

FACTORY FIELD TRIP



6th
Grade
Math

Factoring & Distributing

Digital or Print Escape Room

SAFE COMBINATION

Step 1: The first step in finding the combination is combining like terms.

Combine the like terms. Write down the simplified expressions.

$$p + 3 + 2p + 7$$

$$-6s + 9 + 2s - 6$$

$$9y - 4 - 6y$$

CLUE
5



We need to help the distribution team get the shipping labels printed. Let's head back to the control panel. To print out the shipping labels, we need to factor with the distributive property. Factor out the greatest common factor.

$$27a + 18b =$$

$$27a - 18y + 4 =$$

$$63p + 45q - 18 =$$

Awesome, we've gotten all of the shipping labels made. The last thing we need to do is figure out what boxes to put them on. It's time to distribute! Make an equivalent expression using the distributive property.

$$3(x + 2y + 3z) =$$

$$5(4a - 2b - 7c) =$$

$$7(2d + 8e + 4f) =$$

The Great
CLASSROOM
escape

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Standards

6.EE.A.1, 6.EE.A.2,
6.EE.A.2a, 6.EE.A.2b,
6.EE.A.2c, 6.EE.A.3,
6.EE.A.4

6th Grade Math Skills

Combine like terms, create equivalent expressions by factoring or distributing, evaluate expressions, use order of operations, & more!

Fast Facts

 Low prep digital! Easy to use printable version!

 Escape Time ~45-60 minutes

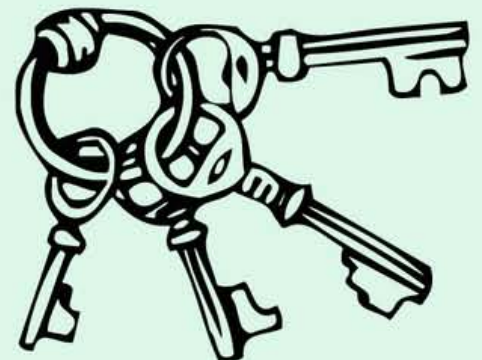
 Recommended for pairs or small groups

 Digital version requires internet connected device

 Self-Checking (digital)

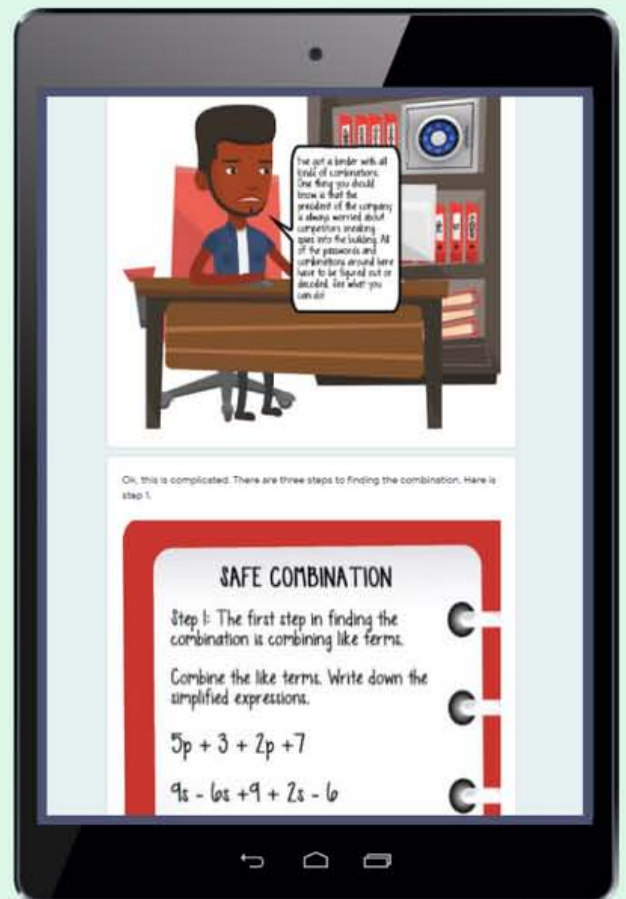
 Virtual or in-person

 Five Engaging Puzzles



How it Works (Digital):

- The escape room is automated by a Google Form™ (Google™ accounts are not required).
- Use the quick start link to click & go, or create a copy of the form to save to your drive (the teacher must have a Google Account to save a copy).
- Students only progress through the puzzles when correct answers are entered.
- The form provides hints if students enter incorrect answers.



Optional Printable Pages (for the digital version)

Optional Invitation and one page to print for digital version



"Visitor Passes"
(Exit Ticket)

Success Signs



How it Works (Print Version):

- There will be 6 pages to print per group. These include a backstory, clues, and a success page.
- You can choose to print optional success signs
- Give students the backstory page and the first clue.
- Check that students have solved the puzzles correctly, then pass out clues in order.

The safe is open! Wow, that's a lot of cash. We better leave that there and stay focused on the task at hand. There's a letter in the envelope that says to open the 'Factor and Distribute' file on the computer. There's also a grid with a bunch of letters.

Factor and Distribute

The password to restore the factory distribution center's operating system can be found by factoring and distributing!

Find equivalent expressions. Match the expression in a row with its equivalent expression in one of the columns. Check only one box per row and one box per column. When you're finished, match up your check marks with the letters on the grid. Unscramble the word to find the password!

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

CLUE 2

$6(3y+4)$	$18y+24$	$24y+8$	$18y-24$	$18y+15$	$24y+18$
$8(3y+11)$					
$6(4y+3)$					
$9(2y+1)$					
$3(6y+5)$					

Restore Password: _____

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We need to help the distribution team get the shipping labels printed. Let's head back to the control panel. To print out the shipping labels, we need to factor with the distributive property. Factor out the greatest common factor.

$27a+18b =$ _____

$24x-16y+4z =$ _____

$63p+40q-18r =$ _____

Awesome, we've gotten all of the shipping labels made. The last thing we need to do is figure out what boxes to put them on. It's time to distribute! Make an equivalent expression using the distributive property.

$3(x+2y+3z) =$ _____

$5(4a-2b-7c) =$ _____

$7(2d+1e-4f) =$ _____

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The Back Story

You are on a class field trip to the Cool Kids Calculator Factory. The president of the company is directing the tour herself. She's a rather suspicious woman and keeps talking about spies trying to sneak into her factory. So far on the tour, you've seen plastic poured into molds, microchips inserted, and the calculators being tested and put into boxes. You are now in the factory distribution center, your last stop on the tour.

While standing at the control panel at the entrance to the distribution center, the president tells you that there is one last security check. She has the key to a safe that contains the code to gain information for and going through the safe president of the company outside. She hands you a suddenly, zeros blink and shut down. The doors to sealed until all systems are

You did it! The doors of the factory distribution center are unlocked and the president of the company smiles on her face.

Congratulations! You passed my test. There were no real problems with our systems. The last step on our tour is designed to test the skills of potential factory workers. You can come work for me any day!

All eyes in the factory are down at the clipboard and procedures. It looks like restore the systems so

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Great job, the tablet is unlocked. Now we need that reset password!

To restore order to the scanners, simply follow the order of operations.

$$\frac{1}{2}(3 \cdot 6) + 3^2 =$$

$$(2^2 \cdot 5) \cdot (\frac{1}{2})^2 =$$

$$11 \cdot 2 - 24(\frac{1}{2})^2 =$$

$$\frac{1}{2}(4^2 - 1) =$$

$$(2 + 4)^2 - (2 + 2)^2 =$$

Now simply take your answers and substitute them for letters: a=1, b=2, c=3, ... z=26 and you'll have the password.

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a man in the office quickly enters it and tells you to head back into the distribution center software.

Forklifts are dropping off boxes in random places and scanners are beeping like crazy

CLUE 3

The code to unlock this tablet is my birthday! Can you evaluate what that is?

Month: $5b^2 - 3c + a$ when $b=2$, $c=5$, and $a=6$

Day: $2(6v)$ when $v=3$

Year: _____

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EXCELLENT EVALUATOR

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Puzzle Preview

SAFE COMBINATION

Step 1: The first step in finding the combination is combining like terms.

Combine the like terms. Write down the simplified expressions.

$$5p + 3 + 2p + 7$$

$$9s - 6s + 4$$

$$8 + 9y - 4$$

Step 2: Find the values of the variables. Use the simplified expressions you created in step one and follow these clues:

The value of p is 10 less than the product of 3 and the coefficient of p in your second expression. $p = ?$

The value of s is the product of 2 and 4.

The value of y equals the sum of the coefficients in your simplified expressions divided by 5.

Step 3: Evaluate the expressions with the value you found for the variable.

You've got the three number combination of the safe!

$$7n + 10 \quad n = 5$$

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

$$18y + 27 \quad 24y + 8 \quad 18y + 24 \quad 18y + 15$$

$$6(3y + 4) \quad \square \quad \square \quad \square \quad \square$$

$$8(3y + 1) \quad \square \quad \square \quad \square \quad \square$$

$$6(4y + 3) \quad \square \quad \square \quad \square \quad \square$$

$$9(2y + 3) \quad \square \quad \square \quad \square \quad \square$$

$$3(6y + 5) \quad \square \quad \square \quad \square \quad \square$$

The code to unlock this tablet is my birthday! Can you evaluate what that is?

Month: $5b^2 - 3c + a$
when $b=2$, $c=5$, and $a=6$

Day: $\frac{x}{3}(6y)$
when $x=2$, and $y=4$

Year: $2r^3 + s^3 + 1$
when $r=2$, and $s=4$

Puzzle Preview

To restore order to the scanners, simply follow the order of operations.

$$\frac{1}{2}(3 \cdot 6) + 3^2 =$$

$$(2^2 \cdot 5) \cdot \left(\frac{1}{2}\right)^2 =$$

$$11 \cdot 2 - 24\left(\frac{1}{2}\right)^3 =$$

$$\frac{1}{3}(4^2 - 1) =$$

$$(2 + 4)^2 - (2 + 2)^2 =$$

Now simply take your answers and substitute them for letters: a=1, b=2, c=3... z=26 and you'll have the password.

Awesome, we've gotten all of the shipping labels made. The last thing we need to do is figure out what boxes to put them on. It's time to distribute! Make an equivalent expression using the distributive property. Keep the terms in the same order as in the original expression.

$$3(x+2y+3z)= *$$

Your answer

$$5(4a-2b-7c)= *$$

Your answer

$$7(2d+11e-4f)= *$$

Your answer

Print the Shipping Labels



We need to help the distribution team get the shipping labels printed. Let's head back to the control panel. To print out the shipping labels, we need to factor with the distributive property. Factor out the greatest common factor. Example: $18x+12y+24=6(3x+2y+4)$ Enter your new expressions with no spaces in them.

$$27a+18b= \text{(keep the variables in the same order in your answer) } *$$

Your answer

$$24x-16y-4z= *$$

Your answer

$$63p+45q-18r= *$$

Your answer

You May Also Like

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OPERATION SAVE THE ROCKET LAUNCH
 Evaluating Expressions Word Problems

PIN Digit 4
 How much space is left?

The expression $e^3 - 8d$ gives the number of cubic feet of storage space that remain in a cube-shaped container that the rocket is taking to the space station. How much space is left in the container if $e = 3$ and $d = 24$?

EASY TO IMPLEMENT!

MISSION CONTROL CENTER
 Four digit PIN? Where is there a four digit pin?
 Click four random numbers and see what happens.
 Go back out into the hallway. Maybe the mission control team has been released and

6TH GRADE CONTENT 6.EE.A.2 6.EE.A.2A 6.EE.A.2C
DIGITAL ESCAPE ROOM!

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SIXTH GRADE MATH
 Digital Escape Room Bundle

EASY TO IMPLEMENT!

Y-axis: 8, 7, 6, 5, 4, 3, 2, 1, 0, -1, -2, -3, -4, -5, -6, -7, -8
 X-axis: -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8

Letters plotted: T(-7, 7), L(4, 7), U(7, 7), S(-5, 4), A(-2, 4), E(2, 4), D(5, 4), M(-7, -4), C(-7, -5), K(-2, -2), N(-2, -3), O(2, -4), R(5, -4)

6TH GRADE MATH STANDARDS

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Operation Restore Order

6.EE.A.1

TOP SECRET
 NAME: Ota, Key
 KNOWN ALIAS: Chaos

WANTED FOR:
 You Ota is suspected of causing mass confusion by breaking number line math problems when he arrived from left to right instead of right to left. He is also suspected of causing confusion by breaking order of operations. You have been wanted to clear and organize an escape route over the correct order of operations.

METHODS OF OPERATION:
 You Ota have wanted capture by accepting messages using a cipher key method that he did on the spot at the academy such as the Caesar Cipher. It is suspected that he is also devising new techniques for sending his messages across using other instructions.

CONFIDENTIAL

0 4 9
 8 2 0
 3 9

$3^2 + 9 + 3 + 6 = 10$
 $5^2 - 7 + 3 + 6 = 12$
 $4^2 + \frac{1}{4} + 32 + 2 = 4$

Order of Operations with Exponents
DIGITAL ESCAPE ROOM!

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NEGATIVE NUMBERS & ABSOLUTE VALUE
6TH GRADE MATH STANDARDS

Easy to implement! Automated with a Google Form™!
Does NOT require Google Classroom™ or e-mail addresses

ESCAPE ANTARCTICA
DIGITAL ESCAPE ROOM!

Dr. Pike's Emergency Instructions
 The team that brought me here is reporting your presence at meeting with me. In order to escape, please use the key below to help you get away as quickly as you can. But don't forget to check the location of the key below. The key is located in the hallway when you arrive. I hope if you find my keys, he has taken all other keys.

Research Notes:
 The penguin program has been able to adapt much better than other penguin species to the changing climate in Antarctica.
 I have been tracking for meeting sites. I gathered on a coordinate plane. The origin represents the research center. The x-axis represents the east-west distance, and the y-axis tracks the distance north or south.
 These meeting locations determine the three-digit combination to my desk drawer:
 Digit 1: Distance between meeting sites A and D.
 Digit 2: Distance between meeting sites C and D.
 Digit 3: Distance between meeting sites A and B.

Meeting Locations:
 Meeting site A is located 6 km east and 3 km south of the research facility.
 Meeting site B is located at (0, 3).
 Meeting site C is located 2 km east and 5 km north of the research facility.
 Meeting site D is located at (0, 8).

Find the Start, Find the Combination

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