

ARROW

TechBrain

Computer Science

BOOK - 1

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PREFACE

TechBrain series on Computer Science is unique in many ways. It focuses on ensuring that the student not only learns the latest in the world of technology but also gets amply challenged to test and consolidate the learning in an easy to read, simple to understand way. Overall, it is intended to inspire students to be curious and delve into the subject and at the same time learn and apply the learning to good effect.

Our day-to-day activities are so deeply intertwined with technology that a life without internet, mobile phones and computers is unimaginable. The advancement of technology is not expected to abate anytime soon in future. In such a scenario it is, therefore, essential that an exposure to computers be made compulsory for children in a manner that generates interest in wanting to learn more and appreciate more. It is in that capacity that this series becomes all the more relevant and effective.

This series for classes 1-8 has been conceptualised in accordance with the practical requirements of the end user. To encourage higher order thinking skills (HOTS), the lab activities extend beyond the usual lab exercises while the project work included in each chapter helps reinforce the learning. The data bank will keep the student updated, with latest developments and the extra information through the several Knowledge Bytes are expected to make understanding easy and fun.

Check points after each concept to gauge the understanding are a way to consolidate the learning. Each chapter also has game plans containing links of websites with topic related games.

Special emphasis has been laid on identifying and explaining difficult words and complex terminologies, which guarantee unhindered learning. While technology has made our lives easy it also comes with its package of threats and risks. It has opened up the sinister world of hacking, data theft and several other risks. An appreciation of student related real-life issues of netiquette, cyber bullying, cyber safety tips presented in the pages will strengthen awareness on these critical aspects of safe usage of technology.

Teacher's note at the end of each chapter is a guiding point for them to understand how to impart collaborative learning and encourage students to participate in the learning process.

Enough research has gone into crafting this series with inputs from expert practitioners. The hands-on approach, the practical way of dealing with the most critical and sensitive topics, and the small tips and tricks will undoubtedly help the students in generating interest in knowing more, and expanding their learning and solidifying it.

We hope this series serves its purpose well and suggestions for improvement are most welcome.

- Publishers

TechBrain Highlights

As per the new pattern issued by **CBSE**

Safety Tips
strengthens the awareness in the students about safe usage of technology.

Higher Order Thinking Skills (HOTS) tests logic and understanding of the student.

Knowledge Bytes
provides interesting snippets of information.

Data Bank keeps student updated with latest developments.

Game Plan
provides links of websites with topic related games.

Lab Time
practical assignment based on concept.

Lab Activity
provides hands on activity to give an insight into the working of computers.

Check Points
tests the understanding of each concept.

Project Work
reinforces learning.

Teacher's Note
guides teachers to impart learning with active participation.

Tips & Tricks
Fun elements added to make the learning enjoyable.



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Machines

1

Look at these pictures.



vacuum cleaner



washing machine



dishwasher



iron

These are machines that help us with our household work.

What is a machine?

A machine is a tool that helps us do our work easily. It is a non-living thing and needs energy to perform any task.

Here are a few more examples of machines that we use in our everyday life.



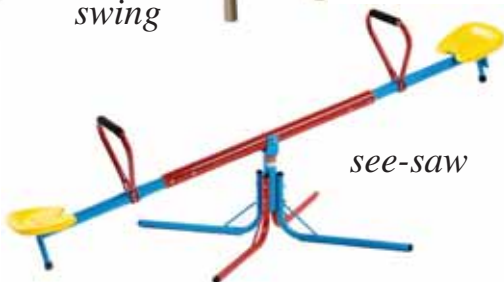
swing



car



slide



see-saw



hair dryer



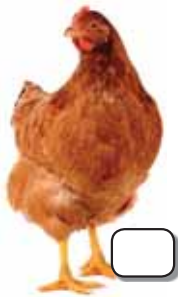
computer





Activity

Tick (✓) the machines from the following.



Characteristics of a Machine

- * It needs external force, electricity or fuel.
- * It is a man-made thing.
- * It cannot work on its own.
- * It is run and controlled by humans.
- * Machines work fast.



Advantages of a Machine

- * Saves time
- * Makes human tasks easier
- * Does not make mistakes
- * Does not get tired
- * Increases quality of work





Interesting Facts

The earliest machines were invented over 2 million years ago. These were rock axes used by early man for hunting.



People made windmills and water movers around the time of the birth of Christ.

Even monkeys and some other animals use simple tools like sticks and rocks to get food.



Activity

Choose a word to fill in the blanks.

mistakes tired energy easy work fuel

1. A machine makes a task _____.
2. A machine cannot _____ on its own.
3. A machine does not make _____.
4. A machine does not get _____.
5. A machine requires _____ or _____ to run.

Different Machines

In our everyday life, we use a number of machines. Each of these machines helps us to do our work quickly and easily. Depending on how they work, these machines have been grouped into different categories. They are :

Mechanical machines are machines that work with human power.



bicycle



sewing machine



hand water pump

Fuel-powered machines are machines that run on fuel such as petrol or diesel.



aeroplane



jeep



motorbike

Electrical machines are machines that run on electricity.



refrigerator

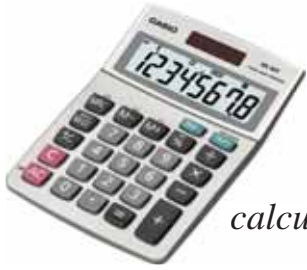


bread toaster



table fan

Electronic machines are machines that need less electricity but perform more interesting and useful things.



calculator



computer



mobile phone



Activity

Draw lines to match the machines to the different categories.



mechanical
machines



fuel-powered
machines



electrical
machines



electronic
machines



Computer as an Electronic Machine

smart machine

works very fast

easy to operate

saves time



It takes commands from you, works for you and then gives you the desired result.

Using a computer you can:



listen to music



play games



watch movies



store information

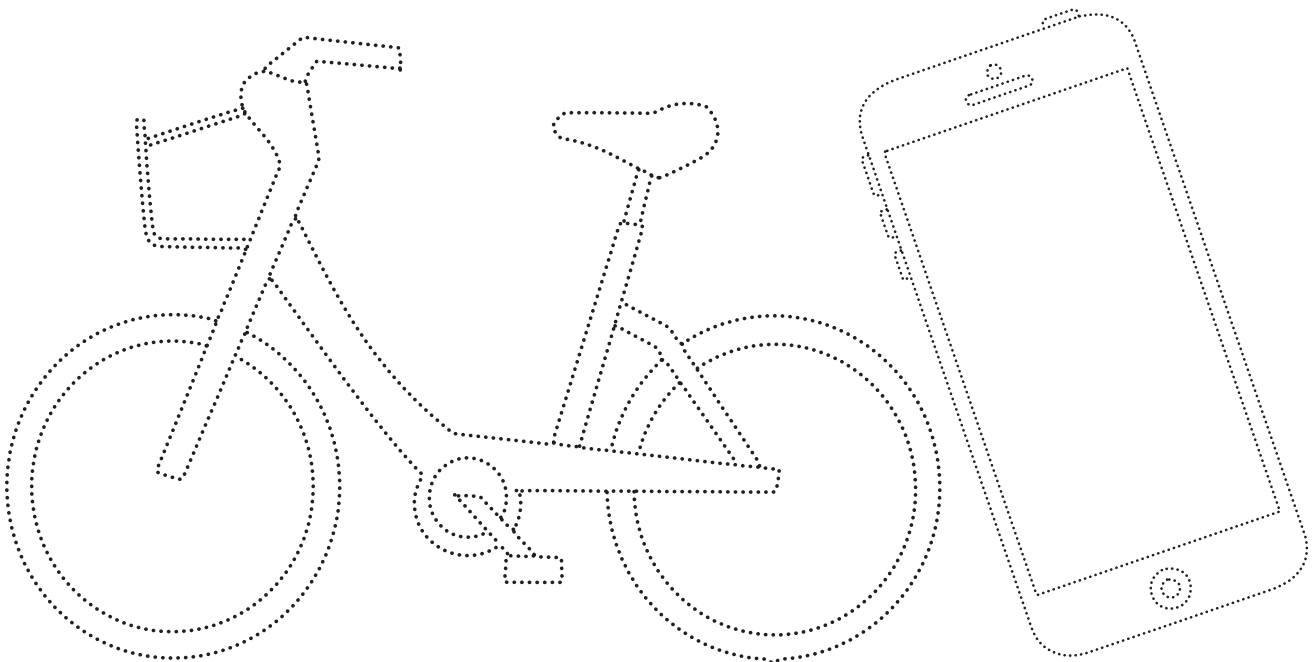


calculate fast



Activity

I. Join the dots to complete the pictures.



II. Fill in the picture with colours of your choice.



Data Bank

Computers are used in:



banks



hospitals



business



education



defence



engineering and robotics



entertainment

Have you watched these?

Cartoon films and animated movies are created using computers.



Teacher's Note

To help students grasp the concept of machines, ask them to look around and to write down names of five or six machines they can see in the classroom.

Hint: sharpener, locks, fans, lights etc.

Be Creative

Draw and colour two machines, one mechanical and one electrical/electronic.

Explore

Collect pictures of machines and paste them in your notebook.

Lab Time

Ask your teacher to help you to start Notepad. Type in names of 10 machines that are used in everyday life.



EXERCISE

I. How is a computer different from you? Write 'Yes' or 'No' in the boxes.

1. A computer can do sums very quickly.
2. A computer cannot remember a lot of things.
3. A computer does not forget things.
4. A computer does not make mistakes.
5. A computer does not get tired.
6. A computer can think.
7. A computer cannot move.

II. The names of a few machines are hidden in the box, vertically, horizontally and also diagonally. Find them out. Use a colour pencil to colour the names.

Hint: washing machine, television, car, cycle, fan, computer, juicer, calculator

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