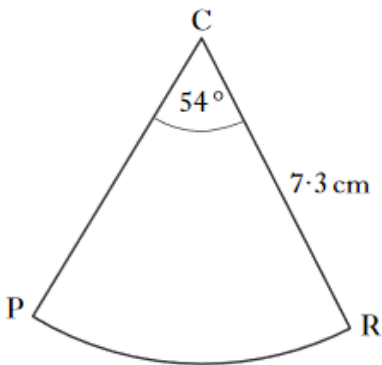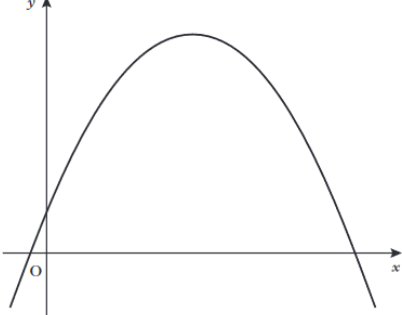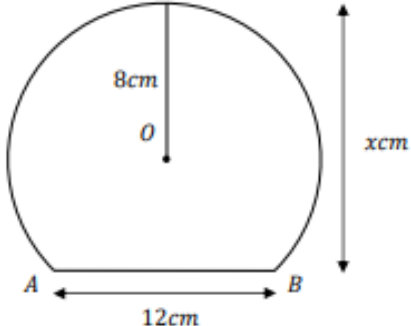| C2	Calculator Paper	
1	Aliyah normally runs a total distance of 50 miles per week. Over the next 6 weeks she intends to increase her distance by 10% per week. How many miles will Aliyah run in her sixth week.	**3**
2	Express $x^2 + 8x + 11$ in the form $(x + a)^2 + b$	**2**
3	The volume of Earth is approximately 1.1×10^{12} cubic centimetres. The volume of Venus is 85% of the volume of Earth. Calculate the volume of Venus. Given your answer in scientific notation correctly rounded to two significant figures.	**3**
4	The diagram shows a sector of a circle with a centre C. The radius of the circle is 7.3 centimetres and angle PCR is 54 ° Calculate the area of the sector PCR.	**3**
5	Solve, algebraically $2x^2 - x - 15 = 0$	**2**
6	The amount rainfall in Perth was recorded for 6 weeks in the spring of 2020. The rainfall in mm was: 35 14 28 32 18 29 (a) Calculate the mean and standard deviation for this data.	**4**
	During the same time period in 2021 the mean rainfall was recorded as 36.2 mm and the standard deviation was 7.8. (b) Write two comments comparing the rainfall in 2020 and 2021.	**2**

7	A tennis ball has a diameter of 6.5 centimetres. Three balls are packaged into a cylindrical tube so that they touch each other and each end of the tube.	
	(a) Calculate the volume of one tennis ball.	2
	(b) Calculate the volume of empty space in the tube when there are three balls inside.	4

| 8 | Solve the quadratic equation $x^2 - 2x - 5 = 0$ | |
| | Give your answers **correct to 1 decimal place**. | 3 |

9	The diagram shows part of the graph of $y = 10 - (x - 5)^2$.	
	(a) State the coordinates of the maximum turning point.	2
	(b) State the equation of the axis of symmetry.	1

10	This shape is part of a circle with a centre O.	
	The circle has a radius of 8 centimetres. The line AB is a chord of the circle and is 12 centimetres.	
	Calculate x, the height of the shape.	4

11	A straight line has the equation $5y = 3x - 10$	
	(a) Find the gradient of the straight line.	2
	(b) Find the **coordinates** of the point where the straight line crosses the y-axis	1

38 marks