



Find Your Way Out!

Your Challenge

- **You have been hired to write clues for a mathematics escape room. To get the next clue, participants need to find six expressions that are equivalent to each of four given expressions. Each expression must be different. The six equivalent expressions must meet these conditions:**
 - One must have exactly 3 terms.
 - One must have exactly 5 terms.
 - One must include a zero pair.
 - One must use the distributive property.
 - One must include a negative factor.
 - One must have no like terms.
- **Complete the table on the Recording Sheet to show a correct equivalent expression for each given expression. The given expressions are shown in the first row of each table.**



Find Your Way Out!

RECORDING SHEET

Possible answers:

Condition	$(6x + 3) + (5x - 4)$	$(-4y - 16) - 8y + 10 + 2y$
Exactly 3 terms	$11x + 3 - 4$	$-10y - 16 + 10$
Exactly 5 terms	$6x + 3x + 2x + 3 - 4$	$-5y - 16 - 9y + 10 + 4y$
Includes a zero pair	$11x + x - x - 1$	$-4y - 6y + 2y - 2y - 16 + 10$
Uses the distributive property	$11\left(x - \frac{1}{11}\right)$	$-2(5y + 3)$
Includes a negative factor	$-3(-2x - 1) + 5x - 4$	$(-4y - 16) - 2(3y - 5)$
Has no like terms	$11x - 1$	$-10y - 6$

Condition	$8 - \frac{1}{2}\left(4s - \frac{1}{2} + 12s - \frac{1}{4}\right)$	$0.25(8m - 12) - 0.5(-4m + 2)$
Exactly 3 terms	$8 - 8s + \frac{3}{8}$	$4m - 3 - 1$
Exactly 5 terms	$10 - 2 - 2s + \frac{3}{8} - 6s$	$m + m + 2m - 2 - 2$
Includes a zero pair	$8 - 8s + \frac{1}{4} - 2s + \frac{1}{8} + 2s$	$4m - 2m + 2m - 4$
Uses the distributive property	$2\left(-4s + 4\frac{3}{16}\right)$	$4(m - 1)$
Includes a negative factor	$-8\left(s - \frac{67}{64}\right)$	$-0.5(-8m + 8)$
Has no like terms	$-8s + 8\frac{3}{8}$	$4m - 4$



LESSON 18

What's the Temp?

Your Challenge

- Temperatures are commonly measured in degrees Celsius or degrees Fahrenheit.

You can convert from degrees Celsius to degrees Fahrenheit by using the formula $C = \frac{5}{9}(F - 32)$, where C is the temperature in degrees Celsius, and F is the temperature in degrees Fahrenheit.

Is there a temperature that has the same value in degrees Fahrenheit as it does in degrees Celsius? If so, what is that temperature? Explain.

Possible answer:

I know it is not a temperature greater than 0°C because the measurements in Fahrenheit and Celsius get further apart above 0°C . So, I tried temperatures less than 0°C .

$$-5 = \frac{5}{9}(F - 32)$$

$$-5(9) = 5(F - 32)$$

$$-45 = 5F - 160$$

$$115 = 5F$$

$$F = 23$$

$$-5^{\circ}\text{C} = 23^{\circ}\text{F}$$

I continued trying degrees Celsius, decreasing by 5° each time, to find out if there was a temperature at which the Celsius and Fahrenheit temperatures were the same.

$$-10^{\circ}\text{C} = 14^{\circ}\text{F}$$

$$-15^{\circ}\text{C} = 5^{\circ}\text{F}$$

$$-20^{\circ}\text{C} = -4^{\circ}\text{F}$$

$$-25^{\circ}\text{C} = -13^{\circ}\text{F}$$

$$-30^{\circ}\text{C} = -22^{\circ}\text{F}$$

$$-35^{\circ}\text{C} = -31^{\circ}\text{F}$$

$$-40^{\circ}\text{C} = -40^{\circ}\text{F}$$

The temperature at which the Fahrenheit and Celsius scales are the same is -40° .