Give your answer to the nearest whole number.
- Q44. A rectangular tank measures 4 m long, 2 m wide and 4.8 m high. Initially it is half filled with water. Find the depth of water in tank after 4000 litres more of water is added to it.
- Q45. In a toy factory, 200 wooden solid cylinders 7 cm long and 35 mm in diameter have to be painted. What is the total surface area, in cm^2 that needs to be painted.

4. Islamiat

1. How are you helping the needy people in this pandemic? Share your experiences.
2. What kind of moral teachings do you see in Surah Al Hujraat?
3. Write the main theme of Quranic passages from 7 to 12.
4. Write the main teachings of Hadith from 9 to 15.
5. What are the conditions for prayer?
6. Write the complete method of prayer.
7. Write down the names of 10 blessed companions and services of first 4 caliphs.
8. Write down the rights of parents through Qur'an and Hadith.
9. Prove through Qur'an and Hadith the finality of the Holy Prophet Muhammad (SAW).
10. Make a list of 20 things in your life for which you are grateful.

5. Pakistan Studies

PAKISTAN STUDIES - I

Assignment 1

Answer question 1.

The number of marks is given in brackets [] at the end of each question or part of question.

SECTION: A

Source A: 'A new era has begun under General Ayub Khan and the armed forces have under taken to root out the administrative malaise and anti-social practices, to create a sense of confidence, Security and stability and eventually to bring the country back to normalcy. I hope and pray Allah may give them the wisdom and strength to achieve their objective.'

A comment made by Quaid-e-Azam's sister, Mohtarma Fatima Jinnah, in an interview with the Morning News, 1958.

Source B:



Question 1. Study the sources carefully and then answer the questions which follow.

- (a) According to Mohtarma Fatima Jinnah, what was going to happen in Pakistan? [3]
- (b) What does the source tell us about Ayub's interest in the field of agriculture? [5]
- (c) Why was Ayub Khan forced to resign in 1969? [7]
- (d) How successful were Ayub's social, economic, agricultural and political policies? [10]

Question 2

- (a) What was the Faraizi Movement? [4]
- (b) Why Aurangzeb became unpopular by the end of his reign? [7]
- (c) Were the invasions by the Persians and Afghans the main reason for the decline of the Mughal Empire? Explain your answer. [14]

Question 3

- (a) Describe the refugee problem? [4]
- (b) Why was it so difficult to agree on a new constitution in early 1950's? [7]
- (c) The canal water dispute was the most important problem facing the newly established government of Pakistan in 1947. Do you agree or disagree? Give reasons for your answer. [14]

Question 4

- (a) What were the outcomes of the provincial elections of 1937? [4]
- (b) Why was there so much opposition to the government of India Act 1935? [7]
- (c) The main reason why Congress Rule 1937-1939 was hated so much was because of the introduction of 'Bande Matram'. Do you agree? Explain your answer. [14]

Question 5

- (a) What was the Lucknow Pact of 1916? [4]
- (b) Why was Dr. Allama Iqbal asked to chair the Muslim League at Allahabad in 1930? [7]
- (c) How successful were the three Round Table Conferences of 1930-1932? Explain your answer. [14]

Assignment 2

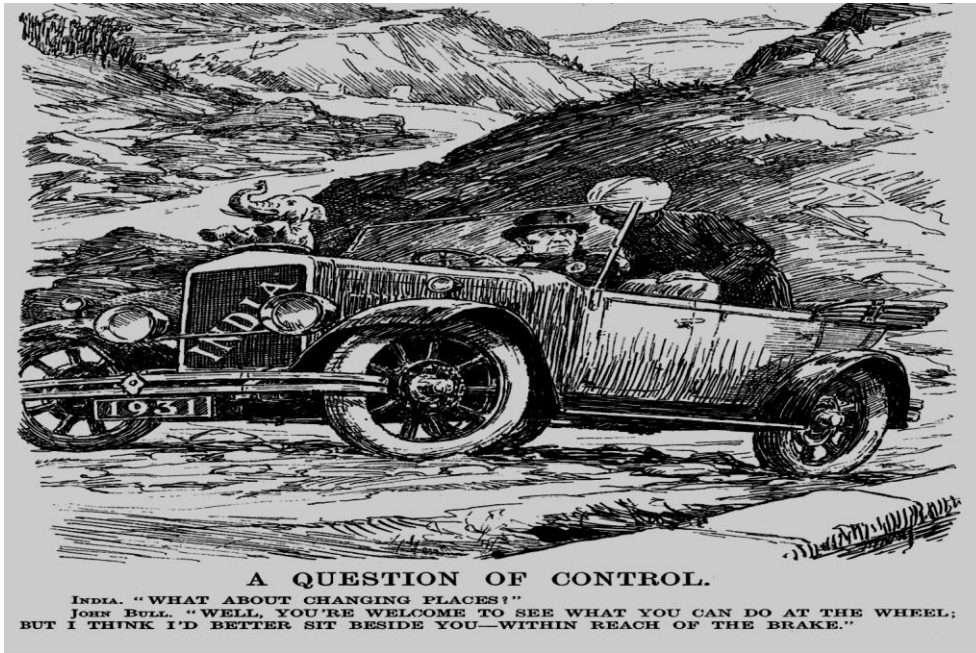
SOURCE A: The Simon Commission 1927

The offer of the hand of friendship from Congress is more valuable than any concession which the British Government is willing to make. This public meeting of the citizens of Bombay firmly declares that the commission which has been announced is unacceptable to the people of India as it denies the right of the people of India to participate on equal terms in framing the future constitution of the country. It contains no Indian representation. Indians throughout the country should have nothing to do with the commission at any stage or in any form. We are not satisfied with the status of just being petitioners to this commission.

From a speech made by Jinnah in Bombay in 1927, in reaction to the appointment of the Simon Commission

SOURCE B

The Round Table Conferences 1930–1932



Source: A British political magazine during the period of the Round Table Conferences. John Bull is a character used in political cartoons as a national symbol to represent Britain in general.

Section: A

Question 1

- (a) According to Source A, why was there opposition to the Simon Commission of 1927? [3]
- (b) What does Source B tell us about the negotiations during the Round Table Conferences between 1930 and 1932? [5]
- (c) Explain the importance of the Government of India Act of 1935 to the future of the subcontinent [7]
- (d) How successful were the three Round Table conferences of 1930-1932? Explain your answer. [10]

Section: B

Question 2

- (a) Who was Warren Hestings? [4]
- (b) Why Aurangzeb was held responsible for Mughal decline? [7]
- (c) How successful was the war of Independence of 1857? Explain your answer. [14]
- (d)

Question 3

- (a) What was the Nehru Report? [4]
- (b) Why did Jinnah produce 14 points in 1929? [7]
- (c) Were the Montague-Chelmsford Reforms of 1919 the main reason for outbreak of violence in Indian in the years 1919-1920? Give reasons for your answer. [14]

Question 4

- (a) What were the Delhi proposals? [4]
- (b) Why did Khilafat Movement fail by 1924? [7]
- (c) Was the main reason, why was Congress rule (1937-1939) hated so much because of Bande Matrim? Explain your answer? [14]

Question 5

- (a) What was the One Unit Scheme? [4]
- (b) Why did Pakistan join the UN in 1947? [7]
- (c) How successful has Pakistan been in solving the problems faced in the years 1947-1948? Explain your answer. [14]

Assignment 3

SOURCE A: Nawab Siraj-ud-Duala opposed the growing British power in Bengal in 1757. Robert Clive, commander of the British East India Company's troops that had just retaken Calcutta from the Nawab, began to re-establish control of Bengal. Clive was heavily outnumbered by the Nawab's forces, but persuaded Mir Jafar, the Nawab's commander, to switch sides and not fight when the two armies met. The Nawab opened the battle with heavy gunfire which went on until it started to rain heavily. Clive's troops covered their cannon and muskets to protect them from the rain, whilst the Nawab's troops did not. When the rain cleared, Clive attacked. The Nawab's troops retreated. 22 of Clive's soldiers were killed and 500 of the Nawab's soldiers were killed. From Seven Years' War: Battle of Plassey by Kennedy Hickman

SOURCE B: The British East India Company



A painting of a British official of the British East India Company riding in an Indian procession in 1825.

Section A

1. Study the sources carefully and then answer the questions which follow

- (a) According to Source A, what reasons are suggested for the British victory at the battle of Plassey in 1757? [3]
- (b) What does Source B tell us about the British East India Company in 1825? [5]

- (c) Why were the British able to take control of India by 1850? [7]
- (d) Was the work of the Christian missionaries the most important reason why the Indians opposed British attempts to westernise them between 1750 and 1850? Explain your answer. [10]

Section B:

Question 2.

- (a) Who was Tipu Sultan? [4]
- (b) Why was Urdu chosen as the national language in Pakistan in 1947? [7]
- (c) Was the attempt to achieve a better understanding with the British the most important contribution that Sir Syed Ahmad Khan made to the Muslim cause during the nineteenth century? Explain your answer. [14]

Question 3.

- (a) What was the All India Khilafat Conference? [4]
- (b) Why did Jinnah produce his 14 Points in 1929? [7]
- (c) How successful were the three Round Table Conferences of 1930-1932? Explain your answer. [14]

Question 4.

- (a) What was the Basic Democratic System of Ayub Khan? [4]
- (b) Why was Islamabad chosen as the new capital of Pakistan? [7]
- (c) Which of the following contributed the most to Pakistan's domestic policies between 1948 and 1958? [14]
- I. Khawaja Nazimuddin
 - II. Malik Ghulam Muhammad
 - III. Iskander Mirza.

Question 5.

- (a) What has been the importance of the Siachen Glacier to both India and Pakistan? [4]
- (b) Why was Pakistan faced with a refugee problem in 1947? [7]
- (c) How successful was Government of Pakistan in solving the problems of partition during 1947 and 1948? Explain your answer. [14]

Assignment 4

SOURCE A: If we are to exist as a nation and give shape to the dream of Pakistan, we will have to face the problems with determination and force. Our people are disorganised and disheartened by the difficulties we face. Their morale is low and we will have to work harder to pull them out of their despondency and galvanise them to action. All this throws a greater responsibility on government servants, to whom our people look for guidance.

(From the speech by Jinnah to government officials in October 1947)

Source B:



1. Study the sources carefully and then answer the questions which follow.

- (a) According to Source A, what problems faced Pakistan in 1947? [3]
- (b) What does Source B tell us about Muslim refugees in 1947? [5]
- (c) Why was the division of the armed and military assets a problem for Pakistan? [7]
- (d) 'The government of Pakistan was totally successful in solving the problems of partition during 1947 and 1948'. Do you agree? Explain your answer. [10]

Section B:

Question 2

- (a) Who were the Thuggee? [4]
- (b) Why was Robert Clive appointed as the first Governor of Bengal? [7]
- (c) Has the promotion of Urdu been more successful than that of any other regional language in Pakistan between 1947 and 1999? Explain your answer. [14]

Question 3

- (a) What was the Jihad Movement? [4]
- (b) Why did British develop railways in India during the 19th century? [7]
- (c) The spread of Maratha power was the main reason for the decline of the Mughal Empire. Do you agree or disagree? Explain your answer. [14]

Question 4

- (a) What was the Rowlatt Act? [4]
- (b) Why was Bengal partitioned in 1905? [7]
- (c) Was the need for their own political party the most important reason, why the Muslim League was established in 1906? Explain your answer. [14]

Question 5

- (a) What was the Nehru Report? [4]
- (b) Why was the 2nd Round Table Conference of 1931 unsuccessful? [7]

(c) Were the Montague-Chelmsford Reforms the main reasons for the outbreak of violence across India in 1919?

Explain your answer.

[14]

PAKISTAN STUDIES - II

Week 1: - Topic (Secondary, Tertiary Industries and Trade)

1. Explain the advantages and disadvantages of expanding sports good industries in Pakistan.
2. Explain how Government Organizations help and promote the development of small-scale industry.
3. What is an export processing zone?
4. What are the benefits of developing Export Processing Zones in Pakistan?
5. Explain why is Karachi a largest cotton textile manufacturing centre in Pakistan?
6. Explain the advantages and disadvantages of increasing steel production in Pakistan.
7. Why has the fertilizer industry grown in recent years?

Week 2: - Topic (Secondary, Tertiary Industries and Trade)

1. What are the benefits of increasing fertilizer production for people and economy in Pakistan?
2. Tourism is an important and growing activity in Pakistan contributing 7.4 % to GDP in 2017. To what extent is further development of Pakistan's tourism industry possible? Give reasons to support your **judgment**.
3. Explain with reference to two examples why tourists visit cultural attractions in Pakistan.
4. How does Pakistan benefit from foreign trade?
5. Why does Pakistan have a negative balance of payments?
6. Describe what has been done in recent years to make the trade between Pakistan and Afghanistan easier?
7. Explain the difference between Balance of Payments and Balance of Trade.

Week 3: - Topic (Secondary, Tertiary Industries and Trade)

1. With reference to the Government policies, suggest measures to improve Pakistan's Balance of Payments.
2. Define the term Trade Deficit?
3. Explain why Pakistan has a trade deficit. You should develop your answer.
4. The negative Balance of Payments needs to be corrected in order to ensure future economic growth. Read the following two views about correcting the Balance of Payments in Pakistan.
A. The best way to correct the balance of payments is to increase exports.
B. The best way to correct the balance of payments is to restrict imports.

Which view do you agree with more? Give reasons to support your answer and refer to examples you have studied.

5. Find out the difference between Trading Blocs and Trade Barriers.
6. Explain whether using global telecommunications has improved employment opportunities in Pakistan. Give reasons to support your answer and refer to examples you have studied.

Week 4: - Topic (Transport and Population)

1. Describe the regional variations of the rail network in Pakistan.
2. Suggest reasons why the government is improving railways in Pakistan
3. Explain the benefits of air transport to the people and the local economy of Northern Mountains of Pakistan.
4. Describe the ways in which the road network of Punjab is different from the road network of Sindh.
5. Explain what is meant by the term Dry Port, Name one Dry Port and explain why they have been developed in many cities of Pakistan.
6. Identify on a map the ports of Keamari, Qasim and Gwadar and the cities with international airports.
7. Define the term Telecommunication. Explain its importance in the field of education and industry.

Week 5: - Topic (Transport and Population)

1. Explain the problems of providing telecommunications in some parts of Pakistan.
2. State and explain the main functions of ports on the Balochistan coast.
3. Read the following article.

The Lowari Tunnel is opened in 2018. It is 8.6 km long and is giving Chitral Valley its only all-weather road to the rest of Pakistan. For some in Chitral Valley this tunnel is of real benefit but for others it is creating problems.

To what extent does the Lowari Tunnel benefit or create problems for the local people and economy of Chitral?

4. Define the following terms.

Population Pyramid	Life Expectancy	Squatter Settlements	Population Density
Immigration	Emigration	Migration	Natural Increase

5. Define the terms Primary, Secondary, and Tertiary in relation to occupations.
6. Describe and explain with reference to both Push and Pull factors the main causes of population movement.
7. Give two benefits and two problems to a family of having a small number of children.

Week 6: - Topic (Transport and Population)

1. Explain how and why the death rate in Pakistan is changing. You should develop your answer.
2. Explain the advantages and disadvantages of self-help scheme.
3. Explain the effects on rural areas when large amounts of people migrate to urban areas.
4. Suggest three problems that might be caused by unsustainable population growth.
5. Explain what has caused high levels of emigration and the effects of this on the economy of Pakistan.
6. To what extent will low birth rate and death rates have a positive impact on the future development of Pakistan? Give reasons to support your judgment.

6. Physics

Q1. Read the topics of magnetism, induced magnetism and applications of permanent magnet and electromagnet and solve the following activities:

Testing for Evidence of Magnetism

Objectives:

- Identify the forces (attraction/repulsion) between:
 - a. Two magnets, and
 - b. a magnet and magnetic/nonmagnetic materials.
- Distinguish a magnet (permanent or temporary) from a non - magnetic object.

Materials:

- Pair of 3"- 6" bar magnets
- 6-10 objects made of different materials from inside the room
- Science notebook and pen
- Safety Precautions:
 - Handle magnets with care so as not to drop those. These might break, chip off, and weaken upon impact.
 - Keep magnets away from computer units/screens, memory storage drives and disks, magnetic tapes, mechanical watches, and the like.

Procedure:

1. Use a bar magnet and explore the possible effects it can have on the other magnet when made to interact. On your science notebook, make a table similar to Table 1 and record the observed force effect/s.

Answer also the guide questions.

Table1: Interaction between two permanent magnets

What I did to the pair of magnets to cause interaction	Observed effects (attracted or replaced)

2. This time, use only one bar magnet and explore its possible effects on six to ten different objects found inside the classroom. Record the observed effects on a table similar to Table 5. (Exclude record on objects with no observed interaction with the magnet.)

Table 2: Interaction of a bar magnet with other objects

Objects that interacted with the magnet...	Observed effects (attracted or replaced)

Guide Questions:

1. What conditions with observable effects make magnets interact with another magnet?

2. In general, what conditions with observable effects make magnets interact with non-magnet materials?
3. What type/s of force can a magnet exert on another magnet?
4. What type/s of force can a magnet exert on non-magnet objects?
5. How will you distinguish magnets from non-magnetized magnetic materials? Conclusion:

Can electric current create a magnet?

A Compare electromagnets and permanent magnets

- a. The electromagnet certainly does not look much like the permanent magnets you are familiar with. Using what you know about magnets, think of at least two tests to show that your electromagnet acts like a permanent magnet. Describe your two proposed tests.
- b. Does the electromagnet act like a permanent magnet? Explain.

B The right-hand rule

- a. Use a permanent magnet or compass to determine the location of the north and south poles of your electromagnet. Explain your method and include a diagram showing the direction of the current from the positive battery terminal, around the nail, and into the negative battery terminal.
- b. Reverse the direction of the current through your electromagnet by switching the locations where the electromagnet wires' ends connect to the battery. Test for the locations of the north and south poles. What effect did reversing the current have on the locations of the poles?

Electric Current and Magnetism

c. The following diagram describes an experiment performed to investigate electromagnets.

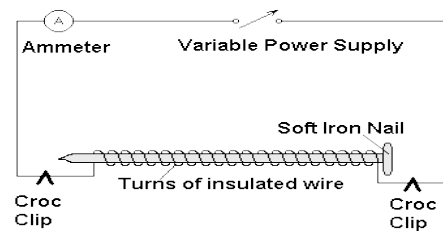
Method

The apparatus was set up as shown in the diagram. An iron nail was used as the core of the electromagnet. Insulated wire was carefully wrapped around the nail to form the electromagnet coil.

- How the strength of the electromagnet changed was found comparing how many paperclips the electromagnet could pick up.
- The paper clips were attached to form a chain of varying weights so that the strength of the electromagnet could be fairly assessed.
- The number of turns of wires was kept constant while the current was varied and then the current was kept constant while the number of turns was varied.

Additional actions taken to improve the results obtained:

- Paper clips are made of steel, a hard magnetic material. Therefore the paper clips chains had obtained magnetic properties of their own after being picked up by the nail. It was necessary to drop them on the floor until they lost their magnetism between readings.



- Long chains of paper clips are required for lifting very high. We therefore opened a paperclip up and used it as a hook.

Results:

Current/A passing through the coil	Number of Turns of wire on the electromagnet	Number of paperclips picked up by the electromagnet	Current/A passing through the coil	Number of Turns of wire on the electromagnet	Number of paperclips picked up by the electromagnet
0	50	0	2.0	50	21
0.5	50	1	2.5	50	30
1.0	50	5	3.0	50	36
1.5	50	13	3.5	50	45

Current/A passing through the coil	Number of Turns of wire on the electromagnet	Number of paperclips picked up by the electromagnet	Current/A passing through the coil	Number of Turns of wire on the electromagnet	Number of paperclips picked up by the electromagnet
3.0	10	6	3.0	50	32
3.0	20	12	3.0	60	39
3.0	30	19	3.0	70	43
3.0	40	26	3.0	80	50

1: Plot graphs to show how the number of paper clips picked up by the electromagnet varied with:

a: The current flowing through the electromagnet.

b: The number of turns of wire of electromagnet.

2: What is your conclusion about the relationship between current and the strength of the electromagnet?

3: Use your graphs to describe any pattern or trend that you observe.

Q2. Develop a quiz relating to the topics mentioned in 'Q1' that should include 10 multiple choice questions, 10 short questions and 2 ATP activities.

Q3. Refresh the topics of electrostatics and current electricity and solve the past exam questions of multiple choice, theory and ATP from year **2017-2019**.

Q4. Fix this sheet in your notebook and answer the questions below in neat.

1. Electricity is a very **versatile** form of energy. Explain what 'versatile' means.
2. (a) List five electrical devices that are used to **make housework easier**.
(b) Choose one of your devices and explain how the device **saves time and effort** for the user.
3. (a) List five electrical devices that **make our life more enjoyable**.
(b) Choose one of your devices and explain why you would miss it if you had not got an electricity supply.
4. List four ways in which big shops use electricity to make the lives of their workers easier.
5. List four ways in which hospitals use electricity to make the jobs of the doctors and nurses easier.
6. List four ways in which offices use electricity to make the office workers' jobs easier.
7. List four ways in which schools use electricity to make your learning experience more enjoyable.

Q5. Solve the following activities regarding energy in your home.

You will investigate the electrical consumption in your home over the course of **TWO days (48 hour period)**.

1. Start by locating your electric meter on the outside of your home. **Take a picture** and record the 1st/initial meter reading in the space provided on the data sheet.
2. Record the appliances that are used throughout the **48 hour period**, their power rating and for how long they are used. A data table is provided for you on the Data Sheet.
If you are unable to see or access the power rating, please see the table on the back of this sheet.
3. Complete the last column on the data table by calculating the energy consumption for each appliance and calculate the total energy consumption for all the appliances (bottom of chart on data sheet).
4. After the 48 hours, **take a picture** and record the 2nd/final meter reading in the space provided on the data sheet. *(Attach both pictures to your data sheet.)*
5. Determine the actual energy usage in your home by subtracting your initial meter reading from your final meter reading in the space on the data sheet.
6. Determine the cost of this energy usage. Including delivery and regulatory charges, the average cost of electricity in Burlington is \$0.10 per kWh.

Appliances	Average Power (watts)	Average Energy Usage (kWh)	Appliances	Average Power (watts)	Average Energy Usage (kWh)
Room Air Conditioner	750		Toaster	1000	
Clothes Dryer	3000		Refrigerator		50 kWh per month
Coffee Maker	900		Dishwasher		2.0 kWh per load

Computer Monitor and Printer	600		Freezers		50 kWh per month
Electric Kettle	1500		Ovens	3000	
Incandescent Lights	60 (each)		Domestic Hot water		0.05 kWh per litre of hot water
Microwave oven	1000		Top loading washing machine		2.0 kWh per load
Television	80		Baths or Showers		4.0 kWh per bath/shower

Questions: Answer these in the spaces provided.

- List your answers for question (4) (actual energy consumption) and the total estimated energy consumption on your chart. Compare these answers. Are they fairly close or is one higher than the other? Discuss any discrepancies and provide some possible reasons for the difference.
- Explain in detail how your family's daily energy usage would change:
 - throughout the week
 - throughout the year
- Identify at least two ways that you and/or your family could reduce energy usage in your home.

Power Ratings of Various Appliances

NOTE: Try and find the power ratings for appliances. If you absolutely cannot, *then* use the values in this table.

Data Sheet Meter Readings:

1 st (Initial) Meter Reading:	2 nd (Final) Meter Reading:
Date:	Date:
Time:	Time:

Data Table:

Appliance	Power (kW)	Estimate Time (hours)	Energy Consumption (kWh) Power X Time	Appliance	Power (kW)	Estimate Time (hours)	Energy Consumption (kWh) Power X Time
<i>Example:</i> Clothes Dryer	5.0 kW	1.5 hours 1.5 hours	5.0 kW x 3.0 h = 15 kWh				
Lights							
Refrigerator							
Television							
Computer							
Showers or Baths							
TOTAL:							

Actual Energy Consumed: 2nd meter reading – 1st meter reading
 (Final) _____ - (Initial) _____ = _____ kWh

Cost of Electricity Consumed: _____ kWh x \$0.10/kWh = \$ _____

Questions:

What was your actual energy consumption?

What was your total estimated energy consumption from the chart above?

Compare the values. Are they fairly close or is one higher than the other? Discuss any discrepancies and provide some possible reasons for the difference.

Q6. Design these circuits.

1. Design a circuit with three bulbs in parallel so that one switch will switch them all on or off at once.
2. Design a circuit with three bulbs in parallel so that each has an individual switch to switch it off or on.
3. Design a circuit with three bulbs in parallel so that each has an individual switch to switch it off or on and there is a master switch that can switch them all off.
4. Design a circuit with three bulbs in series so that one switch will switch them all on or off at once.
5. Design a circuit with three bulbs in series so that one switch will switch one of them on or off.
6. Two-cell battery connected to three light bulbs in series.
7. Two-cells connected to two light bulbs in parallel. A switch controls one light bulb.
8. Two cells in parallel, connected to three light bulbs in series. A switch controls the bulbs.
9. Three-celled battery connected to two light bulbs in parallel and a third light bulb connected in series.
10. One-cell, a switch, a motor and a light bulb all connected. The motor must continue to work, if the light bulb burns out.
11. Four bulbs are connected in series to a three-celled battery with a switch and a properly placed fuse.

- 12.** Two bulbs in parallel and a third in series are connected to a two-cell battery and a switch that works on the second bulb only.
- 13.** Draw a series connection of a cell, a switch, and a bulb. Show the voltmeter connected to measure the electrical potential of the source and an ammeter connected to measure the electric current in the circuit
- 14.** Three 3V cells connected in series, a switch, an ammeter for measuring the total current coming from the cell, three light bulbs connected in parallel and a voltmeter for measuring the potential difference across the second light bulb. The switch should control all three light bulbs at once. Label all positive and negative terminals.
- 15.** Four bulbs in all, two in parallel to each other placed between two in series, all connected to a three cell battery, a switch, a fuse, an ammeter before the first light bulb and a voltmeter across the source.

Q6. Refresh the topics of waves, light and sound and solve the past exam questions of multiple choice, theory and ATP from year **2017-2019**.

Q7. Solve the following activity relating speed of sound and temperature.

The following data show the speed of sound in air at various temperatures. Plot the data on the graph. Then, answer the questions that follow.

Speed of sound in air	
Temperature (°C)	Speed (m/s)
-10	325
0	331
10	337
20	343

- What is the independent variable?
On which axis of the graph does it appear?
- What is the dependent variable? On which axis does it appear?
- In general, how does temperature affect the speed of sound in air?
- From your graph, find the speed of sound at 15 C.
- Extend the line of your graph to find the speed of sound at 25 C.
- Use your graph to determine how much the speed of sound changes for every 1 change in temperature.
- Suppose that a person exploring Antarctica shouts to a person several hundred meters away. At the same time, a person in tropical Africa shouts to a person the same distance away. Will the person in Antarctica or the person in Africa hear the shout first? Why?
- Do you think there is a temperature at which sound cannot be heard? Explain your answer.

7. Chemistry

- 1- Mole: Read from the book, moles from masses used, molar gas volume at R,T.P and mole from solution concentrations.
Solve mole related questions from past papers 2010-2015. (Structured questions) and write them separately. Students must include questions on mass, mole and volume of gases.
- 2- Electrolysis: it is process in which electrolytes are changed/ dissociated to their respective products by passage of electricity.
Write electrolysis of the following compounds including ions present, reaction at cathode, reaction at anode and over all reaction, also try to find out electrolysis being used in industries in Pakistan.
 - i) Any five molten ionic compounds of your choice. e.g molten sodium chloride.
 - ii) Five dilute **aqueous** solutions of ionic compounds. e.g dilute sodium chloride.
 - iii) Three concentrated **aqueous** solutions of ionic compounds. e.g concentrated sodium chloride.

Activity: try to make a model of electrochemical cell.

- 3- Rate Of Reaction
 - (a) See in chemical reactions the effect of concentration, pressure, particle size and temperature on the rates of reactions and try to understand how these effects in terms of collisions between reacting particles
 - (b) Define the term catalyst and describe the effect of catalysts (including enzymes) on the rates of reactions
 - (c) How pathways with lower activation energies account for the increase in rates of reactions
 - (d) State that transition elements and their compounds act as catalysts, in a range of industrial processes and that enzymes are biological catalysts
 - (e) Suggest a suitable method for investigating the effect of a given variable on the rate of a reaction
 - (f) *interpret data obtained from experiments concerned with rate of reaction

Select questions from past papers (fom.2010-2015) on the rates of reactions and practise to solve them.
- 4- Chemical Energetics
 - i) Write four examples of exothermic reactions.
 - ii) Search out three examples of endothermic reactions with equations.
- 5- Redox
 - i) Solve questions related to oxidation and reduction from past papers 2010-2015.
- 6- Find out five acids, five basic things from our daily life. Write their pH and usage.

8. Biology

Activity #1

1: Fig. 1.1 shows a beaker of water in which is suspended an open-ended piece of Visking tubing, a partially permeable membrane.

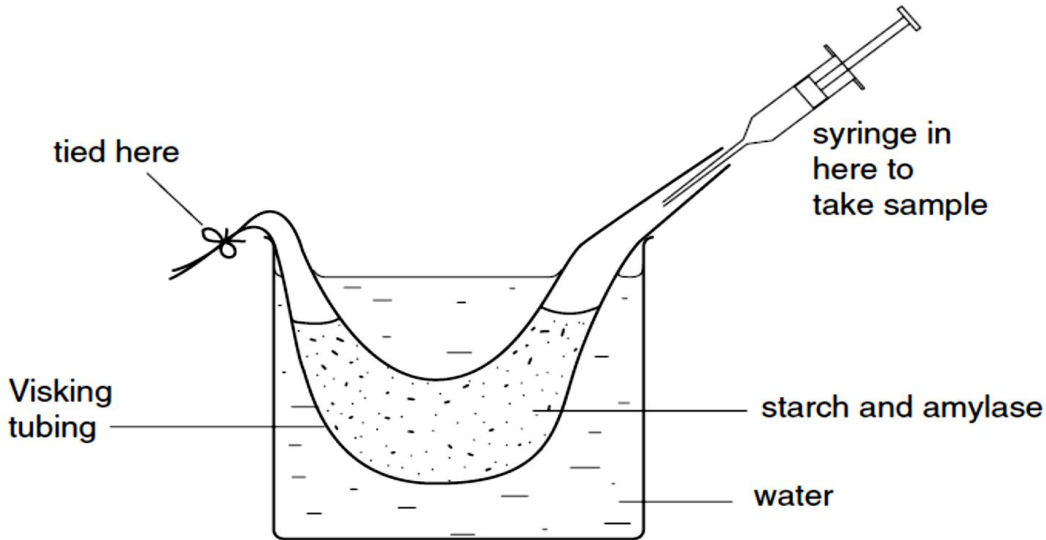


Fig. 1.1

- the Visking tubing contains a mixture of 0.5% starch suspension and a 1% solution of amylase
- the water in the beaker is at approximately 40 C
- when the experiment was set up it was confirmed that there was no reducing sugar in the water
- a blunt-ended syringe could be inserted into the open end of the Visking tubing to obtain a sample of the contents
- samples were taken and tested for starch and for reducing sugar
- the liquid in the beaker was also tested in the same way

(a) (i) Complete Table 1.1 to suggest the observed results (not the conclusions) of the tests indicated.

Table 1.1

time/min	solution in Visking tubing		liquid in beaker	
	starch test	reducing sugar test	starch test	reducing sugar test
0				
2				
4				
10				

(ii) Suggest how you could be sure that the reaction between the amylase and the starch was complete.

(iii) Explain how this apparatus can be taken to represent a model of some aspects of the digestive processes in the gut.

(a) In another experiment, Visking tubing was set up as shown in Fig. 1.2.

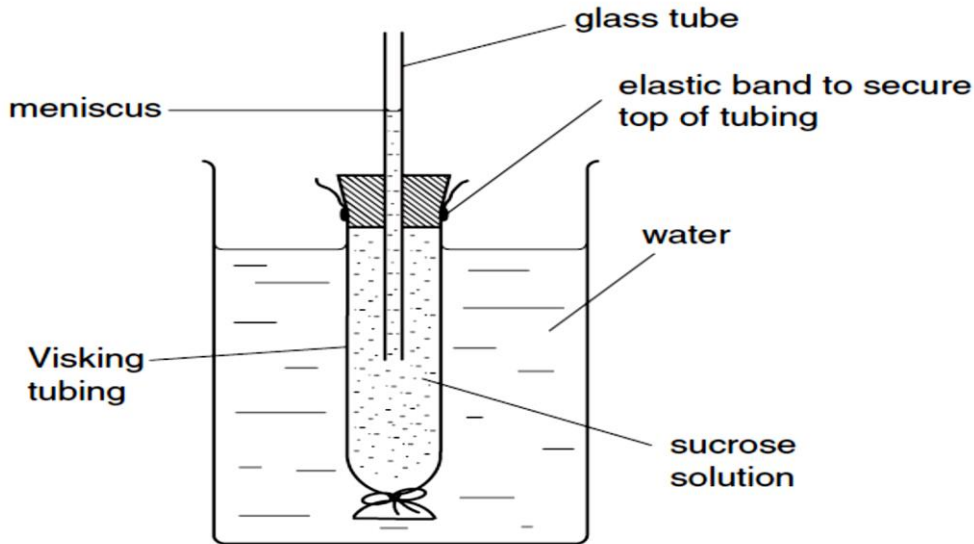


Fig. 1.2.

- the bottom of the Visking tubing was securely tied to prevent leakage in or out
- the tubing was completely filled with a solution of sucrose
- the top of the tubing was securely tied to a bung through which passed a glass tube
- the apparatus was allowed to settle until the meniscus of the sucrose solution was visible above the bung.

(i) Suggest what might be observed after 20 – 30 minutes.

(ii) Explain how, and why, this occurred.

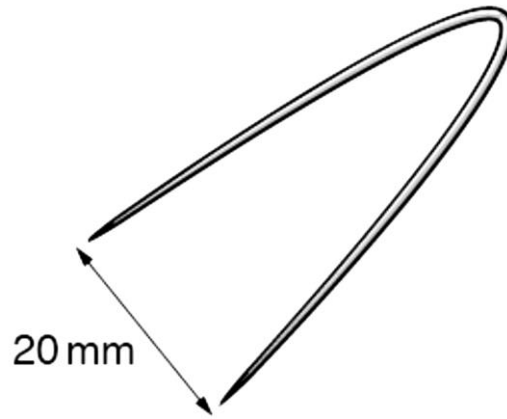
(c) With reference to the substances used and the results of both these experiments, explain why Visking tubing is described as partially permeable.

Activity #2

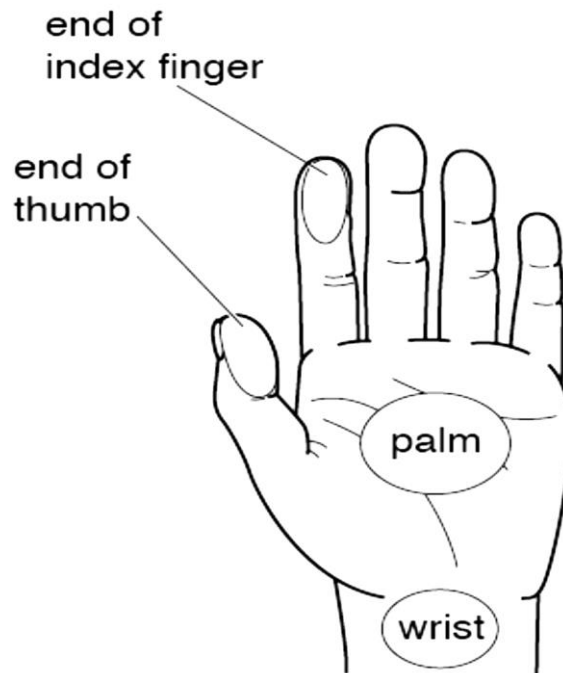
2: Human skin is a sense organ containing sensory receptors that can detect touch.

(a) A student carried out an experiment to investigate the sensitivity of the skin of the hand of another student, whose eyes were covered with a strip of thick cloth called a blindfold.

A piece of wire was bent into the shape shown in the diagram and adjusted so that the two sharp ends were 20 mm apart.



The areas of the hand that were tested are shown in the diagram below.



The blindfolded student's index finger was gently touched with the points of the wire.

Sometimes only one point was used and sometimes both, at random. The blindfolded student indicated whether he could feel only one point or two separate points.

The wire was then adjusted so that the points were 15 mm apart. One or two points were again gently touched on the end of the blindfolded student's index finger. The student indicated whether he could feel only one point or two separate points.

The test was repeated with the points of the wire 10 mm, 5 mm and 2 mm apart.

The tests were then repeated on the blindfolded student's wrist.

(i) Suggest why the student being tested was blindfolded.

The results for the index finger and the wrist are shown in the table. When two separate points were used and correctly sensed by the student, a tick was inserted in the table. A cross indicates that the two points were not sensed separately but as one only.

distance between the two points/mm	area tested			
	end of index finger	end of thumb	palm	wrist
20	✓			✓
15	✓			✓
10	✓			✗
5	✓			✗
2	✓			✗

the skin on the end of the thumb and in the centre of the palm.

For the end of the thumb this distance was 3 mm. For the centre of the palm it was 16 mm.

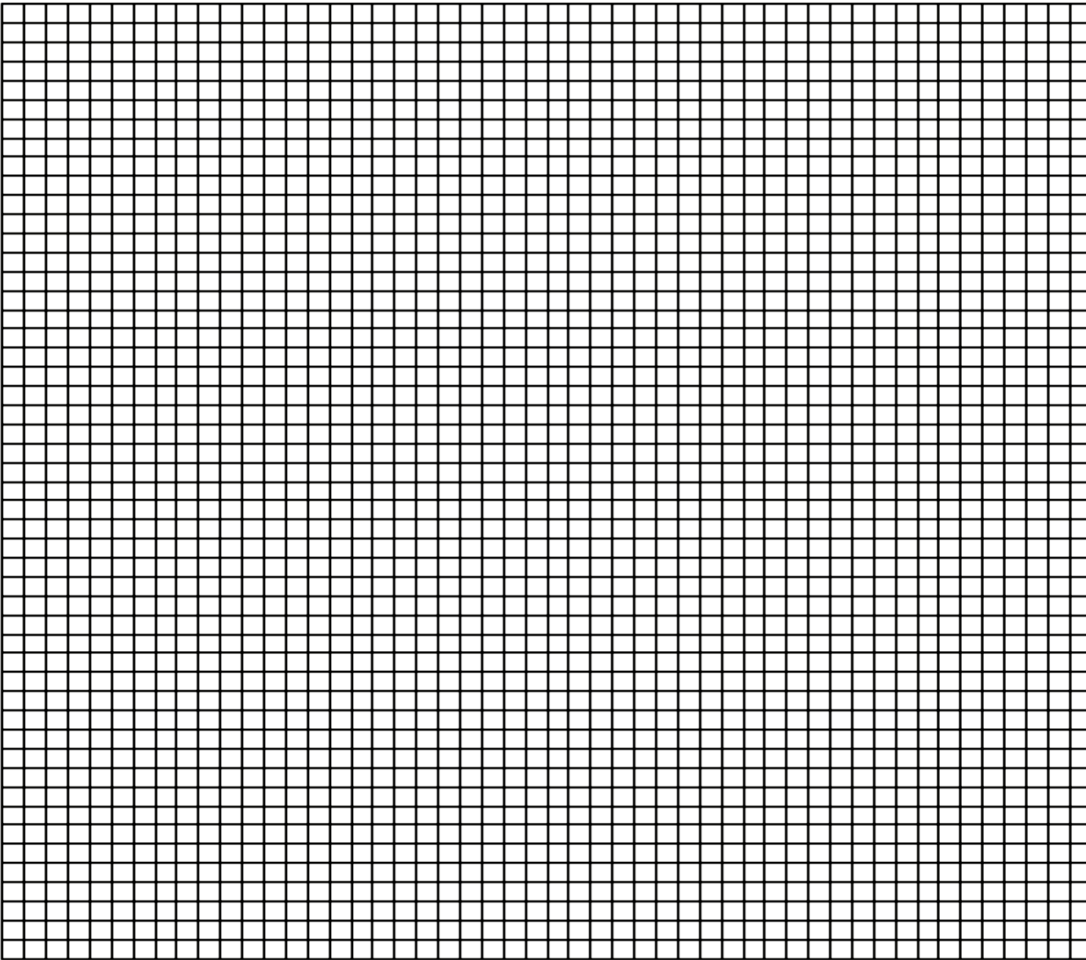
(ii) Use this information to complete the table using ticks and crosses.

(iii) State which part of the student's hand is most sensitive.

(b) The student extended this investigation to include other parts of the body. He recorded the minimum distance between the two points that could be sensed on the forearm, upper arm and shoulder. The blindfolded student then removed his blindfold and gave it to the other student who used it to cover his eyes. All the previous tests were then carried out on this second student. The mean results for the two students are shown in the table.

area of skin	mean minimum distance detected as two points/mm
index finger	2
palm	14
forearm (between wrist and elbow)	32
upper arm (between elbow and shoulder)	38
shoulder	42

(e) Construct a bar chart to display these results on the grid below.

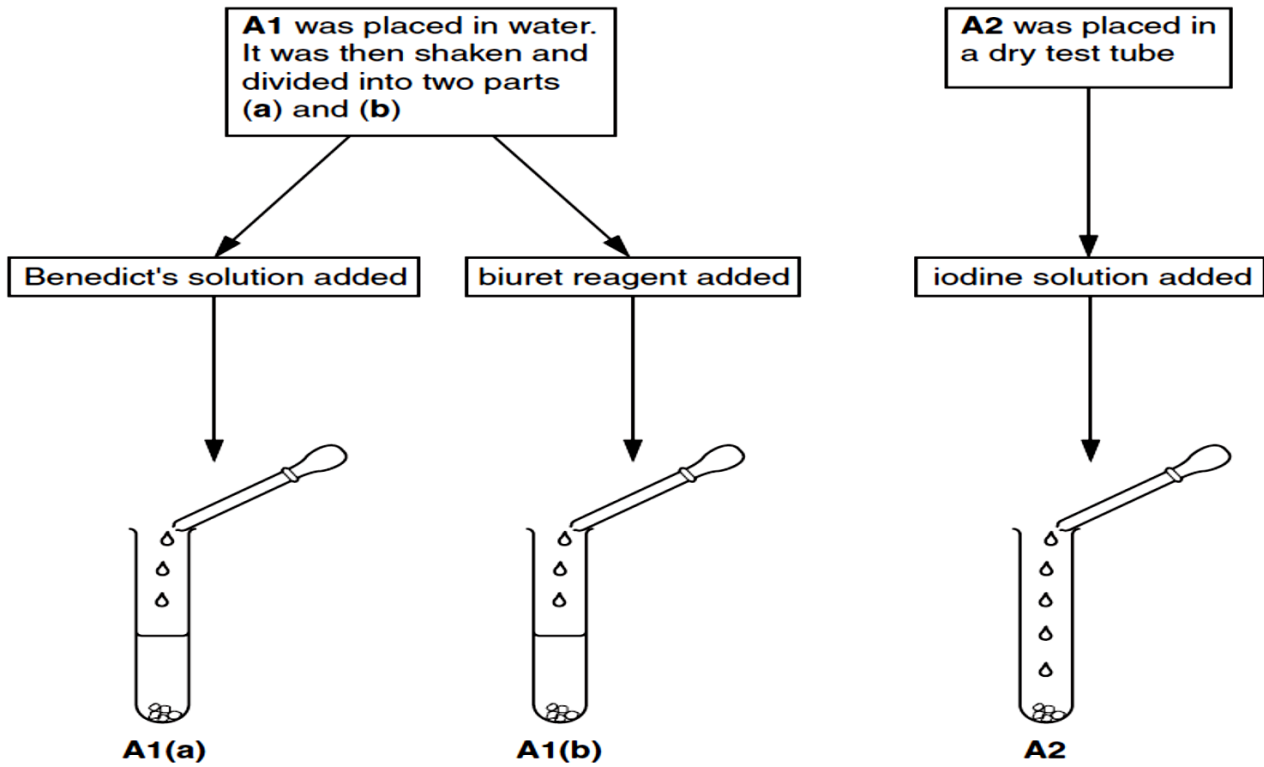


- (ii) Explain why the students tested each other and calculated a mean result.
- (iii) Suggest **one** other variable that the students should control to ensure that their results are valid.
- (iv) Suggest reasons for the different sensitivity of these areas of the skin.

Activity #3

2: Food tests were carried out on two food materials, **A** & **B**.

- material **A** was cut into two pieces (**A1** & **A2**) that were sliced and crushed.



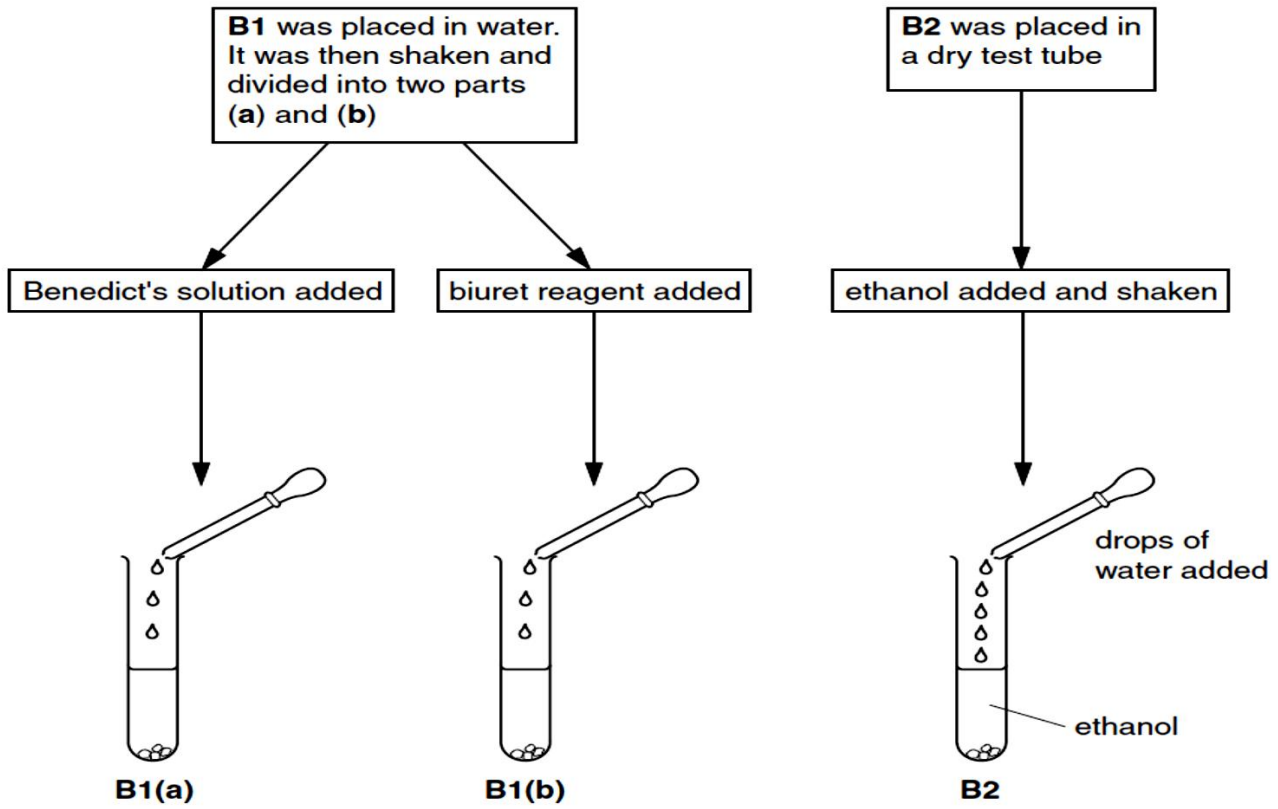
(i) State the colour of the contents immediately after the reagents were added.
A1 (a) **A1 (b)** **A2**

(ii) Complete Table 3.1.

Table 3.1

	Observations at the end of the tests		
	A1(a)	A1(b)	A2
Observation	orange precipitate	blue solution	blue-black colour
Conclusion			

- In the same way material **B** was cut into two pieces (**B1** & **B2**) that were sliced and crushed.



(iii) Complete Table 3.2.

Table 3.2

	Observations at the end of the tests		
	B1(a)	B1(b)	B2
Observation	blue solution	purple (violet) solution	cloudy
Conclusion			

(iv) Explain why the sample **B2** was cut up and placed in a **dry** test-tube.

9. Business Studies

Task 1.

Read the case below and answer the given questions.

T T-shirts (TT)

TT is a private limited company set up 15 years ago in country P. It buys ready-made plain white T-shirts and then prints designs on them. The T-shirts are imported from country Q, a developing country. TT has 50 different designs that are produced in batches of various sizes, from child size to extra-large adult size.

The T-shirts are sold to small retailers in country P. These retailers expect high quality products. The Marketing manager is considering changing the 'place' part of its marketing mix as she wants to increase sales of T-shirts.

The share capital invested to start up the company was \$2m. Shareholders' funds had increased to \$8m by 2015, but stayed at this level in 2016.

TT directors want to expand the company by exporting their T-shirts and are considering the following two options.

Option A:

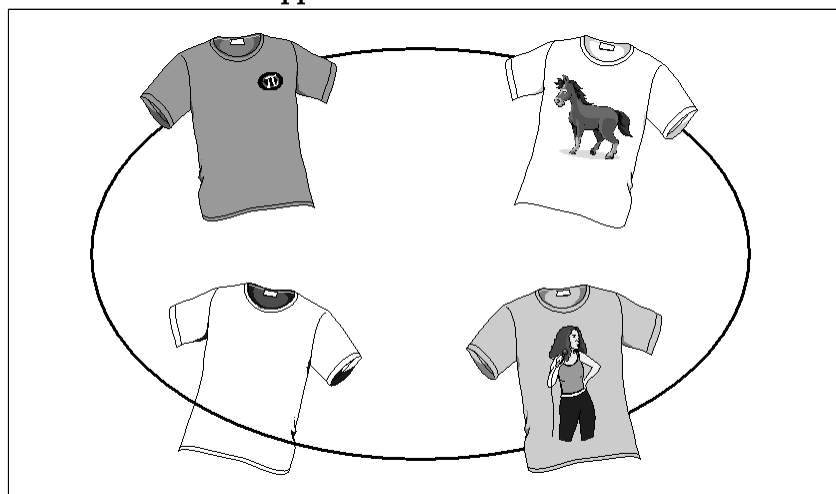
Take over Disowns, a competing company, which manufactures personalized T-shirts to the customers' own designs. This company only sells online and its brand is recognized worldwide. It has a large share of this global e-commerce market. TT will have to raise \$10m to buy out the existing shareholders. Some workers could be made redundant if departments in the new company are merged with those in TT.

Option B:

Invest in expanding its own production facilities by buying new computer-controlled equipment for \$500 000. This will allow an increase in the production of the existing range of T-shirts. TT could then sell directly to large retailers in other countries. However, they may have to use an agent or go into a joint venture to be successful.

Appendix 1: Advertisement

T T-shirts



- High quality material used
- Many designs available – lots of choice

- All sizes available – from child to extra-large adult
- Buy T-shirts from small clothing retailers across the country

Appendix 2

SMS (text) message from TT production employee to a friend

Really unhappy at TT factory, expected to do a lot of work on tasks I am not paid for- expected to advise customers on designs when I have no training on this – shouted at if I do anything wrong or do not make a lot of T-shirts each week – the Operations manager just tells me what to do and she never asks what I think. If I say anything then I am told to keep quiet. Really fed up and want to leave.

I never know what is happening at the factory as information is only put on one noticeboard but that is in the other building!

Appendix 3

TT financial information (\$m)

	2015	2016
Revenue	10	15
Cost of sales	2	4
Expenses	7	9
Capital employed	10	14

1. Identify and explain **two** ways in which TT might achieve quality production.
2. Consider the advantages and the disadvantages of the **two** options for expansion. Recommend the best option to choose. Justify your answer.
3. Identify **two** motivational theories and explain how TT could use these theories to help increase worker motivation.
4. TT should consider the following **three** changes before making a final decision about whether to start exporting its products. Which change will be the most important for the decision? Justify your answer.
 1. Appreciation in the exchange rate of country P’s currency
 2. Increased economic growth in many developed economies:
 3. Increase in the import tariffs in many developed economies:
5. Identify **two** communication barriers which might occur within TT and explain how each barrier might be reduced.

Consider the following **three** channels of distribution TT could use for its products in country P. Recommend the best channel to gain the highest sales. Justify your answer.

- a. Sell to a wholesaler
- b. Sell directly to large retailers

c. Open its own shops in shopping malls

6. Identify and explain **one** reason why TT will need short-term finance and **one** reason why TT will need long-term finance.
7. Refer to Appendix 3 and other information in the case study. Consider the financial performance of TT. Do you think the directors should be pleased with the company's performance? Justify your answer using appropriate ratios

Task 2

Bushell is a farm. This primary sector business grows award-winning fruits such as pineapples and bananas. Bushell has 10 full-time and 50 part-time employees. All part-time job vacancies are advertised on its website. The Government has introduced legal controls for employment including a minimum wage of \$8.50 per hour and a limit on the number of hours an employee can work each week. The farm manager has said to Bushell's owners: 'Taylor's theory of motivation might not work. Our team of employee enjoys what they do. These laws are not good for our employees or our business!'

- (a) Identify two examples (other than farming) of business activity in the primary sector.
- (b) Identify two ways (other than its website) that Bushell could use to advertise job vacancies.
- (c) Identify and explain two possible reasons why 'Taylor's theory of motivation might not work' at Bushell.
- (d) Identify and explain two advantages to Bushell of having part-time employees.
- (e) Do you think that the new legal controls for employment will benefit Bushell's employees? Justify your answer.

Task 3.

Sultan makes arrange of cars. The level of inventory is too high so it plans to decrease production at its factory. Employees were told the business needs to reduce the size of its workforce as competition is increasing. The trade union is not happy that 360 of the 1200 skilled full-time employees at Sultan will be made redundant. A trade union spokeswoman said: 'Sultan should reduce the number of hours of every employee rather than reduce the number of jobs.' Sultan's Operations Director is considering ways to increase efficiency in the factory.

1. What is meant by a 'trade union'?
2. Identify two situations (other than increasing competition) when a business might have to reduce the size of its workforce.
3. Identify and explain two possible problems for Sultan of having a high level of inventory.
4. Identify and explain two ways Sultan could improve efficiency.
5. Do you think Sultan should reduce the number of working hours for every employee rather than reduce the number of jobs? Justify your answer.

Task 4.

Research Task

Cut out ten job advertisement from newspapers. Choose one that gives a great deal of detail about the financial and non-financial rewards of the business.

- a. Identify the different salary levels paid for each job. Which jobs carry the highest and lowest pay? Try to explain why this is
- b. What other benefits are offered in each job?
- c. Consider the lowest paid job from your advertisement. Consider how the business might attempt to motivate the workers using non-financial methods.

10. Accounting

Assignment No.1

Arjit provided the following information for the month of July 2018.

1	Sales ledger control account balances 1 July 2018	
		\$
	Debit	4230
	Credit	80
2	Transactions for the month ended 31 July 2018	
		\$
	Credit sales	9200
	Cash sales	3100
	Bad debts written off	450
	Discount allowed	230
	Returns inwards	740
	Receipts from credit customers	8000
	Refund to credit customer by cheque	300
	Interest charged on overdue account	180
3	Sales ledger control account balances 1 August 2018	
		\$
	Debit	?
	Credit	150

Required

- (a) Prepare the sales ledger control account for the month of July 2018. Balance the account and bring down the balances on 1 August 2018.
- (b) State **one** possible reason for the credit balance on the sales ledger control account.

Arjit prepared a trial balance on 31 July 2018. The totals of the trial balance did not agree. He opened a suspense account. On inspecting his books Arjit found the following errors.

1. A purchase of goods from Dipu had been correctly recorded in the purchases journal as \$65. An entry of \$45 had been made in the account of Dipu.
2. A cheque received from Arca, \$240, had been recorded in Arca's account as \$420.
3. The total of the discount allowed column in the cash book, \$15, had been credited to the discount allowed account

Required

- (c) Prepare the journal entries to correct the errors 1 to 3. Narratives are **not** required.
- (d) Prepare the suspense account showing the original difference in the books.

Assignment No. 2

1. The accruals concept is sometimes known as theconcept.
2. Define an accrual.
3. Give two examples of accrued expenses at a financial year end.
4. How an accrued expense should be classified in a statement of financial position.
5. Define a prepayment.
6. Give an example of a pre-payment at a financial year end.

7. How a prepayment should be classified in a statement of financial position.

Assignment No. 3

	Revenue	3,060	
(minus)	Cost of sales	(1,840)	Trading account
(equals)	Gross profit	1,220	
(minus)	Overheads/expenses	(580)	
(equals)	Operating profit (formerly net profit)	640	
(minus)	Interest	(80)	Profit and loss section
(equals)	Profit before tax	560	
(minus)	Tax @ 20%	(112)	
(equals)	Profit for the year	448	
(minus)	Dividends to shareholders	200	Appropriation account
(equals)	Retained earnings	248	

Calculating gross profit

1 Calculate gross profit for Cosy Corner Retailers Ltd for the financial year ending 31 October 2013

Show all of your workings.

1,500 items sold for \$5 each

- opening stocks were valued at \$500
- purchases totalled \$3,000
- closing stocks were \$1,000.

2 Explain two reasons why you think it is important for any business to make a profit.

3 Cambridge Boxes Ltd sold 3,500 units in the last financial year ending 31 December 2013. The selling price was \$4. Opening stocks were 200 boxes. The business purchased 4,000 boxes during the year. All boxes cost the company \$2 each. Calculate the value of closing stocks and the company's gross profit in 2013.

Assignment No. 4

Is the liquidity of Air Mauritius sufficient?

The following information is taken from Air Mauritius Limited accounts for the year ending 30 September 2013.

- Current assets: inventories \$15,468; Trade and other receivables \$ 65,793; cash and cash equivalents \$17,214.
- Current liabilities: trade payables \$135,921; short-term loans \$40,523.

Required:

1 Calculate the Air Mauritius current ratio.

2 Calculate the Air Mauritius acid-test ratio.

3 Comment on Air Mauritius' liquidity.

4 Why would it be useful to Air Mauritius' stakeholders to have liquidity ratio results for the previous year and for other airline operating companies?

Assignment No. 5

Irfan's accounting year ends on 30 April. The following information is available for the years 30 April 2015, 2016 and 2017.

	2015	2016	2017
	\$	\$	\$
Revenue	128 000	155 000	200 000
Cost of sales	96 000	124 000	164 000
Opening inventory	10 200	13 800	11 000
Expenses	27 500	23 000	22 000
Capital	50 000	50 000	50 000
Bank loan (repayable May 2020)	40 000	30 000	20 000
Gross profit margin	25%	20%	?
Rate of inventory turnover	8 times	10 times	?
Return on capital employed (ROCE)	5%	10%	?

Additional information

Inventory on 30 April 2017 was valued at \$9500.

- a. Calculate the following ratios at 30 April 2017.
 - (i) Gross profit margin
 - (ii) Rate of inventory turnover
 - (iii) Return on capital employed (ROCE)
- b.
 - i. Suggest two possible reasons for the change in the gross profit margin over the 3 years.
 - ii. Suggest two possible reasons for the change in the rate of inventory turnover over the 3 years
 - iii. Suggest two possible reasons for the change in ROCE over the 3 years.

11. Economics

Q1: 1 Universal basic income (UBI)

UBI is a scheme where a government provides everyone with a payment, regardless of their circumstances. Such a scheme can help a number of groups including the sick and the old. In 2016, the Indian government was looking at a UBI as an alternative to its existing system of state benefits. A politician in Costa Rica proposed a UBI of \$337.5. Finland started a two-year experiment with a version of UBI in 2017.

A guaranteed minimum income might help some of the poor who currently do not receive state benefits and may reduce inequality. In a number of countries, income and wealth inequality is increasing. For instance, in Russia 16% of the population live below the official poverty line and 10% of the population own 87% of the country's wealth. State benefits are relatively low in Russia and the country has one income tax rate of 13%. One cause of the rise in the gap between the rich and the poor in Russia has been the effect on prices and profits arising from the privatization of a number of state monopolies.

Differences in annual average incomes (annual GDP per head) between countries can affect life expectancy as shown in Table 1.1.

Table 1.1 Annual GDP per head and life expectancy in selected countries in 2016

Country	Annual GDP per head (US\$)	Life expectancy (years)
Costa Rica	16200	78.8
Finland	42000	80.8
India	7400	68.6
Mali	2300	55.7
Monaco	76000	89.5
Russia	26200	70.4

Table 1.1: Annual GDP per head and life expectancy in selected countries in 2016.

In Finland, a country with an average monthly income per head of \$3500, the trial UBI is \$600 per month. This does not cover everyone's needs in a country with high prices, high tax rates and periods of very cold weather. In India, the average monthly income per head is almost the same as Finland's UBI.

A UBI could help the unemployed including the temporary unemployed. Governments welcome a reduction in unemployment. This is because it increases output and enables governments to reduce spending on state benefits for the unemployed. Governments could then increase spending on other areas including education and healthcare.

- (a) Identify, using information from the extract, **two** reasons why a person may have a low income.
- (b) Explain, using information from the extract, whether Russia has a progressive, proportional, or regressive income tax system.

- (c) Calculate, using Table 1.1, what percentage of annual average income in Costa Rica a person would have if he receives UBI of \$337.5 a month.
- (d) Explain two causes of an increase in a firm’s profits.
- (e) Explain an example of opportunity cost in the extract.
- (f) Discuss whether or not a monopoly will charge high prices.
- (g) Discuss whether or not an increase in government spending will lead to economic growth?
- (h) Discuss whether or not a government paying higher state benefits to the unemployed will reduce unemployment.

Q2 Premium Friday

At the start of February 2017, the Japanese government introduced its ‘Premium Friday’ scheme. This encourages employers to allow their workers to leave work at 15:00 on the last Friday of each month, without experiencing any reduction in their wages.

The Japanese government wants to reduce the number of hours people work. One reason is to improve the health, and so possibly the productivity, of workers. Fig. 1.1 shows the average number of hours worked and productivity (GDP per hour worked in US \$) in six selected countries.

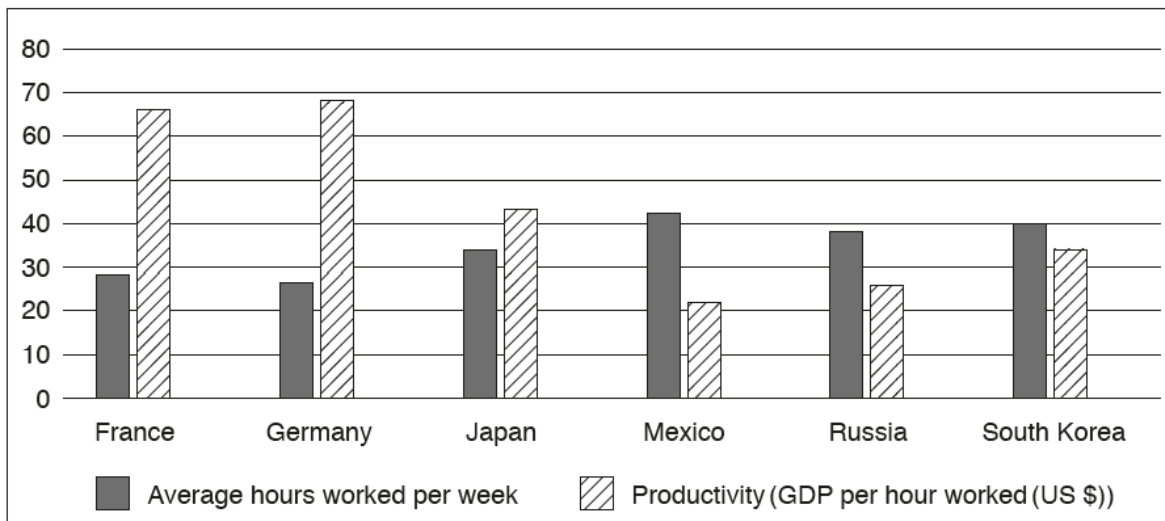


Fig. 1.1 Average hours worked and productivity of selected countries in 2017

Nearly one quarter of Japanese workers work more than 50 hours a week and some work more than 25 hours overtime a week. The average Japanese worker only takes half of their paid holidays. Nearly 20 years of low economic growth and deflation have created a sense of job insecurity. Trade unions in Japan have been concentrating on trying to achieve shorter working hours.

The government thinks that working fewer hours would give people more time to bring up a child and look after elderly relatives. Japan’s birth rate has fallen every year for the last 36 years, and at a faster rate than the fall in the death rate leading to a fall in the size of the population.

The government hopes more leisure time will encourage an increase in consumer spending.

Higher consumer spending would benefit Japanese firms and would reduce the chances of deflation returning.

The initial response to Premium Friday was not promising. At the end of February 2017, only 4% of Japanese workers left early. In the longer run, however, the scheme may be more successful.

This is because unemployment in the country had fallen with only 2 million out of a labor force of 66 million being unemployed at the end of February 2017. Low unemployment increases job security and usually increases wages. In Japan's case, however, the higher demand for labor has been matched by a higher supply. Some of this higher supply has come from migrant workers, but a greater proportion has come from more Japanese people working past retirement age and more women working.

- (a) Identify, using information from the extract, **two** factors that influence an individual's choice of occupation.
- (b) Explain, using information from the extract, an opportunity cost of working.
- (c) Calculate, using information from the extract, the number of Japanese workers who left work early on Premium Friday in February 2017.
- (d) Explain two consequences of a recession.
- (e) Analyze, using Fig. 1.1, the relationship between the average hours worked and productivity.
- (f) Discuss whether or not a cut in income tax would stop deflation.
- (g) Explain, using information from the extract, why wage rises have been low in Japan.
- (h) Discuss whether or not Japan will benefit from employing more migrant workers.

Q 3 A new capital for Zambia

Zambia is a middle-income country but one with 60% of its population of 15 million living below the poverty line. In 2017, the Zambian government announced that it was planning to move the country's capital from Lusaka in the south of the country to Ngabwe, a village in the centre of the country. Ngabwe currently lacks good roads and other infrastructure. A move to Ngabwe, however, may help the country to cope with its high rate of population growth and encourage entrepreneurs to set up new businesses in that area. In 2017, the country had a zero net migration rate, a birth rate of 41.8, a death rate of 12.4, and a life expectancy of 52.5 years.

Zambia's economic growth rate averaged 6.8% between 2004 and 2014. This rate fell after 2014 due, in part, to depreciation in the kwacha, Zambia's currency. The reduction in the foreign exchange rate of the kwacha contributed to the rise in the country's inflation rate from 10.1% in 2015 to 20.6% in 2016.

In 2017, the labor force of 7.2 million accounted for 48% of the country's population. Workers are employed in a range of industries including agriculture, banking, building, copper mining, and emerald mining. Fig. 1.1 shows the relationship between copper output and revenue from the sale of copper, the index for 2010 is 100.

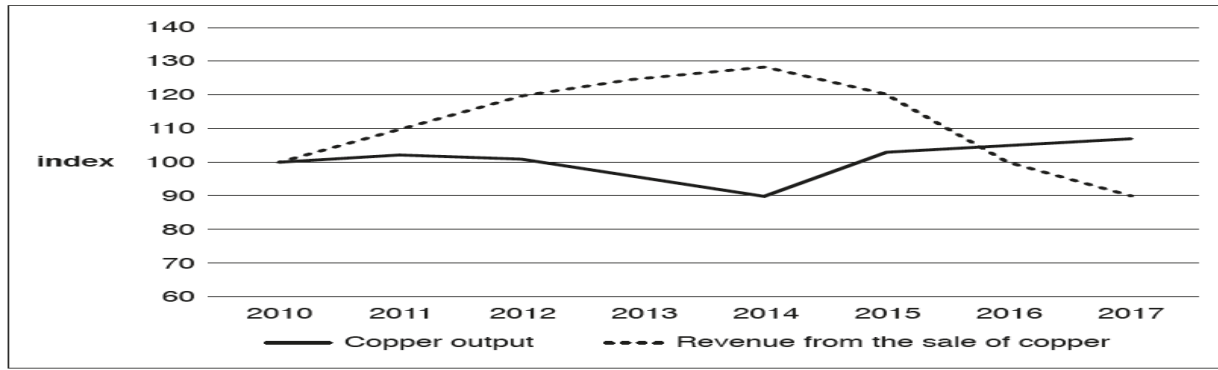


Fig. 1.1 Copper output and revenue from the sale of copper 2010—17 (index numbers)

In 2017, Zambia's central bank reduced commercial bank lending. This lowered investment and household borrowing. Government spending rose more slowly and some cuts were made to the government's spending on training.

- Identify, from the extract, **two** primary sector industries.
- Calculate, using information from the extract, how many people in Zambia lived in poverty in 2017.
- Explain, using information from the extract, why Zambia had a high rate of population growth in 2017.
- Discuss how a cut in the rate of interest could reduce unemployment?
- Analyze, using Fig. 1.1, the relationship between copper output and revenue from the sale of copper.
- Discuss whether or not a central bank should reduce commercial bank lending.
- Explain, using information from the extract, **two** reasons why productivity may have been low in Zambia.
- Discuss whether or not building a new city will benefit an economy. [6]

Q4 Driverless cars and advances in technology

It is predicted that driverless cars, powered by electricity, will be on the roads by 2030. Driverless cars have already been tried out on the roads in some cities, including Pittsburgh in the USA. It is thought that driverless cars will reduce accidents, will have lower repair costs and will create less pollution.

At first, the supply of driverless cars may exceed the demand, but it is expected that they will soon grow in popularity. As more driverless cars come into use, the demand for bus travel and petrol stations may decline, and some taxi drivers may be made redundant. In contrast, the increased access to transport that driverless cars will give to people, including the elderly, is likely to increase demand for out of town restaurants and places of entertainment.

It has been forecast that the technology being developed in connection with driverless cars will make the supply of them elastic. It is predicted that an 8% rise in the price of driverless cars would cause a 20% rise in the quantity supplied.

Advances in technology and the replacement of workers by machines are forecast to destroy 80 million jobs in the USA. Job losses are also forecast in other countries and trade unions are likely to be less able to resist these due to a fall in membership and governments reducing the power of trade unions. Among the jobs thought to be at risk are accountants, train drivers and financial advisers. Demand for workers in other occupations,

including doctors and dentists, may increase but there is a risk that unemployment may rise. The more educated workers are, the more easily they can move from one occupation to another. Table 1.1 shows education spending as a percentage (%) of GDP and the unemployment rate in selected countries.

Table 1.1 Education spending and the unemployment rate in selected countries

Country	Education spending as a % of GDP	Unemployment rate (%)
Argentina	5.3	8.0
Brazil	5.8	13.5
Ghana	6.5	12.0
New Zealand	7.3	4.8
South Africa	6.0	26.0
USA	8.2	4.7

Jobs selling houses and flats may decline but it is expected that the demand for building workers may increase. Some people welcome house building in their area but others oppose it.

- (a) Identify, from the extract, **two** pairs of substitutes.
- (b) Explain, using information from the extract, whether the market for driverless cars is expected to be in equilibrium in 2030.
- (c) Calculate, using information from the extract, the price elasticity of supply (PES) of driverless cars.
- (d) Explain, using information from the extract, **two** external costs that driverless cars could reduce.
- (e) Analyze, using Table 1.1, the relationship between educational spending and the unemployment rate.
- (f) Discuss whether or not an increase in house building will benefit the people who live in the area.
- (g) Explain, using information from the extract, **two** reasons why the power of trade unions may decline in the future.
- (h) Discuss whether or not a rise in unemployment is harmful.

Q 5 Jordan's search for new sources of energy:

Jordan is currently trying to find new sources of the energy for the country's firms, firms and household to use. It is exploring the possibility of nuclear power generation and has started to produce solar energy. The country benefits from long hours of sunshine and the solar energy industry converts sunshine into power.

Jordan is not the only country to be developing a solar energy industry. Other countries include China, Dubai, India, Italy, the UAE and the UK. Indeed, 2016 was the first year in which the world invested more in the industry than in coal and gas-fired power generation. Solar power is seen as a cleaner and more environmentally friendly source of energy. With advances in technology, the price of solar panels is falling. This is reducing the cost of producing solar energy and its price to customers, increasing its price competitiveness. In a number of countries the price of coal is rising which is reducing the sales of coal.

Jordan's agricultural industry needs a boost. The country lacks water and some of its land is very fertile. It does produce a range of agricultural products including citrus fruits, tomatoes, cucumbers and olives. The country has benefited from an increased preference for fruits. In 2016, shortages of lemons pushed up their price and increased

imports. The country could not take full advantage of this change as the price elasticity of supply was only 0.25. the table shows how the price of lemons rose throughout one month in 2016 and how this affected demand.

Price of 1 KG of lemons(Jordanian Dinars)	Daily demand for lemons (tones)
1.00	200
1.20	180
1.50	144
2.00	32

The price and demand for lemons in one month in Jordan in 2016.

Agriculture is small industry in the country. It only accounted for 4% of the country's output and employed only 2% of its workers in 2016. Most of the country's workers are employed in the public sector where the wages are higher. For example, in 2016 25,000 people were employed in the police force. This position is, however, changing. A number of country's industries have been privatized and market forces are playing an increasing role in the economy.

- (a) Explain why sunshine is a free good.
- (b) Explain why demand for coal is likely to become more elastic in the future.
- (c) Calculate the effect that an 8% rise in the price of lemons would have on the demand for lemons.
- (d) Analyze how changes in the price for lemons affected the price elasticity of demand for lemons.
- (e) Analyze, using a demand and supply diagram, the effect of an increased preference for the fruit on the market for fruit.
- (f) Explain whether Jordan operates a market economic system or a mixed economic system.
- (g) Discuss whether or not a rise in the price of a product, such as coal, will always be accompanied by a fall in sales.
- (h) Discuss whether or not governments have to produce public goods such as the police service.

12. Computer Science

Assignment #1

Identify three different loop structures that you can use when writing pseudocode.

Assignment #2

Identify two different conditional statements that you can use when writing pseudocode.

Assignment #3

A program will be written to store information about members of a swimming club. The following membership details will be recorded:

- ❖ Name
- ❖ Gender
- ❖ Status:
 - Senior
 - Junior
- ❖ Fee
- ❖ Team member (Yes or No)

(i) Choose a suitable data type for each of the membership details to be recorded.

(ii) The swimming club has 50 members.

State the data structure that would be most suitable to use and give a reason for your choice.

Assignment #4

(a) Write an algorithm to input three different numbers, and then output the largest number. Use either pseudocode or a flowchart.

(b) Give two sets of test data to use with your algorithm in part (a) and explain why you chose each set.

Assignment #5

Write an algorithm using either pseudocode or a flowchart, to:

- input a positive integer
- use this value to set up how many other numbers are to be input
- input these numbers
- calculate and output the total and the average of these numbers.

Assignment #6

(a) Four pseudocode descriptions and five pseudocode statements are shown. Draw one line to link each pseudocode description to the correct pseudocode statement. Not all pseudocode statements will be used.

Pseudocode description	Pseudocode statement
A loop that will iterate at least once.	FOR...TO...NEXT
A conditional statement to deal with many possible outcomes.	IF...THEN...ELSE...ENDIF
A loop that will iterate a set number of times.	WHILE...DO...ENDWHILE
A conditional statement with different outcomes for true and false.	CASE...OF...OTHERWISE...ENDCASE
	REPEAT...UNTIL

Assignment #7

(a) Write an algorithm, using pseudocode or a program flowchart only, that:

- inputs a series of positive numbers (-1 is used to terminate the input),
- outputs how many numbers were less than 1000 and
- outputs how many numbers were greater than 1000.

b) Write an algorithm, using pseudocode or a program flowchart only, that

- inputs fifty numbers each as 4 separate digits, for example: 1 5 4 1
- outputs the percentage of numbers that were palindromes.

(note: a palindrome reads the same way backwards or forwards. For example, 1331 is a palindrome but 1541 is not).

Use separate variables to store the separate digits of a number (for example D1, D2, D3, D4).

Assignment #8

A small café sells five types of item:

- bun 0.50 dollars
- coffee 1.20 dollars
- cake 1.50 dollars
- sandwich 2.10 dollars
- dessert 4.00 dollars

Write an algorithm, using pseudocode or a program flowchart only, which

- inputs every item sold during the day,
- uses an item called “end” to finish the day’s input,
- adds up the daily amount taken for each type of item,
- outputs the total takings (for all items added together) at the end of the day,
- outputs the type of item that had the highest takings at the end of the day.

Assignment #9

small shop uses barcodes which represent 5 digits. The last digit is used as a check digit.

For example:

a	b	c	d	e
0	1	2	3	4

The check digit (e) is found by:

- multiplying the first and third digits (i.e. a and c) by 3
- multiplying the second and fourth digits (i.e. b and d) by 2
- adding these four results together to give a total
- dividing this total by 10
- remainder is check digit (e)

Write an algorithm, using pseudocode or flowchart only, which

- inputs 100 five-digit barcodes in the form a, b, c, d, e
- re-calculates the check digit for each number and checks whether the input check digit (e) is correct
- outputs the number of barcodes which were entered correctly

Assignment #10

Write an algorithm, using pseudocode or a program flowchart only, which:

- inputs the population and land area for 500 countries,
- calculates the population density (i.e. population/land area) for every country,
- outputs the largest and smallest population density,
- outputs the average population for all 500 countries.

Assignment #11

5000 numbers are being input which should have either 1 digit (e.g. 5), 2 digits (e.g. 36), 3 digits (e.g. 149) or 4 digits (e.g. 8567).

Write an algorithm, using pseudocode or flowchart only, which

- inputs 5000 numbers
- outputs how many numbers had 1 digit, 2 digits, 3 digits and 4 digits
- outputs the % of numbers input which were outside the range

Assignment #12

(a) Write an algorithm, using pseudocode and a FOR ... TO ... NEXT loop structure, to input 1000 numbers into an array.

(b) Rewrite your algorithm using another loop structure.

Assignment #13

A programmer writes a program to store a patient's temperature every hour for a day. State the data structure that would be most suitable to use and give the reason for your choice.

Assignment #14

Write an algorithm in pseudocode, using a single loop, to print 50 names that have been stored in an array.

Assignment #15

A database was set up showing the largest ocean-going liners. Part of the database is shown below.

Liner ID	Year built	Gross Tonnage	Country of Registration	Country of Construction
OA	2009	225 282	Norway	Finland
IN	2008	154 407	Norway	Finland
QM	2004	148 528	UK	France
EX	2000	137 308	Norway	Finland
VO	1999	137 276	Norway	Finland
GP	1997	108 865	UK	Italy
DE	1996	101 509	USA	Italy
SP	1995	77 499	UK	Italy
SO	1988	73 192	Norway	France
FR	1972	66 343	France	France
QE	1940	86 673	UK	UK
NO	1935	79 280	France	France
MJ	1922	56 561	UK	Germany
TI	1912	46 329	UK	UK
MA	1907	31 938	UK	UK

- How many records are shown in the above part?
- Using Liner ID only, what would be output if the following search condition was typed in: (Year built < 2000) AND (Country of Registration = Country of Construction)?
- Write the search condition to find out which liners have a gross tonnage larger than 80 000 or are registered in the UK.

Assignment #16

A survey of motorways was carried out and a database was produced. A section of the database is shown below.

Motorway ID	Length (km)	Cars per day	Toll charge per km (\$)	Number of lanes
M1	100	50 000	0.60	2
M2	210	75 000	0.40	3
M3	180	60 000	0.50	4
M4	40	20 000	0.30	3
M5	25	15 000	0.10	2
M6	100	40 000	0.70	4
M7	30	10 000	0.40	2
M8	150	60 000	0.60	4

- How many fields and how many records are shown?
 - number of fields
 - number of records
- Using Motorway ID only, what would be output if the following search condition was used? (Length (km) > 100) AND (Number of lanes > 3)

(c) What search condition is needed to find the motorways where the number of cars per day exceeds 50 000 or the toll charge per kilometre is greater than \$0.50?

Assignment # 17

A database, PROPERTY, was set up to show the prices of properties for sale and the features of each property. Part of the database is shown below.

Property Type	Brochure No	Number of Bedrooms	Number of Bathrooms	Garden	Garage	Price in \$
Bungalow	B17	7	4	Yes	Yes	750,000
Apartment	A09	2	1	No	No	100,000
House	H10	4	2	Yes	No	450,000
House	H13	3	2	Yes	No	399,000
Apartment	A01	2	2	No	Yes	95,000
Apartment	A16	1	1	No	No	150,000
House	H23	3	1	No	Yes	250,000
House	H46	2	1	Yes	Yes	175,000

- (a) Give the number of fields that are in each record.
- (b) State which field you would choose for the primary key. Give a reason for choosing this field.
- (c) State the data type you would choose for each of the following fields.

Garage

Number of Bedrooms

Price in \$

- (d) The query-by-example grid below selects all houses with more than 1 bathroom and more than 2 bedrooms.

Field:	Property Type	Number of Bedrooms	Number of Bathrooms	Price in \$	Brochure No
Table:	PROPERTY	PROPERTY	PROPERTY	PROPERTY	PROPERTY
Sort:				Ascending	
Show:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:	= 'House'	>2	>1		
or:					

Show what would be output.

- (e) Complete the query-by-example grid below to select and show the brochure number, property type and price of all properties with a garage below \$200,000.

Assignment #18

A picture gallery owner has decided to set up a database to keep information about the pictures he has for sale. The database table, PICTURE, will contain the following fields:

Title; Artist; Description; Catalogue Number; Size (area in square centimetres); Price; Arrived (date picture arrived at gallery); Sold (whether picture is already sold)

- (a) (i) State what data type you would choose for each field.

Title

Artist

Description

Catalogue Number

Size

Price

Arrived

Sold

(ii) State which field you would choose for the primary key.

(b) Give a validation check that you can perform on each of these fields. Each validation check must be different.

Catalogue Number

Size

Price

Arrived

(c) Complete the query-by-example grid below to select and show the Catalogue Number, Title and Price of all unsold pictures by the artist 'Twister'.

Field:					
Table:					
Sort:					
Show:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:					
or:					

Assignment #19

An online fruit tree specialist sells fruit trees in various sizes. A database table, TREETAB, shows the tree type and, for each size, the price and whether they are in stock.

Tree Type	Size1	Size1 In	Size2	Size2 In	Size3	Size3 In
Apple	10.95	Yes	14.95	Yes	29.95	Yes
Apple	12.95	Yes	14.95	Yes	29.95	Yes
Cherry	24.95	No	34.95	No	59.95	Yes
Fig	19.95	Yes	29.95	No	49.95	Yes
Guava	19.95	No	29.95	No	59.95	No
Nectarine	8.50	Yes	11.95	Yes	19.95	Yes
Olive	19.95	No	39.95	Yes	59.95	Yes
Peach	9.25	No	11.95	Yes	19.95	Yes
Pear	10.95	Yes	14.95	Yes	29.95	Yes
Plum	8.95	Yes	11.95	Yes	19.95	Yes
Pomegranate	12.95	No	18.95	Yes	34.95	No
Quince	34.95	Yes	44.95	Yes	84.95	No

(a) State whether any of the fields shown would be suitable as a primary key. Explain your answer.

(b) Complete the table to show the most appropriate data type for each of the fields based on the data shown in the table at the start of question 19.

Field	Data type
Tree Type	
Size3	
Size2 In	

(c) Show the output that would be given by this query-by-example.

Field:	Tree Type	Size1	Size1 In		
Table:	TREETAB	TREETAB	TREETAB		
Sort:		Descending			
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:		<10.00			
or:					

(d) Using the following query-by-example grid, write a query to identify all types of the fruit trees that are out of stock for all three sizes. Make sure the type of the tree and the various 'in stock' fields are shown. The trees should be listed in alphabetical order by type.

Field:					
Table:					
Sort:					
Show:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:					
or:					

13. 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>

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>

Article 4:

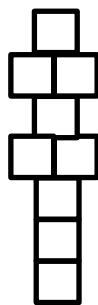
Nutritionists Admit You Can Just Eat Hotdogs And Live Like That For Basically Decades

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

14. 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 juggling 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, turn 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 your 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.

15. 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.

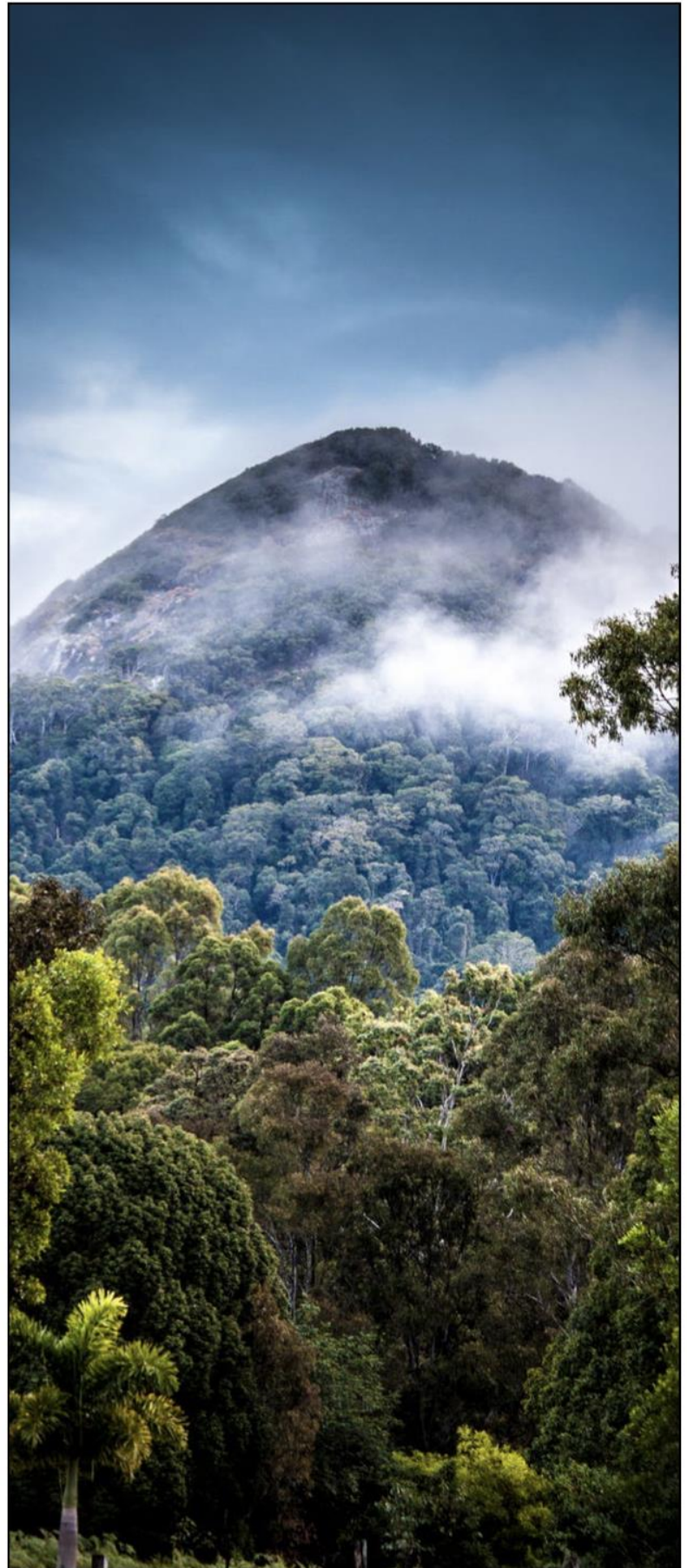
8. Reflect: List at least three things you learnt about deforestation from this material.

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.



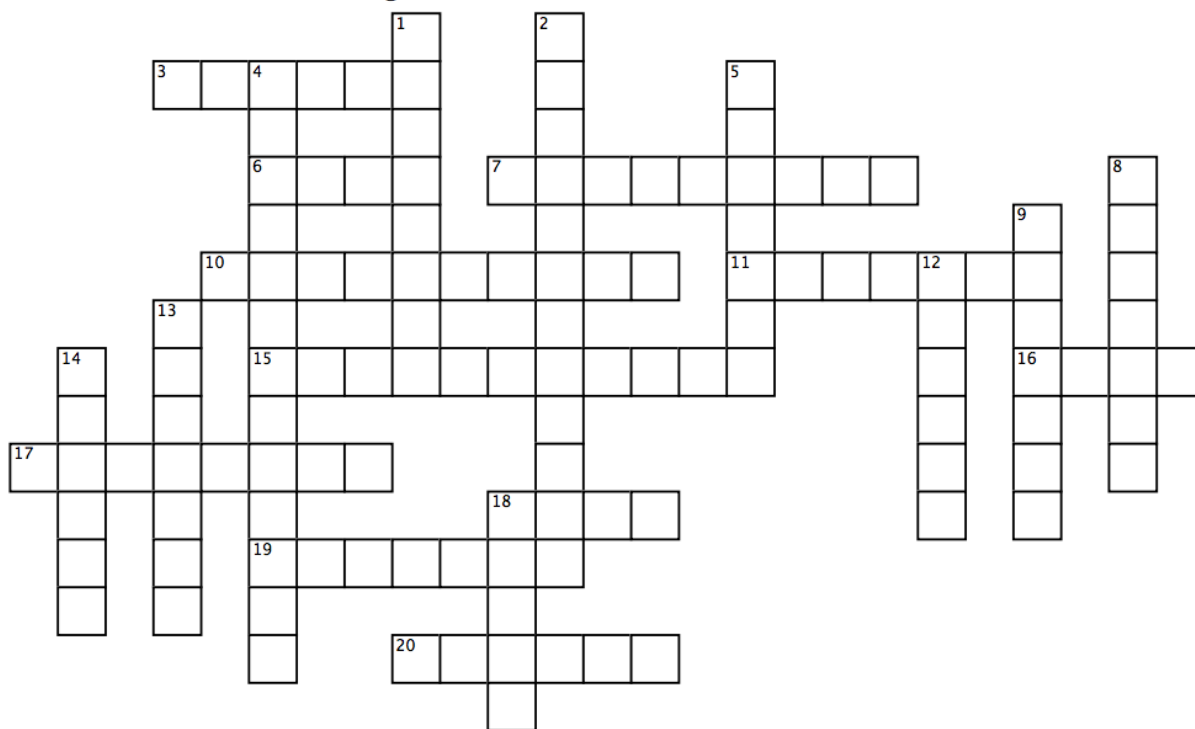
What can I do?

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

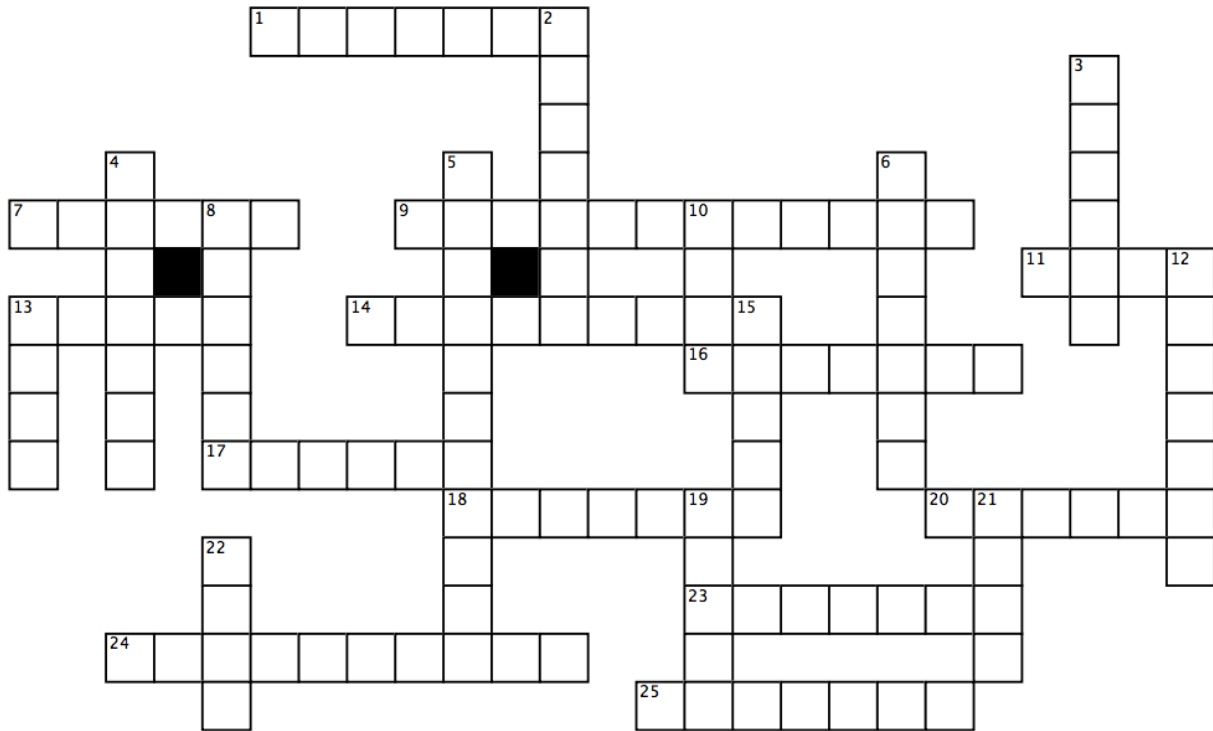
3. France's government announced it will 'encourage every actor (producers, businesses, investors, and consumers), to change their practices in order to _____ deforestation.'
6. In Sudan, trees are cut down to be used as household cooking _____ and heating, and for commercial production of steam-generated 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

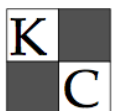


Across

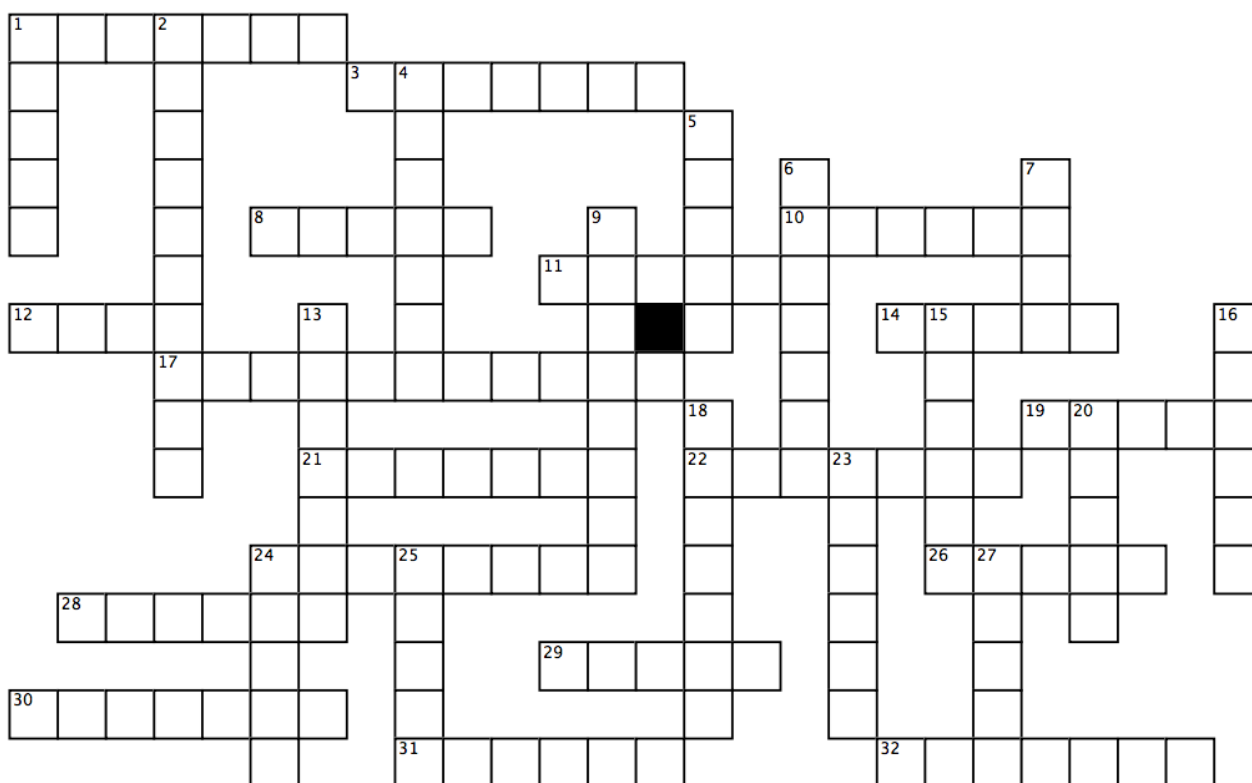
1. 80% of all land _____ and plants live in forests.
7. Forests absorb greenhouse gases that would otherwise fuel _____ warming.
9. Deforestation occurs because people clear forested land to make space for _____ activities such as cattle ranching.
11. Forests keep the _____ moist by blocking the sun 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 which 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 of 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 _____.