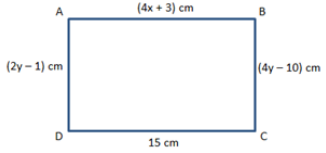
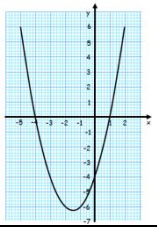
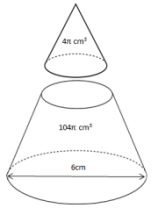
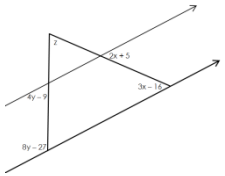
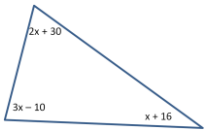
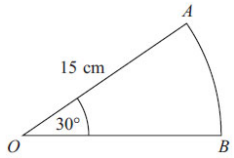
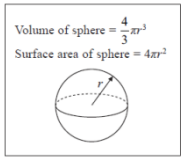
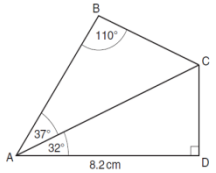
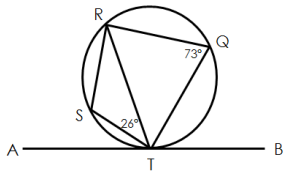
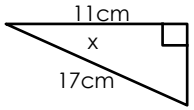
# A BIT OF MATHS EACH DAY – HIGHER TIER GCSE – NOVEMBER 2017

| MONDAY | TUESDAY | WEDNESDAY | THURSDAY | FRIDAY | SATURDAY | SUNDAY |
|---|---|---|---|---|---|---|
| | 1st | 1ST | 2nd | 3rd | 4th | 5th |
| November | | Height, h, cm / Frequency<br>0 < h ≤ 10 : 6<br>10 < h ≤ 20 : 9<br>20 < h ≤ 30 : 18<br>30 < h ≤ 40 : 12<br>40 < h ≤ 50 : 5<br>The table show the heights of some tomato plants in a greenhouse. Work out the group the median lies in AND estimate the mean height of the tomatoes. | ABCD is a rectangle.<br>Find its area<br>  |  <br>This is the graph of y = f(x)<br>(a) Find the roots of y = f(x)<br>(b) Find the value of f(0) |  <br>A small cone has been removed from a larger cone to produce a frustum of a cone. Find the surface area of the frustum.<br>Volume of a cone = $\frac{1}{3}\pi r^2 h$<br>Curved surface area of a cone = $\pi r l$<br>h = height of cone, r = radius of cone, $l$ = slant height of the cone. |
| 6th | 7th | 8th | 9th | 10th | 11th | 12th |
| Solve the equation<br>$\frac{2x-3}{5}+\frac{3x}{4}=3$ |  <br>Find the size of angle z. Explain your reasoning clearly. |  <br>Find the size of the largest angle in this triangle. | The diagram shows a sector of a circle of radius 15cm. Find its perimeter and area.<br>  | Two jars contain coloured counters. Jar A contains 4 red, 9 blue and 7 white counters. Jar B contains 4 red and 11 white counters. A counter is removed from Jar A and put in Jar B. A counter is then removed from Jar B. What is the probability that the counters removed in both cases are different in colour? | The diagram shows a solid hemisphere. Its volume is $\frac{250}{3}\pi$cm³.<br> <br>  <br>Work out the exact surface area of the hemisphere. Give your answer as a multiple of π | |
| 13th | 14th | 15th | 16th | 17th | 18th | 19th |
| Susie has to deliver some packages and some parcels.<br>The total number of packages is 4 times the number of parcels.<br>The total number of packages and parcels is 40<br>Each parcel has a weight of 1.5kg.<br>The total weight of the packages and parcels is 37.6 kg.<br>Each of the packages has the same weight.<br>Work out the weight of each package. |  <br>Calculate the length of BC. | Solve the equation<br>$16x^2 + x = x + 9$ | (a) Derek sold his house in 2014 for £154,500. He invested his money in a bank which paid him x% compound interest over a two year period. In 2016 he had £167,107.20 in his bank account. Find the value of x.<br>(b) When he had sold his house, he had made a 3% profit on the sale. How much did he originally pay for the house? | R is inversely proportional to A. When R = 12.1, A = 1.5.<br>Find R when A = 4 | The total capacity of an oil tank is 8600 litres, correct to the nearest 100 litres.<br>The tank should only be filled to 95% if it's total capacity.<br>A pump can deliver oil to the tank at a rate of 740 litres per minute, correct to the nearest 10 litres per minute.<br>Calculate the maximum possible time it would take to fill the empty tank. Give your answer in minutes and seconds. | |
| 20th | 21st | 22nd | 23rd | 24th | 25th | 26th |
| <br>How many sides does this regular polygon have? | Prove that the difference between any two consecutive square integers is equal to the sum of these two integers. | Write $2.12\dot{2}\dot{5}$ as a fraction in its simplest form |  <br>Work out the size of angle STA. Give reasons for each stage of your working. | Q is inversely proportional to $t^2$.<br>Q = 320 when t = 0.5.<br>Find t when Q = 5. | Time ($t$ minutes) / Cumulative frequency<br>$160 < t \le 180$ : 9<br>$160 < t \le 200$ : 35<br>$160 < t \le 220$ : 68<br>$160 < t \le 240$ : 80<br>$160 < t \le 260$ : 89<br>$160 < t \le 280$ : 92<br>The table shows the times taken for 92 runners to complete a marathon. Estimate the mean time taken to complete the marathon. | |
| 27th | 28th | 29th | 30th | | | |
| A solid sphere has a mass of 1180g (to the nearest g) and radius of 6.2cm (correct to 1dp). Find the upper bound of its density in g/cm³. | Solve, algebraically, these simultaneous equations…<br>$y = 2x^2 + 3x - 10$<br>$y - 5 = 2x$ | Show that<br>$\frac{1}{3x^2-4x-4} \div \frac{1}{9x^2-4}$<br>can be simplified to<br>$\frac{ax+b}{cx+d}$<br>where a, b, c and d are integers to be found. | Find the size of angle x.<br>  | The best way to learn mathematics is to DO mathematics.<br>If you do something regularly on a daily basis you will make a bigger difference than leaving it till just before your exams.<br>If you need help there are some fantastic videos at<br>www.corbettmaths.com<br>Or you can always tweet me **@mrchadburn** | | |