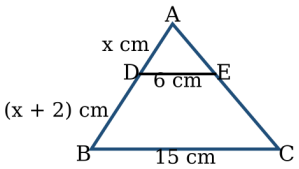
Day 304	IGCSE 10-a-day
1 In the diagram, DE is parallel to BC. AD = x cm, DB = (x + 2) cm, DE = 6 cm and BC = 15 cm. (a) Find the value of x. (b) Work out the length of AB. The diagram is not drawn accurately.  	
2 The curve C has equation $y = -x^2 + 2x - 5$. The points A and B on C have x coordinates 0 and 3. The tangents to C at A and at B meet at the point T. Find the coordinates of T.	
3 A bag contains 3 red counters, 6 blue counters and 3 green counters. Two counters are taken at random without replacement. Work out the probability that (a) at least one is green, (b) exactly one is green.	
4 The point P(−3, 9) lies on the graph of y = f(x). Write down the coordinates of the image of P on the graph of (a) y = f(x + 3) (b) $y = f(\frac{x}{2})$	
5 A ball is thrown upwards. Its height above the ground, h metres, after t seconds is given by $h = -3t^2 + 12t + 5$ (a) Work out the greatest height reached by the ball. (b) Work out the velocity of the ball when t = 4. State whether it is moving up or down.	

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6 The line L has equation $8x - 15y = 120$. L crosses the x-axis at the point A and the y-axis at the point B. (a) Find the coordinates of A and B. (b) Work out the area of triangle OAB, where O is the origin.	
7 On a minibus there are x adults and y children. There are at most 60 people. There are at least 3 children for every adult. There are at least 5 adults. (a) Write down three inequalities for x and y. (b) Find the greatest number of children on the minibus.	
8 A rectangle has length 12 cm and width 14 cm. Both measurements are correct to the nearest centimetre. Evan says that the area of the rectangle could be exactly 185 cm^2. Is Evan correct? You must show your working.	
9 Solve $x - 8\sqrt{x} + 12 = 0$	
10 A closed cylinder (a tin) has radius r cm, height h cm and total surface area 24π cm^2. (a) Show that its volume, V cm^3, is $V = 12\pi r - \pi r^3$. (b) Find the maximum value of V in terms of π, and show that $h = 2r$ when V is a maximum.	