

SPY ESCAPE

destination: Söldenia

TEACHER'S GUIDE

Grades 6 -9



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STORYLINE

Two decades ago, American scientists began a Top Secret collaboration with Söldenia—a small, prosperous mountain country between Austria and Italy. At the time, it was believed that the team was on the verge of developing a serum with powerful regenerative properties. Although this serum would be a valuable medical breakthrough, it could also make any enemy force excessively powerful, and so the research was kept confidential. But soon strange rumors started to emerge—of failed experiments, mutant test subjects, and conflict among the scientists. When one of the American team was badly injured, the collaboration quickly fell apart, with each side accusing the other of sabotage. Ever since, the relationship between the two countries has been tense, and the collaboration is never spoken of.

Recently, new information has come to light, suggesting that the scientists were even closer to developing the serum than previously supposed, and the American government is eager to return to the research. Still, American officials are afraid to bring it up with the Söldenians, lest it inflame tensions between the two countries.

Your mission, should you choose to accept it, is to break into the old facility—deep in the Söldenian Alps—and discover what went wrong all those years ago.

LOCATION

Söldenia, a small, prosperous mountain country between Austria and Italy. The lab is located deep in the Söldenian Alps.

CHARACTERS

Morris Miller - Lab Manager for the American scientists (initially an ally; also the secret source of the sabotage)

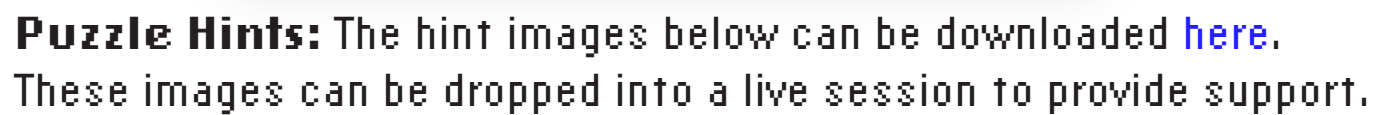
Dr. Anja Baumgartner - Lead scientist for the Söldenian delegation (initially attempting to keep the team from accessing the lab, where she still secretly lives and works; later, she becomes the team's ally.)

DAY 1

Break into the Top Secret lab
(while potentially being
interfered with by Dr. Baumgartner).



Slide 19



>>>>>>>>>> ————— <<<<<<<<<<<

UPDATE FROM HQ.....

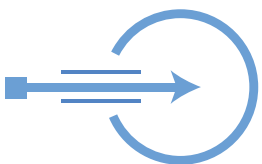
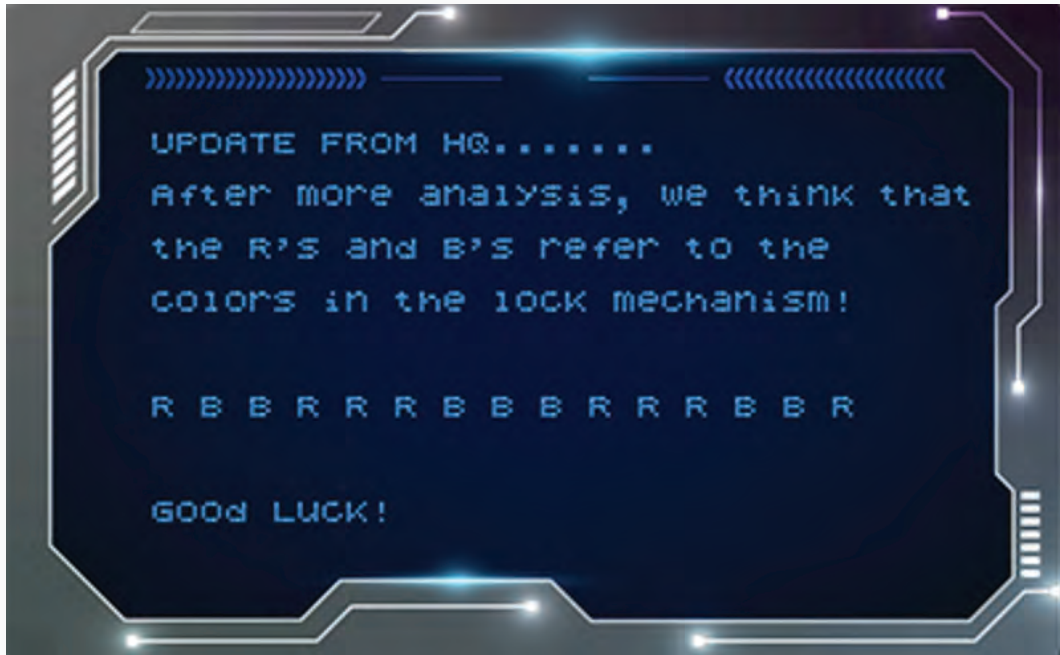
We've analyzed your bodycam
footage, and we noticed some
inscriptions around the entrance.

R B B R R R B B B R R R B B R

GOOD LUCK!

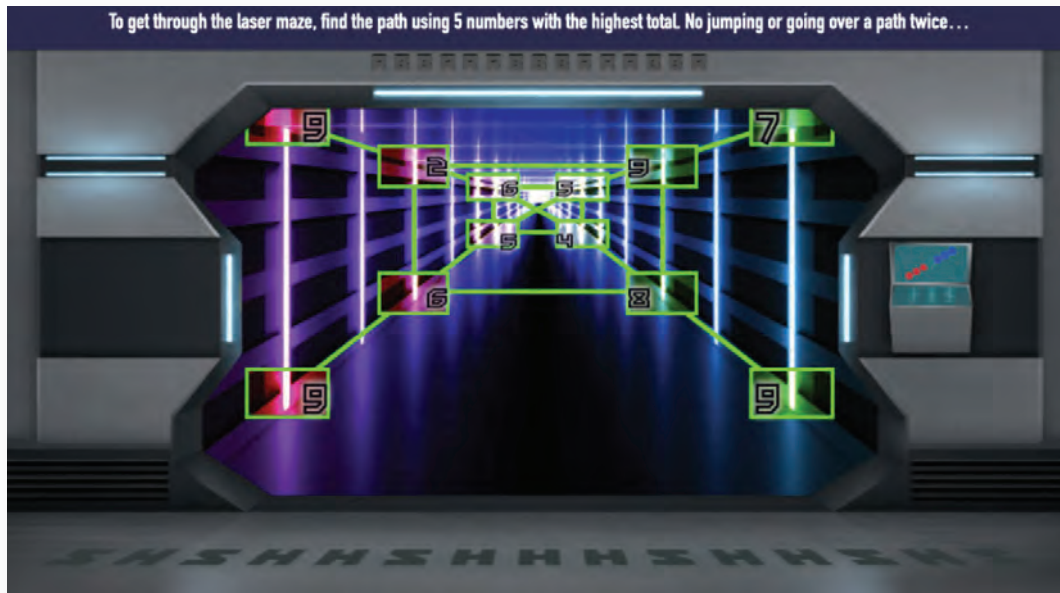


Hint 2:

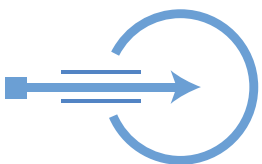
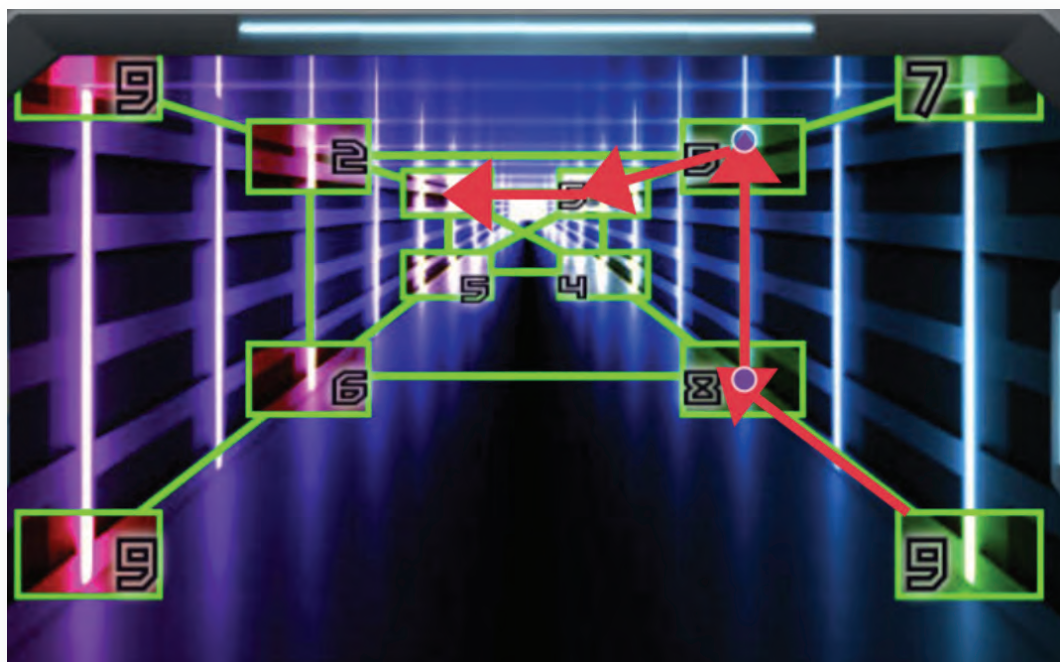


// Follow the right path to deactivate lasers and cross the room.

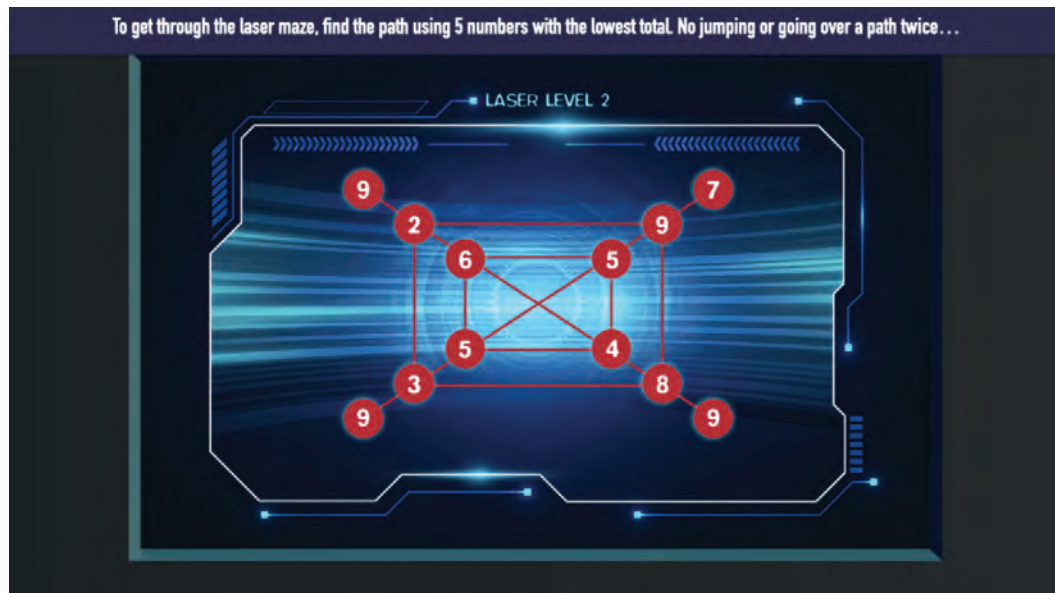
Slide 21



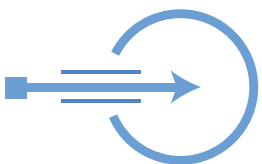
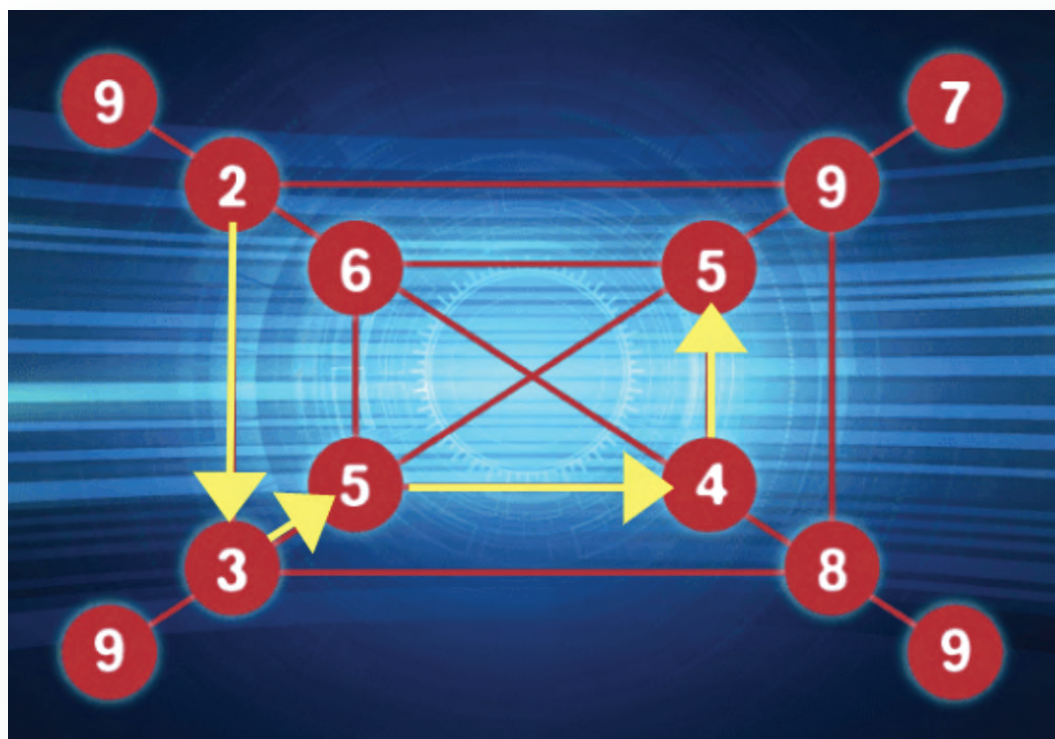
Solution:



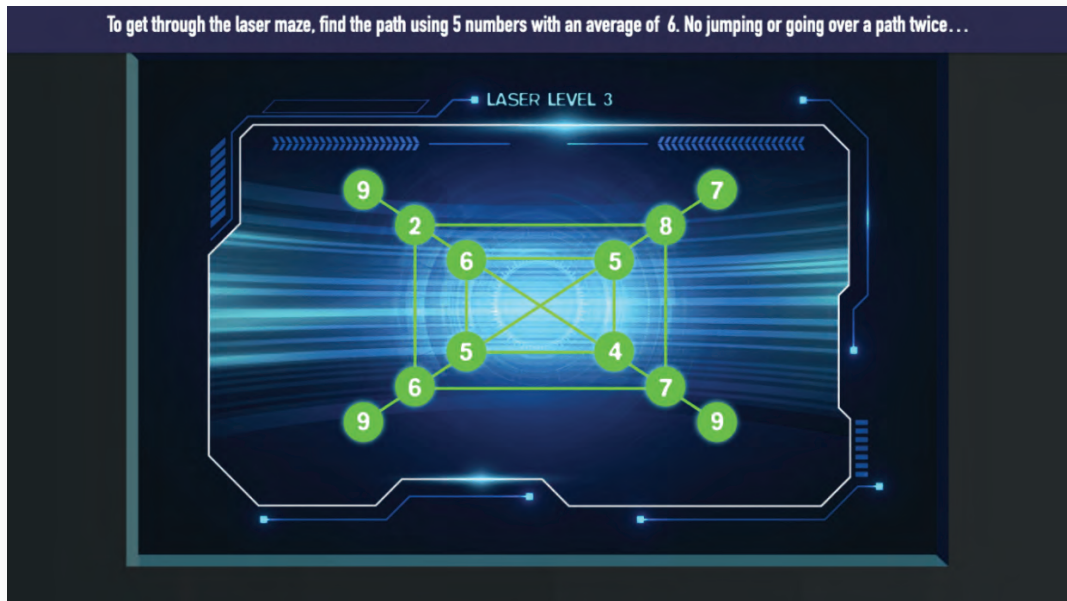
Slide 23



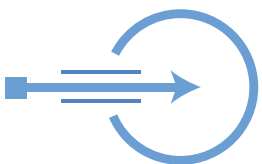
Solution:



Slide 25



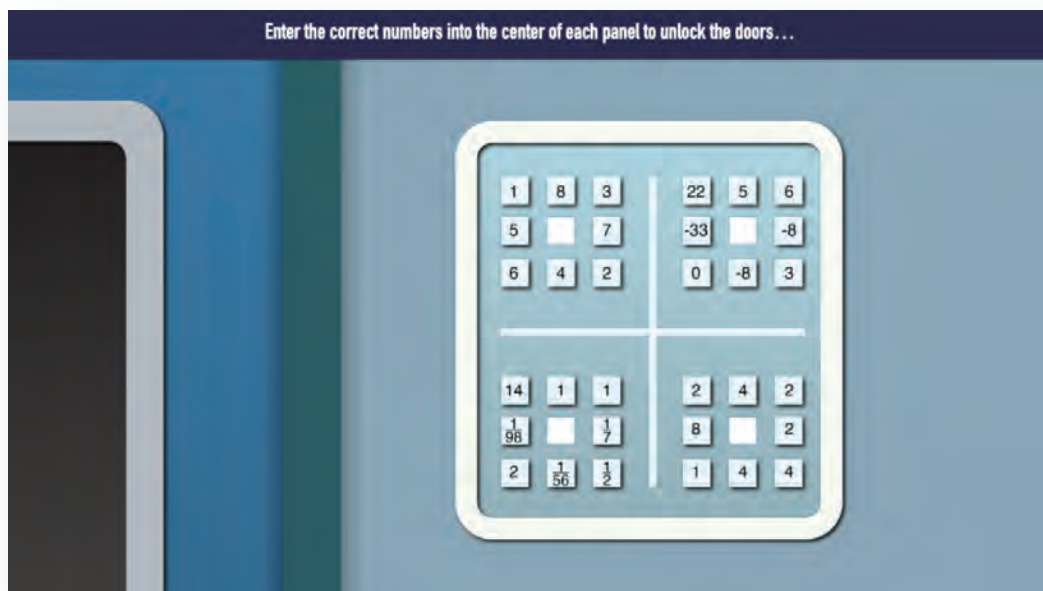
Solution: This puzzle can ignite great conversation. Students are trying to add to 30 so that they get an average of 6 (30 divided by 5 numbers). There are many different ways to do that, as long as their total is 30, then they are correct!



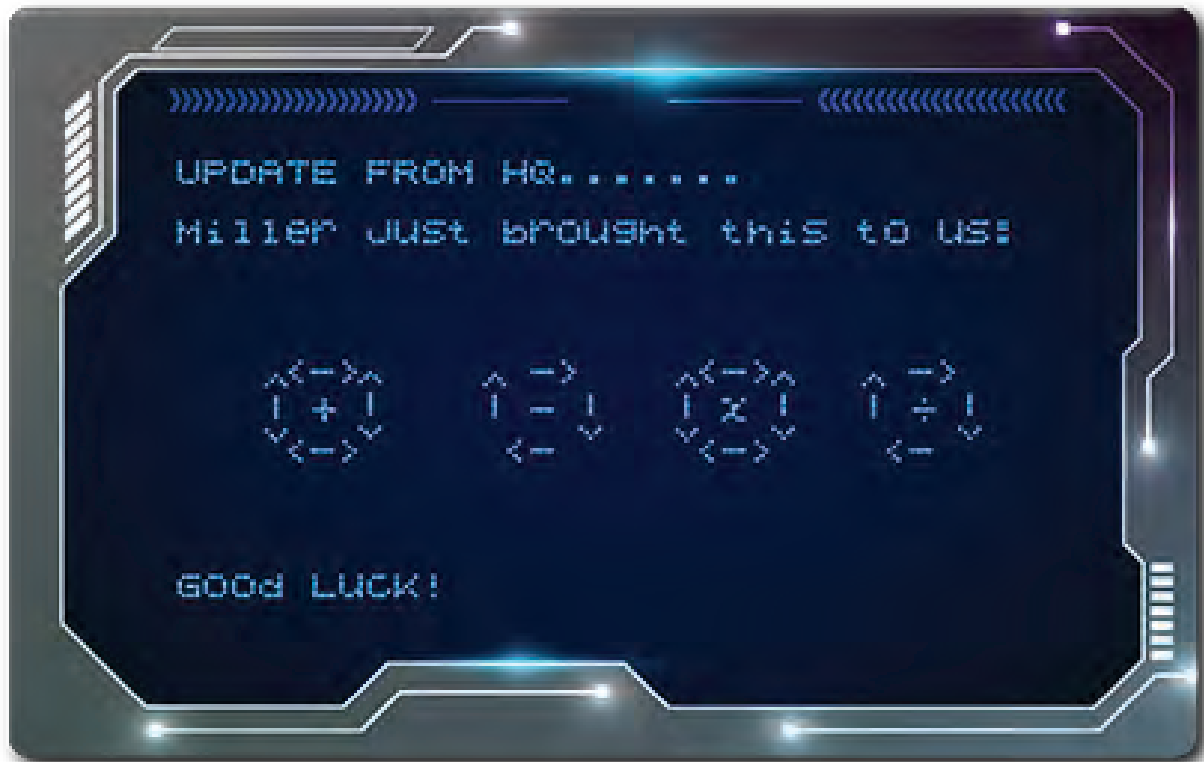
// Solve the puzzle to open the lab.

Slide 30

Instructions: Here are four keypads. Students have to decipher the correct middle squares to unlock the vault! (**Hint:** Think about how the sides work together using the different operations, addition and multiplication.)



Hint: This image is available to download [here](#) and drop into the session.



Solutions:

From Left to Right:

Keypad #1 (adding) middle # is 12

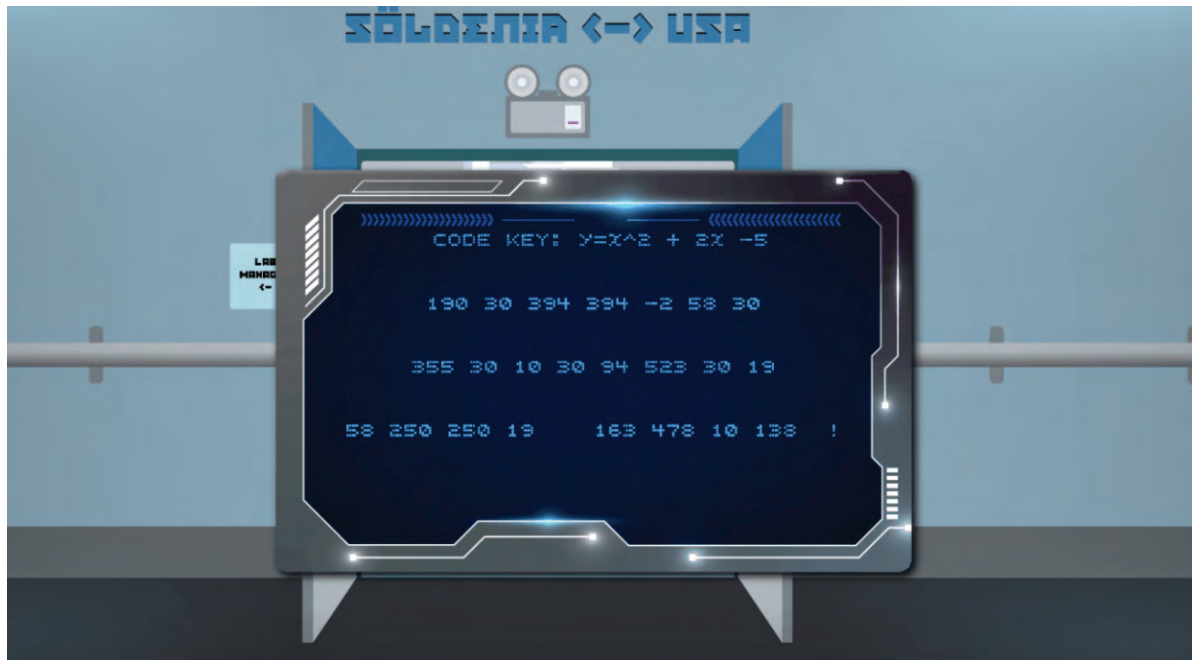
Keypad #2 (subtracting) middle # is 11

Keypad #3 (dividing) middle # is 14

Keypad #4 (multiplying) middle # is 16

Slide 32

In this puzzle, students use a “norma code” where $A=1$. For example, students will plug $x=1$ into the equation to find out the number that represents the letter A.



Hint: Using the table tool, students can put in each x value to generate the y value.

$A=1 \rightarrow -2$

$B=2 \rightarrow 3$

$C=3 \rightarrow 10$

and so on.

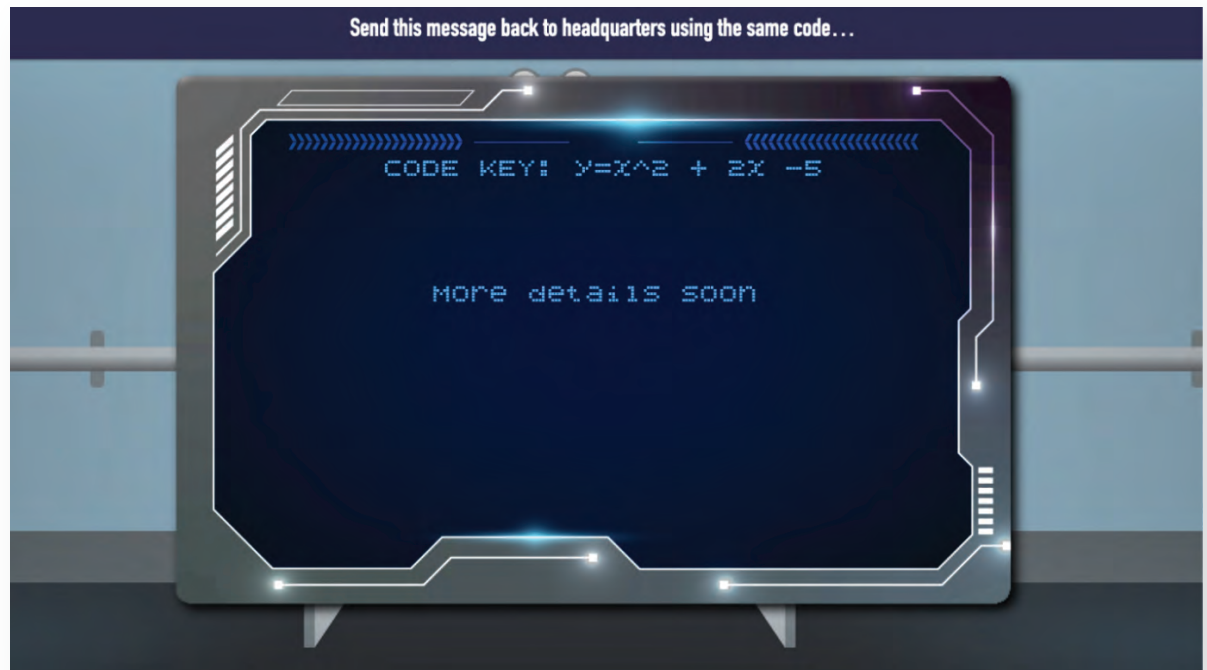
x	$x^2 + 2x - 5$
1	-2
2	3
3	10
4	19
5	30
6	43
7	58
8	75
9	94
10	115
11	138
12	163

Solution:

“Message Received Good Luck”

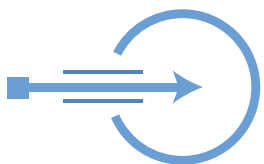
Slide 33

Now students will encode the message using the reverse of the technique in the previous problem.



Solution:

190 250 355 30 (more)
19 30 435 -2 94 163 394 (details)
394 250 250 219 (soon)



DAY 2

Explore the lab & meet
Dr. Baumgartner.
Discover the hidden door.

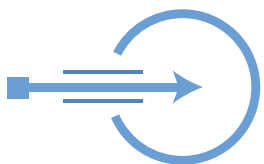
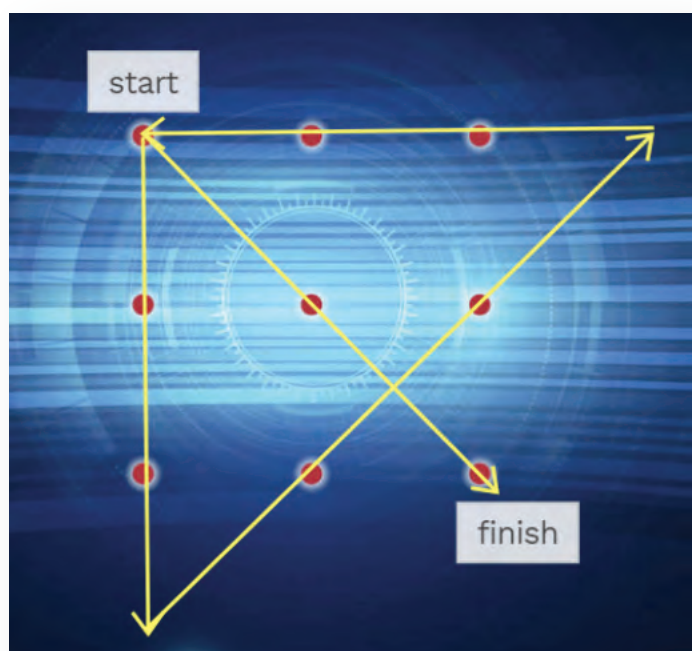


// Solve the puzzle to reveal the presence of Dr. Baumgartner.

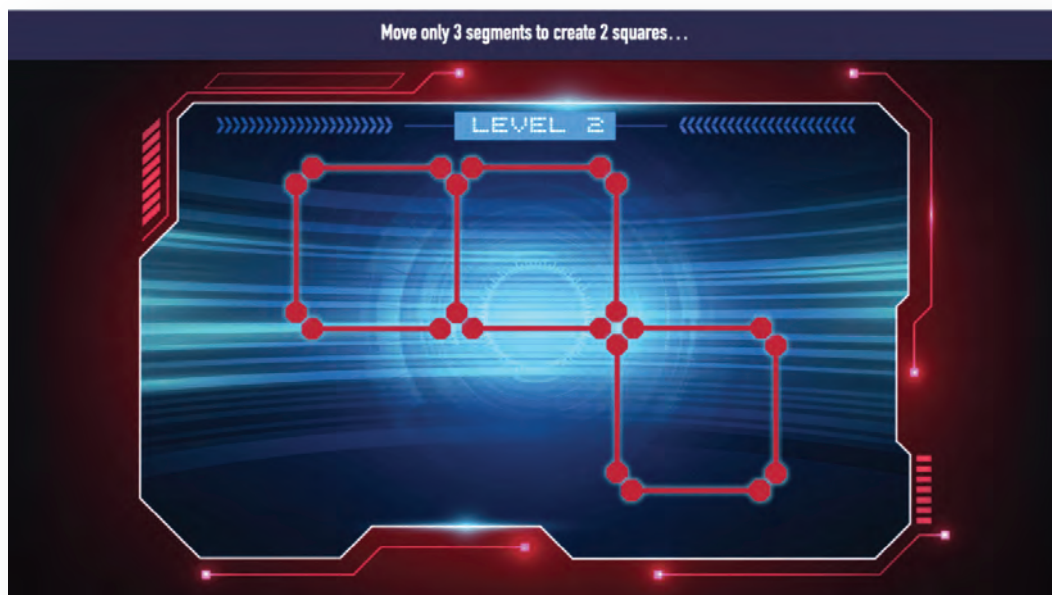
Slide 37



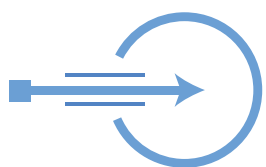
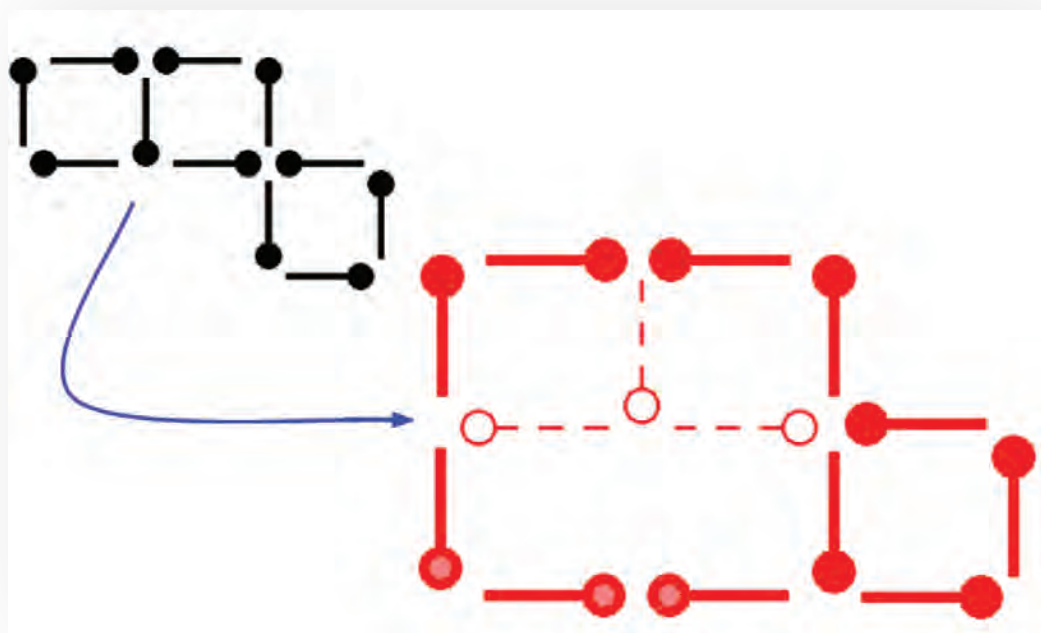
Solution:



Slide 38



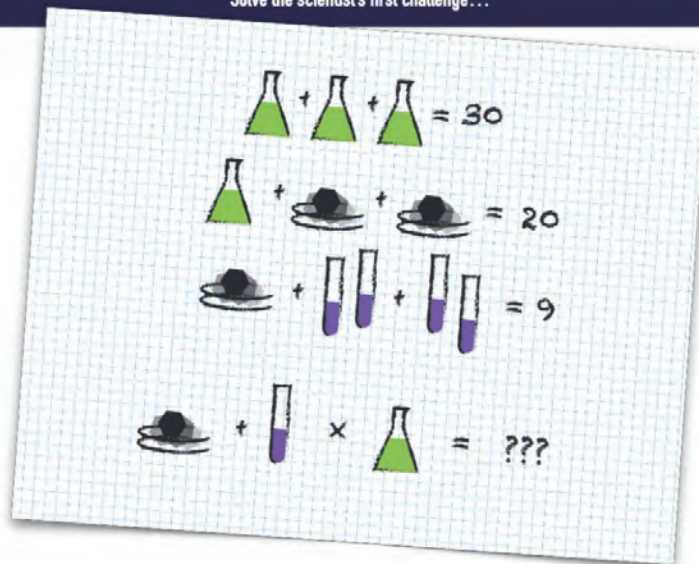
Solution:



// Solve the puzzle to prove you're scientists & not spies.

Slide 43

Solve the scientist's first challenge...



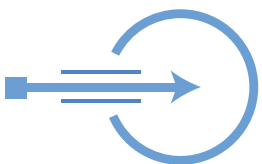
Solution:

Green = 10

Black = 5

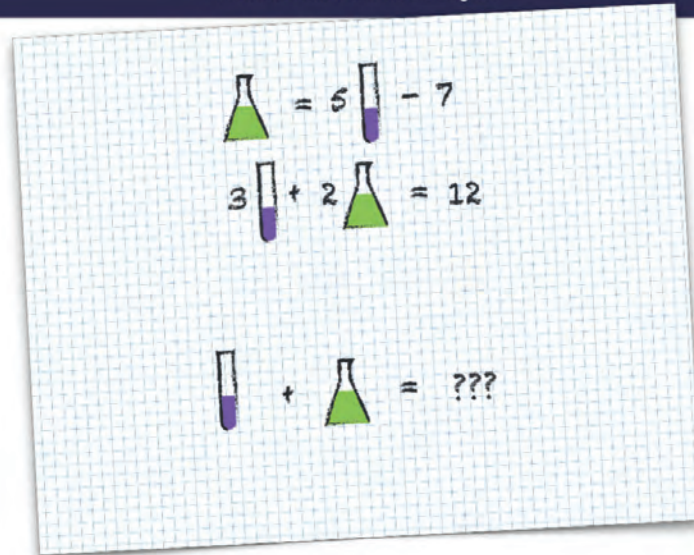
Purple = 1

Therefore, using order of operations... black + purple x green =
= 5 + 1 x 10
= 5 + 10
= 15



Slide 45

Solve the scientist's second challenge...



Solution:

Green = 3

Purple = 2

So $3+2=5$.

More details on finding solution:

$$\{\text{green}\} = 5\{\text{purple}\} - 7$$

$$3\{\text{purple}\} + 2\{\text{green}\} = 12$$

Using substitution:

$$3\{\text{purple}\} + 2[5\{\text{purple}\} - 7] = 12$$

$$3\{\text{purple}\} + 10\{\text{purple}\} - 14 = 12$$

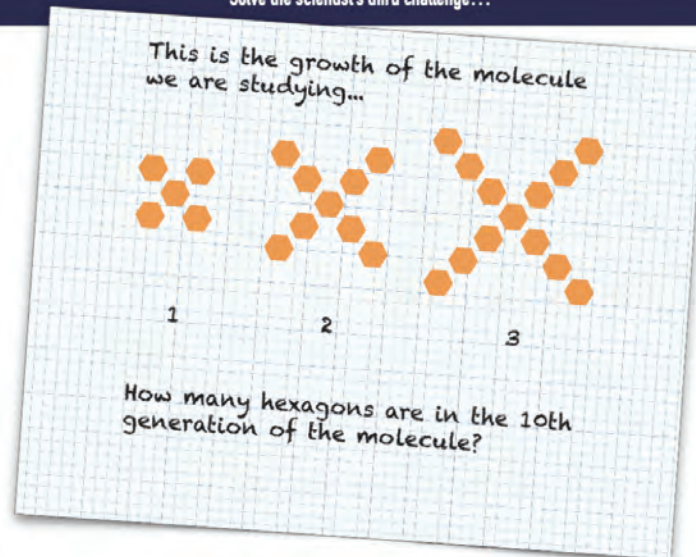
$$13\{\text{purple}\} = 26$$

$$\{\text{purple}\} = 2$$

Substitute {purple}, and get {green} = 3.

Slide 47

Solve the scientist's third challenge...



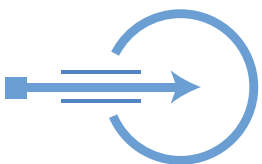
Solution:

There are many ways to look at this problem.

One pattern is " $1+4(\text{case\#})$ ".

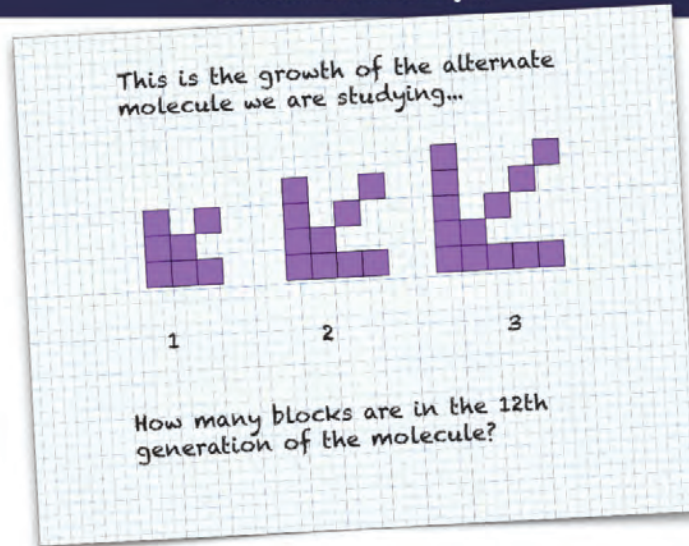
So Case #1 is $1+4(1) = 5$.

When looking for the 10th case, you would get $1+4(10)=41$.



Slide 49

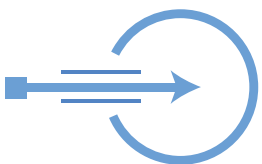
Solve the scientist's fourth challenge...



Solution:

This puzzle shows a visual representation of an equation $y=3x+4$ where x is the case number and y is the number of blocks in the molecule.

So for the 12th case, $y_{12}=3(12)+4=40$.



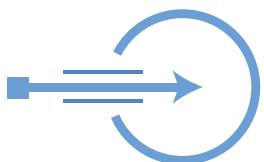
// Solve the puzzle to reveal the hidden safe in the American Lab Manager's office.

Slide 57

In this puzzle, students move around the number tiles in order to get the sum of each side of the triangle to be 10. A digit can only be used once. Hint: Not all of the number tiles will be used.



Solution: A solution for this problem is shown below.



Slide 58

It ALL ADDS UP TO NOTHING! The goal of this puzzle is to find a combination of numbers where the sums of each row, column and diagonal are all the same--0.



Solutions:

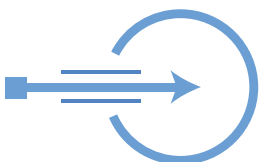
-3	2	1
4	0	-4
-1	-2	3

-1	-2	3
4	0	-4
-3	2	1

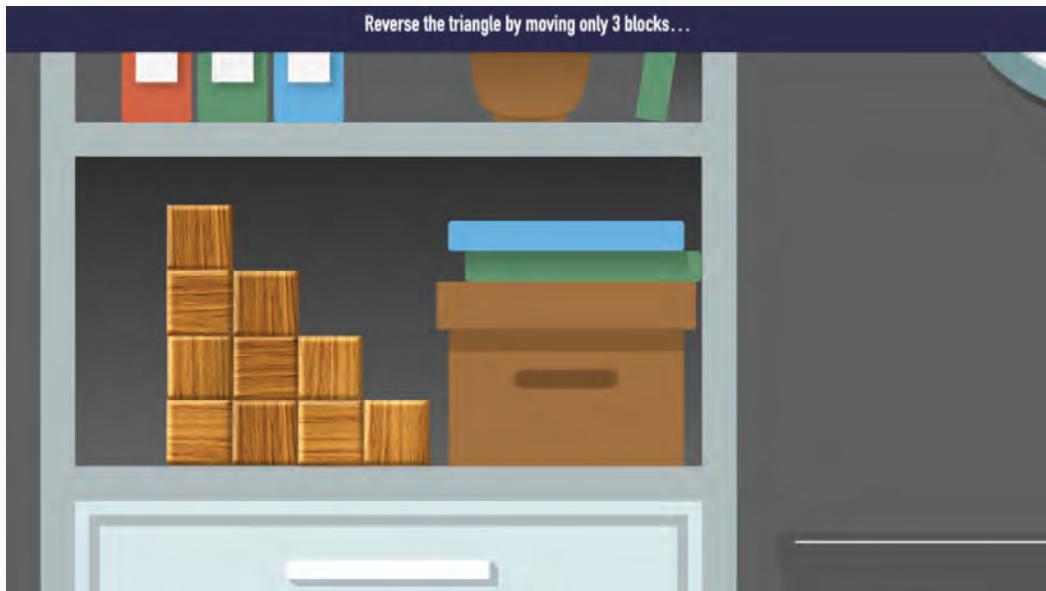
1	-4	3
2	0	-2
-3	4	-1

or

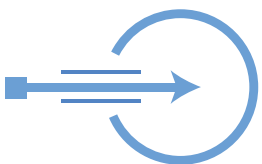
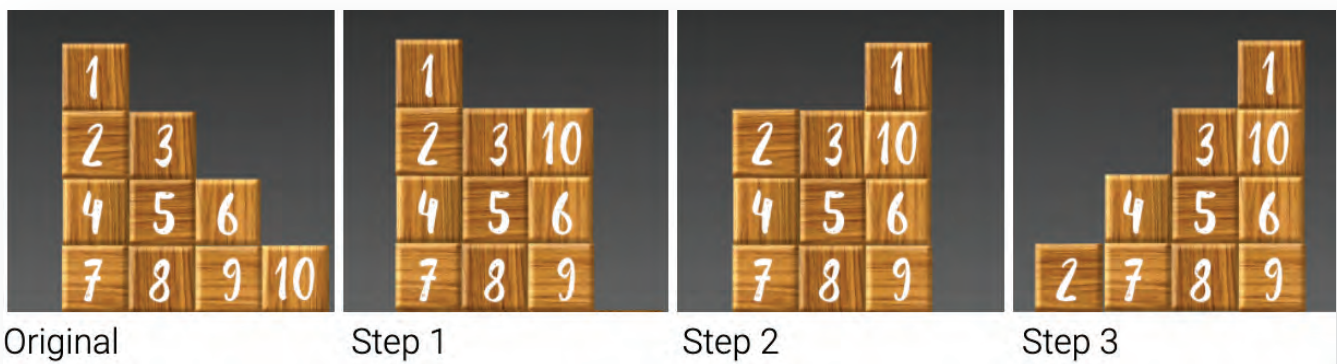
3	-4	1
-2	0	2
-1	4	-3



Slide 62

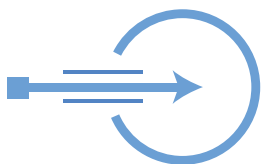


Solution:



DAY 3

Investigate the Lab Manager's hidden safe to reveal the conspiracy.

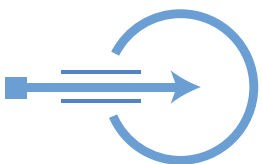


Slide 65

Use the code key to translate the message.
The hint image can be downloaded [here](#) and dropped into a session.

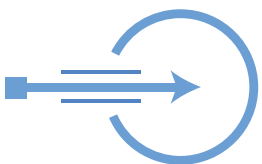
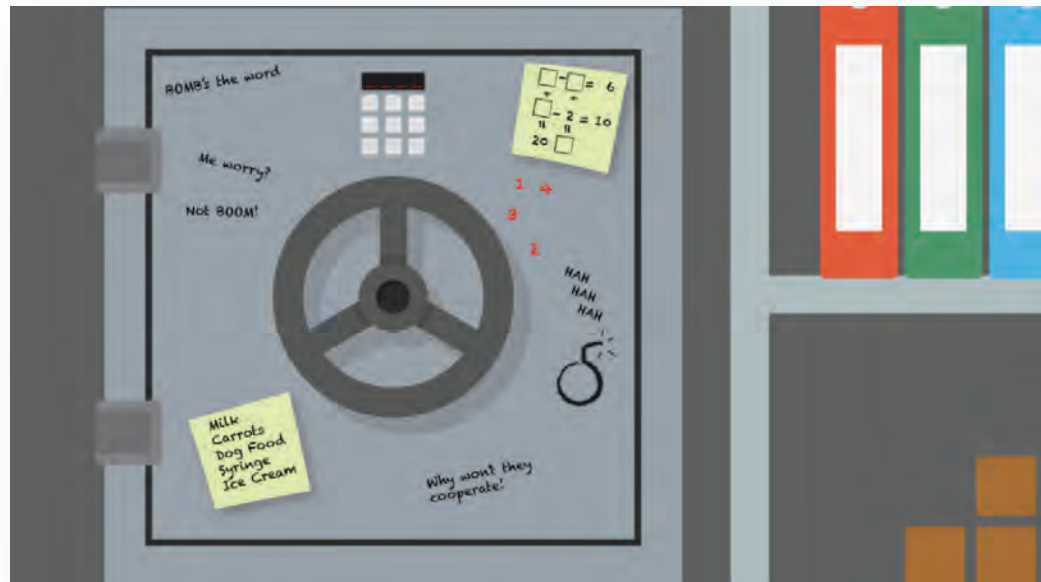


Solution:
“DANGER! PROCEED CAUTIOUSLY”



Slide 67

Students should look for clues on the safe and proceed to the next slide.

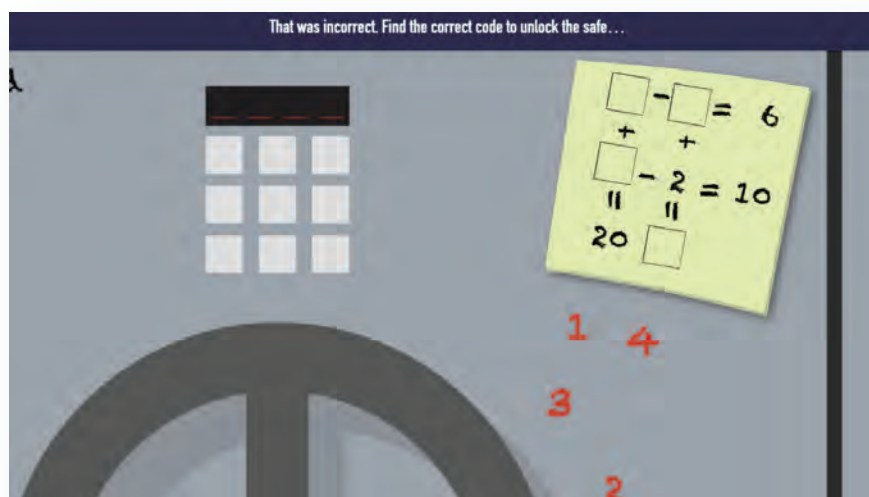


// Open the safe.

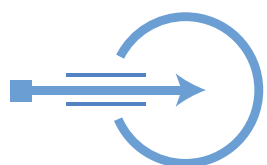
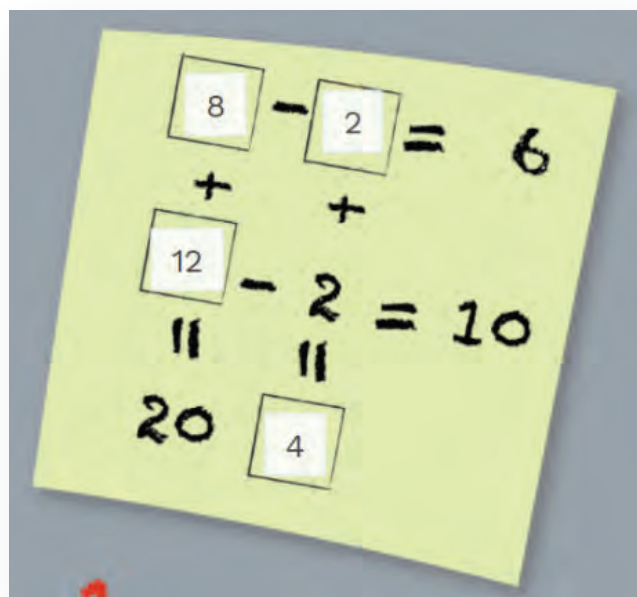
Slide 68

Students work through this problem below to find the answer to the safe. When the first code "doesn't work," proceed to the next slide to find another puzzle.

The answer will be all the boxes added together.

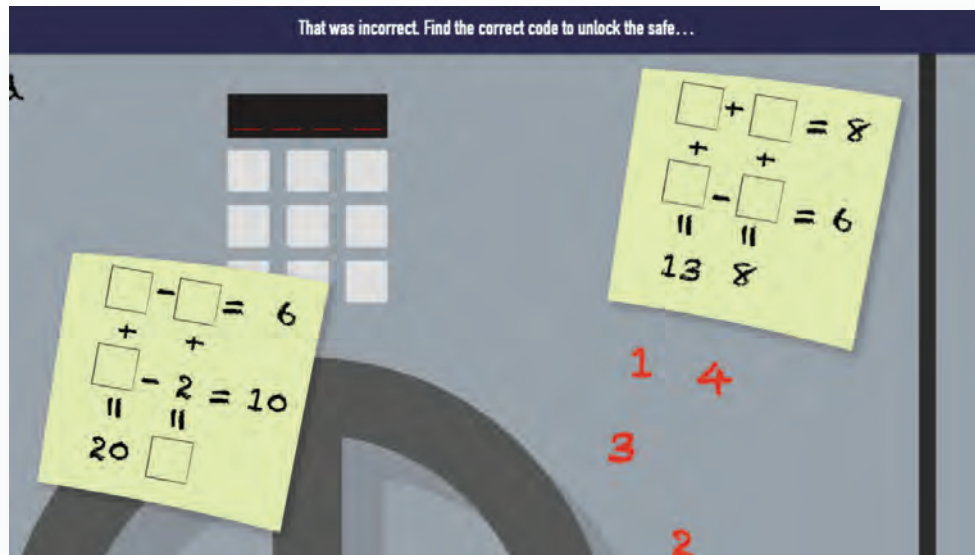


Solution:



Slide 69

Students should move the top sticky note to reveal another puzzle.



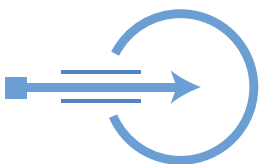
Solution:

Hint 1: You can use fractions.

Hint 2: Two of these equations are the same.

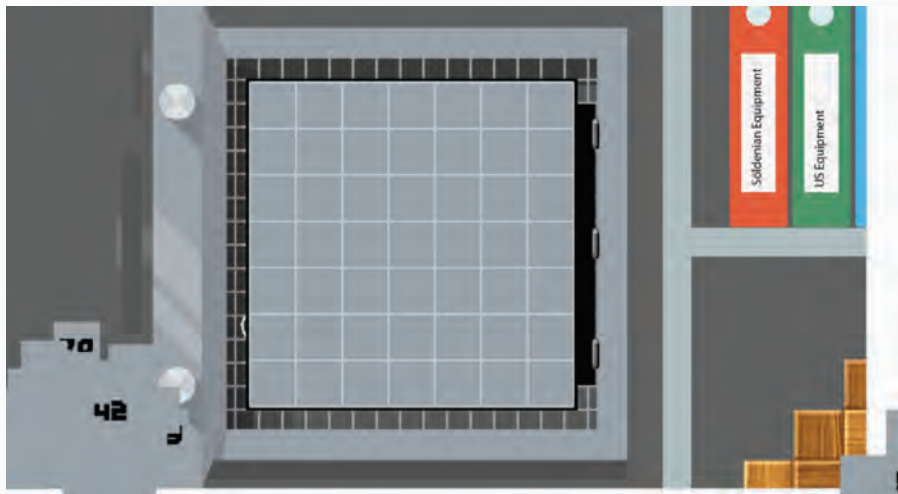
Answer: $3.5 + 4.5 = 8$

$9.5 - 3.5 = 6$

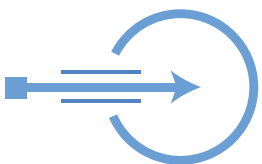
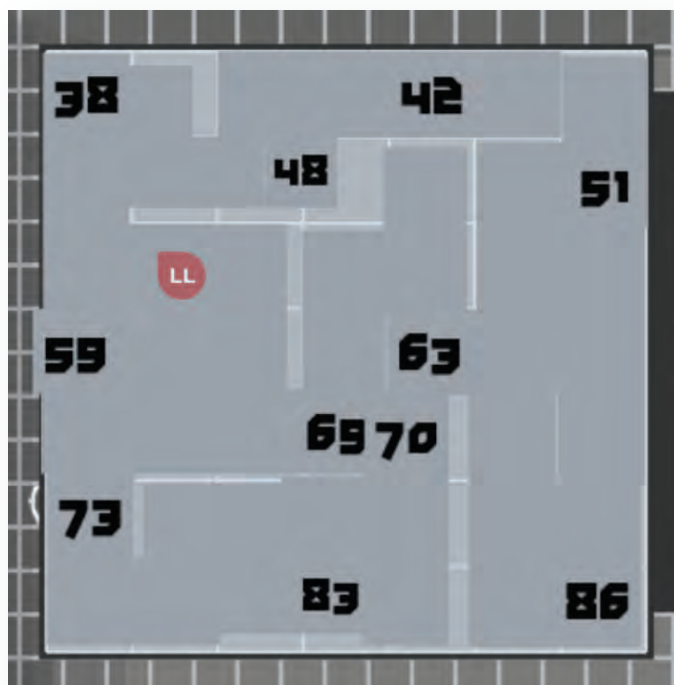


Slide 71

Students will move pieces around to fit into the grid.
Hint: The numbers go in ascending order from the top left corner to the bottom right corner.

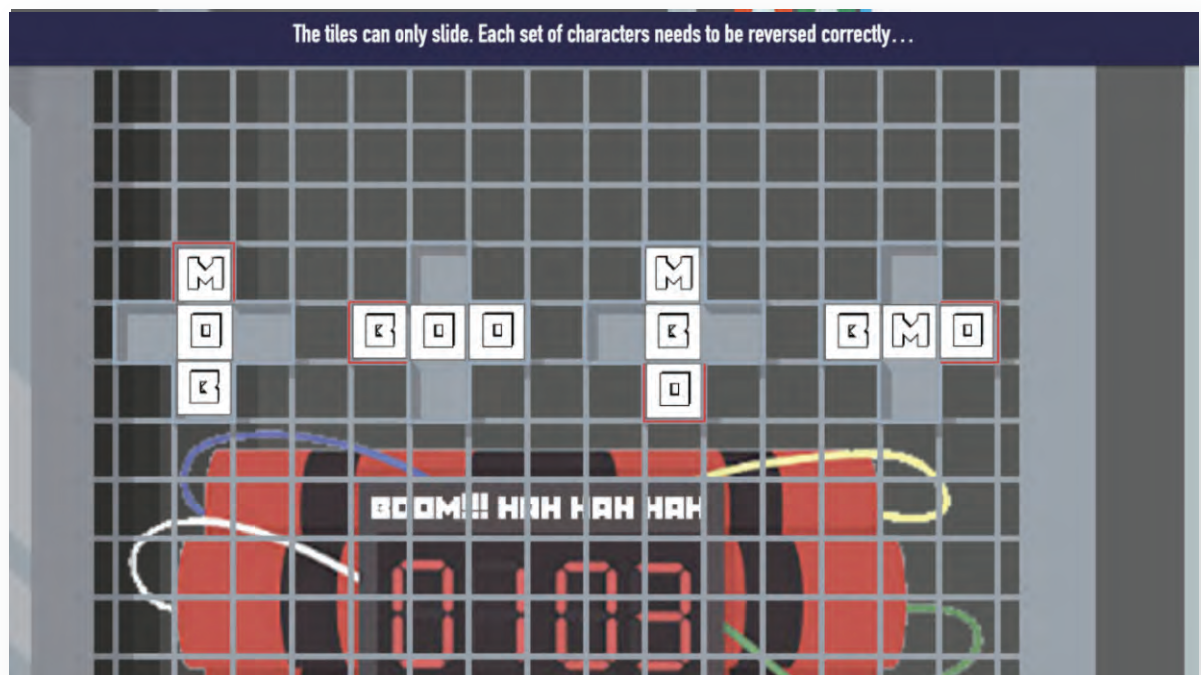


Solution:

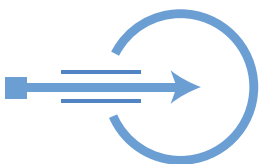


Slide 73

The students slide the letters around to get them in reverse order. Then the word is spelled out using the letters that end up in the red outlined boxes.

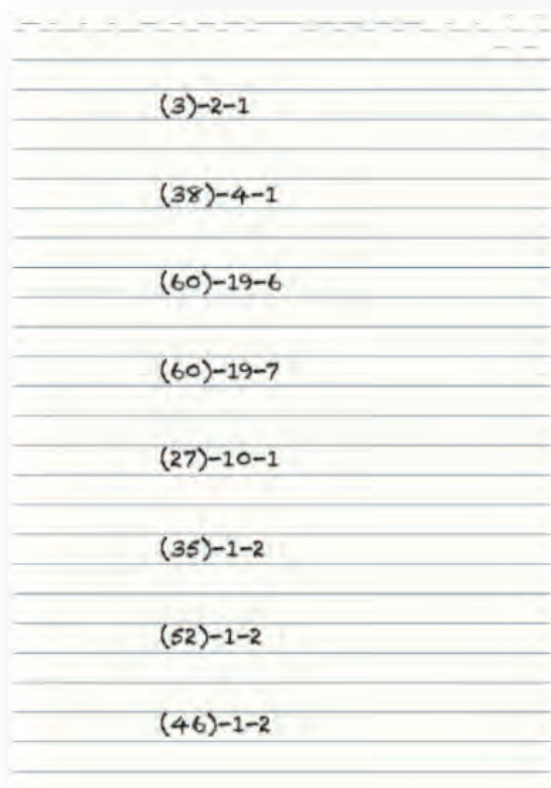


Solution: This should spell BOMB at the end.



Slide 76

Students read through the file and find the clues.



Last page

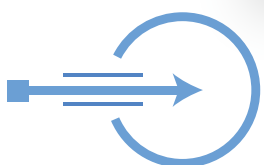
Solution:

The last page has a code, and it is
“(Page Number) - Line Number -
Word Number”

Example: The first code listed is
(3)-2-1, which is Page 3, line 2,
word 1 - “Security”

Message:

“Security Precautions shut down
lasers 35 52 46”



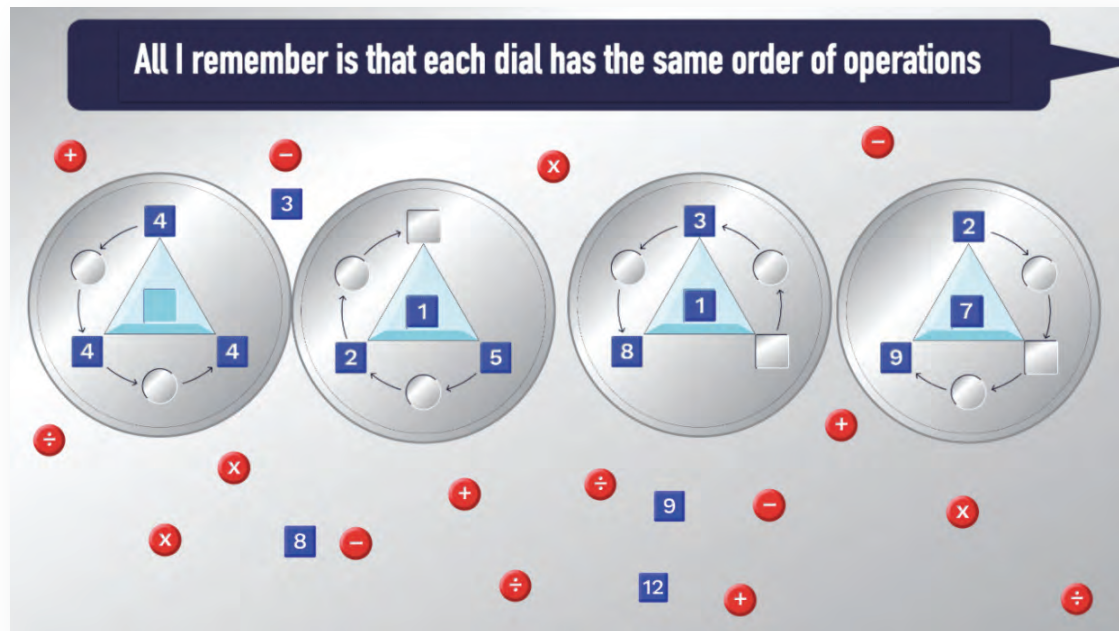
DAY 4

Escape the lab before Miller
destroys it (and you!)

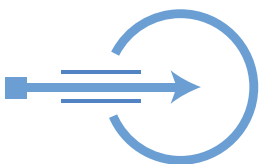
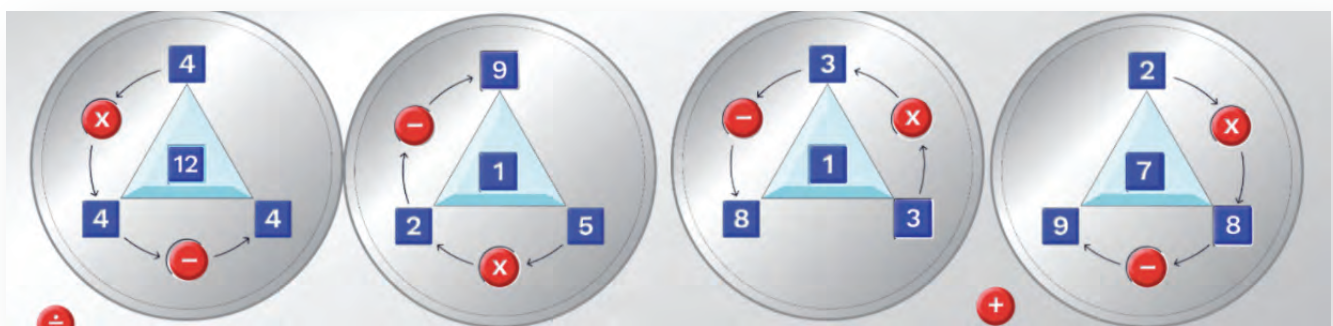


// Repair the drone code (he has destroyed the drone).

Slide 83

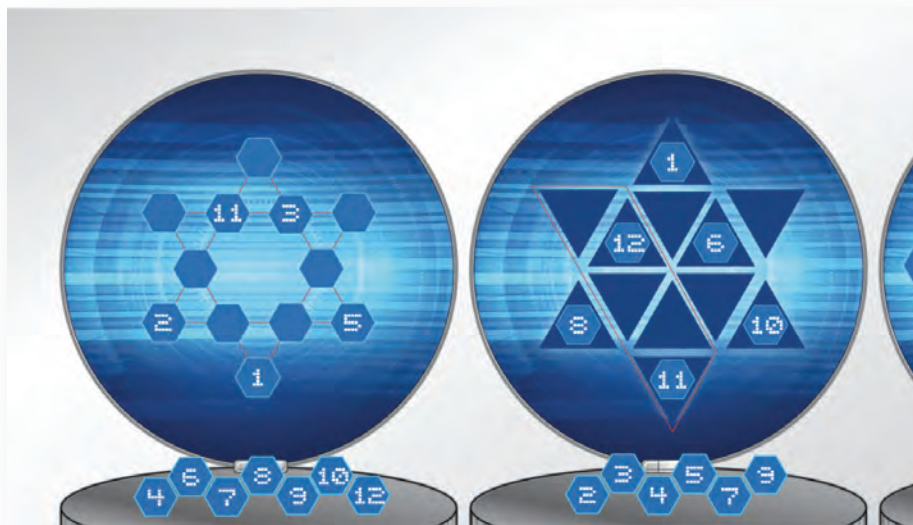


Solution:

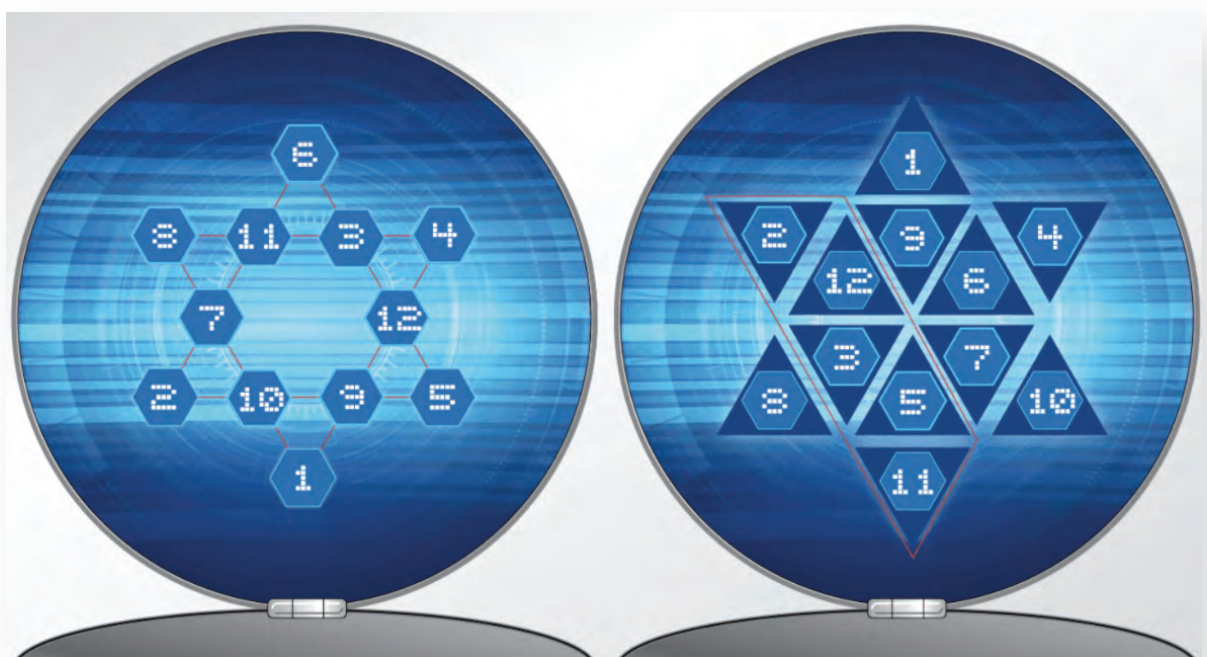


Slide 85

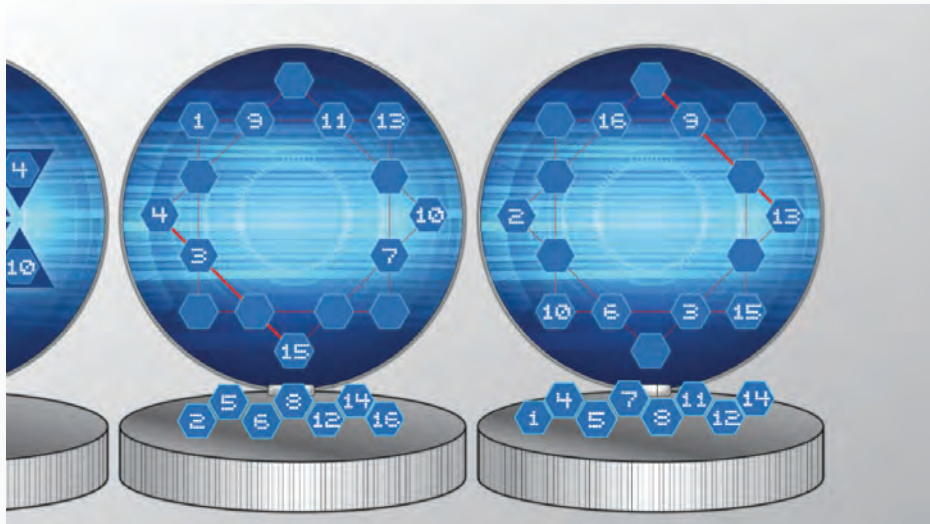
In the first puzzle, students should place the hexagon tiles so that all connected tiles add to 26 (along lines and diagonals). The second puzzle is similar, each group of 5 triangles in a row or diagonal sum to 33.



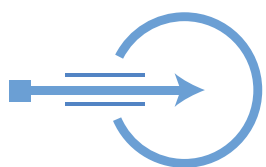
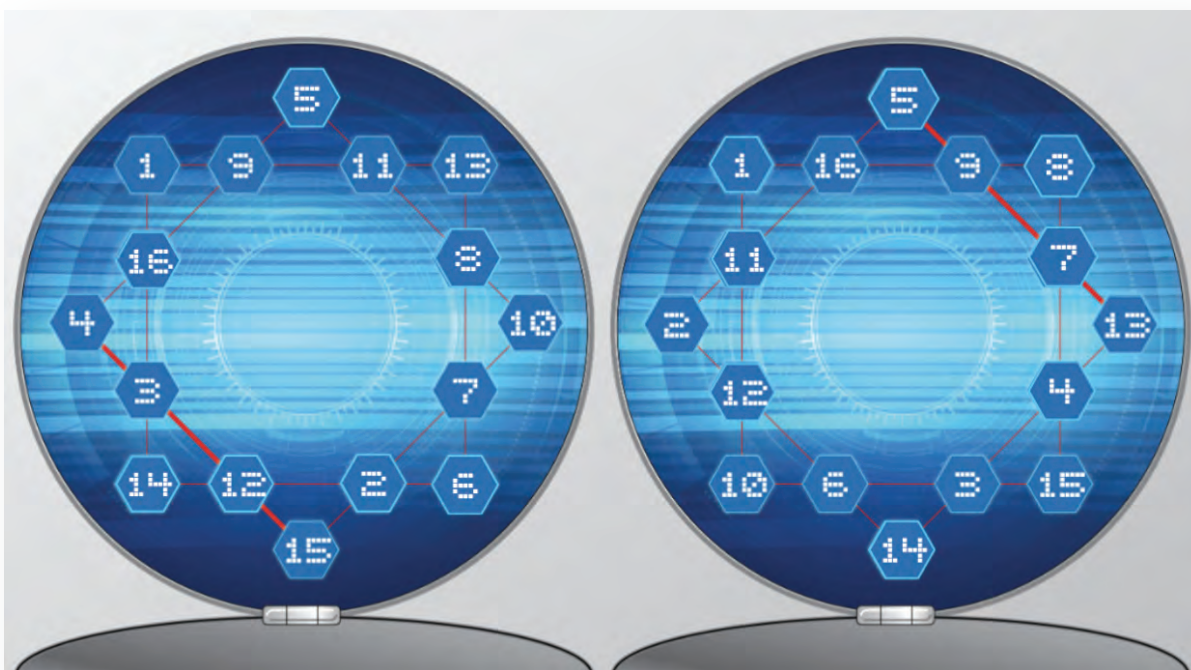
Solution:



Slide 86

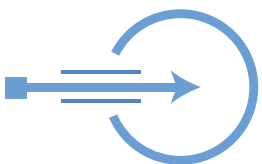


Solution:

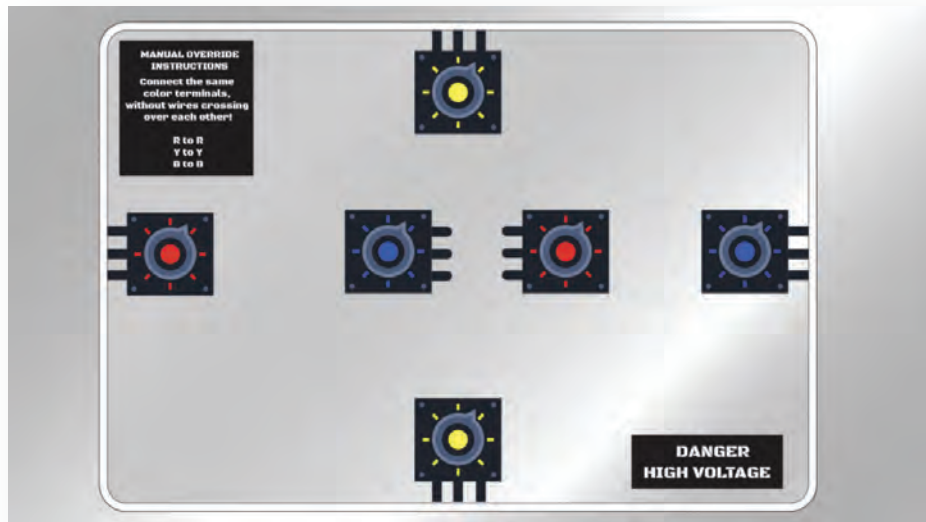


Slide 90

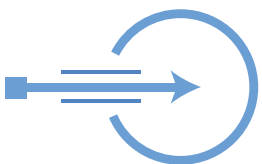
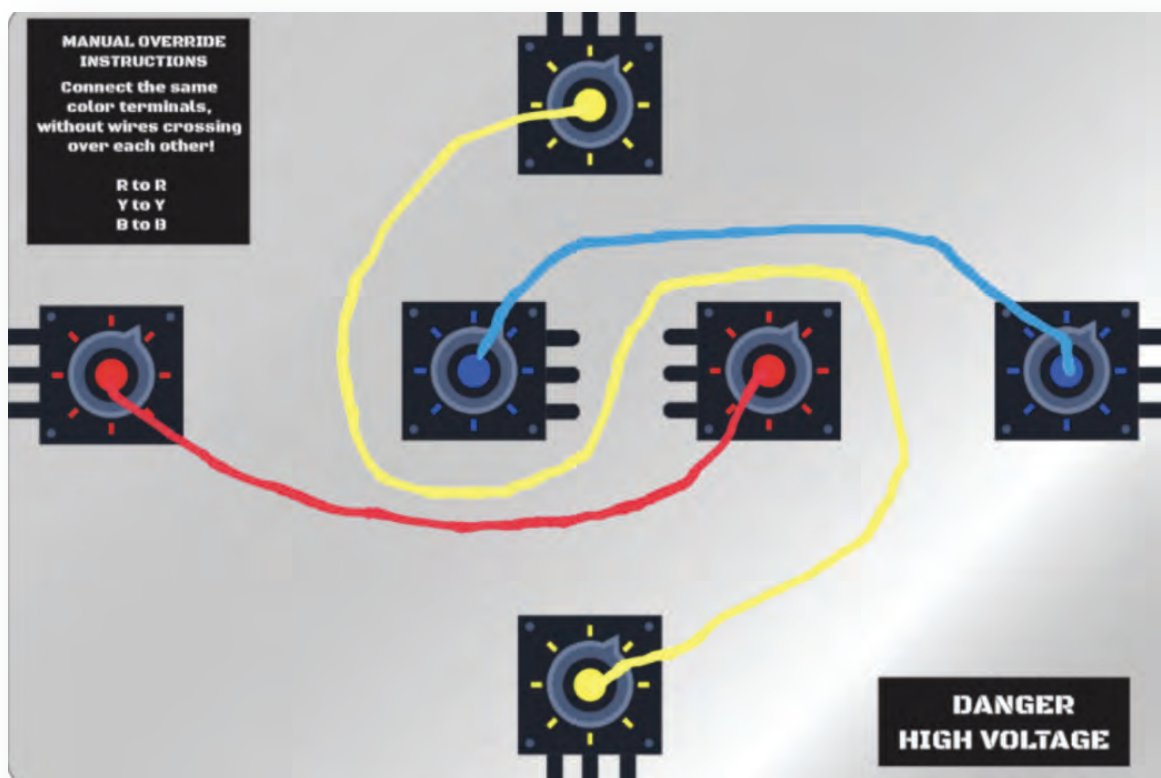
Pretend to enter code from the previous slide and proceed to the next slide.



Slide 96

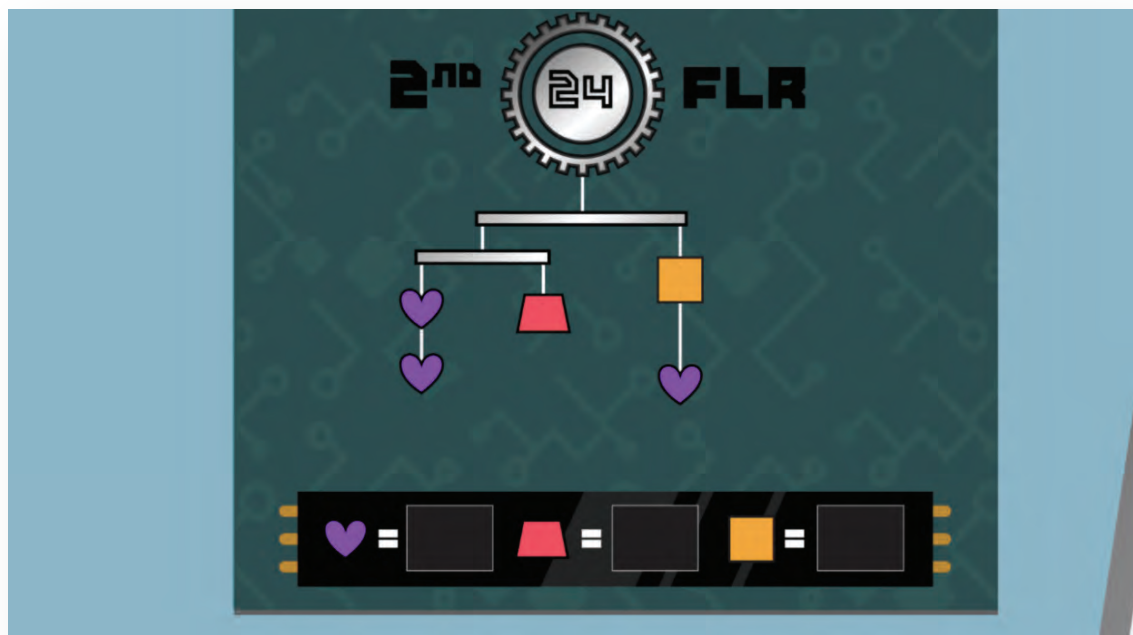


Solution: Here is one possible solution.

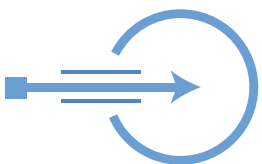


// Slides 98-100 May be omitted if running low on time.

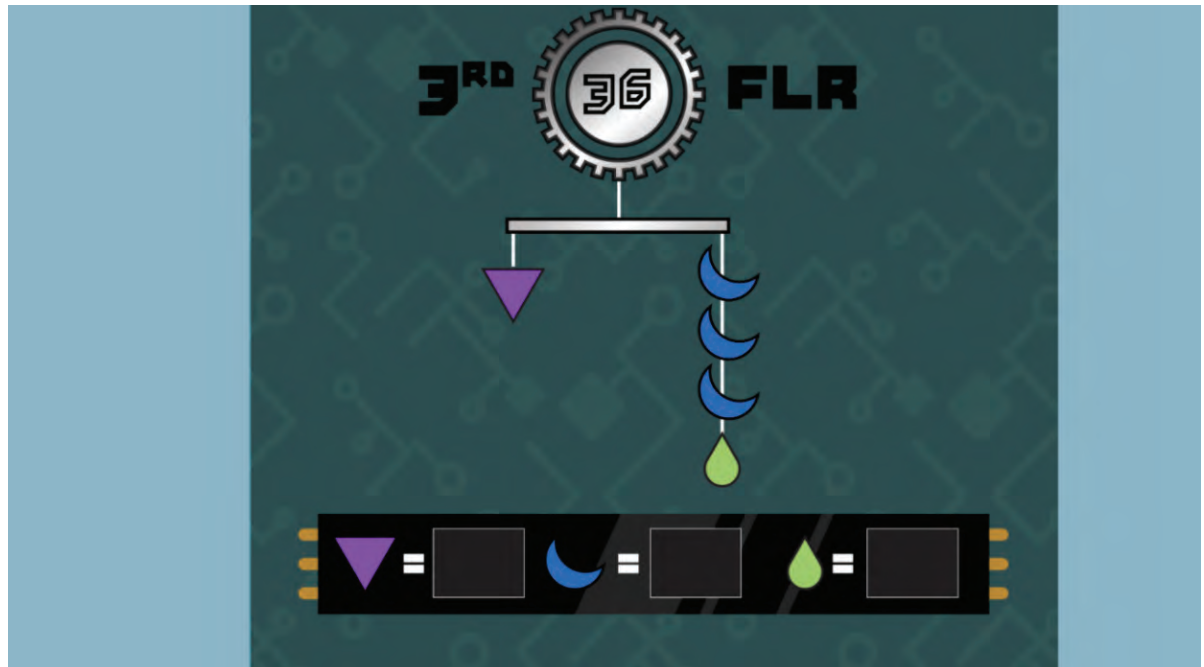
Slide 98



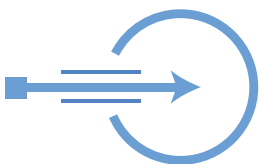
Solution: Heart=3
Trapezoid=6
Square = 9



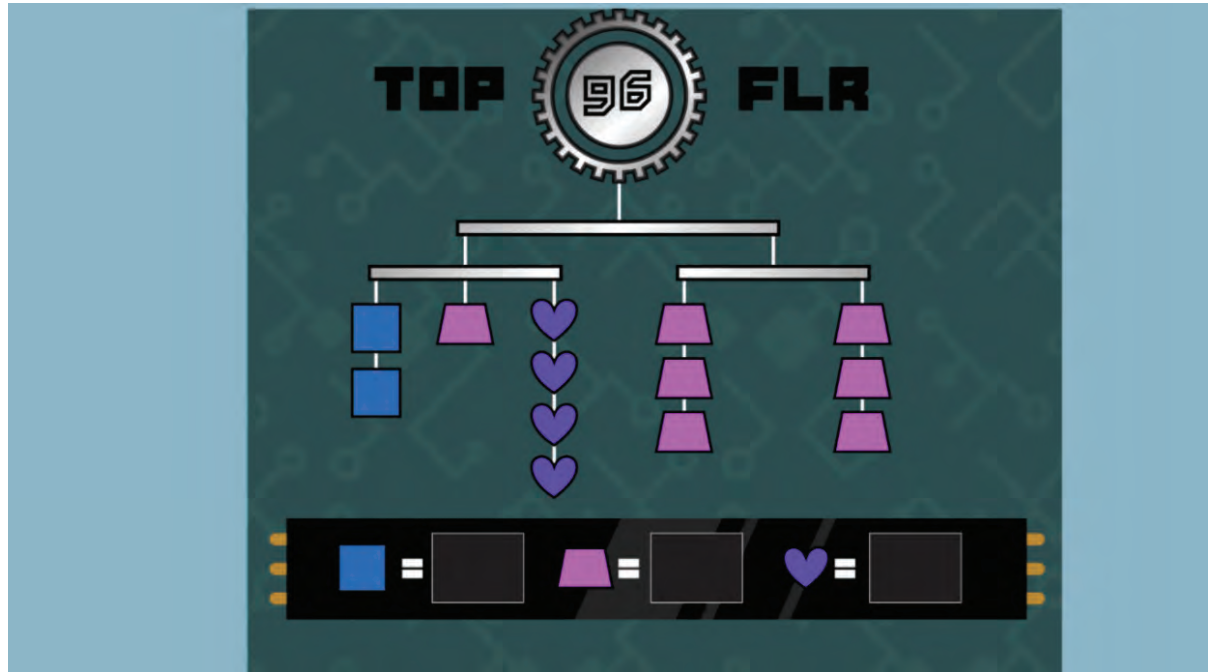
Slide 99



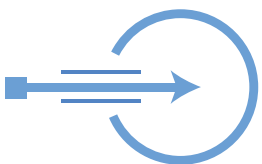
Solution: Purple triangle=18
Blue moons=3
Green drop=9



Slide 100



Solution: Blue square=10
Pink trap=8
Purple heart=5



// Find drone path.

Slide 104

Depending on the students' knowledge, this can go many different ways!

Example instructions: Have students plot a path that avoids obstacles. The goal is to begin at $(-18,15)$ and get to the extraction point, $(-9,-14)$. Students can be challenged to proceed based on the instructions below that navigate through various quadrants of the coordinate system.

Student 1: beginning point $\rightarrow (-x,y) \rightarrow (-x,-y) \rightarrow (-x,-y) \rightarrow$ final point

Student 2: beginning point $\rightarrow (x,y) \rightarrow (x,-y) \rightarrow (x,-y) \rightarrow$ final point

Student 3: beginning point $\rightarrow (-x,y) \rightarrow (x,y) \rightarrow (x,-y) \rightarrow$ final point

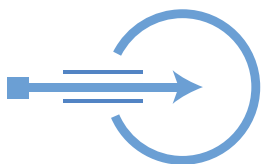
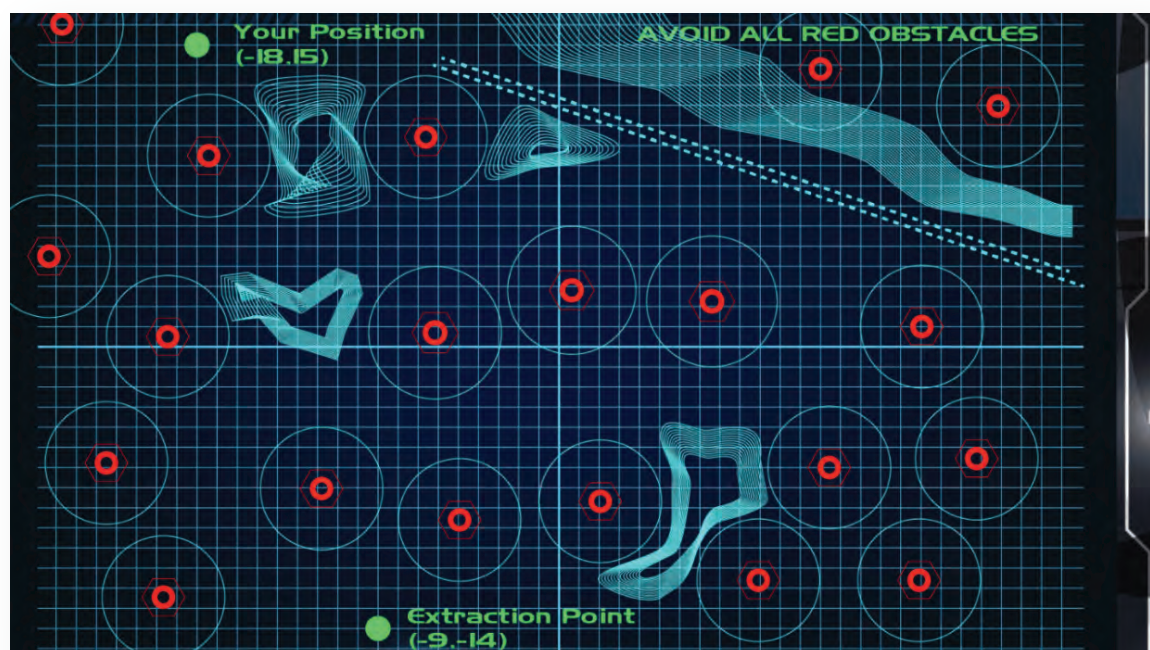
Student 4: beginning point $\rightarrow (-x,y) \rightarrow (-x,y) \rightarrow (-x,-y) \rightarrow$ final point

Student 5: beginning point $\rightarrow (x,y) \rightarrow (x,-y) \rightarrow (-x,-y) \rightarrow$ final point

Student 6: beginning point $\rightarrow (-x,y) \rightarrow (-x,y) \rightarrow (x,y) \rightarrow$ final point

Student 7: beginning point $\rightarrow (-x,-y) \rightarrow (-x,y) \rightarrow (-x,-y) \rightarrow$ final point

Note: If this is too difficult for students or you are out of time, just say "Plot the fastest and safest route."



Slide 107

This slide provides an opportunity for students to indicate their feelings about how the escape room went and their confidence level. Feel free to omit this if it's not pertinent to your class.

[illegible]