



SCHEME OF WORK



<http://agb.gymnaslo.cz>

Subject: Mathematics
Year: first grade, 1.X
School year:/.....

List of topics

#	Topics	Time period
	Introduction, repetition	September
1.	Number sets	October
2.	Right-angled triangle	October, November
3.	Algebraic expressions	December, January
4.	Logic and Proofs	November
5.	Sets	November
6.	Linear and quadratic equations and inequalities	January - April
7.	Equations and inequations with two variables	May, June

<http://agb.gymnaslo.cz>

1



Topic 1.: Number sets

Outputs:

define the different number sets (Natural, Integer, Rational, Irrational and Real numbers) and appreciate how they fit on a number line
explain the relationships between these number sets (eg. Natural numbers are a subset of Integers)
define a binary operation
list four basic binary operations
determine if a given binary operation is associative, distributive and commutative, what its identity element is, and how the inverse of an element may be found
explain the statement a is divisible by b and express it in a symbolic language
explain the term "prime number"
use the rules for divisibility and write proofs
find the modulus of a real number, and state its geometrical significance.
explain the basic properties of modulus of a real number

Sources:

Bušek I., Calda E.: *Matematika pro gymnázia – Základní poznatky z matematiky*, Prometheus, 3. upravené vydání

Teaching methods:

Frontal teaching
Team work
Exercising
e-learning

Grading:

Tests 95%
Activity points 5%

Notes:

<http://agb.gymnaslo.cz>

2



Topic 2.: Right-angled triangle

Outputs:

Pythagoras theorem. Trigonometry of right-angled triangles

Sources:

Bušek I., Calda E.: *Matematika pro gymnázia – Základní poznatky z matematiky*, Prometheus, 3. upravené vydání

Teaching methods:

Frontal teaching
Team work
Exercising
e-learning

Grading:

Tests 95%
Activity points 5%

Notes:

<http://agb.gymnaslo.cz>

3



INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

Topic 3.: Algebraic expressions

Outputs:

define a polynomial and perform four basic operations on polynomials
define the domain of an algebraic expression
find the value of a polynomial for a given value of x
expand brackets
write an algebraic expression as a single fraction
simplify algebraic expressions using any of the above methods
change the subject of a formula

Sources:

Charvát J., Zhouf J., Boček L.: *Matematika pro gymnázia – Rovnice a nerovnice*, Prometheus, 3. přepracované vydání
Janeček F.: *Sbírka úloh pro SŠ – Výrazy, rovnice, nerovnice a jejich soustavy*, Prométheus, 4. Vydání

Teaching methods:

Frontal teaching
Team work
Exercising
e-learning

Grading:

Tests 95%
Activity points 5%

Notes:

<http://agb.gymnaslo.cz>

4



Topic 4.: Loogic and Proofs

Outputs:

express a sentence in ordinary English in symbols
explain the mathematical meaning of words at most, at least, just one, each and none
explain the term "statement"
construct and use truth tables
define and use logical operations and quantifiers, simplification of compound statements
explain and construct direct and indirect proof, proof by induction.

Sources:

Bušek I., Calda E.: *Matematika pro gymnázia – Základní poznatky z matematiky*, Prometheus, 3. upravené vydání

Teaching methods:

Frontal teaching
Team work
Exercising
e-learning

Grading:

Tests 95%
Activity points 5%

Notes:

Topic 5.: Sets

Outputs:

explain the term "set" and list the ways of defining sets
use set notation (including symbols for union and intersection) to define intervals
recognise types of intervals and express intervals by means of inequalities explain the basic set operations and use Venn's diagrams

Sources:

Bušek I., Calda E.: *Matematika pro gymnázia – Základní poznatky z matematiky*, Prometheus, 3. upravené vydání

Teaching methods:

Frontal teaching
Team work
Exercising
e-learning

Grading:

Tests 95%
Activity points 5%

Notes:

<http://agb.gymnaslo.cz>

6



INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

Topic 6.: Linear and quadratic equations and inequalities

Outputs:

solve linear equations with one unknown
solve systems of linear equations simultaneously, with up to three unknown
solve linear inequalities both algebraically and graphically
solve problems which lead to linear equations.
solve parametric linear equations and their systems graphically and numerically

Sources:

Charvát J., Zhouf J., Boček L.: *Matematika pro gymnázia – Rovnice a nerovnice*, Prometheus, 3. přepracované vydání
Janeček F.: *Sbírka úloh pro SŠ – Výrazy, rovnice, nerovnice a jejich soustavy*, Prométheus, 4. Vydání

Teaching methods:

Frontal teaching
Team work
Exercising
e-learning

Grading:

Tests 95%
Activity points 5%

Notes:

<http://agb.gymnaslo.cz>

7



INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

Topic 7.: Equations and inequations with two and more variables

Outputs:

solve problems which lead to linear equations
solve systems of linear equations simultaneously, with up to three unknown
solve parametric linear equations and their systems graphically and numerically

Sources:

Charvát J., Zhouf J., Boček L.: *Matematika pro gymnázia – Rovnice a nerovnice*, Prometheus, 3. přepracované vydání
Janeček F.: *Sbírka úloh pro SŠ – Výrazy, rovnice, nerovnice a jejich soustavy*, Prométheus, 4. Vydání

Teaching methods:

Frontal teaching
Team work
Exercising
e-learning

Grading:

Tests 95%
Activity points 5%

Notes:

<http://agb.gymnaslo.cz>

8

