BMX Algebra: Calculate Your Ride!

Materials Needed:

- Pencil or Pen
- Paper or Notebook
- Calculator (optional)

Hey! Ever wonder how math ties into awesome BMX tricks and runs? Algebra is like a secret tool that helps understand the speed, distance, and angles involved in BMX. Let's jump in!

Part 1: Speed Demons

Knowing your speed is crucial! Remember the formula: **Distance = Rate × Time** (or **d = rt**). 'Rate' is just another word for speed.

Example: You cruise a 120-foot stretch of the park in 6 seconds. How fast were you going?

- We know: d = 120 feet, t = 6 seconds
- We want to find: r (rate/speed)
- Formula: 120 = r × 6
- To find 'r', we divide both sides by 6: 120 / 6 = r
- So, r = 20 feet per second. Pretty fast!

Your Turn!

1. If a rider travels at 15 feet per second for 4 seconds, how far do they travel? (Use d = rt)
2. You need to clear a 30-foot gap. You know you can hit a speed of 10 feet per second off the ramp. How long will you need to be in the air? (Use d = rt, solve for t)

Part 2: Ramp It Up! Slope Basics

Ramps have different steepness, right? In math, we call this 'slope'. Slope is calculated as **Rise / Run**.

- **Rise:** How high the ramp goes vertically.
- **Run:** How long the ramp is horizontally along the ground.

Example: A kicker ramp is 2 feet high (rise) and stretches 4 feet along the ground (run).

- Slope = Rise / Run = 2 feet / 4 feet = 1/2 or 0.5

A steeper ramp has a bigger slope number!

Your Turn!

1. A big launch ramp has a rise of 5 feet and a run of 10 feet. What is its slope?
2. You build a small manual pad ramp. It has a rise of 1 foot and a run of 6 feet. What's its slope? Which ramp is steeper, the launch ramp or the manual pad?

Part 3: Trick Variables

Let's use variables (letters) to represent things we don't know or things that can change, like points for tricks.

Example: In a freestyle run, let 'b' be the points for a barspin and 't' be the points for a tailwhip. If you land 3 barspins and 2 tailwhips, your total score (S) could be written as:

- S = 3b + 2t

If a barspin (b) is worth 5 points and a tailwhip (t) is worth 8 points:

- S = (3 × 5) + (2 × 8)
- S = 15 + 16
- S = 31 points

Your Turn!

1. Let 'x' be points for a tabletop and 'y' be points for a 360. Write an expression for the score of landing 4 tabletops and one 360.
2. If a tabletop (x) is worth 3 points and a 360 (y) is worth 10 points, calculate the total score using your expression from question 1.

Awesome job! You've just used algebra to analyze speed, ramps, and trick scores in BMX. Keep practicing, and you'll see math everywhere in the park!