Educational Objectives for Variables

In playing the Math Snacks/Magic Spell/Superheroes/Swipe Night game, **the user will…**

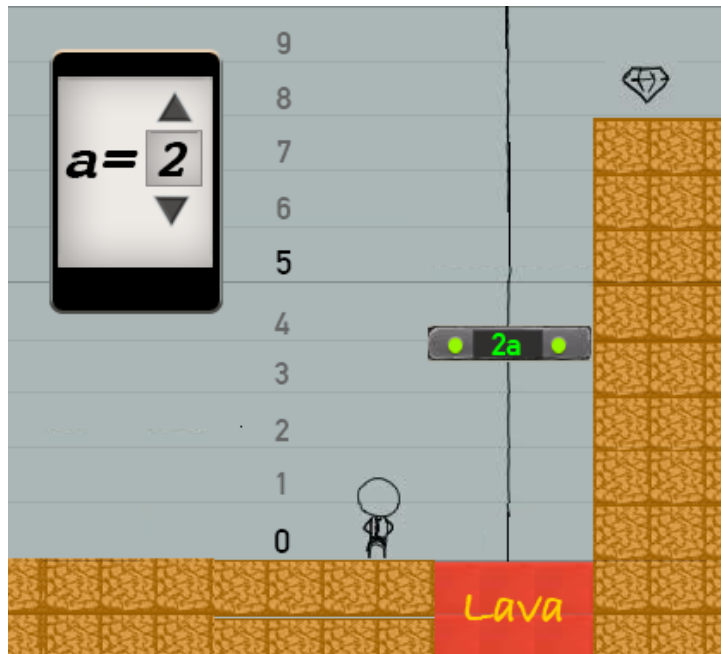1. Given a **set expression, change the value of a single variable**, to get the desired _result/answer_.

   For example:

   $a = 4$ (user assigns *a* value to change platform

   select platform height from   height)

   2a-4, 2a+1, and a+1

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2. Given a **set variable, change or select an expression**.

For example:
$a = 4$
starting platform height $= 2a$
new platform height $= $ _____
(in terms of a)

(user writes or selects expressions to adjust platform height based on $a = 4$)

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3. Change the value of a single variable, to see the **relationship between expressions that share that variable.**
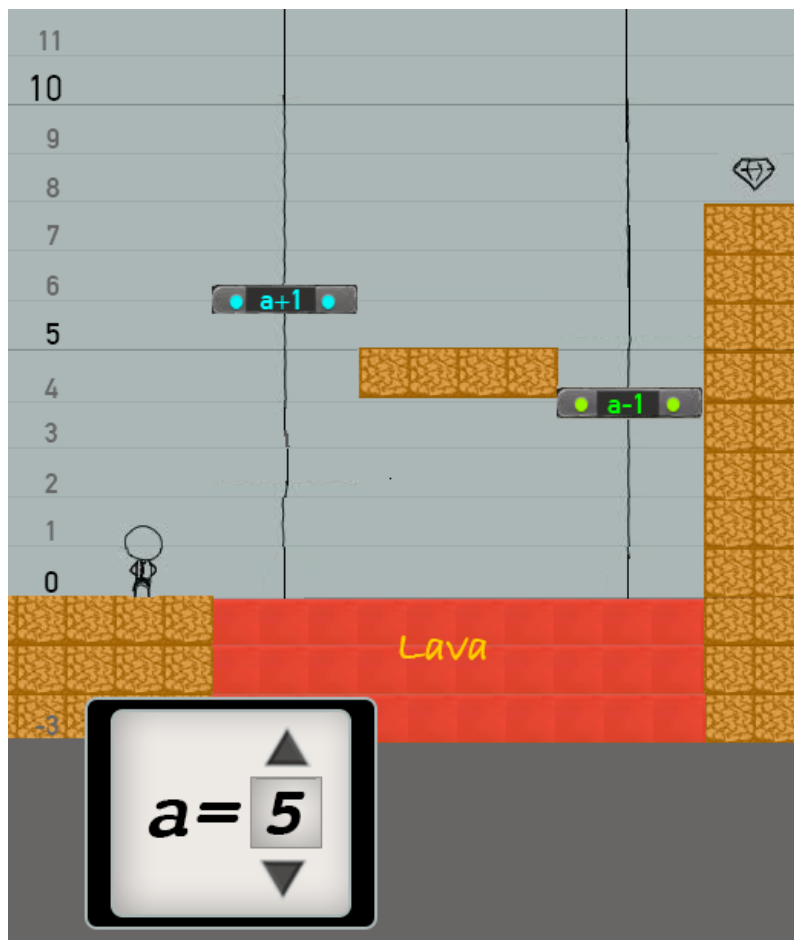
For example:
Platforms that share 1 variable
Blue platform height = $a + 1$
Green platform height = $a - 1$

(user changes b, and notices that the difference between platform heights is always 2)

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4. Change **one or both variables** in **expressions that equal each other**. In doing so, they define *one variable in terms of another*

> *For example:*
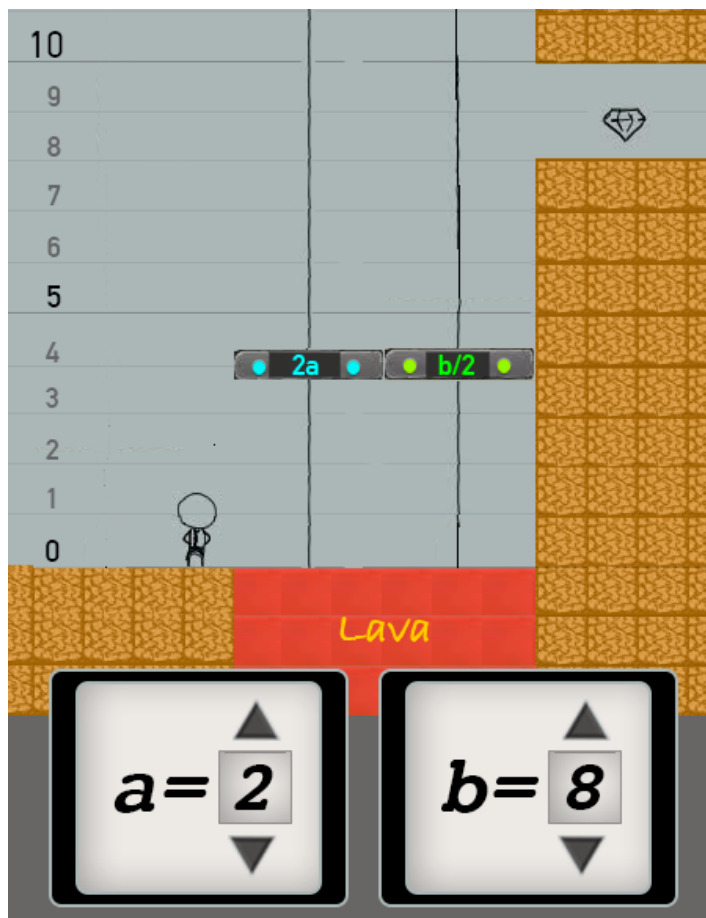> We want Blue platform height = Green platform height
> Blue platform height = $2a$
> Green platform height = $b+1$
> Thus, we want $2a = b+1$
>
> (user changes either value of *a* or *b*, or both)
>
> *Development Notes: Could be good to correlate the variables, such as weight to height for catapults, or height to height in platforms, or height to number of blocks.*

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5. **Mini Game:** Use a variable as a **symbol that represents** a set **quantity**. (The quantity may change, which is why you use a variable.)

> *For example:*
> Let n=☐ , *where you can build a tower out of 3n, 4n, etc. You can also change the size of the shape.*
>
> In all cases variables will relate to number values.
>
> *Development Notes: If we use this, could be a mini game*