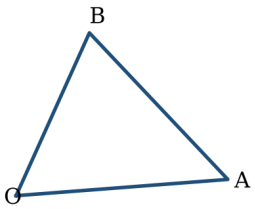
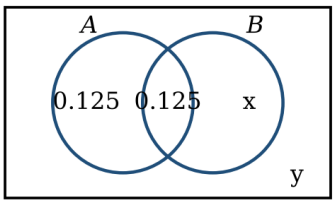
Day 166	A Level Maths: B Tier 10-a-day
1 A remote-control car moves with constant velocity $(-12\mathbf{i} + 16\mathbf{j})$ m s^{-1}, where $\mathbf{i}$ and $\mathbf{j}$ are unit vectors east and north. Find its speed and the acute angle its direction makes with $\mathbf{i}$, to 1 d.p.	
2 A sector of a circle has radius 11 cm and area $\frac{242\pi}{3}$ cm^2. Find the angle of the sector in degrees.	
3 Evaluate $(\frac{32}{243})^{-\frac{1}{5}}$.	
4 In triangle OAB, OA = a and OB = b. M lies on AB with AM : MB = 3 : 2, and N lies on OB with ON : NB = 2 : 3. Find OM and NM in terms of a and b. 	
5 The random variable X has E(X) = 5 and Var(X) = 2. Find (a) E(3X + 2), (b) Var(3X + 2), (c) E(X^2).	

Day 166	A Level Maths: B Tier 10-a-day
6 The volume of a sphere increases at a constant rate of 32 cm^3s^{-1}. Find the rate at which the radius is increasing when r = 3 cm, to 3 s.f.	
7 A golf ball is projected from ground level with initial velocity components 35 m s^{-1} horizontally and 29.4 m s^{-1} vertically upwards. Take g = 9.8 m s^{-2}. Find (a) the greatest height, (b) the speed at the greatest height.	
8 The Venn diagram shows probabilities for events A and B, which are independent. Find the values of x and y. 	
9 Prove that if n is odd then $n^2 + 9n + 4$ is even.	
10 Solve the simultaneous equations $2x + y = -15$ $x^2 + y^2 = 50$	