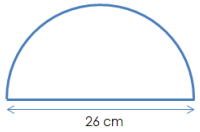
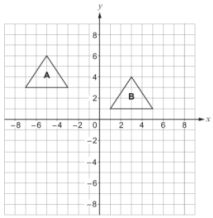
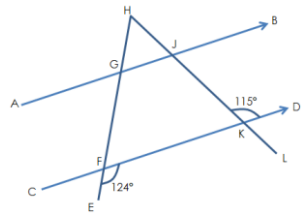
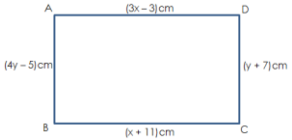
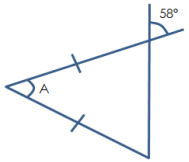
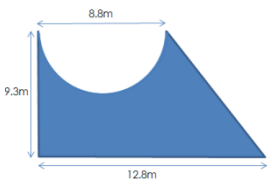
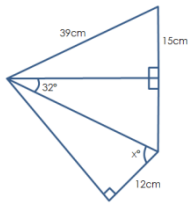
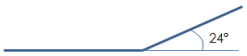
A BIT OF MATHS EACH DAY – FOUNDATION TIER – OCTOBER 2017

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
30th	**31st**				**30th September**	**1st**
(a) Expand and simplify fully $(2x + 3)(x – 4)$ (b) Factorise fully $24a^2b^4 – 16b^3$ (c) Solve the equation $x^2 + 3x – 10 = 0$	 The diagram shows a semi-circle. (a) What is its area? (b) What is its perimeter?	**October** **Calculator**	The best way to learn mathematics is to DO mathematics. If you do something regularly on a daily basis you will make a bigger difference than leaving it till just before your exams. If you need help there are some fantastic videos at www.corbettmaths.com Or you can always tweet me **@mrchadburn**		 (a) Describe the single transformation that maps shape A onto shape B. (b) Reflect shape A in the x-axis. Label the shape C. (c) Enlarge shape B with a scale factor of 2 using (4, 0) as a centre.	
2nd	**3rd**	**4th**	**5th**	**6th**	**7th**	**8th**
(a) Make p the subject in the formula $r = 6p^2 – 9$ (b) Find p if r = 375	**WITHOUT USING A CALCULATOR**, use the calculation 27.1 x 3.9 = 105.69 to write down the answer to (a) 27.1 x 0.39 (b) 2.71 x 39 (c) 10569 ÷ 271	(a) Work out the reciprocal of 0.875 (b) Calculate the following $\frac{\sqrt{78} + 5.6^2}{5.2 \times 1.5^2}$ Giving your answer correct to: (i) 3 d.p. (ii) 3 s.f.	**WITHOUT USING A CALCULATOR**, showing a clear method, evaluate: (a) 85.2 x 0.34 (b) 10284.12 ÷ 1.2	(a) Danielle wins £4000 on the lottery. She invests it in a bank account which pays interest at the rate of 1.75% per annum. How much will her initial £4000 have gained after 3 years? (b) Last year she had another win in the lottery. She invested this in a different account which paid 2% interest per annum. She currently has £1591.20 in this account. How much did she win last year on the lottery?		AGJB, CFKD, EFGH and LKJH are straight lines. AGJB and CFKD are parallel to each other. Angle DKJ = 115° and angle EFK = 124°. Giving correct geometrical reasons for each stage of your working, find the size of angles (a) FGJ (b) GHJ
9th	**10th**	**11th**	**12th**	**13th**	**14th**	**15th**
WITHOUT USING A CALCULATOR, showing a clear method, evaluate: (a) $3\frac{2}{3} – 1\frac{2}{5}$ (b) $5 \times 2\frac{5}{7}$ (c) $6\frac{2}{3} \div \frac{2}{9}$	A year 11 mathematics class has 16 students. They take a test but one student is absent. After the teacher has marked the tests, she finds that the average mark of the 15 students who took the test is 17.8. The absent student returns and takes the test in the next lesson. When his score is added to the other 15, the class average has dropped to 17.5. How many marks did the absent student get on the test?	Solve the following equations (a) $\frac{x}{6} – 1 = 11$ (b) $7(2x + 9) = 35$ (c) $6x – 5 = 9x + 13$	A bicycle has wheels which have a diameter of 62cm. Paul cycles to school, a distance of 4.2km. How many complete rotations does each wheel make on his journey to school?	ABCD is a rectangle. Find the area of the rectangle. 	<table><tr><th>Team</th><th>Frequency</th><th>Angle</th></tr><tr><td>Liverpool</td><td>5</td><td>30°</td></tr><tr><td>Manchester Utd</td><td></td><td></td></tr><tr><td>Rotherham Utd</td><td>3</td><td></td></tr><tr><td>Sheffield United</td><td>20</td><td></td></tr><tr><td>Sheffield Weds.</td><td></td><td>96°</td></tr><tr><td>No Team</td><td></td><td>66°</td></tr></table>(a) Copy and complete the table (b) Draw the pie chart	A survey is conducted on the favourite football team of some students. A pie chart is to be drawn.
16th	**17th**	**18th**	**19th**	**20th**	**21st**	**22nd**
Four numbers have a mean of 8, a median of 8 and a range of 6. There is no mode. What could the four numbers be?	(a) Paul produces this working when solving an equation 8(2x +3)= 28 16x + 24 = 28 16x = 4 x = 4 Paul has made a mistake. What mistake has he made? (b) Solve the equation 4(2x – 1) + 2(3x + 5) = 2(2x – 7)	Giving correct geometrical reasons for each stage of your working, find the size of angle A. 	(a) Solve the inequality 3x + 7 > 1 (b) Solve the inequality -9 ≤ 2x – 1 < 7 (c) Which integer values satisfy BOTH inequalities in parts (a) and (b)?	200 year 11 students choose one of four options for an enrichment afternoon. $\frac{3}{8}$ of them choose swimming, 15% choose football. The remaining students choose between Ice Skating and bowling in the ratio 11:8. How many choose each option?	The diagram shows the plan of a garden. The shaded area is to have a wooden border placed around it and is to be gravelled. The border is sold in 2m strips costing £4.45 each and the gravel is sold in bags which cover 5m² costing £11.85 each. How much will it cost to place a border around and gravel the garden? 	
23rd	**24th**	**25th**	**26th**	**27th**	**28th**	**29th**
(a) Write 8940000 as a number in standard form (b) Write 9.12 x 10^{-3} as a normal number. (c) The distance between Jupiter and Earth is 5.88 x 10^8 km. Light travels at 3 x 10^8 metres per second. How long does light take to travel from Jupiter to Earth? Give your answer to the nearest minute.	 Find the value of x to 2 d.p.	There are 850 coins in a jar. 24% of them are 20p coins. $^4/_{25}$ of the coins are 50p coins. The remaining coins are £1 and £2 coins in the ratio 10 : 7. What is the total value of the coins in the jar?	Solve the pair of simultaneous equations 3x + 5y = 14 4x – 3y = -20	 The diagram shows a vertex of a regular polygon with an external angle of 24°. How many sides does the polygon have?	<table><tr><th>Time, t seconds</th><th>Frequency</th></tr><tr><td>10 ≤ t < 20</td><td>3</td></tr><tr><td>20 ≤ t < 30</td><td>9</td></tr><tr><td>30 ≤ t < 40</td><td>12</td></tr><tr><td>40 ≤ t < 50</td><td>6</td></tr><tr><td>50 ≤ t < 60</td><td>2</td></tr></table>A mathematics class is timed on how long they take to recite their 7 times table. The results are shown in the table. (a) What is the modal group? (b) In which group does the median lie? (c) Estimate the mean time taken to recite the 7 times table. (d) What percentage of students too more than 40 seconds to recite their 7 times table?	