

MATHEMATICS AND CAREER EXPLORATION

YEAR 7



These resources are proudly supported by Toyota Community Trust, Australian Mathematical Sciences Institute, Australian Centre for Career Education, Aurecon Group, and Champion Data.

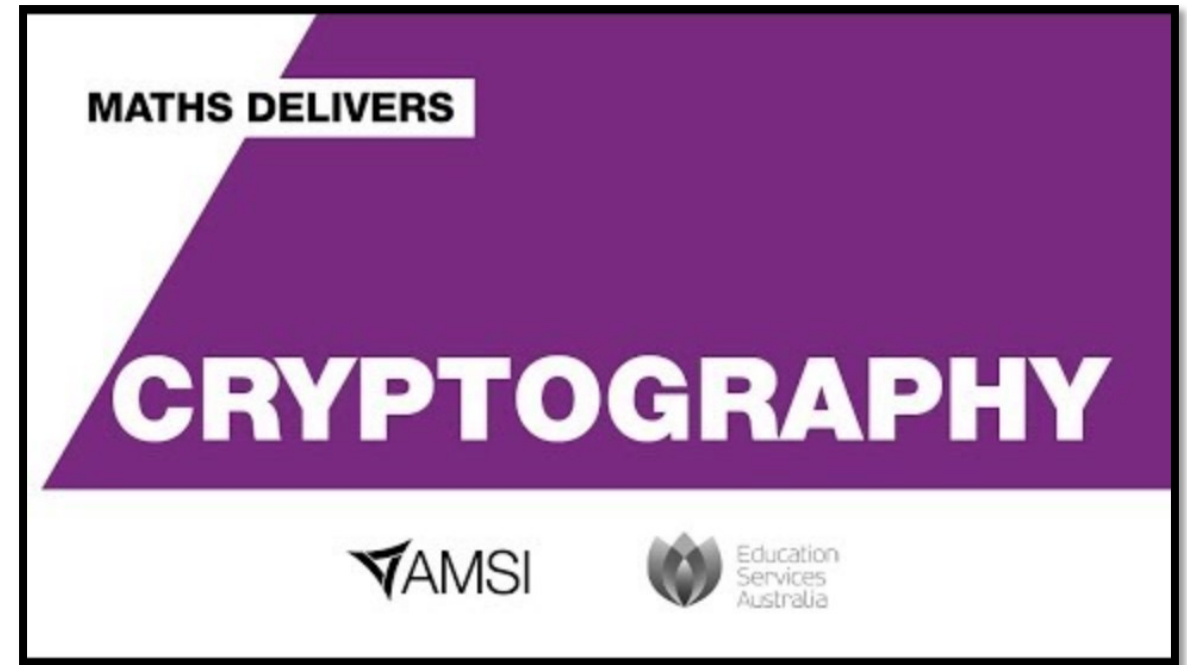


Cryptography

Encryption plays a crucial role in the day-to-day functioning of our society. For example, millions of people make purchases on the internet every day.

Each time you submit your credit-card details online, there is a risk that this information may be stolen. So how can the information be sent securely?

In this video, we see how encryption is used in defence, banking and internet transactions.



<https://youtu.be/hX9TsUrVzt8>



For more teacher and student resources including job ads, career profiles and videos visit careers.amsi.org.au

From computing and robotics to medical research and engineering, maths is critical to so many careers.

The screenshot shows the 'MATHS CAREERS' website with a navigation bar containing 'JOB ADS', 'PROFILES', 'VIDEOS', 'STUDY TIPS', and 'PARENTS & TEACHERS'. The main content area displays a grid of nine video thumbnails, each with a red play button icon. Below each thumbnail is the video title and a short description of the content.

| Video Title | Description |
|-------------------------------|---|
| Tuning into Statistics | Science and medicine rely heavily on data and statistics. Bioinformatician Saskia Freytag uses the power of data to reveal the ... |
| Protecting Forests with Maths | Forest Scientist Cristina Aponte uses Maths to study and protect our forests. In nature, just like in Maths, there is ... |
| Competing with Maths | Lesley West has a Bachelor of Mathematics & Statistics from the University of Strathclyde. She also competes as an amateur ... |
| Dreaming up Robots with Maths | Marita Cheng is the Founder of the International organisation Robogals, designed to encourage more women into Engineering. She is also ... |
| Climbing with Maths | Solai Valliappan has a Bachelor of Commerce (Actuarial Studies) from the University of NSW. She is a Fellow of the ... |
| Taking Off with Maths | Lee Turnley has a double degree in engineering and science (biotechnology) from Swinburne University and is a Composite Research Engineer ... |
| Coding Up a Revolution | Co-founder of Code Like a Girl, Ally Watson has a degree in computer science from Glasgow University in Scotland ... |
| Reaching the Stars with Maths | Karlie Noon was the first Indigenous Australian in New South Wales to complete a double degree in Maths and Physics ... |
| Fighting Malaria with Maths | Lyndal Henden is a Post Doc Researcher at the Walter and Eliza Hall Institute of Medical Research. Her research focuses ... |

Prime numbers keep your encrypted messages safe — here's how.

Belinda Smith, ABC Science.

abc.net.au/news/science/2018-01-20/how-prime-numbers-rsa-encryption-works/9338876



The RSA algorithm was named after the three mathematicians who first publicly unveiled it in 1977.

- ***How are prime numbers used in RSA encryption to protect data?***
- ***Why are prime numbers important to technology and cyber security?***

Worksheet 1

Finding multiples and common multiples.

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

Write down:

- All the multiples of 3.
- All the common multiples of 2 and 3.

Who am I?

- I am a number between 5 and 25, and I am a multiple of both 3 and 5.
- I am a number between 20 and 40, and I am a multiple of both 2 and 7.
- I am a number between 1 and 40, and I am a multiple of 3, 5, and 6.

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Worksheet 1
Finding multiples and common multiples.

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

1. Using the numbers in the box above write down:
a. All the multiples of 3.
b. All the common multiples of 2 and 3.

a. _____
b. _____

2. I am a number between 5 and 25 and I am a multiple of both 3 and 5.

3. I am a number between 20 and 40 and I am a multiple of both 2 and 7.

4. I am a number between 1 and 40 and I am a multiple of 3, 5, and 6.

TOYOTA AMSI aurecon CHAMPION DATA

Worksheet 2

Using clues to identify a number.

1. I am a number between 2 and 10.

When I am divided by a 2 or a 3, my remainder is 1.

What number am I?

2. I am a number between 30 and 50.

When I am divided by a 5 or a 9, my remainder is 3.

What number am I?

3. I am a number between 30 and 60.

When I am divided by a 7 or an 8, my remainder is 2.

What number am I?

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Worksheet 2
Using clues to identify a number.

1. I am a number between **2** and **10**.
When I am divided by a **2** or a **3**, my remainder is **1**.
What number am I?

2. I am a number between **30** and **50**.
When I am divided by a **5** or a **9**, my remainder is **3**.
What number am I?

3. I am a number between **30** and **60**.
When I am divided by a **7** or an **8**, my remainder is **2**.
What number am I?

Logos: TOYOTA, AMSI, aurecon, CHAMPION DATA