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.

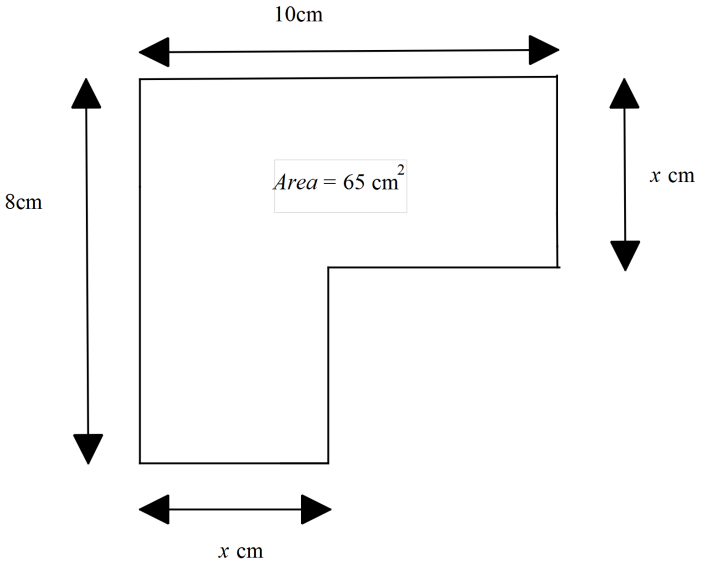
ii) In terms of $m$, determine the midpoint of the x and y intercepts.

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



**Question 8** **(4 marks)**

Determine the value of $x$ for the shape below.




End of test

**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 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.