



Centre for Teaching Mathematics News



Issue 14
www.tech.plym.ac.uk/maths/CTMHOME/CTM.HTML

Welcome

Welcome to the Spring 2005 edition of the CTM News. We publish this newsletter every term and distribute it to schools, colleges and interested people. If you are reading somebody else's copy please contact the Centre secretary to be added to the mailing list. Also if you are moving schools and would like to continue receiving the newsletter please send us details of your new school. The newsletter will contain information on the staff and activities of the CTM. Each issue will contain a teaching resource which might be a graphic calculator activity, a problem solving activity or a practical mechanics problem. This term we have a photocopiable resource for all ages – the 24 challenge – can you make the number 24 out of the four numbers given, and the start of a series on Polygonal Numbers.
Editor – Jenny Sharp jsharp@plymouth.ac.uk

The Centre for Teaching Mathematics

The CTM is an inter-faculty group of mathematics educators based at the University of Plymouth within the Mathematics Department and the Education Faculty at Exmouth plus associate members.

The aims of the Centre are:

Creative Resources and Research

Training for Teachers

Mathematics Enrichment for Pupils

Contacting Us

Members of the CTM can be contacted via the Secretary:

Julie Tombs

Centre for Teaching Mathematics
School of Mathematics and Statistics

University of Plymouth

Plymouth

Devon

PL4 8AA

Tel/fax 01752 232772

Email jtombs@plymouth.ac.uk

Continuing Professional Development

Courses for 2005 in Plymouth

We have a number of cpd courses planned for June 2005:

- 21st – 24th June: CAS, Modelling and Investigations in International Baccalaureate Mathematics
- 27th – 29th June: Decision Maths 1
- 20th June: A Level Mathematics with a Graphic Calculator
- 27th June: Core Mathematics 1
- 28th June: Core Mathematics 2
- 29th June: Core Mathematics 3
- 30th June: Core Mathematics 4
- 29th June: Statistics 1
- 30th June: Mechanics 1

Courses for 2005 in London

We are running a number of courses this year in Central London:

- 2nd March 2005: Teaching Proof in KS3, 4 and 5
- 22nd April 2005: A Level Mathematics with a Graphic Calculator
- 8th June 2005: Core Mathematics 3
- 8th July 2005: Core Mathematics 4

Further details and reservation forms can be found on the website:

http://www.tech.plym.ac.uk/maths/CTMHOME/raining_courses.htm

or contact Julie at the address opposite.

International Journal for Technology in Mathematics Education

The International Journal of Computer Algebra in Mathematics Education has been re-launched as the International Journal for Technology in Mathematics Education. The title of the journal has been changed to

broaden the scope of the journal. While articles on the use of computer algebra systems will continue to be a key component of the journal's content, it hoped to encourage more papers on the use of other and similar technologies. In particular papers on other mathematical computer applications and also hand held technology, such as graphics calculators. The change in title has been as a response to the number of papers that have been submitted to the journal that could not strictly be described as computer algebra. It is hoped that readers will find that the wider scope encourages a greater variety of interesting papers. The aims and scope of the new journal are listed below.

Aims and Scope

The International Journal for Technology in Mathematics Education (IJTME) exists to provide a medium through which a wide range of experiences in the use of technology in mathematics education can be shared. Contributions concerned with any form of technology are welcome, but the primary focus of the journal is on the use of computers and hand technology, including all types of calculator. The Journal aims to provide an environment in which ideas and research can be presented, discussed and criticised so that best practice can be assimilated into the new curricula of schools, colleges and universities. The Journal is pleased to publish contributions on any aspect of the use of technology in education and training likely to be of interest to readers. The main criterion of acceptance is that the material should make a contribution to knowledge in this field. The types of contribution considered for publication in The International Journal for Technology in Mathematics Education are:

Research reports, which should normally contain the theoretical framework and references to related literature, together with a justification and description of the methodology used and some analysis of the results of the study;

Ideas for Teaching and Learning, papers in this section report on classroom activities and good ideas for teaching with technology and include some evaluation of the experience of students who have used the activities;

Discussion papers, that raise important issues on the teaching and learning of mathematics with technology and which may be anticipated to promote a wide-ranging discussion.

If you are interested in submitting an article or subscribing to the journal, please contact the editor, Ted Graham at egraham@plymouth.ac.uk.

Student Profile Lindsay Thompson



I really enjoyed my time from 1999 to 2002 at university in Plymouth! My degree was a BSc (Hons) in Applied Statistics. The university has a very friendly atmosphere

making people feel very welcome. The staff in the School of Maths and Stats were very approachable and always there to give me support when I needed it! There are a variety of topics to study. I like the way it was possible to choose the topics you did, it enabled me to get from my degree exactly what I wanted and needed. My degree has very much helped me in my career as it gave me a large insight into the world of statistics and has very much supported my studies during my MSc.

Joining clubs and societies enabled me to make loads of friends and helped me enjoy my time at university a lot more. There is loads of fun to be had and the chance for lots of different experiences.

Plymouth is a really nice town, people are friendly and there is plenty for students to do, especially of an evening. There are more than enough pubs, bars and clubs!! Everything is right there where you need it. It's never far to walk anywhere, making that trip into Uni easy. And making that all-important shopping trip more enjoyable.

My work afterwards: I am currently studying for an MSc in Biometry at the University of Reading and hope to obtain a job in Medical Statistics.

Talks for Schools

The School of Mathematics and Statistics at the University of Plymouth is happy to provide speakers on a wide range of topics to increase interest in our subjects. Each talk lasts for about an hour. There is no charge to the school.

Unless otherwise stated, these talks are generally accessible for GCSE and A-level students. Further details can be found at www.plymouth.ac.uk/maths

Talks currently available include:

- Mathematics and Statistics Degrees and Careers
- Why Take A-Level Maths? (for Year 11)
- Modelling in Mathematics A-Level
- Coincidences and Statistics
- The Statistics of Medical Trials
- Probability and Risks
- Making Money with Mathematics: how secure is the internet?
- Enigma: the theorem that won the war
- Magnetic Recording: mathematics in small bytes
- Sticky Liquids – Science with Bubbles (for Key Stage 2)
- Expecting the Unexpected (Concepts in Mechanics)
- 100 Years of Quantum Theory
- What's the Matter with Antimatter?
- Quarks: the building blocks of matter
- Why everyone needs to know at least a little numerical analysis: or 'Maths Book + Computer = Wrong Answer!'
- Is Mathematics Invented or Discovered? (for Year 10)

Unless otherwise stated, these talks are generally accessible for GCSE and A-level students. Further details can be found at www.plymouth.ac.uk/maths

If you would like to arrange a talk, please contact

Dr Martin Lavelle,
mlavelle@plymouth.ac.uk
Tel: 01752 232729,
fax: 01752 232780

Why Do A-Level Mathematics?

This is one of the talks that the School of mathematics and statistics offers free of charge to schools. The talk is normally delivered by Ted Graham, who gives a light hearted overview of A-Level Mathematics and some of advantages of taking this subject. His talk is highly interactive and involves the students in demonstrations and experiments in pure maths, statistics and mechanics. Video clips are used to illustrate applications of mechanics and discrete mathematics.

After one recent event the students were asked to give feedback on the talk. Their teacher then sent some of these comment back to the University. Some of these are listed below:

"I thought the lecture was good. I was expecting it to be boring but Mr Graham made it interesting by doing hands-on demonstrations and involving all the students in them, also everything was clear and well presented"

"I think that it was very entertaining. We proved that boys are smarter than girls. I learnt a lot about mechanics and it was fun when he called people up from the audience"

"The maths lecture made me see maths in a more useful and interesting way. I didn't realise you could apply it to so many things. A level maths doesn't seem quite so scary"

"I thought it was brilliant - I wasn't thinking of taking A Level maths but now I have changed my mind"

"I didn't like being chosen for the boys vs girls quiz, but it was a good lecture that made me consider taking A level maths."

We presume that the school filed any negative comments in the bin.

If you would like to have a talk for your students please contact Martin at the address opposite.

Revision Days

The Centre runs A level Revision Days throughout the year. We have a few planned to coincide with the Summer Examinations, in Plymouth and in London.

Students will be guided through the syllabus topic by topic, provided with a pack of resources to help their revision and given lots of hints for examination success. Each day is suitable for all examination boards. The fee for each day is £12. Each day runs from 10:30 to 3:30

Revision Days in London

Friday 15th April 2005 – AS Core Mathematics

Wed 27th April 2005 – A2 Core Mathematics

Thurs 28th April 2005 – M1 Mechanics

Revision Days in Plymouth

Mon 18th April 2005 – AS Core Mathematics

Mon 25th April 2005 – M1 Mechanics

Tues 3rd May 2005 – A2 Core Mathematics

Reservation forms can be found on the website:

http://www.tech.plym.ac.uk/maths/CTMHOME/MEP_revision_days.htm

or contact Julie at the address on page 1.

It is possible for us to come to your school to run a revision day specifically tailored to your students and board. We can do C1, C2, C3, C4, S1 or M1. The cost of such a day would be £360 for groups up to 30. For larger groups we would charge £360 (for 30 students) plus £6 for each additional student. In addition, travelling expenses would also need to be covered by the school. For more information please contact Ted Graham on 01752 232773 or by email: egraham@plymouth.ac.uk

Work Experience at the Centre

There are opportunities for secondary school students to carry out work experience visits at the Centre for Teaching Mathematics. Three students attended early in the school term. They were able to take part in a variety of tasks. These included:

- Attending lectures from the Foundation Pathways in technology Course: The students felt that this helped both their maths and science.
- Helping with Primary School Visits: The students helped operate graphics calculators, distribute lunch and direct the youngsters to the toilets. The student even had the chance to meet one of his old primary school teachers again.
- Working on a Engineering Mathematics Textbook: This work involved producing camera ready copy that will be sent to the publisher. The work included typing, using equation editor, creating graphs and diagrams, as well as checking that the final product made sense and checking answers.
- Meeting with members of staff to discuss career opportunities in mathematics and statistics.

What did the students think of it all? One of the students wrote the following comments on his evaluation form:

The work experience was fantastic. In the final year of my GCSE time is precious, and any out of school or lesson activities such as this must be worthwhile. I was not disappointed. In the space of a single week, not only was I significantly strengthened in the areas of maths and physics, but I was also placed in a pure mathematics environment, in which I got a taste of working independently with a certain degree responsibility. I have become accomplished with a piece of software called "Fx-draw" and am proud to have contributed to the creation of a text book, which is to be published. The various lectures that I attended, helped with my academic work back at school. These valuable sessions did enhance my confidence, as well as my abilities in these areas. This was definitely a week well spent.

The 24 Challenge

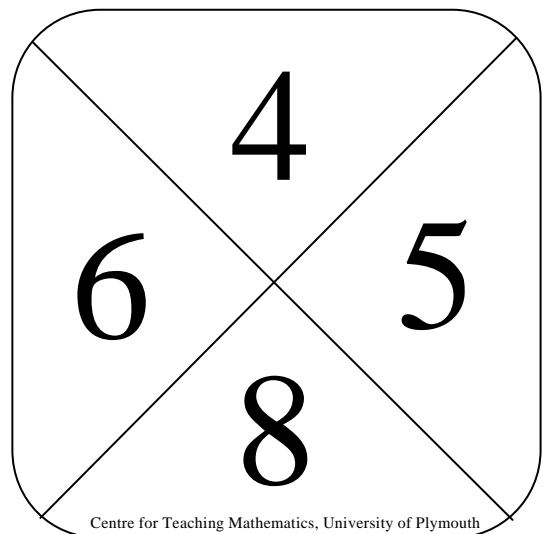
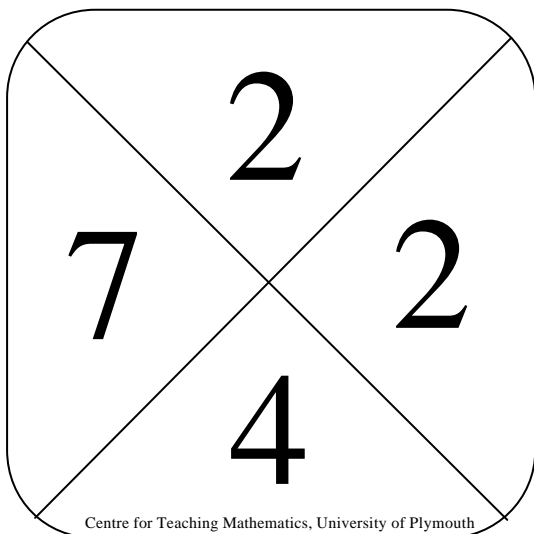
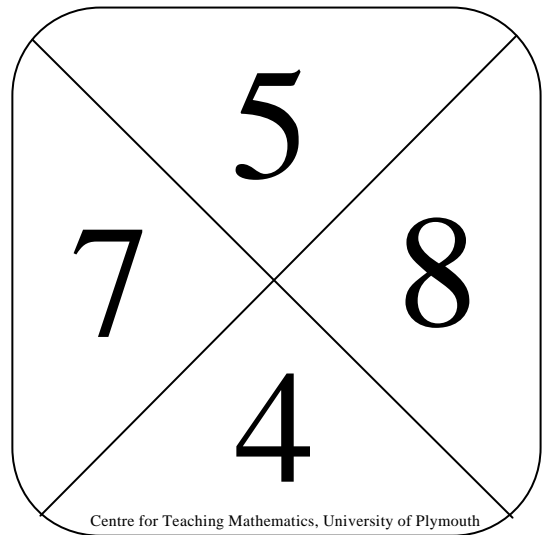
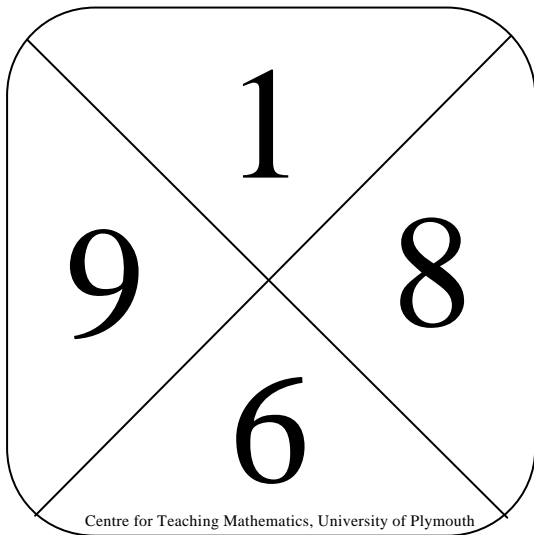
We have used the 24 challenge with students from Primary through to VIth form as a way of getting the brain going – ideal for the mental starter! 24 is a great number to work with because it has a large number of factors. We will be publishing 10 cards an issue, you can photocopy them onto card for students to use individually or in pairs or onto transparency to use with an OHP for a whole class activity.

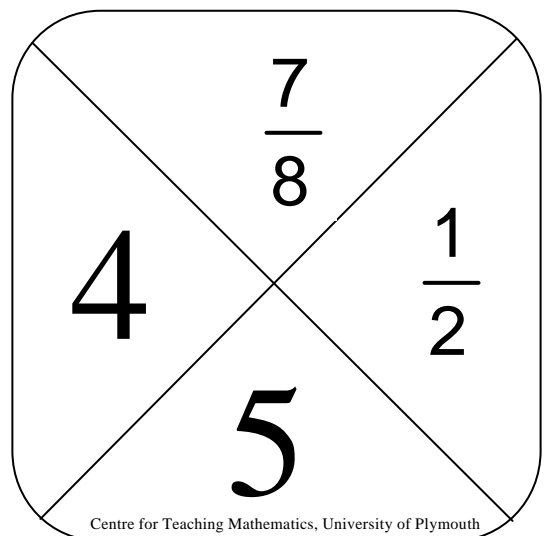
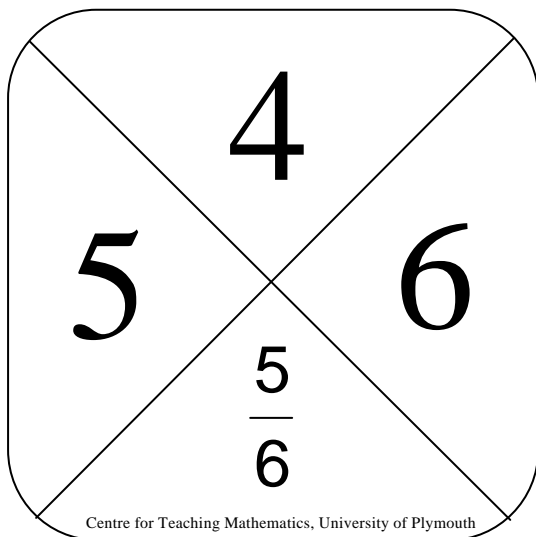
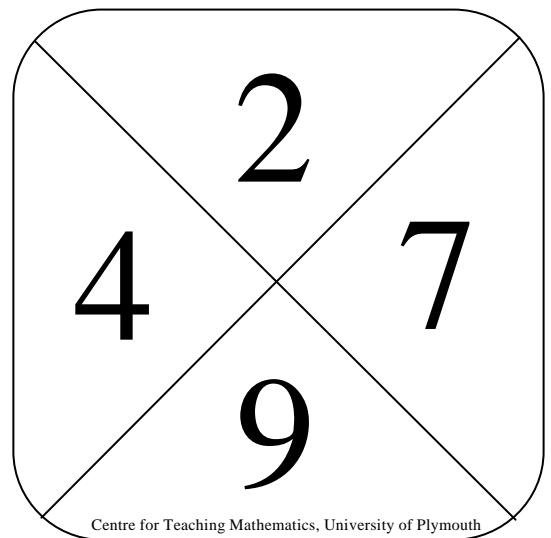
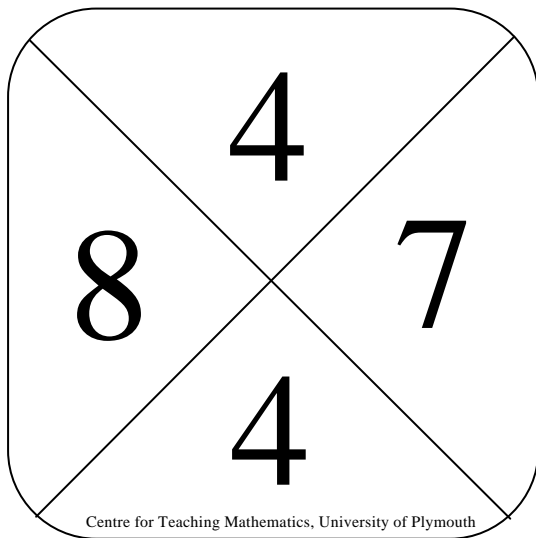
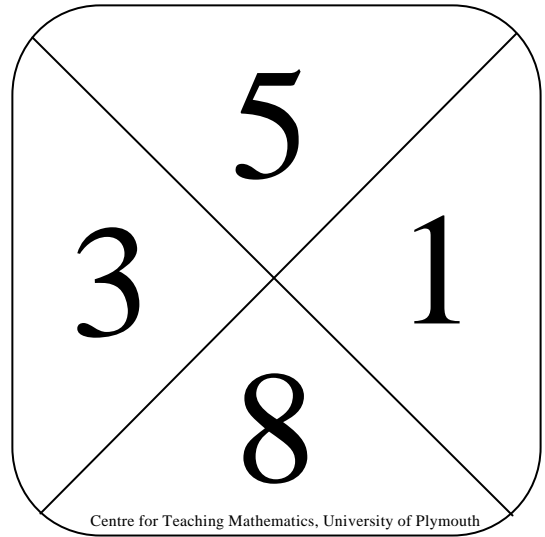
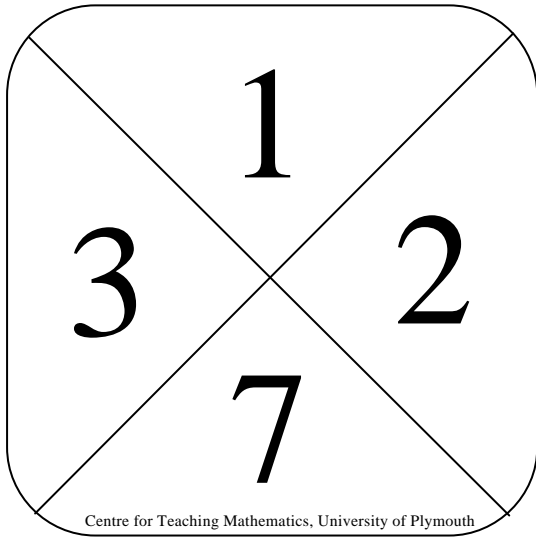
The rules are simple:

Make the number 24 by:

- Using all four numbers once and only once
- Using the four operations $+$, $-$, \times and \div

I think I made a typing error last issue with 2, 5, 5 and 6 which I think is impossible! However if you have been able to do it I would love to know how!

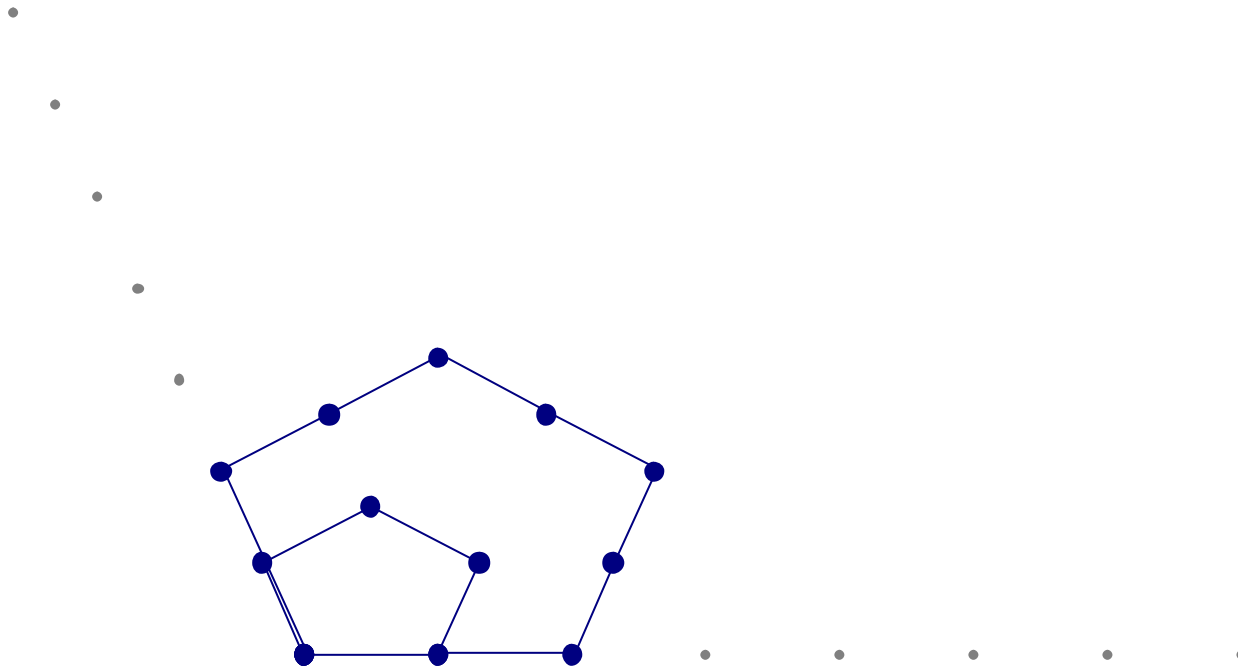




Polygonal Numbers

We have all done triangle numbers and square numbers but how about extending the ideas to other polygons – polygonal numbers. In this issue we have the templates for creating pentagonal numbers and hexagonal numbers.

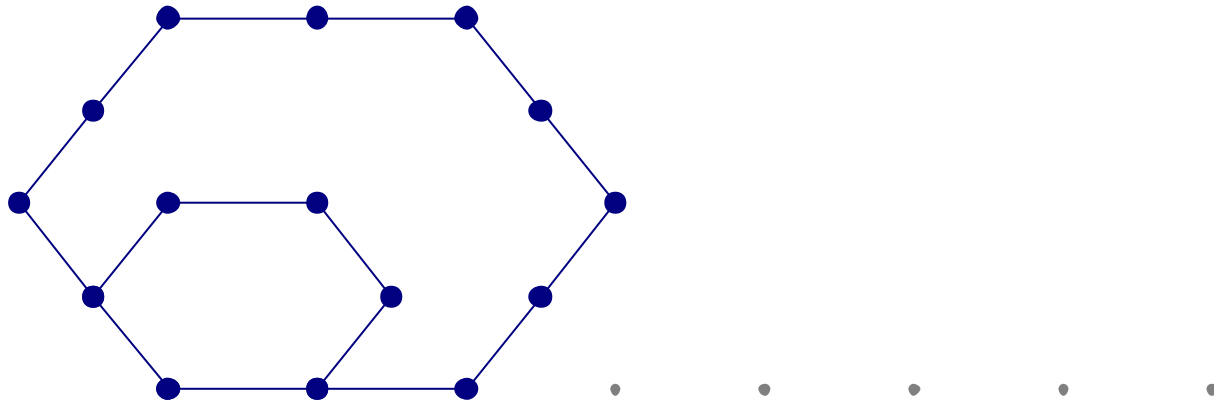
Pentagonal Numbers



What's the pattern?

Order	1	2	3	4	5			
Points	1	5	12	?	?			

Hexagonal Numbers



What's the pattern?

Order	1	2	3	4	5			
Points	1	6	15	?	?			