Integer addition and subtraction.

Integers are positive and negative counting numbers with zero.

…-3, -2, -1, 0, 1, 2, 3…

Integers are **discrete**.

The Real number system is continuous and includes all the numbers in between.

If there is no negative sign or minus, then it is positive.

Positive is the default and we don't need to bother writing the plus sign.

Adding and subtracting integers

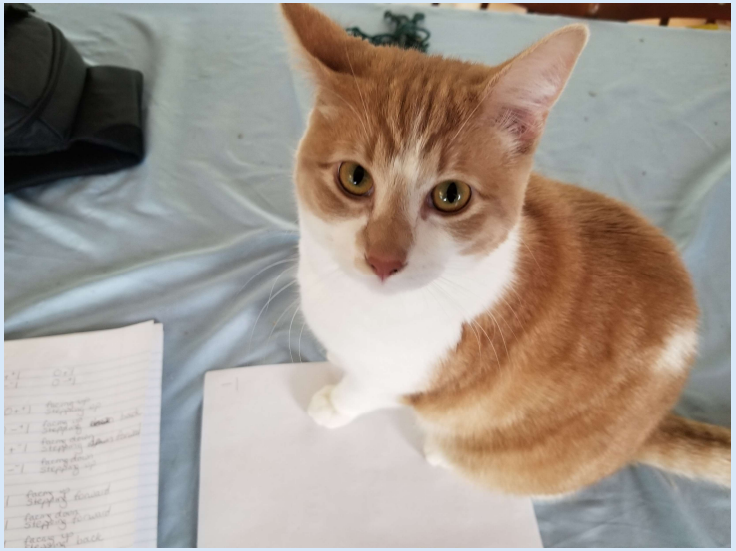
I think of adding and subtracting integers with vectors and have a great activity for learning the concepts.

Adding is stepping up.

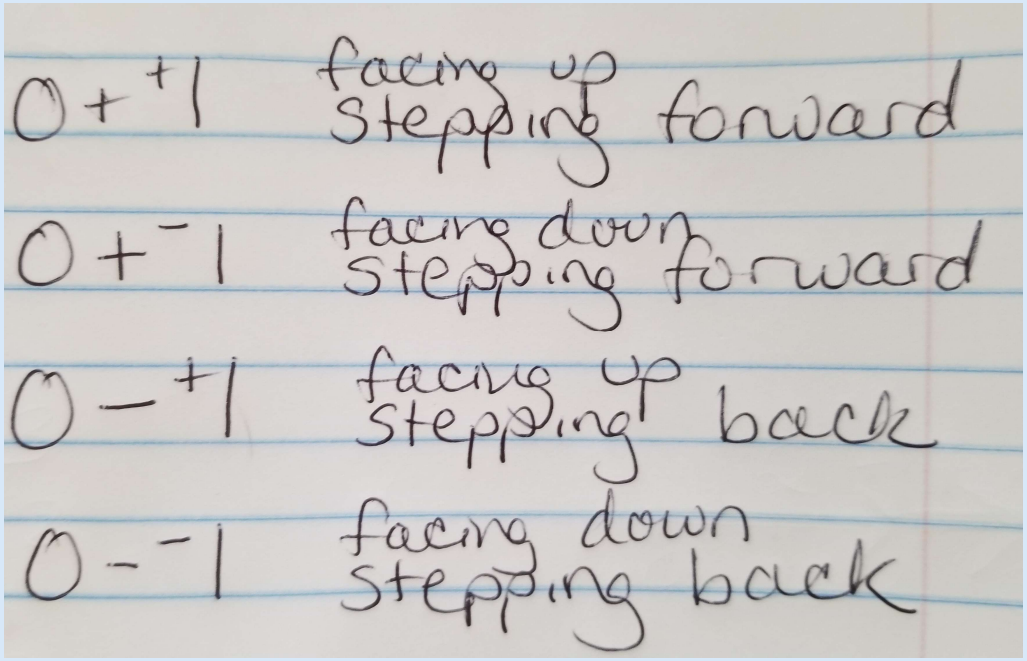
Subtracting is stepping down.

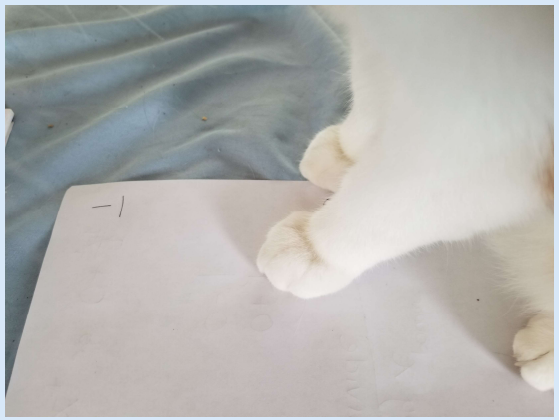
Positive is facing up.

Negative is facing backwards or do**wn**.



Stand on a stair labeled zero or on a labeled number line (outside with sidewalk chalk or paper labeled on an indoor floor).





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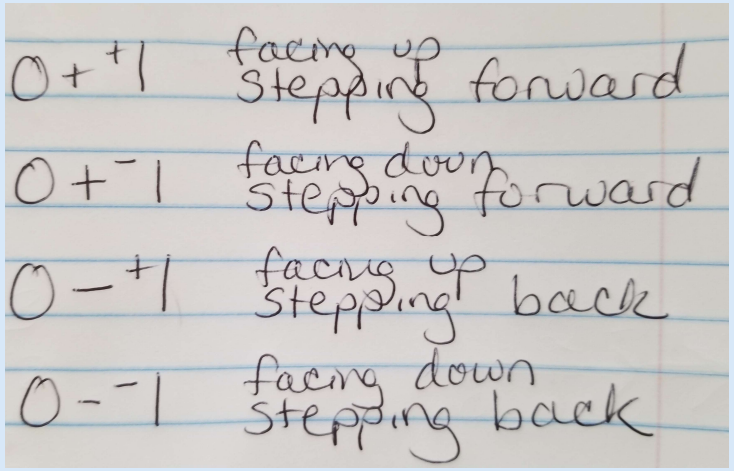
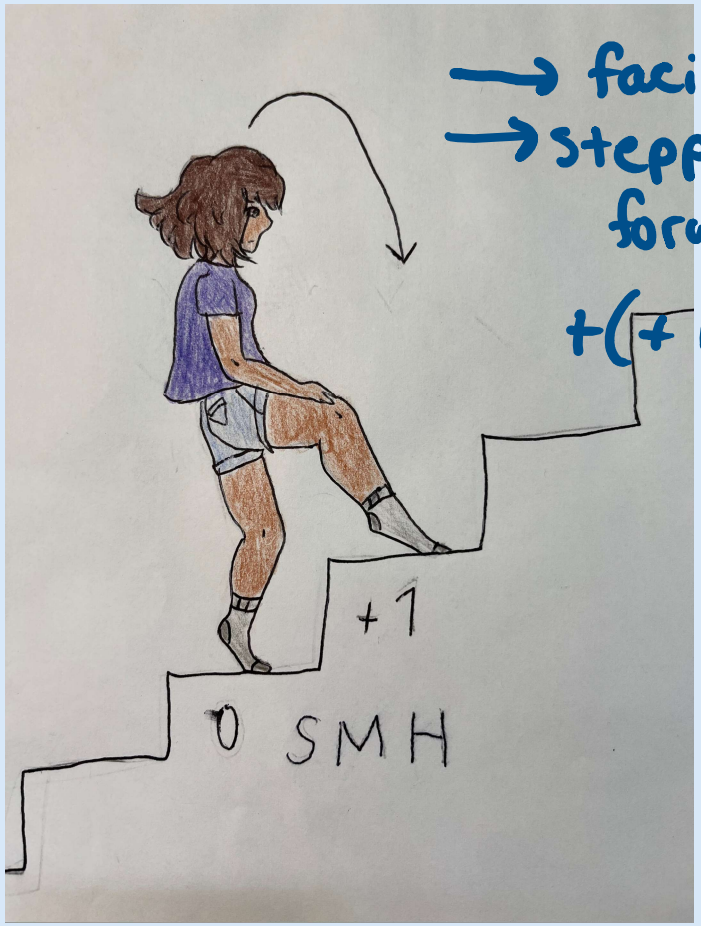
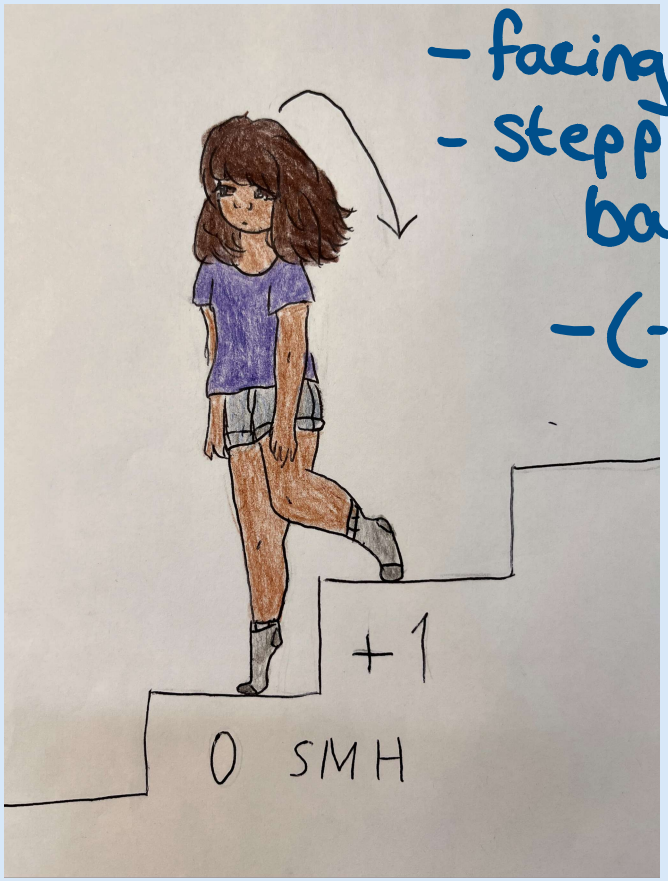
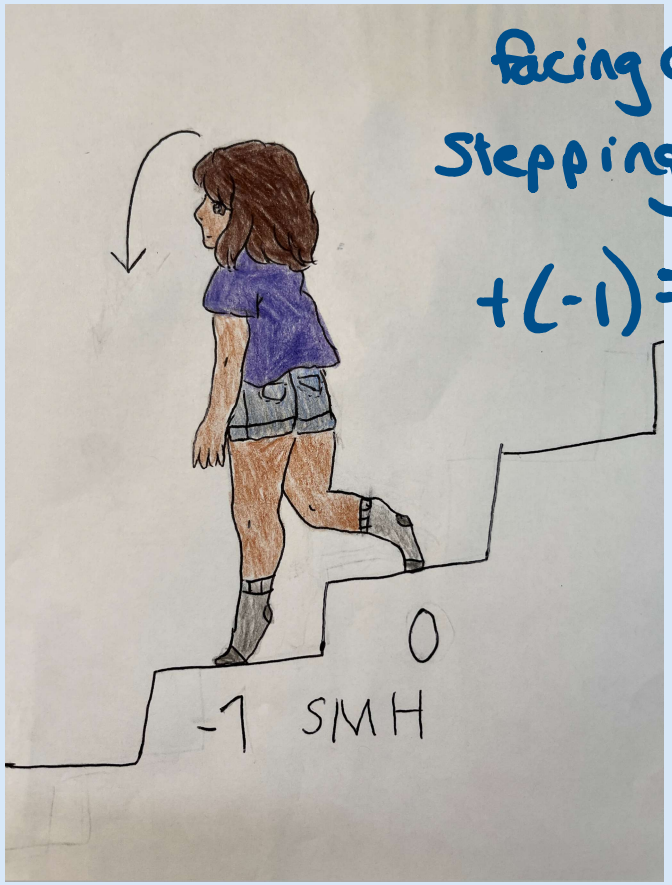


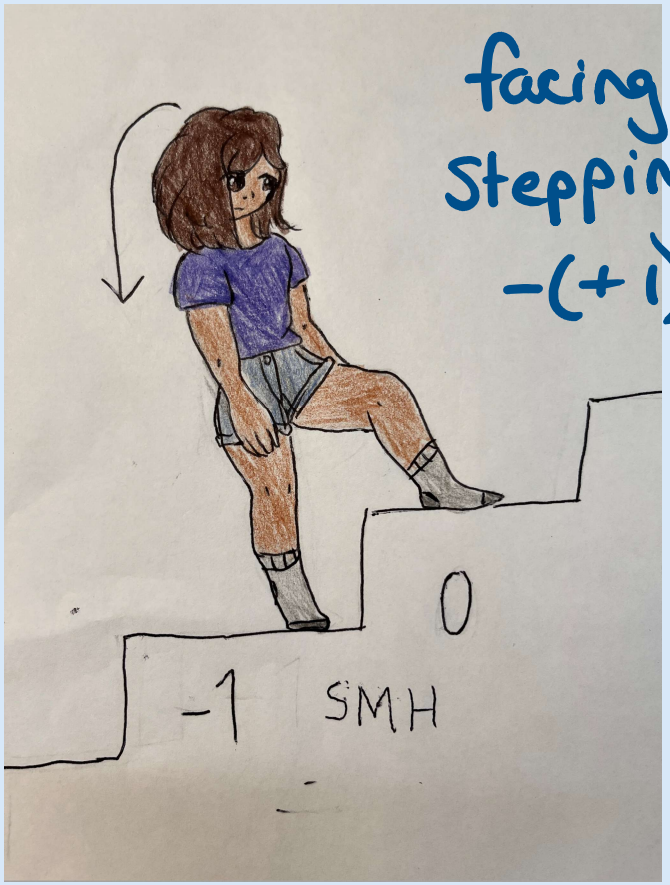
Facing up and stepping forward is +(+1), facing down and stepping back is –(-1). Either way, you end up at +1 or up a stair. (Sophia Haahs, artist)





Facing down and stepping forward is +(-1), facing up and stepping back is -(+1). Either way, you end up down a stair at -1. (Sophia Haahs, artist)





I would love someone to draw cats going back and forth on a horizontal number line!

Kitten integers developed when we fostered a mom cat and her six kittens.

The cat is + or is not - in the room.

The cat is present *pos* or missing *neg*.

0+ +cat cat is present

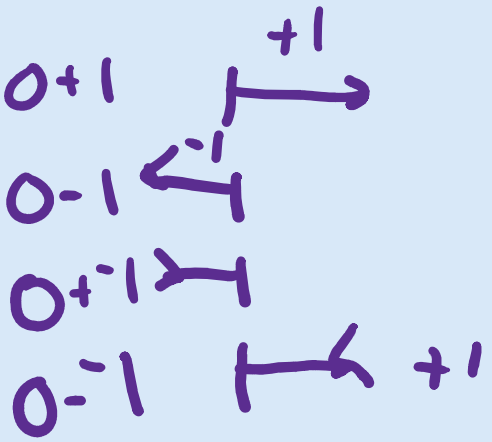
0+ -cat cat is missing

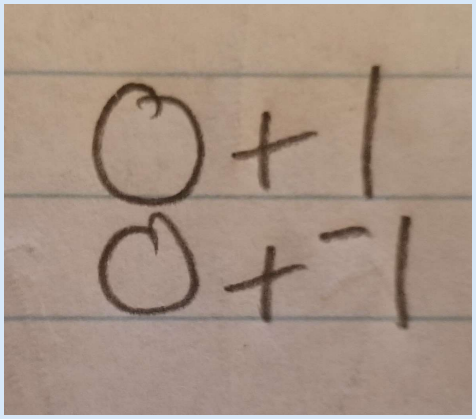
0- +cat cat is not present

0- - cat cat is not missing so is present

Two possibilities

0+1 or 0-1





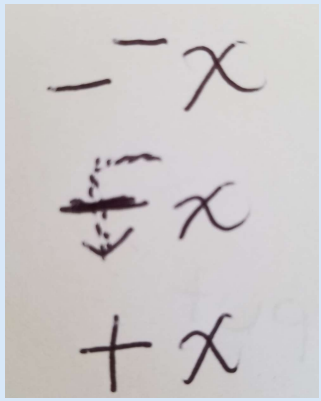
Four possibilities become two outcomes.

0+(+x) is 0+x =x

0+ -x is 0-x = -x

0- (-x) is 0+x = x

0- +x is 0-x = -x

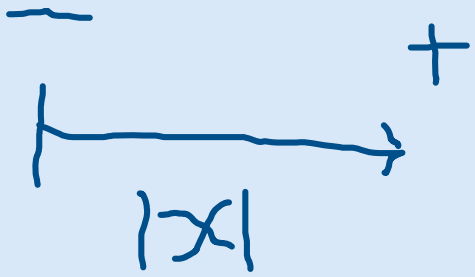


I think of the second negative sign moving down to turn into a plus sign.

If there are lots of positive and negative numbers, use a spreadsheet, calculator or adding machine.

Whichever have the most magnitude will have the sign. If the positive number is bigger than the sum will be positive, and if the negative number is bigger the sum will be negative.

-1+25-42+22=-43+47=47-43



x+n=a

x=a-n

x-n=a

x=a+n

$x+2=3$

$x-1=2$

$x-2=-1$

$x+3=2$

$x-2=-3$

x+n=a x-n=a

x=a-n x=a+n

This works for all Real numbers and not just integers. You can try on a calculator or see how it works.

$35.6 - 57.89 =$

$-3 - 5 =$

$2\sqrt{2} - 4\sqrt{2} = -2\sqrt{2}$

$-3x - 5x =$

$2\pi - 5\pi = -3\pi$

$2x - 7x =$