

Dear Parents and Supervising Adults,

Before starting the experiments, please read the manual together with your child and discuss the safety instructions.

Support your child with advice and a helping hand when performing the experiments outlined in the manual.

Make sure to keep the packaging and instructions as they contain important information.

WARNING! Not suitable for children under 3 years. Choking hazard — small parts may be swallowed or inhaled. Strangulation hazard — long cords may become wrapped around the neck.

Contents



Die-cut sheet
(Item No.: 725206)

Chalk
(Item No.: 725205)

String
(Item No.: 725204)

2 rivets (for cipher disk)
(Item No.: 724719)

The Experiments

Encryption with the Cipher Disk

Cipher disks are used to encrypt and decrypt messages. You and a partner will be using a cipher disk to communicate in code. Assemble them according to the image to the right, and then keep one and give the other to your partner.

First, select the letters that will serve as your key. In the example to the right, the key is A = Q. You will want to communicate this to your partner. Now, you can begin encoding your message. For example, if we want to encode the word “bed,” we will look for the letters that spell “bed” in blue on the inner ring, but write down the letters in red from the outer ring.

In the example to the left, B becomes A, E becomes S, and D becomes W. So your encrypted message (also called a cipher) will be “ASW.” Without the key and the cipher disk, this means nothing, but the intended recipient can use the information to decipher the message: “BED.”

Assembling the Cipher Disk



Place the longer half of the rivet on a table. Place the larger disk on top of it so the rivet slides through the center. Now place the smaller disk in place. Press the smaller rivet on top of the larger rivet and push them together until they snap.



Encryption with the Polybius Square

You can convert text into a numeric code using the Polybius square. To do this, look for the desired letter in the black spaces, and then replace it with the pair of numbers (coordinates) that mark the row and column.

Your partner will use the matching Polybius square to decipher your code. Always write down the number at the top first (the X axis), then the number on the left (the Y axis). For example, the letter B becomes the number 13 (1 at the top and 3 on the left). Separate words with spaces between the numbers or hyphens.

0	0	1	2	3	4	5
0	N	!	X	?	D	K
1	A	@	E	Y	J	Y
2	S	C	F	V	E	I
3	M	B	G	U	H	X
4	N	O	P	W	Z	L
5	R	Q	T	-	.	"

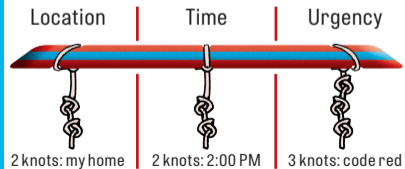
Can you decode the following text?

12010221 12541402424010

A Tangled Secret Message

Quipu, from the Cusco Quechua word for knot, were recording devices composed of rope that the Ancient Incas and other South American indigenous people used to communicate and record information. Quipus were composed of a base (usually cord or wood) with a series of strings hanging from it. Knots were tied in the strings to communicate information, typically as a means of accounting. These could only be deciphered by those who knew what a knot in a certain place or a cluster of knots represented. For example, one knot could mean "I'll be at the meeting point later" and two knots could mean "I'm not feeling well. I won't be there." Alternatively, as you can see below, you can use a series of ropes and knots to communicate specific places, times, and levels of urgency.

Example of an appointment:



6

Secret Symbols of Vagabonds

Dating as far back as the 17th century, it was reported that vagrants and mischief makers used a system of cryptic symbols to communicate information to future vagabonds passing through. Because many of these drifters couldn't read, these so-called "Tramp Signs," written in chalk or carved into trees and buildings, could communicate things such as: there's a vicious dog on the premises, this was a good place to ask for a hand-out, or even that a police officer lived here. You can use similar symbols to communicate with your friends, by drawing them with the piece of chalk on the sidewalk, on a fence, or on your doorstep. The cardboard sheet that came in the kit has some suggestions, but the possibilities are endless — just make sure your friends know what each symbol means!



7



Attention Junior Detectives!



Everything a true detective needs to investigate!

Ages 8 and up

© 2022 Franckh-Kosmos Verlags-GmbH & Co. KG, Pfizerstrasse 5-7, D-70184 Stuttgart, Germany.

This work, including all its parts, is copyright protected. Any use outside the specific limits of the copyright law without the consent of the publisher is prohibited and punishable by law. This applies specifically to reproductions, translations, microfilming, and storage and processing in electronic systems and networks. We do not guarantee that all material in this work is free from copyright or other protection.

Layout, Instructions, Packaging, and Die-cut Sheets: Michael Schlegel;
Cover Illustration: Wolfgang Peschke; All other illustrations: Friedrich Werth

© 2022 Thames & Kosmos, LLC, Providence, RI, USA; Thames & Kosmos® is a registered trademark of Thames & Kosmos, LLC.

Editing: Ted McGuire and Peter Bowen; Packaging artwork: Dan Freitas;
Additional illustrations: Dan Freitas and Ted McGuire
Distributed in North America by Thames & Kosmos, LLC, Providence, RI 02903

Phone: 800-587-2872; Web: www.thamesandkosmos.com

We reserve the right to make technical changes.

Printed in China / Imprimé en Chine

Answer to code on page 5: "Case closed!"



Secret Codes and Ciphers



Throughout history, encrypted codes have been used to communicate classified information, ensuring that it was concealed and could only be deciphered by the right parties. This kit contains the tools you need to make and exchange your own secret coded messages using four different techniques.

548015-02-111022