

Science Olympiad — SSSS 2020 - will0416 - Regional Level

Exam Preparation

You will need:

1. Folders for each of the teams to hold the tests
2. Sufficient copies of the test for all teams. They don't need to be stapled.
3. Multiple timers which have a lap function on them - ideally one per volunteer. The timer app on an iPhone or Android Phone that has a stopwatch function with lap function is sufficient.

Before the event begins:

1. Practice starting the timers and using the lap function to record the times. Make sure volunteers understand how to use the lap function and are not accidentally stopping the timer completely.
2. Memorize the answer to the timed question.
3. Check to make sure that this key matches the test you are proctoring.
4. Place one copy of the test for each team in the provided folders with the first page outside the folder.
5. Adjust desks and chairs – teams may have up to 3 students for this event.

Running the Event

1. When the students enter the room, instruct them to sit down, DO NOT OPEN THE FOLDER, and put their names, school name and school number on the first page.
2. Encourage them to write their team number on all the other pages AFTER they begin the test. This way if their papers gets separated from each other we can make sure to give them credit.
3. **CRITICAL:** Check to see that students have ONLY brought
 - i. Something to write with (pencils, pens, erasers)
 - ii. Five function calculators (addition, subtraction, multiplication, division, and usually square root). The calculator can have a simple memory store/recall function but must not have a modulus or other scientific and programmable functions. If their calculator doesn't meet these requirements, they may not use it.
 - iii. If there are spare calculators in the kit, you may loan up to one per team to use for the test.
 - iv. If the student has a smart watch (Apple watch, Samsung Gear, etc.) they will need to put it away.
4. Instruct the students that if they answer the timed question within 10 minutes, they can be awarded a bonus if they solve the timed question with no more than 2 letters incorrect.
 - i. When they have a solution for the cryptogram they should raise their hand.
 - ii. Let them know that you will announce when the 10-minute time is up. After the first 10 minutes, no additional bonus points will be awarded.
 - iii. When you see a team raise their hand, hit the LAP function and head to the team.
 - iv. Determine if their answer is correct (see next page for grading), If so, write the time on their score sheet.
 - v. If their score is incorrect (more than 2 letters incorrect), tell the team that the answer is wrong, but DO NOT tell them what is wrong. They can continue to work on the question and raise their hand again to be checked. A team has an unlimited number of attempts during the 10-minute bonus.
5. Tell the teams that they do not have to fill in the frequency table. It is simply there as an aid to them solving the cryptogram. It will not be graded.
6. Some students may never have used a non-scientific calculator. You should have them enter a simple formula on their calculator: $1 / 26 = * 26 = ..$ Most will be surprised to see that the answer is not rounded to 1 as they expected but .9999999999

7. When the timers hit the 10-minute point, announce that no bonus points will be awarded and put away the timers. The students may continue to work on the question, but they may not receive any extra points.
8. A team is not restricted to only the timed question during the 10 minutes. They can move on or split up the work if they would like, but it is in their best interest to try for the bonus.
9. When time is up, have the students put writing instruments down and put their answer pages back into the folder in the correct order.

How to grade

1. Teams can have up to two incorrect letters total on their cryptogram and still be correct. The frequency of the incorrect letter is irrelevant. See the example below.

If the cryptogram was as shown:

KZBAOF KFXMFXYP
SAMPLE SENTENCE

and the students answered (underlined letters indicate mistakes)

SAMPLE SENTENCE

then it counts as four mistakes (even though the mistake was only in the letter E) and the answer DOES NOT count. However, if they put

SAMPLE SENTENCE

It is considered correct with two letter mistakes.

2. For questions which have a numeric answer (such as determining the a= and b= values), no mistakes are allowed.
3. Teams do NOT have to fill in the frequency table. It is simply there as an aid to them solving the cryptogram. It WILL NOT be graded. It is included in the answer key as an aid to the grader.
4. When scoring the Baconian ciphers (with strange text or symbols), they can write the answer under the Baconian symbols or on the line provided. Note that you will see lots of As and Bs, but they are not graded as the answer, only what they put on the answer line.
5. As you score each question, if correct, put the number of incorrect letters (0, 1, or 2) next to the question number on the scoring page. Also, put the value for the question into the score column. If they get more than 2 letters wrong, subtract 100 points from the score until it would be zero. If a question is worth 240 points and they get 4 letters wrong, you would start with 240 points (for up to 2 letters wrong) and then subtract 100 points for the next two letters wrong ending up with a final score of 40 points for that question. If they had gotten 5 or more letters wrong on a 240 point question, they would receive 0 points for that question. With a 650 point question, they could get 8 letters wrong and receive 50 points (2 free letters then $6 \times 100 = 600$ points off). Just put the incorrect cost deduction on the score sheet and subtract it from the value for the question. Under no circumstance should the score for any question be less than zero. Note that while the timed question must have 2 or fewer letters incorrect in order to get the timing bonus, a team solving the timed question after the 10 minutes passed would be accepted as correct with 3 incorrect letters receiving 100 points for the timed question.
6. If they correctly answered the timed question in 10-minutes or less with 2 or fewer letters incorrect, you need to compute the bonus time. Take the value for the minute from this first table below

0:xx	2,160	1:xx	1,920	2:xx	1,680	3:xx	1,440	4:xx	1,200
5:xx	960	6:xx	720	7:xx	480	8:xx	240	9:xx	0

and then add the seconds value from this table:

X:00	240	X:01	236	X:02	232	X:03	228	X:04	224	X:05	220
X:06	216	X:07	212	X:08	208	X:09	204	X:10	200	X:11	196
X:12	192	X:13	188	X:14	184	X:15	180	X:16	176	X:17	172

X:18	168
X:24	144
X:30	120
X:36	96
X:42	72
X:48	48
X:54	24

X:19	164
X:25	140
X:31	116
X:37	92
X:43	68
X:49	44
X:55	20

X:20	160
X:26	136
X:32	112
X:38	88
X:44	64
X:50	40
X:56	16

X:21	156
X:27	132
X:33	108
X:39	84
X:45	60
X:51	36
X:57	12

X:22	152
X:28	128
X:34	104
X:40	80
X:46	56
X:52	32
X:58	8

X:23	148
X:29	124
X:35	100
X:41	76
X:47	52
X:53	28
X:59	4

For example if they solved the time question at the 6:46 mark, you would add 720 (from the 6:xx entry in the first table) to 56 (from the X:46 entry in the second table) to get a bonus of 776. If they had solved it in exactly 4:00 minutes, you would add 1200 and 240 to get a bonus of 1440.

7. Add up all the scores and put the total on the bottom of score sheet.
8. You must break all ties. Indicate the tie breaker by adding .1 to the score of the team ahead. With multiple teams tied, you will add more. I.e. if five teams all scored 200 points, the final scores that you would enter on the score sheet would be 200.4, 200.3, 200.2, 200.1 and 200.
9. To determine how to break the tie, you need to look at the correctly answered questions in the order from the table below. If both teams answered the same (i.e. they answered the question with zero mistakes) then you go on to the next question. If one team had no mistakes and the other team had one mistake, then the team with no mistakes is ahead. For example, if one team answered question #8 (which is the highest value question) and another team didn't, the first team will be ahead.

Tie Breaker Order	Question #
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1	15
2	13
3	3
4	16
5	19
6	8
7	5
8	4
9	14
10	12
11	6
12	2
13	17
14	7
15	1
16	18
17	Timed
18	9
19	11
20	10

0. If there is still a tie (typically when you have teams which answered either zero, one or two questions) then you will need to look at the tie breaker questions again and count the number of correctly answered letters. The team with the most correctly matched letters is to be ahead.

Timed Question [200 points] Solve this timed aristocrat. When you have solved it, raise your hand so that the time can be recorded and the solution checked.

P GDIM PDGRJG RJ QHDZ URGK P IZRBIM AHRSM PZL SPZZHG
A TRUE ARTIST IS BORN WITH A UNIQUE VOICE AND CANNOT

SHCV, JH KM KPJ HZXV GH SHCV GH CDHAM KRJ
COPY, SO HE HAS ONLY TO COPY TO PROVE HIS

HDRWRZPXRGV
ORIGINALITY

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Frequency	2	1	3	5			8	11	3	5	4	1	5			7	1	9	4		1	4	1	2		7
Replacement	V	Q	P	R	K	Z	T	O	U	S	H	D	E	M	F	A	B	I	C	J	W	Y	G	L	X	N

1) [250 points] Solve this affine cipher given that $a = 5$ & $b = 11$.

Z	X	C	U	F	S	F	L	Y	B	C	U	Z	Y	P	T	D	S	F	A	L	Y	P	F	S	D	H	X	C	U	L	Y
I	S	T	H	E	R	E	A	N	Y	T	H	I	N	G	M	O	R	E	D	A	N	G	E	R	O	U	S	T	H	A	N
X	B	T	I	L	C	U	F	C	Z	V	H	Y	A	F	S	X	C	L	Y	A	Z	Y	P	?							
S	Y	M	P	A	T	H	E	T	I	C	U	N	D	E	R	S	T	A	N	D	I	N	G	?							

2) [300 points] Encode this text using the Vigenere cipher and the keyword SCHOOL.

S	C	H	O	O	L	S	C	H	O	O	L	S	C	H	O	O	L	S												
E	D	U	C	A	T	I	O	N	H	A	S	P	R	O	D	U	C	E	D	A	V	A	S	T						
W	F	B	Q	O	E	A	Q	U	V	O	D	H	T	V	R	I	N	W	F	H	J	O	D	L						
C	H	O	O	L	S	C	H	O	O	L	S	C	H	O	O	L	S	C	H	O	O	L	S	C						
P	O	P	U	L	A	T	I	O	N	A	B	L	E	T	O	R	E	A	D	B	U	T	U	N	A	B	L	E	T	O
R	V	D	I	W	S	V	P	C	B	L	T	N	L	H	C	C	W	C	K	P	I	E	M	P	H	P	Z	P	L	Q
H	O	O	L	S	C	H	O	O	L	S	C	H	O	O	L	S	C	H	O	O	L	S	C	H	O	O	L	S	.	
D	I	S	T	I	N	G	U	I	S	H	W	H	A	T	I	S	W	O	R	T	H	R	E	A	D	I	N	G	.	
K	W	G	E	A	P	N	I	W	D	Z	Y	O	O	H	T	K	Y	V	F	H	S	J	G	H	R	W	Y	Y	.	

3) [600 points] Solve this K1 patristocrat said by Ralph Nader given that the word "OIL" appears once in the plaintext.

FVLAF KIDOJ ZTRQI MTUJF FADIG ADDIA IJFGR GTUJU
 OBVIO USLYT HEANS WERTO OILSP ILLSI STOPA PERTR

RAQJZ TJRQC TUI
 AINTH ETANK ERS

Obviously, the answer to oil spills is to paper-train the tankers.

K1	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Frequency	5		1	4		5	3		6	6	1	1	1		1		3	4		5	4	1				2
Replacement	I	J	K	L	M	O	P	Q	S	T	U	V	W	X	Y	Z	N	A	D	E	R	B	C	F	G	H

4) [350 points] Solve this aristocrat said by Bob Ross (hint: a word in the plaintext correlates with his occupation).

KHLS WOPYSVEL MOYS EVJHQYPSPHY, VLWVJPOXXN AN SZVPE
 MOST PAINTERS WANT RECOGNITION, ESPECIALLY BY THEIR

WVVEL
 PEERS

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Frequency	1				4			3		2	1	4	1	2	3	5	1		5			7	3	2	4	1
Replacement	B	V	F	K	R	X	Z	O	D	C	M	S	W	Y	A	I	G	U	T	Q	J	E	P	L	N	H

5) [350 points] Encode this text using the Hill Cipher and a keyword of PEWD.

$$\begin{pmatrix} P & E \\ W & D \end{pmatrix} \equiv \begin{pmatrix} 15 & 4 \\ 22 & 3 \end{pmatrix}$$

N	E	I	T	H	E	R	T	H	E	S	U	N	N	O	R	D	E	A	T	H	C	A	N	B	E
D	M	O	Z	R	K	T	P	R	K	M	O	N	N	S	V	J	A	Y	F	J	E	A	N	F	I
L	O	O	K	E	D	A	T	W	I	T	H	A	S	T	E	A	D	Y	E	Y	E				
N	Y	Q	A	U	T	Y	F	Y	O	B	X	U	C	P	O	M	J	M	U	M	U				

6) [300 points] Solve this quote from the song "Already Gone" by Eagles.

LI IVJTX JGQT GJ KOEETXL, RT OUU UGCT IMW UGVT GX
SO OFTEN TIME IT HAPPENS, WE ALL LIVE OUR LIFE IN

HKOGXL, OXY RT XTCTW TCTX NXIR RT KOCT JKT NTS.
CHAINS, AND WE NEVER EVEN KNOW WE HAVE THE KEY.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Frequency			4		2		6	1	4	4	4	3	1	2	5		1	4	1	15	4	2	2	8	1	
Replacement	Q	J	V	Z	P	B	I	C	O	T	H	S	U	K	A	X	M	W	Y	E	L	F	R	N	D	G

7) [250 points] Decode this given an a value of 21 and a b value of 24.

L	G	Y	U	E	M	E	E	Q	E	J	H	P	E	Y	U	E	G	Z	R	G	Q	Y	L	O	E	H	G
N	O	A	G	E	S	E	E	M	E	D	T	H	E	A	G	E	O	F	R	O	M	A	N	C	E	T	O

K	H	M	E	V	Z
I	T	S	E	L	F

8) [400 points] Solve this baconian said by Steven Wright on the topic of a certain scientist associated with finches.

BDCARWEINFDGHAJKLRWIMONPQRDASRWTUVXIYNDZBARCWEFIGNHJD
 ABABBBABBABAABAAABBBAABAABBBABBAAAABABBAABBABABAABABAAB
 M Y T H E O R Y O F E

KLAMORWPINQDRASRTWUVINDXYAZBRCEFGWIHNJDAKLMROPQWRSTIN
 AABAABBABBABABABABAABBBABAABAABAAAABBABABBAABAABAABAABB
 V O L U T I O N I S

UVDXYZARWBCEFGIHNKLMODAPQRSTRUVXYWZIBCENFGHJDAKLRMWO
 AABAAABBBAAAAABAABAAAABBAAAAABAAAABABAAAABAABAABAABA
 T H A T D A R W I N W

PQRSTUIVXYNZBCEFGHJDAKRWLI MNDAORPQWRSTIUVXYZND
 AAAAAABAABAABAAAAAABBABBABABBBABAABAABAABAABAABB
 A S A D O P T E D

My theory of evolution is that Darwin was adopted.

9) [150 points] A quote has been encoded using the Morbit Cipher for you to decode. You are told that 9=●x, 2=x-, 7=●-, 5=---, 6=●●, 8=x●.

2 6 3 3 4 9 2 7 4 5 1 7 5 6 7 7 4 3 1 3 4 7 1 7 1
 ●-xx●●●●x●-x●-●x●-●x-●-xx-●-●x●●●●x●●x●-●●x-●●x
 A / H A P P Y / C H I L D

3 3 8 5 8 5 8 3 6 3 3 4 9 3 1 4 3 4 5 1 5 9 3 4 7 1
 ●●●●x---x---x-●●xx●●●●x●-x●●●xx●●●x●-●x---x●●x●-●●x
 H O O D / H A S / S P O I L

1 7 1 8 9 2 8 1 7 5 6 2 6 2 7 4 7 8 5 8 9 3 4 3 4 1
 ●x-●●xx---x●-x-●x-●-xx●-xx●-●x●-●x---x---x●●x●●●x●●x
 E D / M A N Y / A / P R O M I S I

7 8 7 6 2 3 4 1 3 7 4
 -●x---●xx●-●●x●●x●●-●x●
 N G / L I F E

10) [100 points] Find the decryption matrix of encryption matrix BISL

$$\begin{pmatrix} B & I \\ S & L \end{pmatrix} \equiv \begin{pmatrix} 1 & 8 \\ 18 & 11 \end{pmatrix}$$

$$\begin{pmatrix} \begin{array}{|c|c|} \hline 5 & 20 \\ \hline 6 & 17 \\ \hline \end{array} \end{pmatrix}$$

11) [100 points] Solve this Caesar Cipher.

B	K	N	P	D	A	I	K	O	P	L	W	N	P	L	A	K	L	H	A	W	N	A	L	N	K	Q	Z	K	B
F	O	R	T	H	E	M	O	S	T	P	A	R	T	P	E	O	P	L	E	A	R	E	P	R	O	U	D	O	F
P	D	A	L	H	W	Y	A	B	N	K	I	S	D	E	Y	D	P	D	A	U	Y	K	I	A					
T	H	E	P	L	A	C	E	F	R	O	M	W	H	I	C	H	T	H	E	Y	C	O	M	E					

12) [300 points] Solve this aristocrat said by Charles Platt (hint: if you're having trouble, the first word is the title of a famous Maroon 5 song).

WYLCGH YL IXC LITSS DS ADWCBH, YS DZC AJZ VTLI UYPC
MISERY IS THE STUFF OF COMEDY, IF ONE CAN JUST LIVE

UDZE CZDTEX ID ECI DPCG YI.
LONG ENOUGH TO GET OVER IT.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Frequency	2	1	8	7	3		2	2	6	1		4				2			4	3	2	1	2	2	5	4
Replacement	C	D	E	O	G	Z	R	Y	T	A	B	S	W	K	X	V	P	Q	F	U	L	J	M	H	I	N

13) [600 points] It's in Spanish. You know what to do.

CPVS ESWSDP SA SW PWVP BAJSQBLQ; NZS SW GLVEQS
DAME BELLEZA EN EL ALMA INTERIOR; QUE EL HOMBRE

SRJSQAL X SW BAJSQAL TSPA ZAL.
EXTERNO Y EL INTERNO SEAN UNO.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Ñ	O	P	Q	R	S	T	U	V	W	X	Y	Z
Frequency	7	3	1	1	2		1			3		5		1			5	5	1	14	1		3	6	1		2
Replacement	N	I	D	Z	B	Ñ	H	P	F	T	G	O	V	Q	K	W	A	R	X	E	S	C	M	L	Y	J	U

Translation: *Give me beauty in the inward soul; may the outward and the inward man be at one.*

14) [300 points] The following quote needs to be decoded with the Vigenère Cipher with a keyword of **BOOKWORM**.

B	O	O	K	W	O	R	M	B	O	O	K	W	O	R	M	B	O	O	K	W	O	R								
U	V	S	B	A	O	C	X	Z	U	F	O	W	H	E	A	W	S	Z	D	A	B	U	E	U	C	P	O	P	V	V
T	H	E	R	E	A	L	L	Y	G	R	E	A	T	N	O	V	E	L	T	E	N	D	S	T	O	B	E	T	H	E

M	B	O	O	K	W	O	R	M	B	O	O	K	W	O	R	'	M	B	O	O	K	.								
Q	Y	O	Q	D	J	S	X	M	U	W	J	O	K	T	Z	F	T	O	I	D	D	C	I	'	E	M	W	T	O	.
E	X	A	C	T	N	E	G	A	T	I	V	E	O	F	I	T	S	A	U	T	H	O	R	'	S	L	I	F	E	.

15) [650 points] Solve this K2 patristocrat once said by Sophocles (hint: Michael Scott once adamantly asked Jo Bennett not to call him this keyword)

JMGZY QKCKI RBEQC MGOB KIZCB YQORJ XCAUB XQCMG
SUREL YTOTH INKYO UROWN THEON LYWIS DOMAN DYOUR

JKIZC BYQOC GXKIZ CBYQO RYYVZ KGUQJ UJIUY YCOJD
STHEO NLYWO RDTHE ONLYW ILLBE TRAYS ASHAL LOWSP

RGRKU BZADK QIZUG K
IRITA NEMPT YHEAR T

Surely, to think your own the only wisdom, and yours the only word, the only will, betrays a shallow spirit, an empty heart.

Replacement	U	V	W	X	Z	S	H	I	R	L	E	Y	A	B	C	D	F	G	J	K	M	N	O	P	Q	T
K2	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Frequency	2	7	10	2	1		7		6	6	9		3		5		8	5			6	1		3	8	7

16) [550 points] Solve this patristocrat (no hints this time, you got this).

SKWAJ KJIFM VFMMJ IWJKW BXJOK JBMIJ HWSMJ TVIJK
ANECO NOMIS TISSO MEONE WHOKN OWSMO REABO UTMON

WPVXS KVXWY WJYUW BXJXS ZWFV
EYTHA NTHEP EOPLE WHOHA VEIT

An economist is someone who knows more about money than the people who have it.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Frequency	1	3		1		3		1	4	11	6		4		1	1		4	1	1	5	9	5	2	1	
Replacement	C	W	D	B	Z	I	J	R	M	O	N	Q	S	G	K	Y	F	X	A	U	L	T	E	H	P	V

17) [250 points] A quote has been encoded using the Pollux Cipher for you to decode. You are told that 0=●, 1=-, 5=●, 8=-, 6=x, 2=●.

375020607680357931782942154498806203685429527100788438
 -x●●●●x●x●●-●x---x●●-x●-●xx-●●●x●●-x●●x●-●●x-●●x●●x-●
 T H E F O U R B U I L D I N

733267388268180793141515495362807691972235473622007566281
 x--●xx-●●●x●-●●x---x-●-●x-●-x●●●xx---x●●-●xx-x●●●●x●xx●●-
 G B L O C K S O F T H E U

71268875203607238458540475945987846209045062324276891
 x-●x●●x●●●-x●x●-●x●●●x●xx●-x●-●x●xx●●-●x●●x●-●x●xx●--
 N I V E R S E A R E F I R E W

4037165753876930403540370881487895847236987328645801480
 x●-x-x●x●-●xx--●x●-●x●-x●●●-x●x●-●●xx●-x-●x-●●xx●●●-x●●
 A T E R G R A V E L A N D V I

7924159378122
 x-●x-●--x●-●●
 N Y L

18) [200 points] Solve this Caesar cipher said by Lewis Thomas.

K	G	U	A	W	L	Q	W	N	G	D	N	W	K	F	G	L	T	Q	K	Z	G	M	L	A	F	Y	W	S	U	Z	
S	O	C	I	E	T	Y	E	V	O	L	V	E	S	N	O	T	B	Y	S	H	O	U	T	I	N	G	E	A	C	H	
G	L	Z	W	J	V	G	O	F	T	M	L	T	Q	L	Z	W	M	F	A	I	M	W	U	S	H	S	U	A	L	Q	
O	T	H	E	R	D	O	W	N	B	U	T	B	Y	T	H	E	U	N	I	Q	U	E	C	A	P	A	C	I	T	Y	
G	X	M	F	A	I	M	W	A	F	V	A	N	A	V	M	S	D	Z	M	E	S	F	T	W	A	F	Y	K	L	G	
O	F	U	N	I	Q	U	E	I	N	D	I	V	I	D	U	A	L	H	U	M	A	N	B	E	I	N	G	S	T	O	
U	G	E	H	J	W	Z	W	F	V	W	S	U	Z	G	L	Z	W	J													
C	O	M	P	R	E	H	E	N	D	E	A	C	H	O	T	H	E	R													

19) [450 points] Solve this baconian cipher given that the last 3 letters are PED.

ADEFBCGJHIMKLNPOQRVSTWUXYZADBCEGFHIMNJKLOPQSRTVUWYZXD
 ABBBAAABAAABBABABBBAABABAAABAABABAAAABBBABBABABABAABB
 P E O P L E W H O L O

AEBFJCKGLHIPQMNROSTVWXDUYZABEFCJKGHLPIMQRNOSVWXTDUYEZ
 ABABBABABAABBAABAABBBBAAAABBBABBAABBAABBAABBBABAABA
 O K T H R O U G H K

AFBCJGKLHIMPQRNVWOXSDTEUYZFABJCGHKIMNOSLTUYZABPCGHIMN
 ABAABABBAABBBABBABABABAAABAABAABAAAABAAAAABAAAAA
 E Y H O L E S A R E A

OSQRTWUYXZDABECGFJHKIMLPNOSQTURYZVAWBCXGHIDEFMNJOSTK
 ABBBBABAABABAABAABBABAABBAAABAABAABABAABAABBBBAABAAB
 P T T O G E T T H E

UYZABCLPGHQIMNOSTURYZVABCWXDGHIMNEOSFTUJYKLZPQARVBCGW
 AAAAAABBAABAAAAAABAABAAABBBAAAAABAABAABABBABBABBAAB
 I D E A T H A T M O S

XHIDMENOFSTUJKLYPZABCQRGHIMVWNXOSTDUYZABECGHIMNFOSTJU
 BAABABAABAAABBBABAAAABBAABBBABAAAABAAAABAAAAABAAAABA
 T T H I N G S A R E K

YKZALBCPGQRHIMVWXNDEOFSJTKUYZLABPCGHQIMRVWNOSTUYXDEZA
 ABAABAABABBAABBBABBABABABAAABAABAABBBBAAAAAABBBAA
 E Y H O L E S H A P

BFCGHIMJK

ABAAAAABB

E D

People who look through keyholes are apt to get the idea that most things are keyhole shaped.