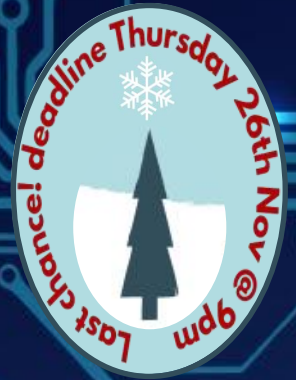


Design Technology and The Medical Science of the future

Bioprinting is the biological cousin of 3D printing. It uses a digital file to print an object layer by layer however unlike 3D printing, bioprinting prints out cells and biomaterials to create organ-like structures. To create a digital file, normally a CT scan or a MRI is done to create a biopsy of the cell. After the biopsy, reconstruction is used to split the organ into thin layers. These 2D layers are sent to the bio-printer, where a liquid mixture of cells, matrix and nutrients called bioinks is placed into a cartridge and is deposited due to how the file is, layer by layer. The pre-tissue is then placed into an incubator where it will mature into a tissue. During post-bioprinting, the 3D printed structure is looked after to make sure the integrity and function of the object is not at risk. To maintain the object, physical and chemical processes are used, the processes send signals to cells to help control the growth and remodelling of the tissue.

Bioprinting is the future of medicine as there are hundreds of thousands of people who are in need of an organ transplant, however there aren't enough organ donors, as organ donors only donate if they can and still live a full life or they donate their organs after they die. However, there are many ways for the donation to fail as the organs that are being donated may not be healthy enough or the body may come to reject the organ itself and therefore damage the organ, rendering it useless. With



NEWS LETTER



26th November 2020

www.bexleygs.co.uk



the help of bioprinting, there could be enough organs for every person on the transplant list. Another area where bioprinting can help is when a patient is in need of a skin graft, an area of skin which has been infected from a burn for an example, needs to be replaced by uninfected skin. This can be done from a skin donor, but the skin needs to fit the right categories for it to be accepted by the new host. Normally, skin is taken from one area of the patient and placed on the infected area. However, there are still many problems with this as the skin could be rejected and the process isn't a simple copy and paste. Bioprinting can help as skin is an easier option for bioprinting as it will need fewer layers of a file.

There are still limitations with bioprinting as the printers used for bioprinting need improvements as the resolution and the speed need to be increased. Also they should be compatible with a wide range of biocompatible materials. A higher resolution will allow better interaction and control in the 3D microenvironment. An increase in speed will help reach a commercially acceptable level therefore allowing a scaled up process. There needs to be more biomaterials themselves for the printer to use as we are limited by what we have now. New synthetic materials will be able to provide good mechanical strength and can promote cell attachment, proliferation and differentiation. Another limitation is the need of a vascular system, which helps feed the oxygen and nutrients. We can't use diffusion for every tissue as it only works up to 150-micrometer thickness. Without it the tissue won't develop properly.

On the other hand, bioprinting is already having an impact and can have a bigger impact in the future, we can print out organs and tissue to help with the testing of new drugs more accurately and eliminate the need for testing on animals. What is stopping scientist from adapting organs to help with lives in the future? Possibly in the future, we print tissues with imbedded technology or produce organs which exceed current capability or give us new features like unburn able skin. We could also increase the human life by printing and replacing organs and tissues.

Jack Kenny, Year 12



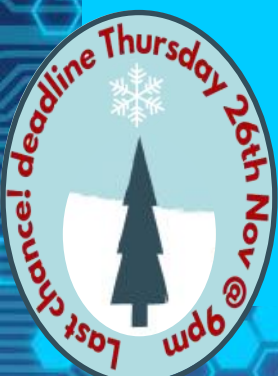
A 3D printed ear



A bioprinter, printing a heart



Skin graft onto an arm



Welcome to the

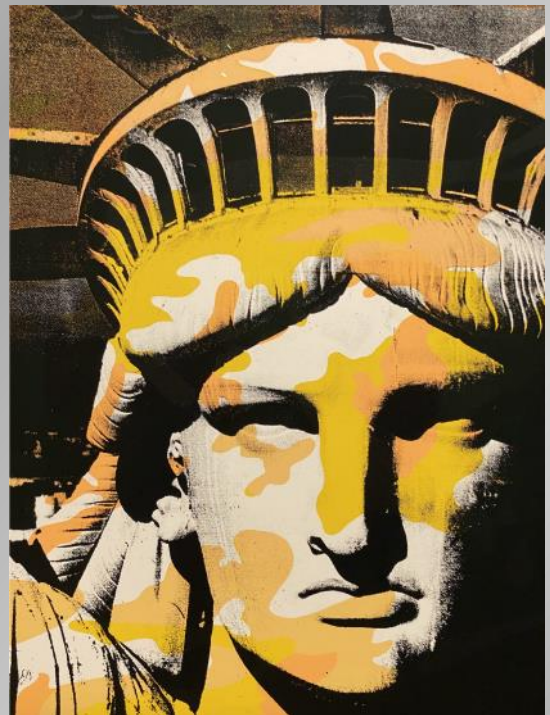


Andy Warhol - an icon whose work shook the world and revolutionised the face of popular art forever. (Part 3)

Moving onto the final few rooms, we reached the part of the exhibition that explored Warhol's life when he was in the prime of his career: an international celebrity. His works in the 1970's were explicit works that fixated on the body - an example would be his 'Oxidation' series, which required human urine to oxidise metallic paint (yes, he created urine paintings): this resulted in a painting that resembled that of abstract expressionist artworks, as it formed uniquely shaped pools of colour. I found that piece fascinating since you would never know, from just looking at the piece, that it was created using Andy Warhol's waste - this just emphasizes how pretty much anything can be turned into art.



He also made a 'Torso' series, in which he modelled men, recruited by his friends from gay bath houses; these were taken in black and white with strong contrast - this helped to define the shape of their bodies and transform the subjects into the art rather than merely the subject of the art, which is what I loved about this photograph series.



In the following decade, Andy Warhol subconsciously returned his attention back to political and even religious imagery; his artwork mirrored major concerns such as the Cold War and the AIDs epidemic.

One of the pieces that impacted me significantly was Warhol's 'Statue of Liberty (Fabis)' wherein this symbol of freedom was defaced with a layer of camouflage - although it was not a particularly difficult message to interpret, it was most definitely powerful: The idea of freedom being stripped from people in plain sight, despite the US priding themselves on individuality and liberty.

Warhol also presented his own identity in his artwork with the famous 'fright wig' - in these self-portraits, he conveyed the incessant suffering





he had to deal with, during the aftermath of his shooting, through his pained expression. The fact that these pieces were done on such a large scale further illustrates the magnitude of his constant physical and mental torment.

Finally, wrapping up this insightful exhibition, we were directed into a dark room that displayed an illuminated painting that covered the entire length of the wall - Andy Warhol's 'Sixty Last Suppers', 1986. This grand artwork has the irregular use of a group of men rather than individual portraits; it draws attention to the communal atmosphere and activity between the subjects. 'Sixty Last Suppers' was one of Andy Warhol's last artworks, as he died the following year in 1987 due to the long-term effects of his compromised health.

Overall the experience of going to the Andy Warhol exhibition at the Tate Modern was beneficial and fun! We were able to learn more about the man who shaped a significant part of our art and culture today, as well as simply admire his beautiful pieces and understand the reasoning behind his artwork.



Joy Hui, Art Prefect





BGS Parents' Association

Last chance!

The deadline to order
your Nordmann Fir
Christmas Tree is
Thurs 26 Nov @ 9pm

To order, visit:
bgschristmastrees.co.uk

Trees range from £20 -£55
All proceeds will benefit the school!





Easyfundraising ~ Join Today!

Free money for the school when you shop online at absolutely no cost to you.

Congratulations to Mrs Haslam (SEND), who has regained her position at the top of the PA leaderboard on EasyFundRaising having raised £456.29 for the school through her online shopping.

Thank you to our 363 (up 20 on last week) Easy-fundraising supporters who have now raised a total of £5,746.46.

Remember, the donation is made by the company you shop from - it has no effect on the price you pay; it really is a no-brainer. We could easily have another 1000 supporters from the parent body...

Please take 3 minutes to join us during lockdown 2.0 and then remember to do that extra click before you shop online.

Simply click [here](#) and then on the "Promote my cause" button at the top of the page and "Get Started". Follow the simple instructions, making sure you add the donation reminder after you have signed up.

Time for some Christmas shopping!

Thank you,

Mr Elphick and the Parents' Association

Sign up at:

[https://
www.easyfundraising.org.uk/
causes/bexleygrammar](https://www.easyfundraising.org.uk/causes/bexleygrammar)
click on the pink "Support this Cause"
box.

Don't forget to set up
"[Donation Reminder](#)"!



COVID-19 CASES ARE RISING IN WELLING

Parents, carers and students - help keep your community safe

Do not send your child to school or to school events if they have symptoms



Wear masks on public transport

Remember social distancing at school entrance and exits - if they're busy wear your mask



Go straight home when school ends

Wash your hands often



KEEP
WELLING
SAFE

www.gov.uk/coronavirus



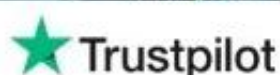
News items you may have missed

STEM Summer Internships

Ages 15-18 OR Ages 12-14 | London 2021

Architecture | Computer Science | Engineering | Investment Banking |

Medicine | Psychology



Excellent

4.9 out of 5

Give your students the life-changing opportunity to work alongside top professionals in 6 STEM-related industries in London next summer. Some Internship highlights are set out later in this email.

We would particularly urge students interested in The Young Doctor Summer Internship to register now as we are seeing a huge demand for the in-hospital work experience we provide. The Young Engineer Summer Internship, which includes an experiential visit to the Airbus ExoMars facility, is also proving to be extremely popular.

Students can register before 31st December and use the code INTERN15 to receive 15% off.

[Register now \(Ages 15-18\)](#)[Register now \(Ages 12-14\)](#)

COVID-19 POLICY

Our Summer 2020 Internships in London went ahead with strict social distancing measures in place. The feedback averaged an outstanding 9.2/10! We are therefore very confident that 2021 will go ahead as planned. In the unlikely event the Internships are completely cancelled due to COVID-19, students will receive a refund. You can download a pdf of this email [here](#).



- **Medicine:** work experience in a top London teaching hospital. Experience emergency theatre; examine real patients; shadow doctors on a ward round.
- **Engineering:** enter the Airbus headquarters; tear down a supercar engine; build aerofoil with a Rolls Royce engineer
- **Computer Science:** visit some of the fastest-growing tech firms in Europe; design Artificial Intelligence; develop autonomous vehicles
- **Psychology:** meet patients in hospital; coach a professional sports team; forensically assess a suspected criminal
- **Investment Banking:** trade stocks live at the London Stock Exchange; visit hedge funds and private equity giants; work on a FTSE 100 M&A deal
- **Architecture:** conduct site visits with architects; design buildings and get feedback; use 3D visualisation software



A Mindful Moment

DO YOU WANT TO KNOW HOW YOU CAN GET BETTER SLEEP?

We care about your sleep... And so should you! It helps you to concentrate, gives you energy and might even make you look and feel better! So here are some of our top tips to getting a better night's sleep.

ROUTINE, ROUTINE, ROUTINE

Bedtime routines aren't just for young kids! Everyone benefits from having a routine in the run up to bedtime – even your parents. Try and do the same things at around the same time each night – even at weekends – so that your body has time to prepare for relaxation and sleep.

TURN OFF THE TECH

In the hour before bed, screens should be a no go! We understand it can be hard to turn off your devices, especially if you've been revising all night and want to chat to friends or even unwind with a game. But remember, the blue light does suppress melatonin and you will feel less sleepy.

TIME FOR BED

The perfect sleep environment is cool, quiet, dark and clutter free (yes, it's time to tidy away the mess!). You need a comfortable bed, a supportive pillow and nice bedding. Think about the décor and where possible, keep electronic devices out of the bedroom.



WORK IT!

Grab your trainers. Go for a run, walk or cycle. Get your family or friends involved too. Exercise is really good for sleep (not too close to bedtime) and your mental health.

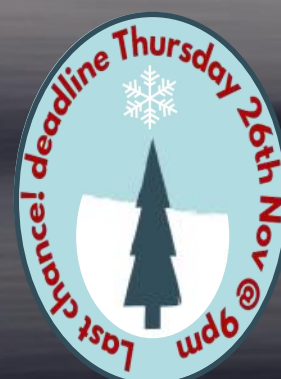
RELAXATION

Relaxation and mindfulness exercises can be really useful in looking after yourself when you're stressed and worried. Whether you do this during your bedtime routine, or once you're in bed, pick something that really helps you to feel calm and content.

Miss Brand, Mental Health Lead



FOR MORE INFORMATION
AND TO DOWNLOAD YOUR
**FREE COPY OF THE TEEN
SLEEP E-BOOK VISIT
TEENSLEEPHUB.ORG.UK**





Year 7 Club

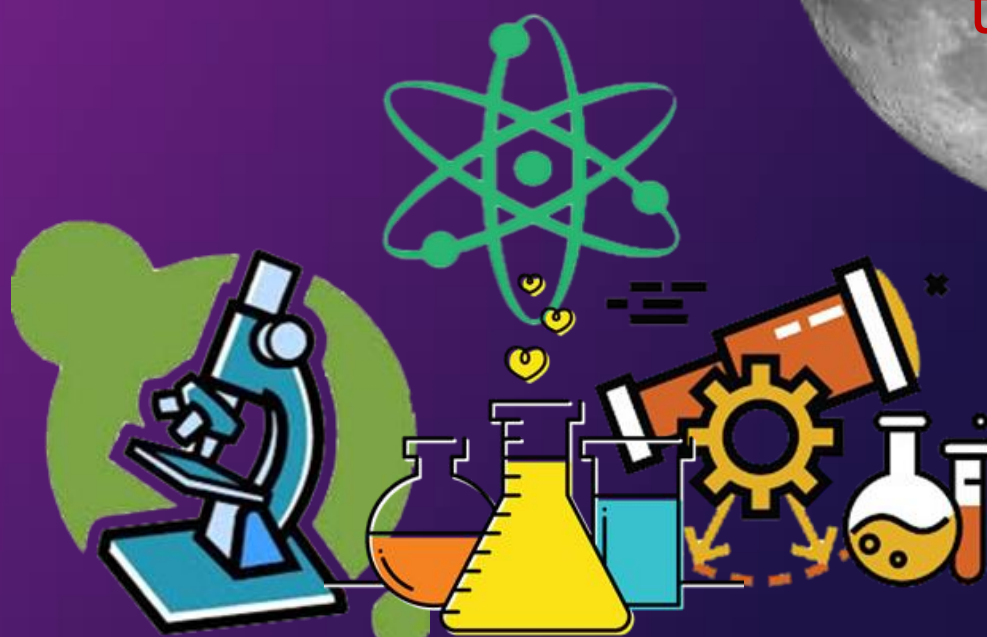
Meets: Week B ~ Wednesday lunch in M16
(come at the start of lunch)

A science club with a difference!

Session 3 - Share your experiences of the
last challenge and find out the
next one!



Students see
Ms Lusted's
email to
take part





Year 9 House STEM competition

Are you creative? A problem solver? Someone who can think outside the box and work in a team?

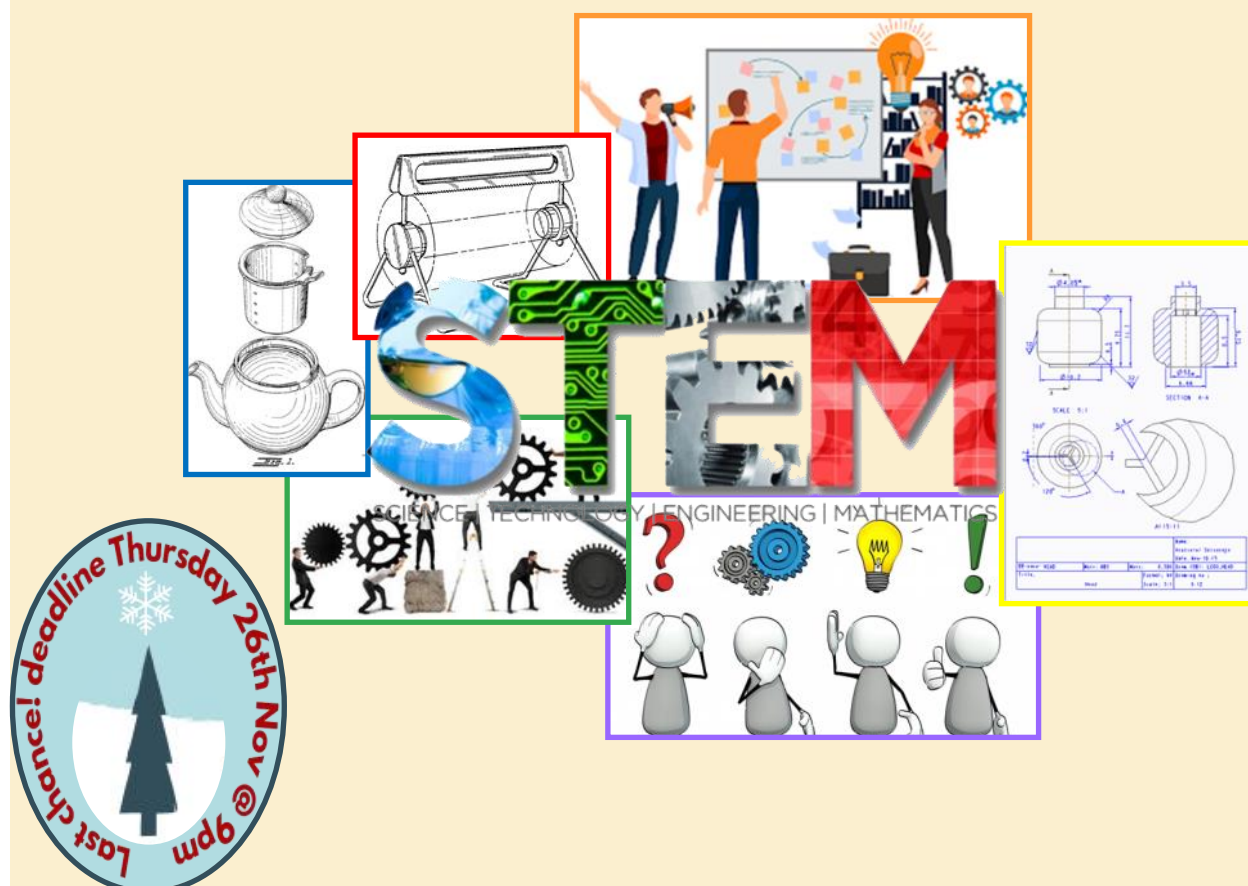
The Challenge

- In a team of three you will be given a few problems to choose from.
- You pick a problem and design a device to solve that problem.
- You make a poster and maybe a prototype of your design.
- Your team presents their design and model to the judges.
- The winning team gets glory and admiration... oh and house points!!

The Details

- Teams of three (make sure you have a mix of boys and girls).
- Meeting in **M16 on a Monday lunchtime** (you can bring lunch) for four weeks.
- Three sessions to design and create and one session to present.
- **Starts Monday 9th November.**
- Finishes Monday 30th November.

Ms Lusted, STEM Coordinator





BGS PA

Christmas ★ Raffle ★

The 12 Prizes of Christmas:

- 
- 
- 
- 
1. £100 Bluewater voucher
 2. Family Christmas hamper
 3. £50 Amazon voucher
 4. Pamper hamper for her
 5. Pamper hamper for him
 6. Basket of beer
 7. Art sets
 8. Chocolate hamper
 9. Armani perfume & headphones
 10. Designer phone case & purse
 11. Magnum of Prosecco
 12. Cuddly toy

Tickets £1 each

To buy your tickets, visit:
bgspa.co.uk/raffle



The deadline for ticket sales is Monday 14th December.
The raffle will be drawn on Thursday 17th December
by PA trustees and winners notified.

Thank You & Merry Christmas!





Winter Festival of Music

14 - 17 December, 6pm on YouTube

A series of short concerts for your
Christmas entertainment by students of
the music department.

Details to be announced soon.

Please donate via ParentPay.





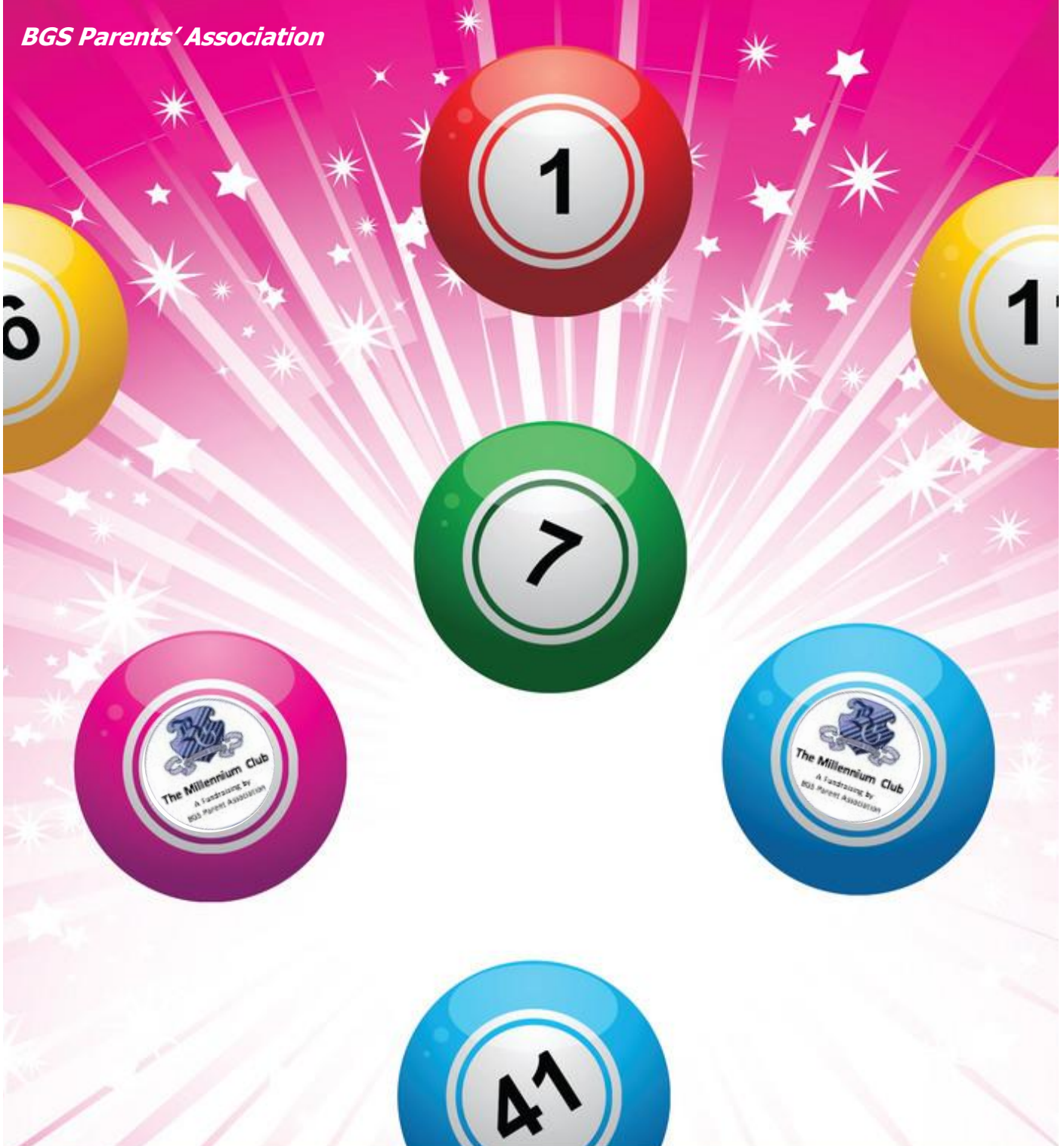
Have you heard about the PA Millennium Club?

Dear Parent/ Carer,

The Parents' Association runs a monthly Millennium Club draw to raise funds for the school. Each month there is a prize draw, with a first prize of £15 and a second prize of £10. Each share costs £5 and will be entered into monthly 12 draws plus an additional bonus Christmas draw in December. There is no limit to the number of shares you can buy; the more shares purchased the higher the funds raised for Bexley Grammar! You can join at any time, but must be over 18 to enter. To be in with a chance of winning, please click on the link [here](#) for details of how to enter.

Good Luck!

BGS Parents' Association





Blood and Transplant

We are holding a blood donation session

at **St Michael's Community Centre**, Wrotham Road,
Welling DA16 1LS on **Friday 27th November 2020**
and have appointments available between **13:45 – 20:00**

To book an appointment

visit us at **blood.co.uk**

download our app **NHSGIVE BLOOD**

call us on **0300 123 23 23**

We have social distancing measures in place for the safety of our donors and staff so ask that you come alone to session and, where possible, do not bring children at this time.





Report Lost Property

Please help us to help you by putting your child's name in all their belongings so that we can return them to their owners. Please report lost property by clicking on the link [here](#). Thank you for your cooperation.

Reception Team

Forthcoming events/ Important dates for your diary

November

Thursday 26th ~ 9pm deadline to order Nordmann Fir Christmas Tree (see notice)



Monday 30th ~ Week A

Monday 30th ~ Year 9 House STEM Competition finishes (see notice)



December

Monday 14th to Thursday 17th ~ Youtube - Winter Festival of Music streamed concerts (see notice)



Monday 14^h ~ BGS PA Raffle - ticket sales deadline (see notice)



Thursday 17th ~ BGS PA Raffle - drawn (see notice)



Friday 18th ~ Last school day before the Christmas Holiday

January

Monday 4th ~ First day of the spring term all students return to school