Schloss Krumbach
International School

GRADE 10

ENTRANCE MATHEMATICS TEST

Instructions:

- No calculator is allowed, all working must be done on extra papers – PLEASE DO NOT WRITE ON THIS INSTRUCTION SHEET.
- Points are being awarded also for the method, not only the final answer, so it is advised to show all working.
- Questions can be done in any order and each has the same amount of points, though some are easier than the others.
- The allocated time is 45 minutes

START OF THE TEST

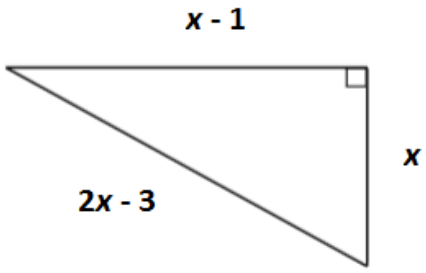
Exe 1

a) Simplify by factorizing: $\dfrac{x^2 - 9}{x^2 - 2x - 15}$

b) Solve for *x*: $2x^2 - 3x = 2$

Exe 2

Find the perimeter of the triangle



Exe 3

Make *x* the subject of the formula (express in terms of x)

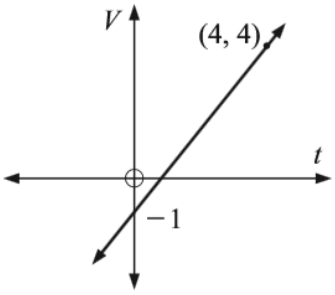
a) $\dfrac{2}{a} = \dfrac{5}{\sqrt{x}}$

b) $2(x + y^2) = 1 + \dfrac{x}{a}$

Exe 4

For the graph alongside, determine:

a) the slope(gradient) of the line.
b) the equation of the line.
c) if a point A(8,9) lies on the line.



Exe 5

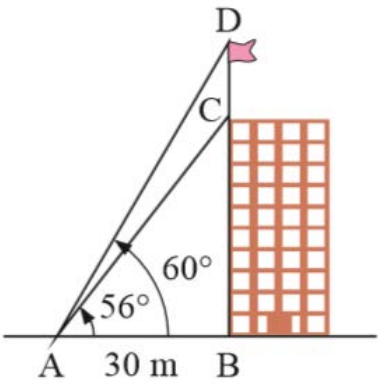
For the function $f(x) = -x^2 - 2x + 8$:

a) find coordinates of its *x*- and *y*-intercepts.
b) find coordinates of vertex.
c) find equation of the axis of symmetry.
d) sketch the function showing all features calculated above.

Exe 6

From a point A, which is 30m from the base of a building B, the angle of elevation to the top of the building C is 56º, and to the top of the flagpole is 60º. Find the CD – the length of the flagpole.

Note:Trigonometric values of the mentioned angles can be found in the table below.



A - Angle	Sin(A)	Cos(A)	Tan(A)
56º	0.83	0.56	1.48
60º	0.87	0.5	1.73

Exe 7

A small business has two printers. On any one day, machine A has a 6% chance of malfunctioning and machine B has a 4% chance of malfunctioning. Determine the probability that on any one day:

a) both machines will work effectively.
b) at least one of the machines will malfunction.

Exe 8

A cannon ball is projected into the air with a velocity of 40 m/s. Its height in meters above the ground after t seconds is given by $h(t) = 40t - 5t^2$

a) How long does is take for the ball to reach its maximum height?
b) What is the maximum height?
c) How long does it take for the missile to hit the ground?

END OF THE TEST