



## 4.5 Fiona and McKenzi Engaging with the Three Animals Race Task Transcript



[Fiona and McKenzi Engaging with Three Animals Race Task](#)

Transcript:

**[Students are on a page with the 3 animals task book in GeoGebra. The cursor is idle on the page.]**

Fiona: Um

Teacher: now, put it there notice how it flops like that

Teacher: that means now put it where you want it

Fiona: The turtle

McKenzi: Why?

Fiona: because the exponential graph I feel like okay so when we look at it it goes

Fiona: from like one to like how long is it

Fiona: 100?

McKenzi: Yeah true

Fiona: so exponential it'll curve up and it'll go higher

Fiona: higher as it goes

McKenzi: yeah

Fiona: so it will like end up up here

Fiona: and so it'll take longer to get here

Fiona: But linear it'll kind of like keep going.

McKenzi: Yeah

Fiona: So it'll get here faster,

Fiona: and the same with the exponential

Fiona: for the alligator.

Fiona: Cause he'll go up and it'll curve up,

Fiona: super high.

McKenzi: Yeah. Okay.

**[Footage cuts to students interacting with page 1 of the three animals task. The page has an axis with labeled distances from 10 to 90m on the left and a starting line before the 10 m and a finish line at 100m. The turtle begins at the 50m mark and the rabbit and alligator begin at start.]**

Fiona: So yeah, we think....

Fiona: Okay, so open the, we opened it.

Fiona: Drag time slider to observe

Fiona: a simulation of the race.

McKenzi: Um it's just that yeah.

Fiona: The time.

**[Student moves cursor to time slider and slowly drags the slider to the right. The turtle is in the lead for a while but does not move as far as the others with each increment. The rabbit moves slowly at first and the speed increases gradually, the**



**alligator is behind for a while and then accelerates quickly to cross the finish line first.]**

Fiona: Oh!

McKenzi: The alligator wins

Fiona: Hmm.

**[Student drags the slider back to the left to going backwards through the simulation and then forward through it again.]**

McKenzi: I think it was cause it was a mix,

McKenzi: It was a mix of both.

**[Student moves slider so that the simulation is reset. Each character is at their starting position.]**

McKenzi: Because wouldn't then he come in second?

Fiona: Oh, cause the rabbit, the rabbit starts exponential

Fiona: from here and keeps going up.

McKenzi: Yeah.

Fiona: So maybe, he starts five seconds later

Fiona: so it kinda scoots.

McKenzi: Yeah and I think this one didn't have,

McKenzi: it was like a slower slo-. Like the,

McKenzi: it wasn't a steep slope.

McKenzi: It was like more like (unclear word) out.

McKenzi: It wasn't like lower down if you did it.

**[Footage cuts to students working on Three Animals Page 2 there is a spreadsheet in GeoGebra where students have a column representing time in seconds and a column for each animal. The students begin inputting distances into the chart starting with the turtle column.]**

McKenzi: okay so for the turtle

Fiona: Okay, so at one second, he's at three meters.

McKenzi: yeah

**[Student enters a 3 into the appropriate space in the spreadsheet.]**

Fiona: and then he's uh at

McKenzi: six

Fiona: six

**[Student enters a 6 into the appropriate space in the spreadsheet. They continue this with the pattern they count out loud, putting new entries down the spreadsheet column for turtle.]**

McKenzi: that just goes by threes

Fiona and McKenzie: 15,

Fiona and McKenzie: 18.

Fiona: And then...

McKenzi: 21.

Fiona and McKenzie: 24, 27

Fiona and McKenzie: 30, 33

Fiona: 36

Fiona: 39



McKenzi: 42

McKenzi: 45

McKenzi: 48

McKenzi: 51

Fiona: 51. Yeah. 51, and then...

McKenzi: 54.

Fiona: There you go.

McKenzi: Okay, so now for the rabbit...

Fiona: Distance....

**[Student moves cursor and begins typing in the first box of the rabbit column.]**

Fiona: that one's going to be a little hard

McKenzi: Hard, yeah.

Fiona: Okay.

McKenzi: So...

Fiona: So he, the rabbit takes off slowly, but okay

Fiona: So starts at a meter per second

Fiona: So at one second he's at a meter?

McKenzi: Yeah.

**[Student enters a 1 into the appropriate space in the spreadsheet.]**

Fiona: And then each second he goes

McKenzi: He's going

McKenzi and Fiona: a meter faster.

Fiona: So the next time it would be one and then

McKenzi and Fiona: Two?

Fiona: And then three?

**[Students enter the numbers going down the column as they say them.]**

McKenzi: mm-hmm

Fiona: 4, 5, 6, 7, 8, 9,

McKenzi and Fiona: 10

McKenzi and Fiona: 11, 12

Fiona: 13, 14

Fiona: 15, 16,

Fiona: 17, and then 18.

McKenzi: okay.

**[Students move cursor to begin typing in the alligator column.]**

Fiona: You get the alligator up until five seconds,

McKenzi and Fiona: he's at 0.

McKenzi: Yeah.

**[Student enters 5 zeros into the alligator column.]**

McKenzi: So now

Fiona: and then

McKenzi: he begins at a pace of 1.5

McKenzi: and then continues going up 1.5 faster each time.

McKenzi: So he would start at 1.5. Right?

Fiona: Yeah.



McKenzi: And then....

Fiona: okay. 1.5, and then each time he gets

**[Student enters 1.5 into the spreadsheet below the zeros.]**

Fiona and McKenzie: 1.5 times faster.

McKenzi: So the next would be 3.

Fiona: So then 3 and then....

**[Student enters 3 into the spreadsheet below the 1.5.]**

McKenzi: 5.5?

Fiona: 4.5? 4.5

McKenzi: Oh yeah 4.5

**[Student enters 4.5 into the spreadsheet below the 3.]**

Fiona: And then 6.

McKenzi: um yeah

Teacher: You can always make the spreadsheet do the math for you if you want.

Fiona and McKenzie: \*laughter\* okay

**[Student enters 6 into the spreadsheet below the 4.5. They continue this with the next numbers 7.5, 9, 10.5, 12, 13.5, 15, 16.5, 18, and 19.5.]**

Fiona: It would be 6.

McKenzi: And then 7.5.

Fiona: Yeah.

Fiona and McKenzie: And then 9.

Fiona: And then...

McKenzi: 10.5?

Fiona: um yes yeah 10.5

Fiona and McKenzie: and then 12,

Fiona: and then 13.5.

Fiona: And then 15 and then

Fiona: 16.5

Fiona: and then 18.

Fiona: And then 19.5.

**[Footage cuts to students working on Three Animals page 2 in GeoGebra.]**

McKenzi: In your spreadsheet continue building up the animals' distances from the start as the race continues. Approximately how many seconds does it take for each animal to finish the race?

Fiona: Okay. So then if it's 54 then it'll be...

**[Students continue entering numbers going down the spreadsheet.]**

McKenzi: 57?

Fiona: yeah 57 and then

McKenzi: 60.

Fiona: 60 and then 63

McKenzi: 63, 66, 69

McKenzi: Um 72

Fiona: 72

McKenzi: 75 78 81

Fiona and McKenzie Together: \*inaudible students laughing\*



McKenzi: 84, 87

Fiona: Then 87...and then 90

McKenzi: 90

Fiona: And then 93.

Fiona: 96

McKenzi: 102

**[Student enters 102 into the cell beside 35 seconds.]**

Fiona: okay so 102 and then that's where it stops I guess, so after about 35 seconds

McKenzi: Wait, it keeps...

Fiona: because the meter like the race is only 100 meters,

McKenzi: oh yeah

Fiona: so it's past 100

McKenzi: Alright

**[Student moved to the cell for the rabbit and continued entering numbers starting at 20 seconds.]**

Fiona: and then 18 this one's easy 19, 20

Fiona: 21, 22, 23, 24, 25, 26, 27, 28, 29, 30

**[Student enters the 30 and goes to the next cell and pauses.]**

McKenzi: Did we do that right?

Fiona: See that's what I'm thinking.

**[Student scrolls up and down the spread sheet. Then they use the cursor to indicate the rabbit and the time the turtle would have ended (35 seconds).]**

McKenzi: I don't think we did that right

Fiona and McKenzie: because the rabbit has to

Fiona: beat the turtle

McKenzi: okay

Fiona: \*gasp\* the turtle starts 50 meters ahead

McKenzi: yeah

Fiona: \*inaudible whisper\* dang it.

Fiona: Okay, okay so the distance from start would be, start at 50...

**[Footage cuts to students interacting with Three animals page 2. The numbers in each of the columns have changed. The turtle column now starts at 50m. The students' cursor is in a blank cell in the Alligator's column.]**

Fiona: It's the one like at one second, it would be one meter per second, which is one.

Fiona: and then at the 2nd second, he's going 2 meters per second so

Fiona: plus 2 which would be 3, and then it's plus 4, and then plus 5, plus 6

Fiona: Wait.

McKenzi: Um explain it, because right now it just sounds like you're just going up by ones

Fiona: I don't know. I know that's what it sounds like, wait.

McKenzi: Just show me because I'm more a visual person like...

**[Student erases entries in the rabbit column except the entry in the first cell, the number one.]**

Fiona: Maybe, maybe I don't know if it'll work, but it might work

McKenzi: okay



Fiona: oh, oops.

McKenzi: Don't go like that.

Fiona: and then at two seconds he's going two meters per second

McKenzi: uh huh

Fiona: which means it's plus 2. So 1 plus 2 is 3.

**[Student enters a 3 into the next cell in the rabbit column.]**

McKenzi: Okay.

Fiona: And then 3. And then now he's going 3 meters per second,

Fiona: so he's at 3 and now he's going 3 more,

Fiona: so it's at 6.

McKenzi: Okay.

**[Student enters a 6 into the next cell in the rabbit column.]**

Fiona: and then it's 6

Fiona: and then now he's going— wait

Fiona: so now we're at 4, so he's going 4 meters per second, so now we add 4.

McKenzi: Okay. So you're adding the...

Fiona and McKenzie: We're adding the second time

Fiona and McKenzie: to the previous.

McKenzi: Okay

Fiona: So then 6 plus 4 is 10.

McKenzi: 10. Okay, yeah and then and then 15?

Fiona: 16?

**[Student enters a 10 into the next cell in the rabbit column.]**

Fiona: Right? because it's now he's going or yeah.

Fiona: Sorry I'm looking at that number

Fiona: yeah

Fiona and McKenzie: 15

**[Student enters a 15 into the next cell in the rabbit column.]**

McKenzi: and then 21?

**[Student enters a 21 into the next cell in the rabbit column.]**

Fiona: Yeah, here now it's just 21 plus...

McKenzi: That's 28

McKenzi: Sorry, I just...

Fiona: no you— you totally like...

McKenzi: yeah

Fiona: I could have still done that in my head. And then,

**[Student enters =21+7 into the next cell in the rabbit column, the spreadsheet then shows 28 in that cell.]**

Fiona: 28 plus 8. Enter.

**[Student enters =28+8 into the next cell in the rabbit column, the spreadsheet then shows 36 in that cell.]**

Fiona: I think that's, I think that's how it's supposed to be

McKenzi: Okay.

Fiona: Right?

McKenzi: Yeah, that makes sense.

## Module 4: Comparing and Contrasting Linear, Quadratic, and Exponential Rate of Change



Fiona: but now we have to fix the alligator once we're done.

McKenzi: Okay, so let's fill this one in for...