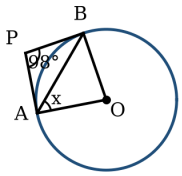
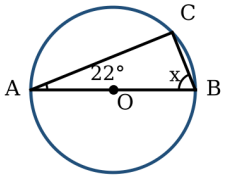
Day 178	A Tier 10-a-day
1 PA and PB are tangents to a circle with centre O. Angle APB = 98°. Work out the size of angle x (angle OAB). Give a reason for each step of your working. 	
2 (a) Write 44 and 28 as products of prime factors. (b) Find the highest common factor (HCF) and the lowest common multiple (LCM) of 44 and 28.	
3 AB is a diameter of the circle. Angle BAC = 22°. Work out the size of angle x. Give a reason for each step of your working. 	
4 (a) Write 0.00037 in standard form. (b) Write 5.07×10^4 as an ordinary number.	
5 A straight line passes through the points (−2, −1) and (−1, 2). Find the equation of the line.	

Day 178 **A Tier 10-a-day**

6 The table shows information about 98 people.
One person is chosen at random.
(a) Find the probability that the person is a woman and chose pasta.
(b) The person chose chicken. Find the probability that they are a man.

	Chicken	Pasta	Total
Men	30	29	59
Women	23	16	39
Total	53	45	98

7 A metal block has mass 820 g and volume 72 cm^3. The mass is measured to the nearest 10 grams and the volume to the nearest cm^3.
(Calculator)
Work out the upper bound for the density of the metal in g/cm^3.
Give your answer correct to 3 significant figures.

8 There are 18 students in a class.
8 students do chess and 7 students do coding.
6 students do neither.
(a) Work out how many students do both.
(b) One student is chosen at random. Find the probability that they do chess only.

9 Jug A contains 15 litres of a mixture of orange juice and lemonade in the ratio 2 : 1.
Jug B contains 8 litres of a mixture of orange juice and lemonade in the ratio 3 : 1.
The contents of both jugs are mixed together.
Work out the ratio of orange juice to lemonade in the mixture. Give your answer in its simplest form.

10 Simplify fully
(a) $\frac{9x^5y^4}{2x^2y^6}$
(b) $(2x^3y)^3$