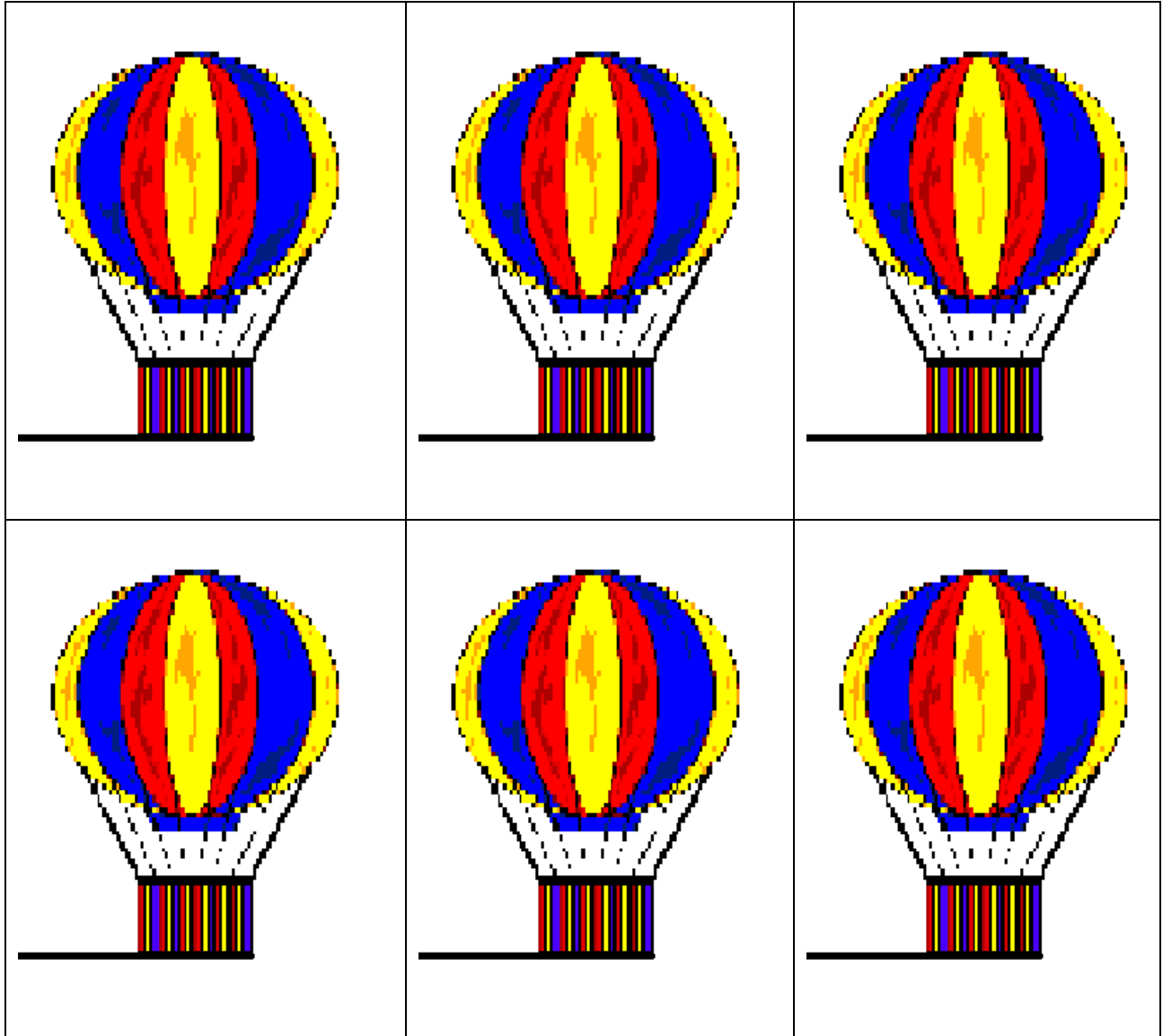


Balloon Arithmetic Template

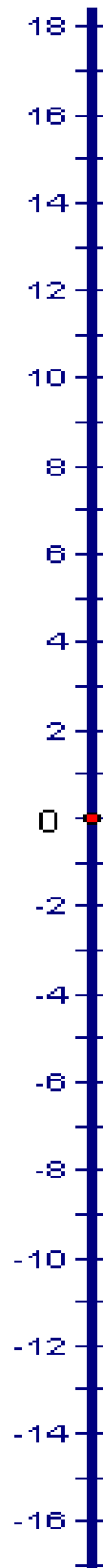
Cut out and use with the number line below.



Balloon Arithmetic Rules

- * putting on gas bags make the balloon rise.
- * taking off gas bags makes the balloon lower.
- * putting on sand bags makes the balloon lower.
- * taking off sand bags makes the balloon rise.

***there is an unlimited supply of gas bags and sand bags floating in the air around the balloon at all times.



Balloon Arithmetic Rules

- Putting on one gas bag makes the balloon rise one unit.
- Taking off one gas bag makes the balloon lower one unit.
- Putting on one sand bag makes the balloon lower one unit.
- Taking off one sand bag makes the balloon rise one unit.
- There is an unlimited supply of gas bags and sand bags floating in the air around the balloon at all times.
- Problems can not be re-written until new rules are developed to allow problems to be changed.

Balloon Arithmetic Addition/Subtraction

- The first number represents the initial position of the balloon on the number line.
- The operation following the number:
 - addition means "put on"
 - subtraction means "take off"
- The second number represents how many and what type of bags are being "put on" or "taken off." (positive numbers are gas bags and negative numbers are sand bags)
- Ex. $2 + (-1)$: I start at 2 and put on 1 sandbag.
- Ex. $-3 - (-2)$: I start at -3 and take off 2 sandbags.

Balloon Arithmetic Multiplication

- We always start at 0.
- The first number represents how many groups we are "putting on" or "taking off."
- The second number represents how many are in each group and if they are gas bags or sand bags.
- Example: -2×4 means: starting at 0, I take off 2 groups of 4 gas bags. Since taking off gas bags makes me go down, I will go down in 2 groups of 4 and land at -8.
- Example. $3 \times (-2)$ means starting at 0, I put on 3 groups of 2 sandbags. Putting on sandbags makes me go down, so I will go down in 3 groups of 2 and land at -6

Balloon Arithmetic Division

- The first number represents where the balloon came to rest after starting at 0.
- The second number represents how many and what kind of bags were in each group.
- The answer is what had to be done with the groups and how many times it was done.
- $9 / 3$: Using groups of 3 gas bags, how did I get to 9 from 0? I must have had to put on 3 groups since gas bags make me rise.

Balloon Absolute Value

- The length of the tether from the balloon to 0.