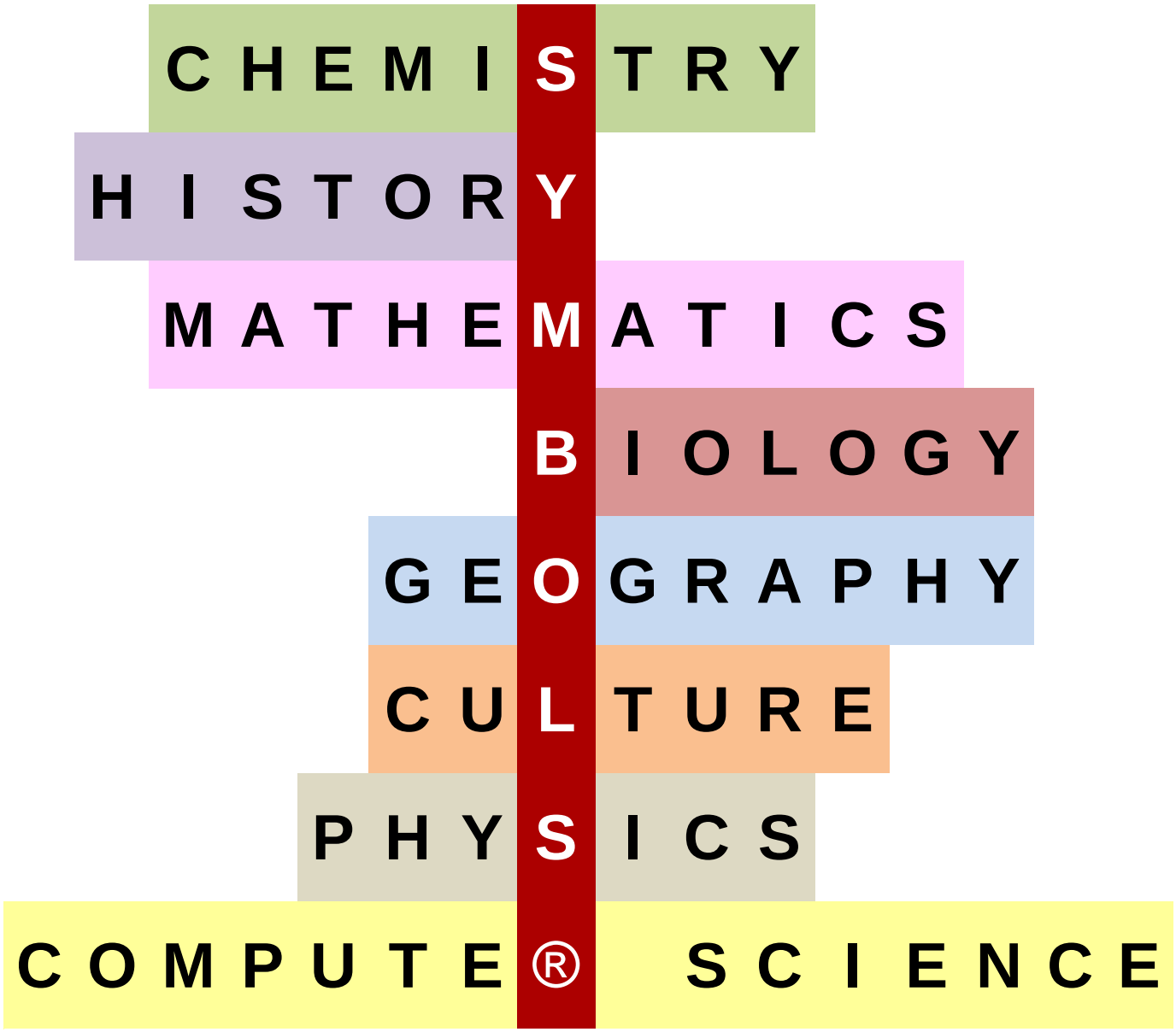
VIII Liceum Ogólnokształcące im. Adama Asnyka w Łodzi
2012



Ćwiczenia w języku angielskim

Drodzy Nauczyciele!

Zintegrowane kształcenie przedmiotowo-językowe[1] *staje się coraz częściej codziennością szkolną. Szkoły, które od lat prowadzą ujęte w system klasy dwujęzyczne, zbierają tylko dobre doświadczenia. Nabycie jak najwcześniej kompetencji zdobywania wiedzy poprzez język obcy to konieczność współczesnego świata i czas najwyższy, aby dotychczasową naukę języka obcego zawężoną do sytuacji dnia codziennego rozszerzyć o sytuacje szkolne.*

Korzystając z doświadczeń klas dwujęzycznych z językiem niemieckim, nauczyciele VIII LO w Łodzi, znający język angielski, pokusili się o próbę napisania kilku ćwiczeń koncentrujących się wokół głośnego czytania symboli (w tym liczb) i występowania ich w poszczególnych przedmiotach. Są wśród zadań także krótkie teksty, diagramy i tabele, których głośna interpretacja zawsze sprawia trudności. Część zadań to zadania, w których liczby są pretekstem do ćwiczenia słownictwa i utrwalenia wiedzy przedmiotowej.

Mamy nadzieję, że zaproponowane ćwiczenia zachęcą nauczycieli przedmiotów niejęzykowych do wypróbowania ich na swoich lekcjach, a także do prób tworzenia własnych (uwzględniających aktualne tematy) zadań, zachęcających uczniów do podejmowania trudu zdobywania wiedzy poprzez wybrany język obcy.

W imieniu zespołu
Elżbieta Świerczyńska

Konsultacja językowa	*Anna Markowska & Joshua Skjold*
Skład	*Elżbieta Ździebło*
Koordynator projektu	*Elżbieta Świerczyńska*

[1] Zintegrowane kształcenie przedmiotowo-językowe = **CLIL.** *Akronim **CLIL** jest używany jako określenie definiujące **wszystkie** **typy świadczeń edukacyjnych**, w których drugi język (język obcy, język regionu lub język mniejszości oraz/albo inny oficjalny język państwowy) stosuje się do nauczania / uczenia się pewnych przedmiotów / tematów – innych niż lekcje języka obcego.*
Źródło: http://eacea.ec.europa.eu/portal/page/portal/Eurydice

BIOLOGY

B 1. The composition of the air. Complete the sentence and read it aloud:

The air consists of: a. …… of oxygen,
b. …… of nitrogen
c. ……. of carbon dioxide.

78% N_2
0.03% CO_2
21% O_2

THE HUMAN BODY IN FIGURES

B 2. Write the numbers and, where necessary, the units found in the text. Use abbreviations or symbols (e.g. %).

The man has:

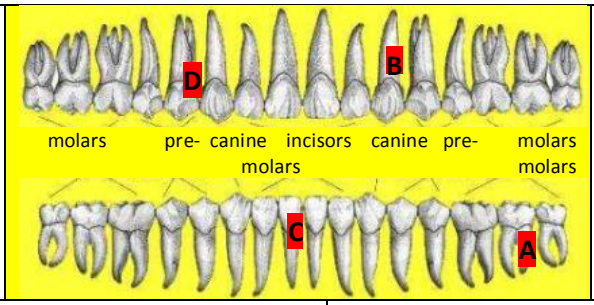
A.	thirty one spinal nerves	*31*
B.	about sixty per cent of water	
C.	forty six chromosomes	
D.	four thousand cubic centimetres of vital capacity in lungs	
E.	thirty six point six degrees Celsius of temperature	
F.	An adult has about sixty – eighty heart-beats per minute,	
G.	the blood pressure averages out at one hundred and twenty millimetres of mercury column	
H.	and at eighty millimetres of mercury column (Hg)*.	

**blood pressure* – BP = Hg

B 3. Fill in the right numbers and read the text aloud.

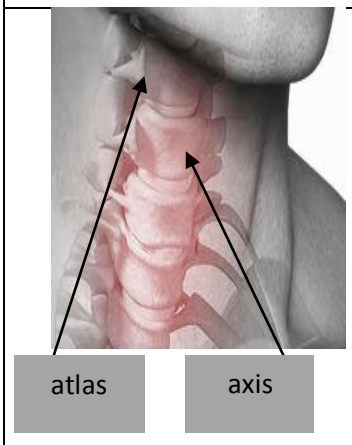
A TEETH

The man has
a. … teeth:
b. … canines
c. … incisors
d. … premolars
e. … molars
f. … wisdom tooth



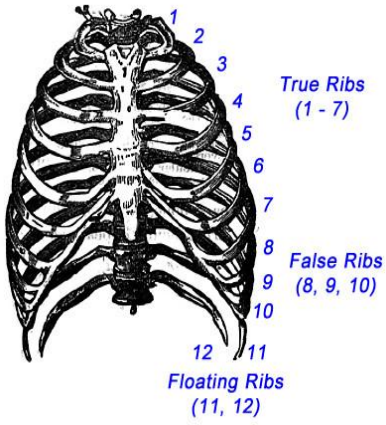
At the dentist's
the tooth A – *lower left seven*
the tooth B – *upper left three*
the tooth C – *g*. ……
the tooth D – *h*. …….

B NECK VERTEBRA



Atlas is the *a*. …… neck vertebra and axis is the *b*. …….. one.

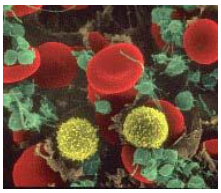
C RIBS



The man has *a*. ….. pairs of ribs.

The *b*. ….. rib and the *c*. ….. rib are called floating ribs.

B 4. Complete the sentence adding the appropriate values and read them aloud.



A healthy man has about a. ……. erythrocytes, b. ……. leucocytes and c. ……. platelets.

6 000/mm^3
5 000 000/mm^3
250 000/mm^3

B 5. Read aloud Ann Robert's blood test results shown below. Make use of the units found in the reference range.

Ann has 15.0 grams of haemoglobin per 100 millilitres of blood.

BUPA WELLNESS AUSTIN FRIAR	
Forename: ***Ann***	Seen by: ***Dr Brian Sedah***
Surname: ***Roberts***	Date of Visit: ***20.11.***
Age: ***16***	Lab. No.: ***06529176***

BLOOD COUNT	RESULTS	REFERENCE RANGE
Haemoglobin (Hb)	***15.0***	11.5 to 16.5 grams per 100ml of blood
Red Blood Cells	***4.9***	3.8 to 5 x 10 ^{12}/l (3.8 to 5 million per cubic millimetre of blood)
White Blood Cells	***9.9***	4 to 11 x 10 ^{9}/l (4,000 to 11,000 per cubic millimetre of blood)
Lymphocytes	***2.0***	1.3 to 4.0 x 10 ^{9}/l(1,300 to 4,000 per cubic millimetre of blood)
Platelets	***276***	150 to 440 x 10 ^{9}/l (150,000 to 440,000 per cubic millimetre)

B 6. KILOCALORIES

A. How many kilocalories does each of the following products have per 100 grams?
Fill the gaps.
B. R**ead it aloud.**

kcal/100g
250
290
357
497
887

a bread roll
250 Kcal/100g

oil
a. .....

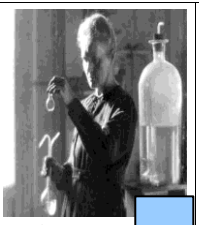
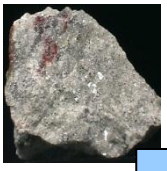
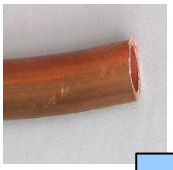
meat
b. .....

cheese
c. .....

chocolate
d. .....

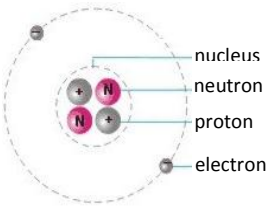
CHEMISTRY

C 1. Write the symbol of an element under its name. Read the names aloud. Be careful about the pronunciation.

 Radium	 Sulfur	 Neon	 Phosphorus	 Gold	Au Ne S Ag K Co P Cl Ra Mg Hg Al Cu Ba Zn C O
 Mercury	 Barium	 Potassium	 Silver	 Chlorine	 Magnesium
 Cobalt	 Zinc	 Copper	 Carbon	 Oxygen	 Aluminum

C 2. How many protons, neutrons and electrons are there in each of the following atoms?

$^{27}_{13}\mathrm{Al}$, $^{15}_{7}N$, $^{226}_{88}\mathrm{Ra}$, $^{35}_{17}\mathrm{Cl}$, $^{137}_{56}\mathrm{Ba}$



The atom of aluminum has 13 electrons, 13 protons and 14 neutrons.

C 3. How many protons and electrons are there in each of the following ions?

$^{24}_{12}Mg^{2+}$, $^{37}_{19}K^{+}$, $^{35}_{17}Cl^{-}$, $^{32}_{16}S^{2-}$

In Magnesium there are 12 protons and 10 electrons.

C 4. What is the molecular mass the following compounds. Write, calculate and read aloud.

A. $C_{12}H_{22}O_{11}$

B. C_2H_6

C. C_4H_8

m_C = 12 u m_H = 1 u m_O = 16 u

+ plus - minus · times = equals

A. $12 \cdot 12 + 1 \cdot 22 + 11 \cdot 16 = 144 + 22 + 176 = 342\ amu$
Twelve times ....

B. $12 \cdot$ … … … … ….

C 5. Assign oxidation numbers to each element in the following compounds and read the entire sentence.

A. CO_2
B. NH_3
C. K_3PO_4
D. $NaClO_3$
E. $Na_2Cr_2O_7$

A. The oxidation number of carbon is four and the oxidation number of oxygen is minus two.
B. …

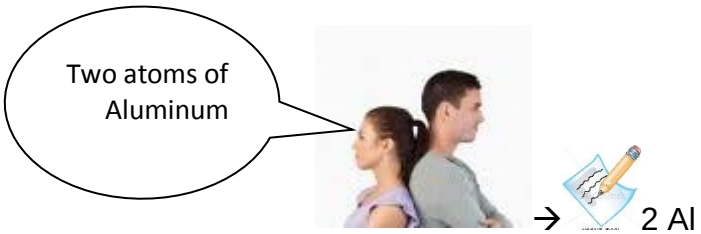
C 6. Read the information from the following table as a sentence.

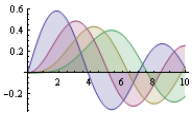
Atomic number of Selenium is thirty four, its number of mass is seventy nine.

	Kind of Atom	Atomic Number	Mass Number	Nr of Protons	Nr of Electrons	Nr of Neutrons
1.	selenium	34	79	34	34	45
2.	calcium	20	40	20	20	20
3.	phosphorus	15	31	15	15	16
4.	barium	56	137	56	56	81
5.	aluminum	13	27	13	13	14

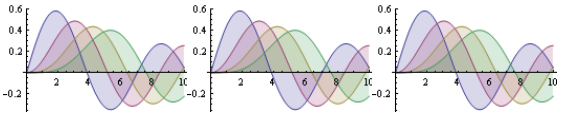
C 7. PAIR DICTATION

Work in pairs.
Write behind assistance of number and chemical served amount symbol of element and dictate to each other.





MATHEMATICS



M 1. Fractions:
Fold a sheet of paper in half (along the vertical line below) and do the following exercise (you can start either with the left or the right side). Check the results. Read everything aloud.

Read the numbers aloud	Write it down as a symbol
$\frac{1}{2}$	one half
$\frac{1}{3}$	one third
$\frac{1}{7}$	one seventh
$\frac{3}{4}$	three quarters
$\frac{1}{100}$	one hundredth
$1\frac{1}{2}$	one and one half
$\frac{11}{2}$	eleven halves
$4\frac{1}{3}$	four and one third
$\frac{23}{6}$	twenty three sixths

M 2. Read the following expressions and match them with the proper symbols from the table below. Then read everything aloud. To make it easier for you one example is already given.

$\sqrt{x}$	%	$\frac{1}{8}; \frac{3}{4}$	a^b	$\frac{3}{4}$	$\sqrt[3]{x}$	$\frac{x}{y}$	$\frac{1}{4}; \frac{3}{4}$	$a \cdot b$	$\frac{11}{7}$

	power of base $\boldsymbol{a}$ and exponent $\boldsymbol{b}$ ($\boldsymbol{a}$ raised to the $\boldsymbol{b}$ -th power; $\boldsymbol{a}$ to the power $\boldsymbol{b}$)		fraction with a numerator $\boldsymbol{x}$ and denominator $\boldsymbol{y}$ ($\boldsymbol{x}$ divided by $\boldsymbol{y}$; ratio of $\boldsymbol{x}$ and $\boldsymbol{y}$)
	the square root of x		fractions with common denominators
	the cube root of x		fractions with different denominators
	product of b and b		proper fraction
%	Percent		Improper fraction

M 3. Binominal expansion formulas
A. Based on the formula, write down the expressions in the way you would read them.
B. Work in pairs. Dictate two your partner one example of the binominal expansion. After he/she writes it down, switch the roles.

A. $(a+b)^2 = a^2 + 2ab + b^2$
B. $(a-b)^2 = a^2 - 2ab + b^2$
C. $(a+b)(a-b) = a^2 - b^2$

Your example	Your partners example

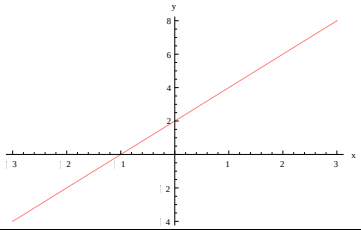
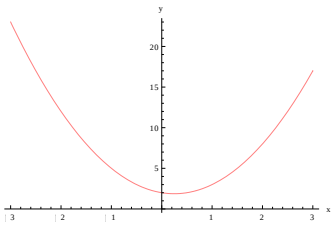
M 4. Choose the right symbol and write it down in the proper place. The set of symbols to choose from is given on the right. Read the expressions aloud.

x y	x equals y
x y	x is different from y
x y	x is greater than y
x y	x is greater than or equal to y
x y	x is less than y
x y	x is less than or equal to y
x y	x is approximately equal to y
x	absolute value of x
	round bracket
	square bracket
	curly bracket

$> = ( ) < \approx \{ \} \leq \neq \geq [ ] |x|$

M 5. Functions
Match the formula describing the function and the plot, then write it down as the plot title. Name the type of the function. Choose from the list below:

$y = ax + b$	$y = ax^2 + bx + c$	linear function	quadratic function

$y =$	$y =$
	
..... function	..... function

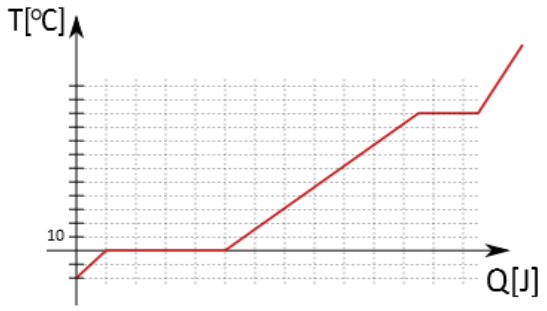
M 6. Looks different, means the same…
Which of the following expressions describe the same formula? Choose the correct sentence from the list below and write down the corresponding letter in the table. Write these formulas in the mathematical form. Finally read everything aloud.

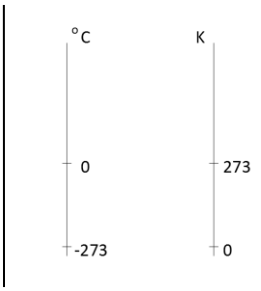
Expression	Letter	Mathematical form
the sum of *a* and *b* taken to the power of four		
square root of *a* plus *b*		
a divided by *b*		
product *a* minus *b* and *a* plus *b*		
the product of *a* and *b*		

A. The ratio of *a* and *b*;
B. The difference of *a* and *b*, multiplied by the sum of *a* and *b*;
C. Open the bracket, *a* plus *b*, close the bracket, raised to the fourth power;
D. Square root of the sum of *a* and *b*;
E. *a* multiplied by *b*.

PHYSICS

PH 1. Read the values of the phase transition temperatures from the graph. Express them in degrees of Celsius and in kelvins. Read everything aloud.





- The temperature of melting is ……°C = …… K
- The temperature of vaporization is ……°C = …… K

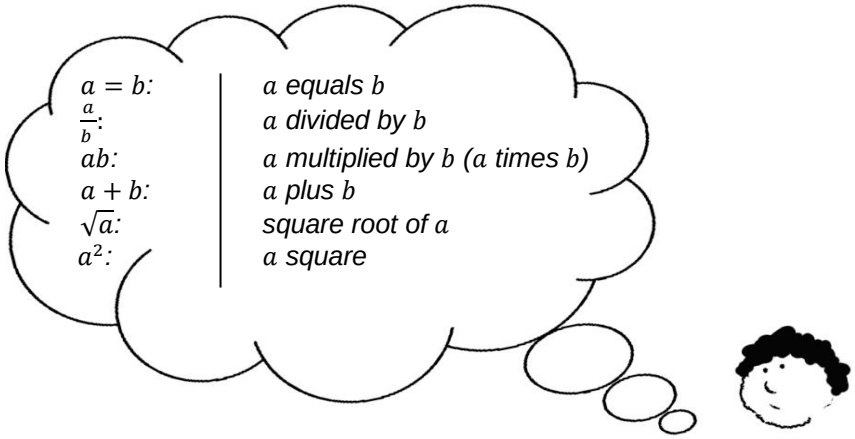
PH 2. Fill the gaps basing on the photos below (give the units!). Then read the numbers aloud.

A. The manometer shows pressure of ……

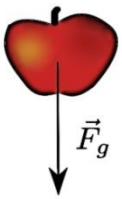
B. The maximal temperature is …… and the minimal temperature is ……

C. The maximum degree of filling of this tank is ……

PH 3. See the examples below, and read aloud the following formulas.



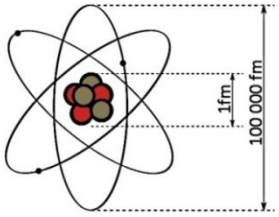
Formula:	**Quantity:**
• $a = \frac{F}{m}$	acceleration
• $E = mc^2$	energy
• $F_g = G\frac{m_1 m_2}{r^2}$	gravitational force
• $v = \sqrt{\frac{GM}{R}}$	orbital speed
• $E = mgh + \frac{m v^2}{2}$	mechanical energy
• $s = v_0 t + \frac{a t^2}{2}$	distance



PH 4. Work in pairs. 1. Fill in the following table in their part; 2. Dictate to each other what you have written; 3. Switch the roles. Then fill in the last column, choosing an object from the list below:

- Microwave wavelength
- Radius of the Earth
- Distance from Earth to the Sun
- Radius of the atom

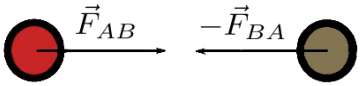
To make it easier for you, the first row is already filled in



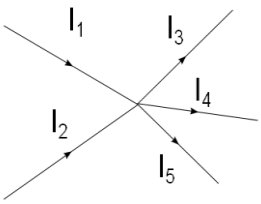
What can be of that size?	Radius of the nucleus				
How do I read that?	Ten to the power of minus twelve		Ten to the power of minus two		Fifteen times ten to the power of ten
Unit	10^{-12} m	10^{-7} m		$6{,}4 \cdot 10^{-6}$ m	

Unit	10^{-12} m		10^{-2} m		$15 \cdot 10^{10}$ m
How do I read that?	Ten to the power of minus twelve	Ten to the power of minus seven		Six point four times ten to the power of six	
What can be of that size?	Radius of the nucleus				

PH 5. Name these fundamental laws of physics by giving their number:

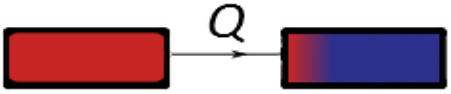


A. "*Every action causes reaction*" is the …… Newtonian law.



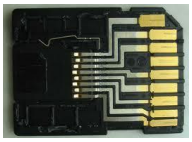
B. "*At any node (junction) in an electrical circuit, the sum of currents flowing into that node is equal to the sum of currents flowing out of that node*" is the Kirchhoff's …….. law.

C. *"A process in which the heat is transferred from a body of lower temperature to a body of higher temperature is impossible"* is the …….. law of Thermodynamics.



COMPUTER SCIENCE

CS 1. The computer and electronic devices. Write down the correct acronym, and then read aloud the acronyms and the full name.

a. …… personal computer	b. …… central processing unit	c. …… random access memory	d. …… liquid crystal display
			
			
e. …… hard disk drive	f. …… or …… compact disc or Digital Video Disc	g. …… Universal Serial Base flash drives	h. …… or …… Secure Digital or Secure Digital High Capacity

RAM
SD/SDHC
HDD
CD/DVD
CPU
USB
PC
LCD

CS 2. How is it measured? Fill the gaps with appropriate units and read the text aloud.

A. CPU is the nerve center of the PC. Clock speed is measured in …..…….. . One …….. simply means one cycle per second, for example ……means four thousand million cycles per second.

B. Random Access Memory (RAM) controls the speed and memory in your computer. RAM sizes come in multiples of ……., such as 32, 64, 128 and so on.

C. At present the RAM capacity is measured in ……. (e.g. 4 GB). The frequency of how it works is measured in …….

D. Capacity of the hard disk HDD is measured in …….. However, the rotation speed of plates of the hard disk is not less important, a hard drive spins at over 7,200 rpm (in words: …… …… ……).

E. Display resolution and screen size and are basic parameters of the LCD monitor. Display resolution is usually quoted as width × height, with the units in pixels: e.g. "1920 × 1080" means the width is ……..and the height is ……... Screen size is measured diagonally and is usually quoted in ……

F. An optical disc like a CD can hold from …… to ……. data, and a basic DVD can hold from ……. to …… . A Blu-ray disc has a capacity from …… (single layer) to ……. (sixteen layers).

G. Popular SD cards are used in mobile phones and cameras. The Speed Class Rating is the official unit of speed measurement for SD cards and is usually quoted in …….. (in words: ……..).

CS 3. Numeral systems

decimal system	$255_{(10)}$	base ten
binary system	$11111111_{(2)}$	base two
hexadecimal system	$FF_{(16)}$	base sixteen

Fill the gaps and read aloud:

A. Decimal Number System is the system which we use in everyday counting. The number system includes the …….. digits from 0 to 9. The prefix "……..-" stands for 10, it is based on ten, for example: 1492 = $(1*10^3) + (4*10^2) + (9*10^1) + (2*10^0)$ (in words ……..…….. ……..……)

B. Binary Number System is used in computers for counting and arithmetic, their CPU and memory are made up of millions of tiny switches that can be either in …… and …….. states. ……..… represents OFF and ……. represents ON. Binary system has …. numbers 0 and 1. It has base …… . The prefix "…….-." stands for 2. For example $65_{(10)}$ equals ……$_{(2)}$ (in words: ……)

C. Hexadecimal Number System works exactly like the decimal and binary systems, except that the base is …... The prefix "……-" stands for 6 and the prefix "deci-" stands for ….. Each …… represents a power of 16. The system uses ….. to ….. numbers and A to F characters to represent …… respectively.

CS 4. Quiz

The chosen student is reading the next questions aloud. Chosen students are answering.

A. How many characters can be recorded by means of 1 byte? Give an example.

B. How many bits does 1 byte consist of?

C. What kind of symbols will you get if you use the following combination Shift + 1, Shift +2, Shift + 3, Shift + 4, Shift + 5, Shift + 6, Shift + 7, Shift + 8, Shift +9, Shift + 0?

D. Put the following values in increasing order: 10000 Hz, 1KHz, 1GHz, 100MHz, 1Hz

E. Put the following units of memory in decreasing order: 1GB, 1KB, 1TB, 1MB, 1B

E. Are 1Mbps and 0.125 MBps the same internet speeds? Justify your answer.

CS 5. INTERNET

A. Write any Internet address of some length and dictate it to your partner. Have you found it?

The typical address of a file on the Internet looks like this:
http://www.8lolodz.eu/. Http means Hypertext Transfer Protocol, www means world wide web, 8lolodz.eu/ is the domain name.
The parts of the address are separated by . (dot), / (slash) and : (colon)

B. Look below and dictate the email address to your partner.

124_user_name@my-domain.eu

_ : underscore/underline
- : hyphen

The typical address of an email looks like this:
login@domain.com, which is read as login at domain dot com.

CULTURE

K 1. Literary periods in the *Polish literature*. Which century is it? Give exact years. Fill in and read as a sentence.

The Middle Ages in the Polish literature are dated from ……. to…...

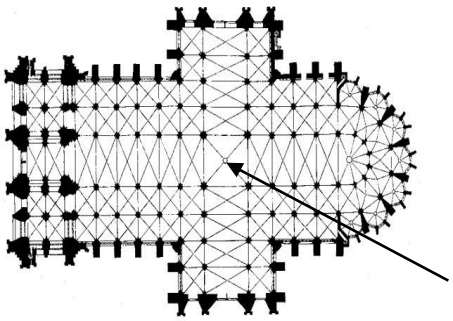
1.	The Middle Ages	10th century → middle of the 16th century
2.	Renaissance	from the end of the 15th century → beginning of the 17th century
3.	Baroque	from the end of the 16th century → middle of the 18th century
4.	Age of Reason	1740s → …
5.	Romanticism	
6.	Positivism	
7.	Young Poland	
8.	Interbellum	
9.	World War II	
10.	Contemporary literature	

Jean-Honoré Fragonard
French, 1732 - 1806
Young Girl Reading

K 2. Describe (orally) the Cologne cathedral using the data given.

The gothic High Cathedral of Sts. Peter and Mary in Cologne was enlisted as a UNESCO World Heritage Site in 1996. It was built for over 600 years…

The High Cathedral
of Sts. Peter and Mary
in Cologne



construction commencement	1248
construction completion	1880
length	144,58 m
width	86,25 m
internal nave height*	43,35 m
area	7914 m²

*43,35 m – that is the height of a ten-storey building

K 3. Fill in the information about Frederic Chopin and read the text aloud. Use the English version of The Fryderyk Chopin Institute: http://en.chopin.nifc.pl/institute/

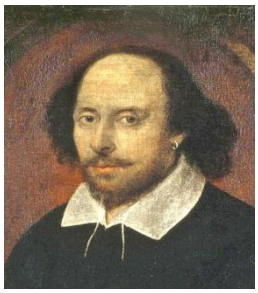
(Eugène Delacroix –1838)

Frédéric Chopin was born in Zelazowa Wola on (a) 22nd February or (b) ….. March (c)…….. His earliest compositions were written before he was (d)…….. Frederic's first public performance took place in Warsaw on (e)…….. February (f)…… . Between (g) ..... he was a student of the Warsaw Music School. He was mainly interested in folk music then.
On (h) …….. November (i)…….. Chopin left Poland never to return. He spent (j)…….. years in Paris. Frederic Chopin died on (k)…… October (l)…… He was buried at Père-Lachaise. His heart was brought to Poland by his sister. Right now it is preserved at the Holy Cross Basilica in Warsaw.
Frederic Chopin composed i. a. (m) …….. piano concertos, (n) …… mazurkas, (o) ……. polonaises, (p) …… etudes, (q)…… preludes, (r) …… songs, (s)…….. nocturnes, (t)…….. waltzes.

K 4. Talk about the life and work of William Shakespeare on the basis of the information given.

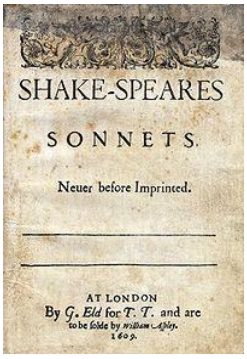
William Shakespeare was born and died in Stratford-upon-Avon.
He lived between… the reign of … He was …

Reigning monarch	Elisabeth I, James I
Occupation	poet, playwright, actor
Active years	1586-1612
Workplace	The Globe, London
Sonnets	154
Dramas	over 30
Most famous works	e.g. *Macbeth, Romeo and Juliet, Henry V*
Drama adaptations	about 420
Interesting adaptation	*Macbeth by a 20th century Japanese director,* Akiro Kurosawa
Neologisms created	about 600



William Shakespeare
*1564 Stratford-upon-Avon
✞1616 Stratford-upon-Avon

K 5. Fill in the definitions with the correct numbers. Read the definitions aloud and remember about the correct form of the numerals.



Sonnet – a form of a poem consisting of …… lines divided into …… stanzas. The first two have …… lines each, the last two have …… lines each.

Limerick – a kind of a humorous poem, mostly consisting of …… lines. At the end of …… line there usually is a geographical name of a country or city/town.

Sapphic stanza – consists of …… lines, the first three have …… syllables, the last one …… syllables.

4, 11,
4, 14,
3, 4, 5,
1, 5,

HISTORY

H 1. How long did the fighting last? Calculate the periods and complete the sentences. Read them aloud.

A. The War of the Roses began in the year 1455 and ended in the year 1485. The war lasted ... years.

B. The biggest war was called the Hundred Years War, it began in the year 1337 and ended in the year 1453. The war lasted ... years.

C. The war between Poland and The Teutonic Order started in the year 1454 and ended in the year 1466. The war lasted ... years.

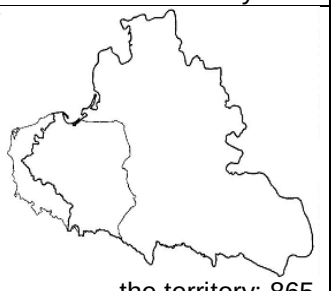
D. The Second World War began in the year 1939 and ended in the year 1945. The war lasted ... years.

E. The Warsaw Uprising began on 1 August 1944 and ended on 2 October 1944. The Uprising lasted ... days

H 2. The territory of Poland between the 11th and 21st centuries. Choose proper dates from the ones given below and read aloud the information about the Polish territory according to the following pattern. The numbers referring to the territory stand for thousands of km^2.

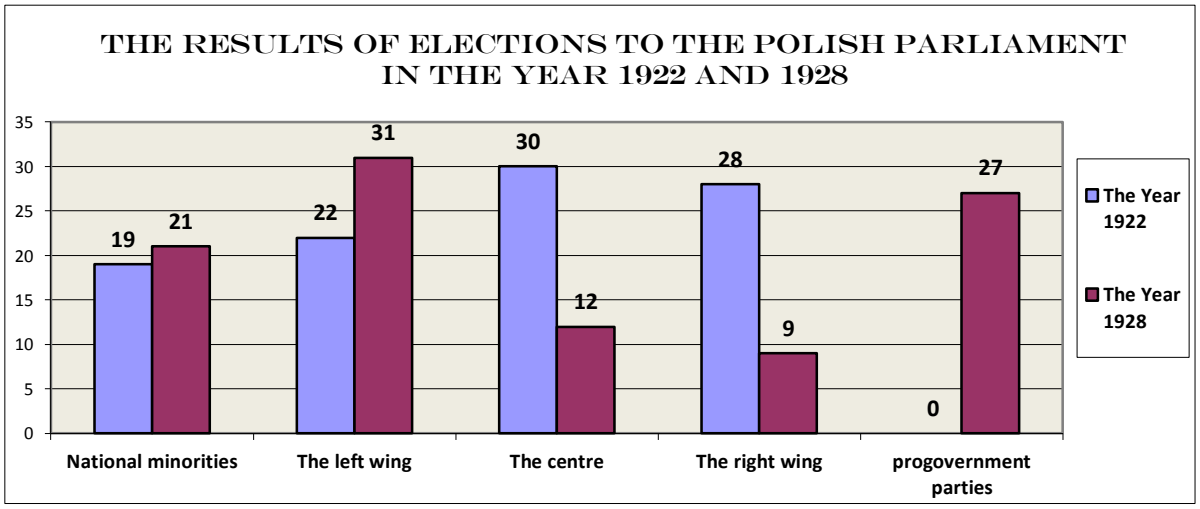
In the year ....., during the reign of Casimir III , Poland had the territory of two hundred and forty thousand square kilometres.

1025 1370 1572 2012

A  The monarch *Casimir II*  Poland in the year ...; the territory: 240.	B  The monarch *Boleslaus the Brave*  Poland in the year ...; the territory: 250.
C  The Republic of Poland  Poland in the year ...; the territory: 313.	D  The monarch *Sigismund II*  Poland in the year ...; the territory: 865.

H 3. The results of the Elections to the Polish Parliament in the year 1922 and 1928. Read the figures referred to in the diagram below according to the following pattern:

In 1922,67% of all eligible voters took part in the elections to the Polish Parliament.
.... % voted for national minorities, ... % voted for ....
In 1928, 78% ...



Na podst.: M. Przybyliński, Poznać przeszłość, zrozumieć dziś. Dzieje najnowsze: 1872-2006, Stentor, Warszawa 2007, s.135, 137

H 4. When did they begin to rule? Fill in the appropriate dates. Read the answers aloud as full sentences.

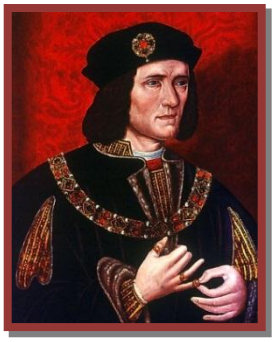
George the Sixth started his reign in …….

George VI .....

Elizabeth II .....

1066 1483
1509 1936
1952

William I .....



Richard III .....

Henry VIII .....

GEOGRAPHY

G 1. Long, deep or wide? Complete the sentences and read them aloud.

1. Certain trees in rain forests are up to 60 m ____.
2. The Nile is 6 852 km ____.
3. The Earth is about 4.6 billion years ____.
4. The equator is 40 076 km ____.
5. The Mariana Trench is 10 994 ± 40 m ____.
6. The Amazon in the estuary is almost 80 km ____.
7. Poland is 312 679 km^2 ____.
8. The biggest geological bore-hole on the Earth is 12 262 m ____.
9. The border between England and Scotland is 154 km ____.
10. The largest goldmine in South Africa is 3.9 km ____.
11. Lake Tanganyika is 673 km __, 50 km __ and has a surface of almost 33 000 km²

high, long 4 x, old, deep 3x, big, wide 2 x

G 2. What do these symbols mean?

a. Read the given symbols aloud.

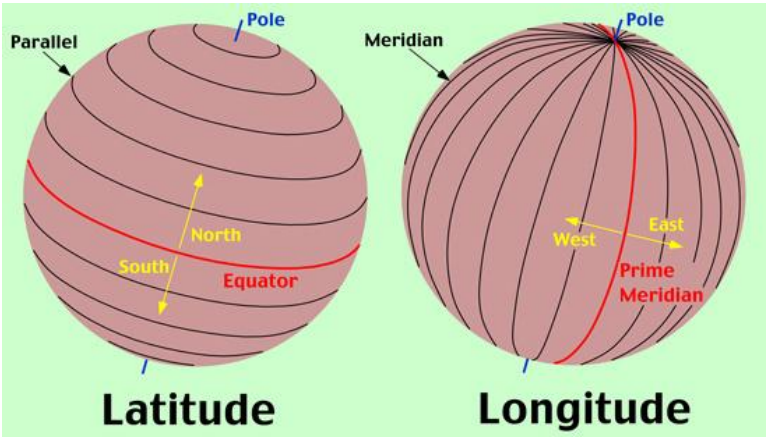
%, ‰, p/km², hPa, ºC, km², km^3, mm, cm, $, (€) EUR, km/h, m/s

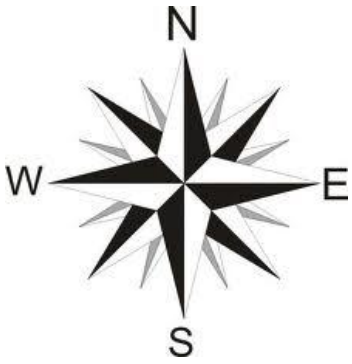
b. Fill in the gaps and read the sentences aloud.

1. Population density in Poland is 122 people ____.
2. Infant mortality rate in the Third World is about 8____.
3. Population growth in the Third World is over 20____.
4. Illiteracy rate in Niger is 70 ____.
5. The delta of the Nile is 24 000 ____big.
6. Lake Baikal's capacity is 23 000 ____.
7. Daily temperature amplitude on the desert is 50 ____.
8. The annual rainfall in the equator zone is over 2 000 ____.
9. The afforestation in Poland is ____.
10. Average air pressure on sea level is 1 013.25 ____.
11. The highest peak in the Tatra National Park is Rysy (2 499 ____ above sea level).
12. On a map with a scale of 1:40 000 000, the Chinese Wall is 6.78 ____long.

$, hPa, m, ºC , km², km^3, mm, cm, … per km², ‰, % (3x)

G 3. Geographical position





Fold a sheet of paper in half (along the vertical line below) and do the following exercises (you can start either with the left or the right side).
Check the results. What is there at the locations given?

	Read the numbers aloud	Write it down as a symbol
1.	**1:50000**	1 cm on the map equals 500 m in reality.
2.	**1:300000**	1 cm on the map equals 3 km in reality.
3.	**40° N, 3° W**	latitude of forty degrees north; longitude of three degrees west
4.	**52°31′ N, 13°41′ E**	latitude of fifty two degrees thirty one minutes north, longitude of thirteen degrees forty one minutes east
5.	**69° 6′ N, 15° 43′ E**	latitude of sixty nine degrees six minutes north, longitude of fifteen degrees forty three minutes east
6.	**20° 17′ 0″ S, 57° 33′ 0″ E**	latitude of twenty degrees seventeen minutes and zero seconds south, longitude of fifty seven degrees thirty three minutes and zero seconds east
7.	**90° 0′ 0″ S**	latitude of ninety degrees (zero minutes and zero seconds)

G 4. PAIR DICTATION

Play in pairs.

1. **Partners fill in the gaps in their part.**
2. **Partners dictate to each other the coordinates and look for the appropriate points on the map. Which geographical places are defined by the coordinates shown below?**

Partner A	Partner B
35°41’22”N 139°41’30”E	31° 57’ S, 115° 51’ E
34° 3’ N, 118° 15’ W	43° 18’ N, 5° 23’ E
52°13’N 21°00’E	47° 8' 0" N, 9° 31' 0" E
4°10’N 73°30’E	33° S 70° W
48°52’N 2°21’E	50°03’41”N 19°56’18”E
51°30’N 0°W	40°43’N 74°00’W

BIOLOGY

B 1. a. twenty one per cent; **b.** seventy eight per cent; **c.** three hundredth per cent.
B 2. A. 31; B. +/- 60%; C. 46; D. 1000 cm^3; E. 36.6 ^{0}C; F. 60-80/min; G. 120 mm/Hg; H. 80 mm/Hg.
B 3. A *a*. 32; *b*. 4; *c*. 8; *d*. 8; *e*. 12; *f*. 4; *g*. the tooth C - lower right one; *h*. the tooth D - upper right five.
B 3. B *a*. first; *b*. second.
B 3. C *a*. 12 (twelve); *b*. 11 (eleventh); *c*. 12 (twelfth).
B 4. a. five million erythrocytes in cubic millimeter; **b.** six thousand leucocytes in cubic millimeter; **c.** two hundred and fifty thousand platelets in cubic millimetre.
B 5. Ann has fifteen grams of haemoglobin per 100 millilitres of blood, and four million nine hundred thousand red blood cells (erythrocytes) per cubic millimetre of blood, nine thousand nine hundred white blood cells (leucocytes), two thousand lymphocytes per cubic millimetre of blood and two hundred and seventy six platelets per cubic millimetre.
B 6. A *a*. 887; *b*. 357; *c*. 290; *d*. 497.
B 6. B A bread roll has two hundred and fifty kilocalories per one hundred grams, cheese has two hundred and ninety kilocalories per one hundred grams, meat has three hundred and fifty seven kilocalories per one hundred grams, chocolate has four hundred and ninety seven kilocalories per one hundred grams and oil has eight hundred and eighty seven kilocalories per one hundred grams.

CHEMISTRY

C 1.

Ra	S	Ne	P	Au	
Hg	Ba	K	Ag	Cl	Mg
Co	Zn	Cu	C	O	Al

C 2. Al – 13(thirteen) electrons, 13(thirteen) protons and 14(fourteen) neutrons; **N** – 7(seven) electrons, 7(seven) protons, 8(eight) neutrons; **Ra**- 88(eighty eight) electrons, 88(eighty eight) protons, 138(one hundred thirty eight) neutrons; **Cl** – 17(seventeen) electrons, 17(seventeen) protons, 18(eighteen) neutrons; **Ba** – 56(fifty six) electrons, 56(fifty six) electrons, 81(eighty one) neutrons.
C 3. In magnesium there are 12(twelve) protons and 10(ten) electrons; In potassium there are 19(nineteen) protons, 18(eighteen) electrons; In chlorine there are 17(seventeen) protons and 18(eighteen) electrons; In sulfur there are 16(sixteen) protons and 18(eighteen) electrons.
C 4. A. Molecular mass of sucrose it twelve times twelve plus one times twenty two plus eleven times sixteen equals three hundred forty two amu; **B**. Molecular mass of ethane it twelve times two plus one times six equals thirty amu; **C**. Molecular mass of butene it twelve times four plus one times eight equals fifty six amu.
C 5. A. The oxidation number of carbon is four and the oxidation number of oxygen is minus two; **B**. The oxidation number of nitrogen is minus three and the oxidation number of hydrogen is one; **C.** The oxidation number of potassium is one and the oxidation number of phosphorus is five and the oxidation number of oxygen is minus two; **D.** The oxidation number of sodium is one and the oxidation number of chlorine is five and the oxidation number of oxygen is minus two; **E.** The oxidation number of sodium is one, the oxidation number of chromium is six and the oxidation number of oxygen is minus two.
C 6. 1. Atomic number of selenium is thirty four, its number of mass is seventy nine. It has thirty four of protons and thirty four of electrons, forty five of neutrons.; **2**. Atomic number of calcium is twenty, its number of mass is forty. It has twenty of protons and twenty of electrons, twenty of neutrons.; **3**. Atomic number of phosphorus is fifteen; its number of mass is thirty one. It has fifteen of protons and fifteen of electrons, sixteen of neutrons.; **4**. Atomic number of barium is fifty six, its number of mass is one hundred thirty seven. It has fifty six of protons and fifty six of electrons, eighty one of neutrons.; **5**. Atomic number of aluminum is thirteen; its number of mass is twenty seven. It has thirteen of protons and thirteen of electrons, fourteen of neutrons.

MATHEMATICS

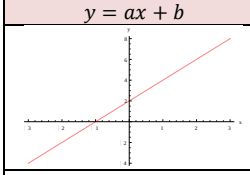
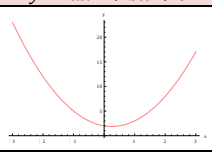
M 2.

a^b	power of base a and exponent b (a raised to the b -th power; a to the power b)	$\frac{x}{y}$	fraction with a numerator x and denominator y (x divided by y; ratio of x and y)
$\sqrt{x}$	the square root of x	$\frac{1}{4}; \frac{3}{4}$	fractions with common denominators
$\sqrt[3]{x}$	the cube root of x	$\frac{1}{8}; \frac{3}{4}$	fractions with different denominators
$a \cdot b$	product of b and b	$\frac{3}{4}$	proper fraction
%	Percent	$\frac{11}{7}$	Improper fraction

M 3. A. Open the bracket, a plus b, close the bracket, square equals a square plus two a times b plus b square; B. Open the bracket, a minus b, close the bracket, square equals a square minus two a times b plus b square; C. Open the bracket, a plus b, close the bracket, open the bracket, a minus b, close the bracket equals a square minus b square;
M 4.

$x = y$	x equals y
$x \neq y$	x is different from y
$x > y$	x is greater than y
$x \geq y$	x is greater than or equal to y
$x < y$	x is less than y
$x \leq y$	x is less than or equal to y
$x \approx y$	x is approximately equal to y
$\|x\|$	absolute value of x
( )	round bracket
[ ]	square bracket
{ }	curly bracket

M 5.

$y = ax + b$	$y = ax^2 + bx + c$
	
linear function	quadratic function

M 6.

Expression	Letter	Mathematical form
the sum of a and b taken to the power of four	C	$(a+b)^4$
square root of a plus b;	D	$\sqrt{a+b}$
a divided by b	A	$\frac{a}{b}$
product a minus b and a plus b	B	$(a-b)(a+b)$
the product of a and b	E	$a \cdot b$

PHYSICS

PH 1.

A. 0°C =273 K, zero degrees of Celsius equals two hundred and seventy three kelvins;
B. 100°C =373 K, one hundred degrees of Celsius equals three hundred and seventy three kelvins.

PH 2.

A. 0,84MPa, zero point eighty four megapascals; **B.** –40°C, 20°C, minus fourty degrees of Celsius, twenty degrees of celsius; **C.** 80%, eighty percent

PH 3.

A. *a* equals *F* divided by *m;* **B.** E equals *m* times *c* square; **C.** F_g equals *G* times m_1 times m_2 divided by *r* squre; **D.** *v* equals square root of *G* times *M* divided by *R;* **E.** *E* equals *m* times *g* times *h* plus *m* times *v* square divided by two; **F.** *s* equals v_o times *t* plus *a* times *t* square divided by two.

PH 4.

Unit	How do I read that?	What can be of that size?
10^{-12} m	Ten to the power of minus twelve	Radius of the nucleus
10^{-7} m	Ten to the power of minus seven	Radius of an atom
10^{-2} m	Ten to the power of minus two	Microwave wavelength
$6,4 \cdot 10^{6}$ m	Six point four times ten to the power of six	Radius of the Earth
$15 \cdot 10^{10}$ m	Fifteen times ten to the power of ten	Distance between the Earth and the Sun

PH 5. A. third**; B.** first**; C.** second.

COMPUTER SCIENCE

CS 1. a. PC; b. CPU; c. RAM; d. LCD; e. HDD; f. CD/DVD; g. USB; h. SD/SDHC.
CS 2. A. gigahertz (GHz), hertz (Hz), 4 gigahertz (GHz); **B.** two; **C.** gigabytes, gigahertzes; **D.** GB, rotations per minute; **E.** 1920 pixels, 1080 pixels, inches (“); **F.** 650MB, 700 MB , 4.7GB, 17 GB, 25GB, 400GB; **G.** MB/s, megabyte per second.
CS 3. A. 10 (ten), deci-**,** one thousand four hundred ninety two base ten equals in brackets one multiplied by ten to the power of three plus in brackets four multiplied by ten to the power of two plus in brackets nine multiplied by ten to the power of one plus in brackets two multiplied by ten to the power of zero; **B.** on, off, 0,1, two, 2, bi-, $01000001_{(2)}$ (zero one zero zero zero zero zero one base two) **C.** 16, hexa-, ten, hexadecimal, 0-9, 10 to 15.
CS 4. A. By means of one byte can be recorded one character, e.g. “7”, “B”, “;” (semicolon); **B.** One byte consists of eight bits; **C.** “!”exclamation mark , “@” at, “#” hash, “$” dollar sign, “%”percentage sign,”^” caret, “&” ampersand, “*”asterisk, “(“left bracket, “)” right bracket”; **D.** *The increasing order is as follows*…:1Hz, 1KHz, 10000 Hz, 100MHz, 1GHz; **E.** The decreasing order is as follows 1TB, 1GB, 1MB, 1KB, 1B; **F.** Yes, 1Mbps (megabit per second) is the same internet speed that 0.125 MBps (megabyte per second), because 1Mbps is eight time slower than 1MBps, so an/one eighth equals zero point one hundred twenty five.
CS 5. A. e.g. http://www.biography.com/people/bill-gates-9307520; **B.** one hundred twenty four underscore user underscore name at my hyphen domain dot eu.

CULTURE

K 1.

1.		from the tenth century to the middle of the sixteenth century
2.		from the end of the fifteenth century to the beginning of the seventeenth century
3.		from the end of the sixteenth century to the middle of the eighteenth century
4.	1740s -1822	from the seventeen forties to eighteen twenty-two
5.	1822 - 1863	from eighteen twenty-two to eighteen sixty-three
6.	1864 - 1890	from eighteen sixty-four to eighteen ninety
7.	1890 - 1918	from eighteen ninety to nineteen eighteen
8.	1918- 1939	from nineteen eighteen to nineteen thirty-nine
9.	1939 - 1945	from nineteen thirty nine to nineteen forty five
10.	from 1945	from nineteen forty five

K 2. an example answer: *The gothic High Cathedral of Sts. Peter and Mary in Cologne was enlisted as a UNESCO World Heritage Site in 1996/nineteen ninety-six. It was built for over 600/six hundred years, from 1248/twelve forty-eight to 1880/eighteen eighty. It has an area of 7914/seven thousand nine hundred and fourteen square metres. The cathedral is 144.58/one hundred forty four point fifty eight metres long and 86.25/eighty six point twenty five metres wide. The nave is 43.35/forty three point thirty five metres high, which means that a ten-storey building would fit into it.*
K 3. (a). 22nd/the twenty second of; (b). 1st/the first of; (c). 1810/eighteen ten; (d). 7/seven; (e). 24th / the twenty fourth of; (f). 1818/eighteen eighteen; (g). 1826-1829/eighteen twenty six and eighteen twenty nine; (h). 5th/the fifth of; (i). 1830/eighteen thirty; (j). 18/eighteen; (k). 17th/the seventeenth of; (l). 1849/eighteen forty nine; (m). 2/two; (n). 57/fifty seven; (o). 16/sixteen; (p). 27/twenty seven; (q). 26/twenty six; (r). 17/seventeen; (s). 19/nineteen; (t). 8/eight.
K 4. an example answer: *William Shakespeare was born and died in Stratford-upon-Avon. He lived between 1564/fifteen sixty-four and 1616/sixteen sixteen, in the reign of Elisabeth the First and James the First. He was a poet, playwright and actor. He was active mostly between 1586/fifteen eighty-six and 1612/sixteen twelve. His plays were performed in London's The Globe. He is the author of 154/one hundred fifty-four sonnets and over 30/thirty dramas. He wrote i. a. "Macbeth", "Romeo and Juliet" and "Henry V/the fifth". There are over 420/four hundred and twenty film adaptations based on his work. The Japanese version*

of "Macbeth" directed by a 20-th/twentieth century director, Akiro Kurosawa, is worth mentioning. William Shakespeare created over 600/six hundred neologisms, which are still used nowadays.
K 5. Sonnet – 14/fourteen; 4/four; 4/four; 3/three; **Limerick** – 5/five; the 1st/first; **Sapphic** – 4/four; 11/eleven; 5/five.

HISTORY

H 1. A. fourteen fifty-five – fourteen eighty-five...thirty; B. thirteen thirty-seven – fourteen fifty-three... one hundred and sixteen; C. fourteen fifty-four – fourteen sixty-six... thirteen; D. nineteen thirty-nine – nineteen forty-five... six; E. the first of August nineteen forty-four – the second of October nineteen forty-four... sixty-three.
H 2. A.1370 - *In the year* thirteen seventy*, during the reign of Casimir the third (the Great), Poland had the territory of* two hundred and forty thousand square kilometres*;* B. 1025 - *In the year ten twenty-five, during the reign of Boleslaus the Brave, Poland had the territory of two hundred and fifty thousand square kilometers;* C. 2012 - *In the year* twenty twelve *The Republic of Poland has the territory of* three hundred and thirteen thousand *square kilometres*; D. 1572 - *In the year* fifteen seventy-two*, during the reign of Sigismund the second, Poland had the territory of* eight hundred and sixty-five thousand *square kilometres.*
Źródło: Historia Polski w liczbach. Ludność. Terytorium, Warszawa 1994, s.14

H 3.

1922 nineteen twenty two	sixty seven per cent	nineteen per cent	twenty two per cent	thirty per cent	twenty eight per cent	-
1928 nineteen twenty eight	seventy eight per cent	twenty one per cent	thirty one per cent	twelve per cent	nine per cent	twenty seven per cent

H 4. George the Sixth started his reign in nineteen thirty- six; Elizabeth the Second started her reign in nineteen fifty-two; William the First started his reign in ten sixty-six; Richard the Third started his reign in fourteen eighty-three; Henry the Eighth started his reign in fifteen hundred and nine.

George VI (1936),	Elizabeth II (1952)	William I (1066)	Richard III (1483)	Henry VIII (1509)

GEOGRAPHY

G 1. 1.high; 2.long; 3. old; 4. long; 5. deep; 6. wide; 7. big; 8. deep; 9. long; 10. deep; 11. long, wide;
1. sixty metres high; 2. six thousand eight hundred fifty-two kilometres long; 3. four point six billion years old; 4.forty thousand seventy-six kilometres long; 5. ten thousand nine hundred ninety-four plus/minus forty metres deep; 6. eighty kilometres wide; 7. three hundred twelve thousand six hundred seventy-nine square kilometres big; 8. twelve thousand two hundred sixty-two metres deep; 9. one hundred fifty-four kilometres long; 10. three point nine kilometres deep; 11 six hundred seventy- three kilometres long, fifty kilometres wide, thirty-three thousand square kilometres
G 2. a. per cent, per mille, people per square kilometre, hectopascal, degrees Celsius, square kilometre, cubic kilometre, millimetre, centimetre, dollar , euro, kilometres per hour, metres per second;
b. 1.one hundred and twenty-two people per square kilometre 2.eight per cent; 3.twenty per mille; 4. seventy per cent; 5. twenty-four thousand square kilotmetres; 6. twenty three thousand cubic kilometres; 7. fifty degrees Celsius; 8. two thousand milimetres; 9. twenty-nine per cent; 10. one thousand and thirteen point twenty-five hectopascals; 11. two thousand four hundred and ninety-nine metres above sea level ; 12. one to forty million ... six point seventy-eight centimetres.
G 3. 3. Madrid is at a latitude of forty degrees north and a longitude of three degrees west; 4. Berlin is at a latitude of fifty-two degrees thirty one minutes north and a longitude of thirteen degrees forty-one minutes east; 5. Andøya is at a latitude of sixty-nine degrees six minutes north and a longitude of fifteen degrees forty-three minutes east; 6. Mauritius is at a latitude of twenty degrees seventeen minutes and zero seconds south and a longitude of fifty seven-degrees thirty-three minutes and zero seconds east.; 7. The South Pole is at a latitude of ninety degrees (zero minutes and zero seconds) south.
G4. It is also possible to say: The latitude of London is 51 degrees 30 minutes and 26 seconds north and the longitude is 0 degrees 7 minutes and 39 seconds west London is at a latitude of fifty-one degrees thirty minutes and twenty-six seconds north and at the prime meridian.

Partner A		Partner B	
Tokyo is at a latitude of thirty-five degrees forty-one minutes and twenty two seconds north and a longitude of one hundred and thirty-nine degrees forty one minutes and thirty seconds east	35°41'22"N 139°41'30"E	Perth is at a latitude of thirty one degrees fifty-seven minutes south and a longitude of one hundred and fifteen degrees fifty-one minutes east	31°57' S, 115° 51'E
Los Angeles is at a latitude of thirty-four degrees three minutes north and a longitude of one hundred and eighteen degrees fifteen minutes west	34° 3' N, 118° 15' W	Marseille is at a latitude of forty-three degrees eighteen minutes north and a longitude of five degrees twenty-three minutes east	43°18' N 5° 23' E
Warsaw is at a latitude of fifty-two degrees thirteen minutes north and a longitude of twenty-one degrees east	52°13'N 21°00'E	Vaduz is at a latitude of forty-seven degrees eight minutes north and a longitude of nine degrees thirty-one minutes east	47°8' 0"N, 9° 31' 0"E
Male is at a latitude of four degrees ten minutes north and a longitude of seventy-three degrees thirty minutes east	4°10'N 73°30'E	Chile is at a latitude of thirty-three degrees south and a longitude of seventy degrees west	33° S 70° W
Paris is at a latitude of forty-eight degrees fifty-two minutes north and a longitude of two degrees twenty-one minutes east	48°52'N 2°21'E	Kraków is at a latitude of fifty degrees three minutes and forty-one seconds north and a longitude of nineteen degrees fifty-six minutes and eighteen seconds east	50°03'41"N 19°56'18"E
London is at a latitude of fifty-one degrees thirty minutes north and at the prime meridian	51°30'N 0°W	New York is at a latitude of forty degrees forty-three minutes north and a longitude of seventy-four degrees west	40°43'N 74°00'W

Zdjęcia, ikony, rysunki pochodzą z ogólnie dostępnych stron www.google.pl.

Zadania zawarte w zeszycie są efektem samodzielnej pracy nauczycieli, uczestników szkolenia rady pedagogicznej VIII LO im. A. Asnyka w Łodzi zorganizowanym przez CRiE dr Beaty Owczarskiej (www.crie.pl).