PERTH MODERN SCHOOL
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Test One

Semester One 2018
UNIT 1 METHODS

Calculator Assumed 40 minutes */45 marks*

Scientific Calculator, ClassPad, Formula Sheet and One page one side of A4 notes is permitted

Name:

Place a tick in the box next to your Mathematics teachers name:

Mr Strain	☐
Ms Sindel	☐
Ms Rimando	☐
Mr Gannon	☐
Mr Young	☐
Mrs Flynn	☐
Ms Ensly	☐

Question 1 **(2, 2, 2 = 6 marks)**

Consider the following points, A $(4,9)$ and B $(20,12)$.

i) Determine the distance from point A to B.

ii) Determine the midpoint between points A and B.

iii) If point B was the midpoint of points A and point C. Determine the coordinates of point C.

Question 2 **(2, 2, 1, 3 = 8 marks)**

Determine the equation of a line that passes through the point $(-10, 3)$ and :

i) passes through the point $(5, -7)$.

ii) is parallel to the line $y = -5x + 11$.

iii) is parallel to the y axis.

iv) is perpendicular to the line $x - 4y = 9$.

Question 3 **(2, 3, 3 = 8 marks)**

Consider the line $5x+my=21$, where m is a constant.

i) In terms of m, determine the y intercept.

ii) In terms of m, determine the midpoint of the x and y intercepts.

iii) Determine the value of m so that the line will never cross $y=7x$.

Question 4 **(1, 1, 2 = 4 marks)**

Jessica needs to hire a car for a number of days. The hire car company has two options from which she can choose.

Budget: $15 per day plus $0.25 per km travelled

Deluxe: $42 per day for unlimited travel

i) Jessica will hire the car for n days and drive a total of x km.

a) Find an expression for the cost, $\$C$, in terms of n for the Deluxe option.

b) Find an expression for the cost, $\$C$, in terms of n and x, for the Budget option.

ii) If Jessica plans to drive a total of 600 km, find the maximum number of days for which she can hire the car so that it is cheaper for her to take the Deluxe option.

Question 5 **(2, 2, 2 = 6 marks)**

Factorise the following expressions:

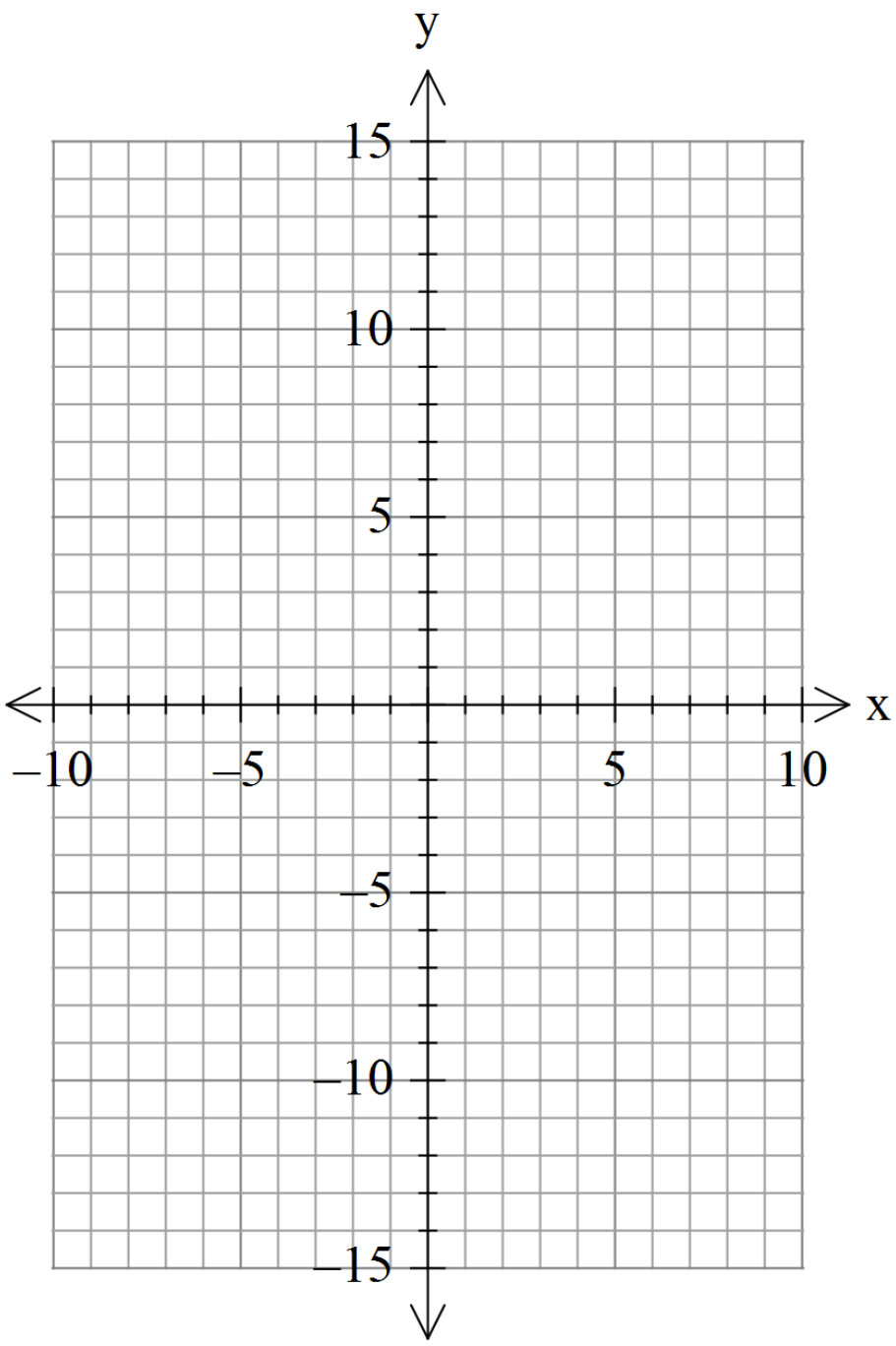
i) $4x^2y - 12xy^4$

ii) $x^3 - 3x^2 - 9x + 27$

iii) $18x^2 + 33x - 30$

Question 6 **(5 marks)**

On the axes below, sketch the parabola $y=-2(x+3)^2+6$ showing all major features.



Question 7 **(2, 2 =4 marks)**

For each of the following write down the equation of a parabola that satisfies the following:

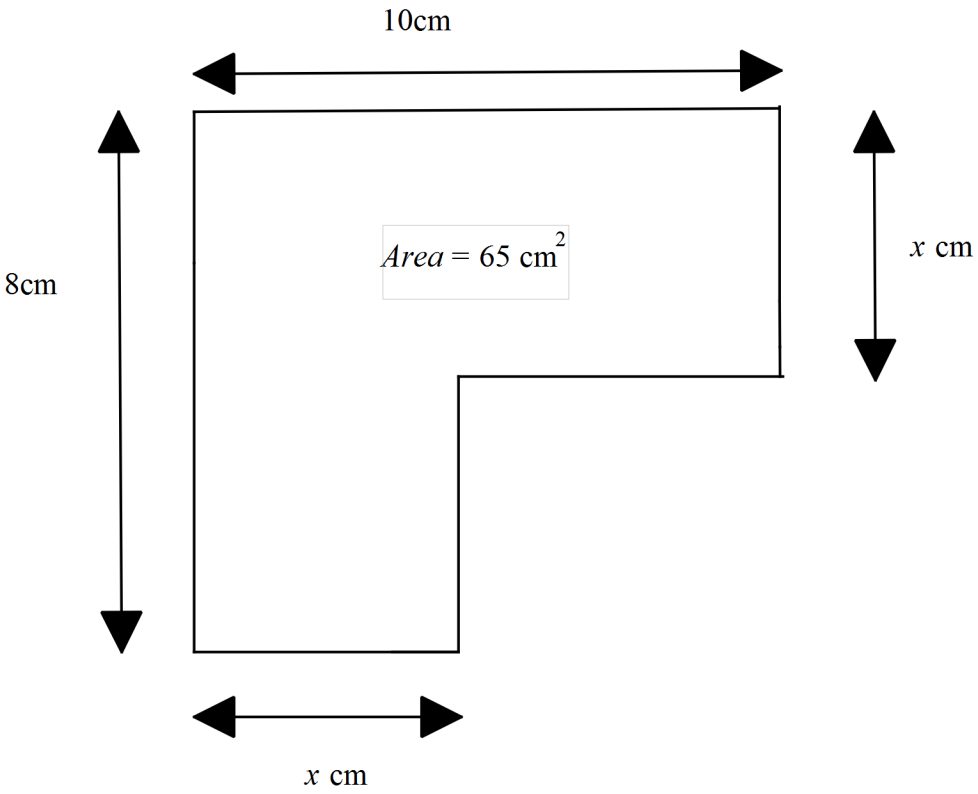
(No need to simplify)

i) A quadratic with intercepts $(4,0)$and $(-7,0)$ with a y intercept of (0, -56).

ii) A quadratic with a maximum turning point $(7,1)$ and an x intercept $(10,0)$.

Question 8 **(4 marks)**

Determine the value of x for the shape below.



End of test