# Just In Time Quick Check
## Standard of Learning (SOL) 8.16c

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### Strand: Patterns, Functions, and Algebra

### Standard of Learning (SOL) 8.16c
*The student will determine the independent and dependent variable, given a practical situation modeled by a linear function.*

### Grade Level Skills:
- Identify the dependent and independent variable, given a practical situation modeled by a linear function.

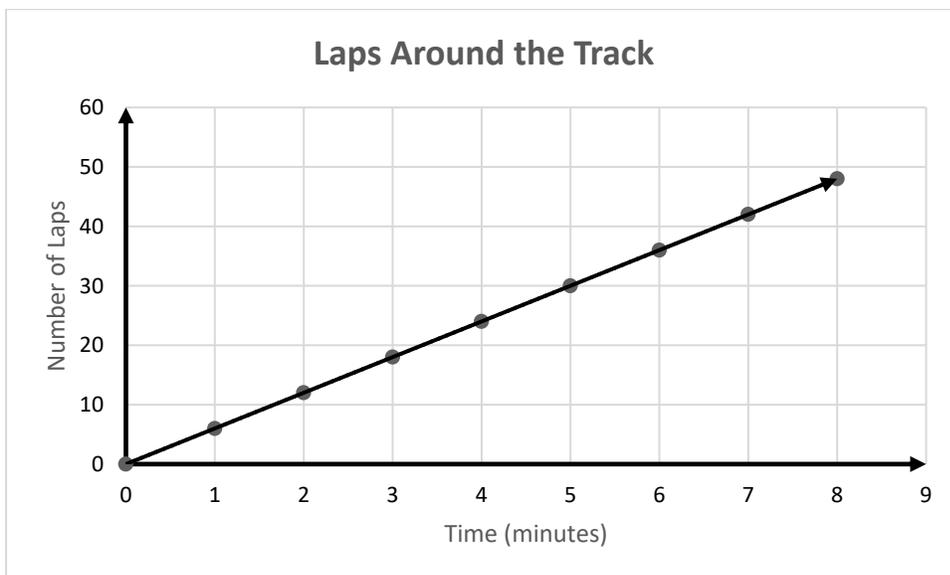### Just in Time Quick Check

### Just in Time Quick Check Teacher Notes

### Supporting Resources:
- VDOE Mathematics Instructional Plans (MIPS)
  - 8.16c - Independent and Dependent Variables (Word) / PDF Version
- VDOE Algebra Readiness Formative Assessments
  - SOL 8.16c (Word) / PDF
- VDOE Algebra Readiness Remediation Plans
  - Independent and Dependent Variables (Word) / PDF
- VDOE Word Wall Cards: Grade 8  (Word)  |  (PDF)
  - Linear Function
  - Dependent/Independent Variable
  - Independent Variable
  - Dependent Variable

### Supporting and Prerequisite SOL:  8.15b

# SOL 8.16c - Just in Time Quick Check

1. Which two scenarios correctly identify the dependent variable?

   - Thomas is purchasing apps for his iPad at $0.99 each. The total cost is determined by the number of apps he purchases. The dependent variable is the total number of apps purchased.

   - Ellie earns $15 an hour babysitting. The total amount Ellie earns depends on the number of hours she babysits. The dependent variable is the total amount Ellie earns.

   - Taylor's dad is building a terrarium for his lizards. The number of lizards will determine how many shelves the terrarium will have. The dependent variable is the number of shelves the terrarium will have.

   - Jessica is making fresh orange juice. The more oranges she squeezes, the more juice she makes. The dependent variable is the number of oranges she squeezes.

2. A cell phone company uses the equation $C = \$0.15t + \$35.00$ to determine the total cost, $C$, for a month of service based on the number of text messages, $t$. Identify the independent and dependent variables in this situation.

3. Cameron created a graph to show the amount of time, in minutes, he spends walking around the track and the number of laps around the track he completes. Identify the independent and dependent variables in this situation. Explain your reasoning.



Laps Around the Track

# SOL 8.16c - Just in Time Quick Check Teacher Notes

## Common Errors/Misconceptions and their Possible Indications

1. Which two scenarios correctly identify the dependent variable?

- Thomas is purchasing apps for his iPad at $0.99 each. The total cost is determined by the number of apps he purchases. The dependent variable is the total number of apps purchased.

- Ellie earns $15 an hour babysitting. The total amount Ellie earns depends on the number of hours she babysits. The dependent variable is the total amount Ellie earns.

- Taylor's dad is building a terrarium for his lizards. The number of lizards will determine how many shelves the terrarium will have. The dependent variable is the number of shelves the terrarium will have.

- Jessica is making fresh orange juice. The more oranges she squeezes, the more juice she makes. The dependent variable is the number of oranges she squeezes.
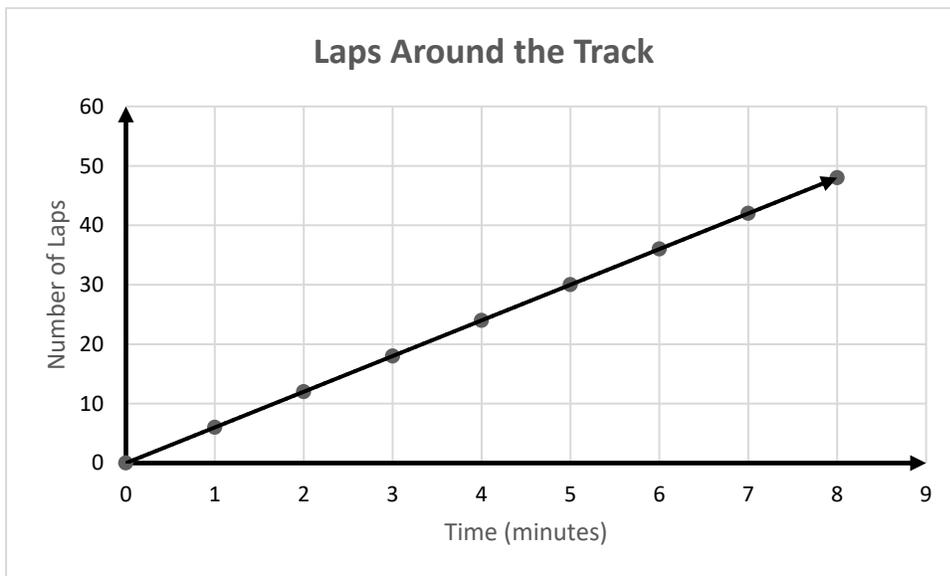
*A common error students may make is confusing the independent and dependent variables based on the situation. This may indicate that the student does not understand the vocabulary terms and how to apply them correctly to the relationship between the two variables in the given situation. These students may benefit from revisiting the Grade 8 Mathematics Vocabulary Word Wall Cards to review the terms independent and dependent variables. They may also benefit from using a sentence structure*

*such as: __ depends on __ for scenarios to determine which variable is independent and which is dependent. Refer to the VDOE MIP 8.16c Independent and Dependent Variables; Patterns, Functions, and Algebra for scenarios where independent and dependent variables can be identified.*

2. A cell phone company uses the equation $C = \$0.15t + \$35.00$ to determine the total cost, $C$, for a month of service based on the number of text messages, $t$. Identify the independent and dependent variables in this situation.

*A common error would be for students to reverse the independent and dependent variables given the equation. This may indicate that students do not have a conceptual understanding of dependent and independent variables and have just associated the definitions with the letters x and y and not the idea of input and output. A teacher may consider providing students with opportunities to work with examples in context using different variables instead of x and y. These students may also benefit from creating a table for the equation, which would provide an opportunity to apply the ideas of input and output as they create values for t and calculate the resulting values of C.*

3. Cameron created a graph to show the amount of time, in minutes, he spends walking around the track and the number of laps around the track he completes. Identify the independent and dependent variables in this situation. Explain your reasoning.

**Laps Around the Track**



*A common error students may make is to reverse the independent and dependent variables based on the labels of the x-axis and y-axis. This may indicate that a student does not know how to identify independent and dependent variables when given a graph, perhaps confusing the horizontal and vertical axes. A teacher may want to review the definitions of independent variable representing the x-values and the dependent variable representing the y-values. Refer to the independent and dependent variable cards in the VDOE Vocabulary Grade 8 Mathematics Vocabulary Word Wall Cards. The teacher could then ask students to connect these ideas to the x and y-axis on a graph.*