



# **As Simple as Rocket Science**

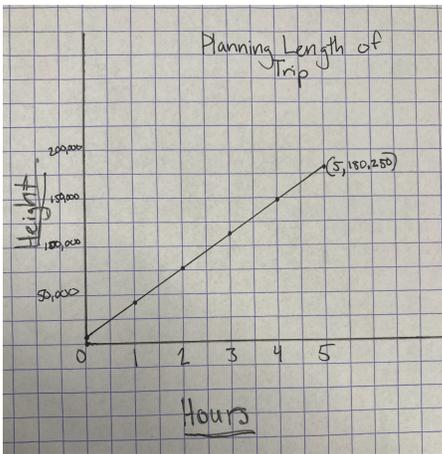
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Algebra I Benchmark

**Introduction:**

Today's the day! Emma was overwhelmed with excitement. Today she starts her first day at NASA! Everybody knows how much Emma has loved rocket science her entire life, and today she's finally achieved her lifelong dream of working on NASA space projects.

**Rising Action:**



Emma arrives at the section of the NASA building where she's supposed to be meeting the head director. "Hi Emma!" he says. "Thank you so much for coming in today. We need your insight on the new project." Emma looks at the blueprints and sees that right now the rocket is 250 feet in the air for repairs. The trip to the rocket's destination will take about 5 hours, not including setting up and safety checks. "Okay," Emma says. "If we want the trip to take about 5 hours, we should set up the meter for traveling 36,000 feet per hour." "Sounds good!" the director responds. "We'll get that ready for you. Launch will be in an hour- you should go get ready!"

x	Calculations	y
1	$36000 * 1 + 250$	36,250
2	$36000 * 2 + 250$	72,250

3	$36000 * 3 + 250$	108,250
4	$36000 * 4 + 250$	144,250
5	$36000 * 5 + 250$	180,250

Slope: 36,000, the amount of feet traveled per hour.

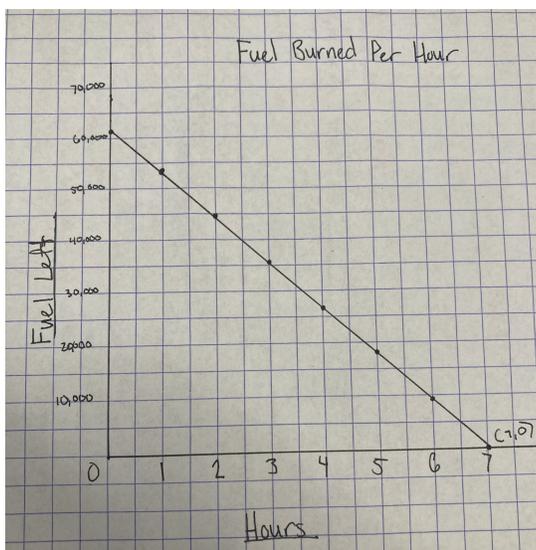
Y-Intercept: 250, the starting height.

Equation:  $y = 36,000x + 250$

Point Slope Form =  $y - 180,250 = 36,000(x - 5)$

- Point (5,180,250) represents the amount of time it will take to travel 180,250 feet to the final destination.

### Climax:



Emma is so excited. She's finally doing what she's always dreamt of! She looks out of the rocketship window, searching for the Earth when she spots it. She almost has to squint to see it because of how tiny it looks. All of a sudden, she hears a beeping and a staticky voice coming from the radio on the dashboard. "This is Albany to Emma. We've just discovered that

you're rapidly running out of fuel! We need you to come back down immediately." Emma grabs the radio and pushes the button to speak.

"The fuel tank has 52,000 pounds of fuel right now. How much time do I have?"

"The rocket burns about approximately 9,000 pounds of fuel per hour so that should give you about 7 hours," the radio chokes out.

And so, Emma turns the ship around, expecting to be home by around 9 pm.

x	calculations	y
1	$63000 - 9000 * 1$	54000
2	$63000 - 9000 * 2$	45000
3	$63000 - 9000 * 3$	36000
5	$63000 - 9000 * 5$	18000
7	$63000 - 9000 * 7$	0

Slope: 9,000, the amount of fuel burned per hour.

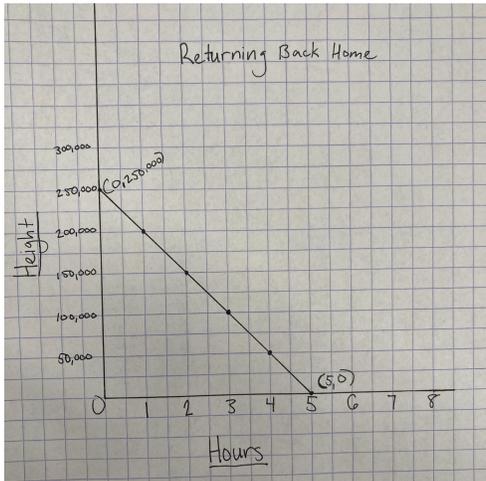
Y-Intercept: 63,000, the starting amount of fuel.

Equation:  $y = 63,000 - 9000x$

Point Slope Form =  $y - 0 = -9000(x - 7)$

- Point (7,0) represents the amount of time it will take before the fuel is completely gone.

## Falling Action:



Emma enjoys the ride back to Earth, even though her time in space was cut shorter than she'd expected. She plays music and sings along for the next couple of hours until about 4 pm. As she reenters the atmosphere, she receives a text message from her best friend Anna. "Hey!" the message reads. "I have no idea if you'll get this, but how much longer until you're home? I'd love to hang out."

Emma checks the speedometer on the dashboard which tells her that she's pushing 50,000 feet per hour. Next to it is the meter that tells her that she's currently 250,000 feet in the air. Emma picks up her phone to answer Anna's text. "I should be home in around 5 hours, so about 9 pm! That sounds great." Happy after making plans, Emma put down her phone and resumed listening to music for the rest of the duration of the trip.

x	calculations	y
1	$250,000 - 50,000 * 1$	200,000
2	$250,000 - 50,000 * 2$	150,000
3	$250,000 - 50,000 * 3$	100,000
4	$250,000 - 50,000 * 4$	50,000
5	$250,000 - 50,000 * 5$	0

Slope: 50,000, the amount of feet traveled per hour.

Y-Intercept: 250,000, the starting height.

Equation:  $y = 250,000 - 50,000x$

Point Slope Form =  $y - 0 = -50,000(x - 5)$

- Point (5,0) the speed the rocket ship traveled in 5 hours.

### **Conclusion:**

As the rocketship barrels towards Earth, Emma prepares for the impact, flipping switches and pressing buttons, readying the ship to land. Another staticky message comes through the radio. “We’re ready for you to land in five...four...three...two...one.” Emma feels the boosters ease and jolts as the ship re-connects with the launch pad. She can’t help but let out a small cheer as the rocket settles into the ground. She’s just completed her very first mission, and she confidently steps out of the ship, meeting the proud smiles of the NASA workers with a wide grin across her face.