CORNERSTONE INTERNATIONAL ACADEMY

Student Name	
Homeroom	
Level	MYP 4
Subject	Extended Mathematics
Date	28th November, 2025
Facilitator(s)	Mr. Robert & Mr. Charles
Time allotted	2 hours
Total points	32
Percentage	100%
Obtained points	
Obtained percent	

Instructions

1. Before beginning the exam, read the whole document and pay special attention to the instructions in each part of the exam.
2. If you do not understand an instruction, ask your teacher to clarify.
3. The exam should be filled out with a blue or black pen only. Any segments done in pencil or red ink lose the right to appeal.
4. White-out is not permitted during the completion of the exam. Any use of white-out loses the right to appeal.
5. • Any doodles, blurs, or crossings out of words invalidate the answer.
6. Your penmanship should be legible and consistent. Anything that the facilitator has difficulty reading will be their responsibility to correct.
7. You are a capable, intelligent person who has studied consciously. This means you have all the capability to complete this test and obtain good results. Be positive, go slowly, and remember that nothing is impossible if it is done with love and good intentions.

Criterion A: Knowing and Understanding. 8 points

I. Select appropriate mathematics when solving problems in both familiar and unfamiliar situations.

II. Apply the selected mathematics successfully when solving problems.

III. Solve problems correctly in a variety of contexts.

Question 1

Solve the following quadratic equations by ***factoring.***

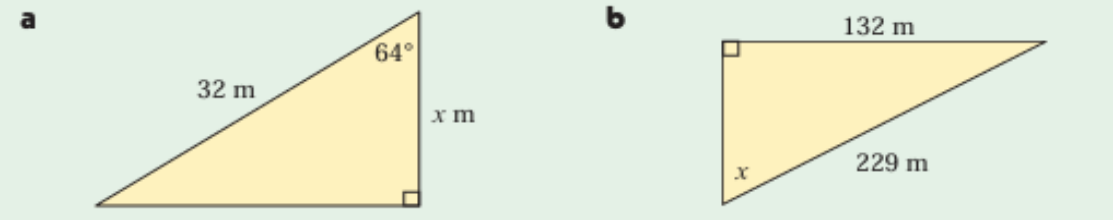
a) $x^2 - 16x + 61 = 2x - 20$

b) $2x^2 - 16x = -x^2 + 12$

(Hint: ***Rearrange the equation to have 0 on the right side by moving all terms to the left, then simplify before solving***)

Question 2

Find the value of x:



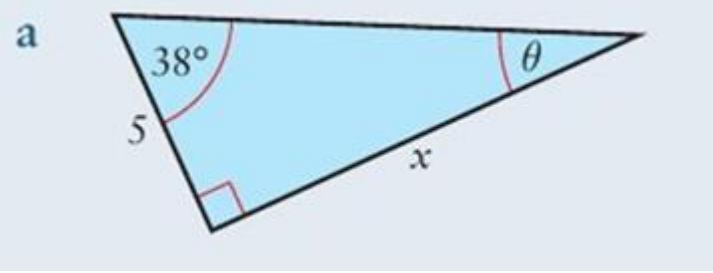
Question 3

For the triangle below, find:

a) the value of x

b) the value of θ

c) the length of the hypotenuse.



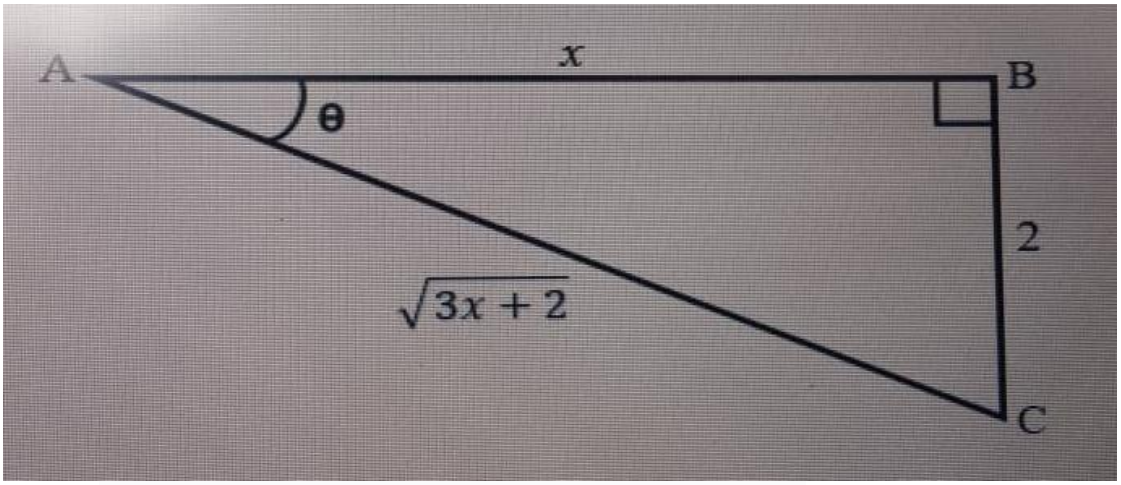
Question 4

It is given that $f(x) = 25x^2 + 20x + p = 0$, where p is a non zero constant. The quadratic equation has ***equal roots***. Find the value of p .

Criterion B: Investigating Patterns. 8 points
I. Apply mathematical problem-solving techniques to recognize patterns
II. Describe patterns as relationships or general rules consistent with findings
III. Verify whether the pattern works for other examples.

Question 5

A right-angled triangle ABC has angle θ at A. The sides are given by:
AB = x, BC = 2 and AC has length $\sqrt{3x+2}$.
The diagram is shown below.



a) Using the Pythagorean theorem, write an equation in x.
b) Identify the type of equation you obtained.
c) Solve the equation for x, showing full working (reject any solution that makes a side non-positive).
d) Using the valid value of x, find the lengths of AB and AC.
e) Find angle θ correct to 2 decimal places.

Question 6

A curve has equation f(x): $x^2 + 4x - 12 = 0$

a) Express the curve in the form $(x + a)^2 = b$, where a and b are integers.(hint: use completing the square method)
b) Using the form found in (a), solve for x using the square root property.
c) State the axis of symmetry of $f(x)$.(Hint: use the x values found at (b)

Criterion C: Communicating. 8 points
I. Use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations
II. Use appropriate forms of mathematical representation to present information
III. Organize information using a logical structure..

Question 7

Consider the parabola defined by $y = x^2 - 6x + 5$

a) Find the ***y-intercept*** of the parabola.
b) Find the ***x-intercepts*** of the parabola.
c) Use your answer to part b to find the equation of the ***axis of symmetry*** and the coordinates of the ***vertex***.
d) ***Sketch*** by hand the graph of $y = x^2 - 6x + 5$ (using a scale of 2cm to 2 units on both axes)

Criterion D: Real Life Application. -8 points
I. Apply mathematical problem-solving techniques to recognize patterns
II. Describe patterns as relationships or general rules consistent with findings
III. Verify whether the pattern works for other examples.

Question 8

The angle of elevation from a point on level ground to the top of a building 100m high is 22°. Find:

a) The distance of the point from the base of the building
b) The distance the point must be moved towards the building in order that the angle of elevation becomes 40°.

(Hint***: Draw diagrams to illustrate the two situations; Situation 1 (initial position for part a) and Situation 2 (after moving point towards the building for part b***)

Question 9

An aeroplane departs Town A and flies on a 143° course for 368 km to point Town B. It then changes direction to a 233° course and flies a further 472 km to town C. Find:
a. the distance of C from A
b. the bearing of C from A
(Hint: ***Draw a diagram to illustrate the flight path and form your right angled triangle***)