

EXERCISE 1

Match the number to its corresponding unit of measurement and fact from the article.

Number		Unit of Measurement		Fact
1. 2 billion	●	seconds	●	Atomic clocks can measure time to within one second in this period of time
2. 15	●	times	●	Optical clocks can keep time for this long
3. over 80 million	●	years	●	A normal wristwatch loses this length of time each month
4. less than one	●	years	●	Optical clocks are more accurate than atomic clocks by this number
5. at least 21	●	metre	●	The minimum distance of an object on the surface of the Earth that optical clocks on satellites can detect

EXERCISE 2

Fill in the blanks with the common or proper nouns.



GPS Louis Essen
 electrons clock ships
 lasers caps scientists
 second years cars
 standard ranges NIST

1. Optical clocks use lasers to detect and measure the frequency with which electrons in atoms vibrate.

2. Scientists at the National Institute of Standards and Technology or _____ **NIST** _____ in Colorado, USA, have created the most advanced _____ **clock** _____ in the world.
3. _____ **Scientists** _____ believe that within the next 10 years, it will be possible to create a clock that is so accurate that it will work with total accuracy for 13.7 billion _____ **years** _____.
4. Atomic clocks measure time to within one _____ **second** _____ in over 80 million years.
5. British physicist, _____ **Louis Essen** _____, created atomic clocks in 1955.
6. Optical clocks will replace the existing atomic ones by 2010 in order to set an even more accurate _____ **standard** _____ for universal time than they do now.
7. The optical clocks are already having an impact in the field of global positioning systems or _____ **GPS** _____.
8. GPS satellites track planes, _____ **ships** _____ and _____ **cars** _____.
9. Scientists also believe that satellites armed with optical clocks will one day map the world's ice _____ **caps** _____ and mountain _____ **ranges** _____ with total accuracy.

GROUP ACTIVITY

- Time is precious. In business, time equates with money. In sports, time and speed equates with winning. In personal life, time means accomplishment if it is well spent. Read these quotes and discuss what they mean:

1. **Time is the coin of your life. It is the only coin you have, and only you can determine how it will be spent. Be careful lest you let other people spend it for you. ~ Carl Sanders**
Time is compared to a coin. It is valuable and it is entirely up to you how you spend or use it. If you let others consume or use your time, you are letting the value of time slip away.

2. **The great French Marshall Lyautey once asked his gardener to plant a tree. The gardener objected because the tree**



was slow growing and would not reach maturity until 100 years later. The Marshall replied, 'In that case, there is no time to lose; plant it this afternoon!' ~ John F. Kennedy
If something takes a long time to achieve, don't contemplate or pass it up altogether; instead, start doing it right away and don't let others stop you. Make your dream come true.

- 3. Time is an equal opportunity employer. Each human being has exactly the same number of hours and minutes every day. Rich people can't buy more hours. Scientists can't invent new minutes. And you can't save time to spend it on another day. Even so, time is amazingly fair and forgiving. No matter how much time you've wasted in the past, you still have an entire tomorrow. ~ Denis Waitely**
Every day is a new day. Make the most of it. If your past had not been so productive, don't dwell on it and don't repeat it. Make each new day count.
- 4. Better three hours too soon, than one minute too late. ~ William Shakespeare**
Always plan and be prepared. Then you can stand a better chance of succeeding. Otherwise, you might regret your missed opportunities. Another saying is "The early bird catches the worm".
- 5. "Time is free, but it's priceless. You can't own it, but you can use it. You can't keep it, but you can spend it. Once you've lost it you can never get it back." ~ Harvey MacKay**
Make use of your time. Take action on any given opportunity. There's more to gain if you give it a try but nothing to gain if you don't.
- 6. For every minute spent in organising, an hour is earned.**
Planning and organising can save you a lot of time and hard work in the long run. Being efficient is also a key to success.
- 7. You can't change the past, but you can ruin the present by worrying about the future.**

Let go of past failures. Don't let it affect your daily life and future goal. Don't waste time worrying whether you will succeed or not. Instead, channel those energies into productive ones so that your dream can be realised.

8. Don't count every hour in the day, make every hour in the day count.

Don't watch time. Do useful things with your time. Don't just sit; be proactive.

9. We all have our time machines. Some take us back; they're called memories. Some take us forward; they're called dreams. ~ Jeremy Irons

Make your time machine a special one. Do positive things with your time so you can have plenty of happy memories. Enjoy what you are doing currently so time won't be a chore. And work at your goals so that they will turn into reality.