

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

ISTEP+ Mathematics Assessment for Grade 10
Part 1 (March) Section Information

This document provides examples of the types of items on the *ISTEP+ Part 1 (Applied Skills) Assessment*. The sample items can serve as models when teachers are constructing items for classroom assessment. It should be noted that this document is not a practice test.

On this website, <http://www.doe.in.gov/assessment/istep-grade-10>, you may access other critical mathematics information related to the ISTEP+ Assessments, such as:

- Test Blueprints
- Instructional and Assessment Guidance
- A **MUST**-see WebEx recording and accompanying PowerPoint presentation containing critical mathematics information located in the Instructional and Assessment Guidance section
- Calculator Policy
- Reference Sheets
- Applied Skills Rubrics also found on the last pages of this document

Grade 10

Sample Applied Skills

Questions

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1. Melanie is buying professional outfits for her new job. She has \$300 budgeted to spend on the new outfits. Pants cost \$25 each. Skirts cost \$32 each. Blouses cost \$28 each. Sales tax in Indiana where she plans to purchase her outfits is 8%.

Part A

Write an inequality that would represent the number of each item she could purchase including sales tax and still stay within her budget. Be sure to define the variables you are using for your inequality.

Define the variables: _____

Inequality: _____

Part B

She plans to purchase at least three pairs of pants, at least two skirts and at least five blouses. She wants to use various combinations of pants, skirts and blouses to make outfits to wear for each day of the week. Can Melanie make her purchase and stay within her budget? Use words, numbers, and/or symbols to justify your answer.

Show All Work

Answer _____

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Process Standards: 1, 2, 3, 4, 5 and 6 Item Type: Constructed-Response 4 Points Total: 2-Content, 2-Process DOK: 3 Calculator: Yes	Content Standard: Al.L.2: Represent real-world problems using linear equations and inequalities in one variable and solve such problems. Interpret the solution and determine whether it is reasonable.
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Exemplary Response:

Let ***p*** represent the total number of pants purchased,
Let ***s*** represent the total number of skirts purchased,
Let ***b*** represent the total number of blouses purchased

$$(25p + 32s + 28b) \times 1.08 \leq 300$$

Or other valid equation and definition of the variable

AND

No

Sample Process

$$(3 \times 25 + 2 \times 32 + 5 \times 28) \times 1.08 = 301.32$$

$301.32 > 300$ So, *No, she cannot make her purchase*

Or other valid process

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2. Zach has a basic cell phone plan that does not include texting. He is going to add a multimedia texting package to his cell phone plan. He has two choices of multimedia texting packages, A and B. Package A charges \$0.25 per multimedia text with no monthly fees for the multimedia texting package. Package B charges \$0.20 per multimedia text, but has a \$15 monthly fee for the multimedia texting package.

Part A

Write an equation that represents the total cost for each multimedia texting package if any amount of multimedia texts are sent. Be sure to define the variables you are using for your equation.

Define the variables: _____

Package A Equation: _____

Package B Equation: _____

Part B

How many multimedia texts will Zach have to send each month for the two multimedia texting packages to be the same cost? Use words, numbers, and/or symbols to justify your answer.

Show all Work

Answer _____ texts

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Part C

Zach plans to send 250 multimedia texts each month. Which multimedia texting package would be less expensive package for Zach to add to his cell phone plan? Show all work using words, numbers, and/or symbols to justify your answer.

Show all Work

Answer _____

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Process Standards: 1, 2, 3, 4, and 7 Item Type: Extended-Response 6 Points Total: 3-Content, 3-Process DOK: 3 Calculator: Yes	Content Standard: AI.SEI.3: Write a system of two linear equations in two variables that represents a real-world problem and solve the problem with and without technology. Interpret the solution and determine whether the solution is reasonable.
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Exemplary Response:

Let **C** represent the Total Cost of the Multimedia Texting Package,
Let **t** represent the number of multimedia texts sent

Package A: $C = .25t$

Package B: $C = .20t + 15$

Or other valid equation and definition of the variable

AND

300

AND

Package A

Sample Process:

$$C = .25t$$

$$C = .20t + 15$$

$$.25t = .20t + 15$$

$$.05t = 15$$

$$t = \frac{15}{.05}$$

$$t = 300$$

Or other valid process

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Since at 300 multimedia texts the plans are the same, and since Zach only plans on sending 250 multimedia texts, the plan with no monthly charges would be the least expensive plan.

Or

$$C = .25t$$

$$C = .25 \times 250$$

$$C = 62.5$$

$$C = .20t + 15$$

$$C = .20 \times 250 + 15$$

$$C = 65$$

Or other valid process

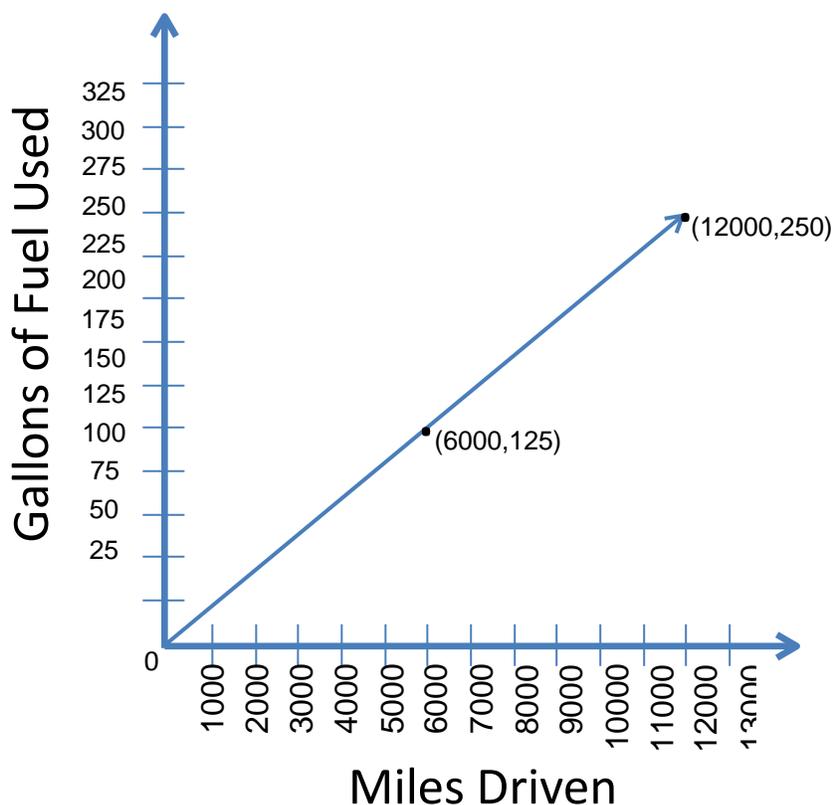
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3. Evan buys a new car that costs \$23,740. Anna buys the same new car, only she buys the hybrid model. Anna's hybrid car costs \$31,140.

Part A

Anna pre-pays for gasoline so that the cost for her gasoline will always be \$2.40 per gallon forever. Using the graph, which represents a combined city and highway driving annual fuel usage, write an equation that represents the exact cost for any amount of miles she drives. Be sure to define the variables you are using for your equation.

Fuel Used Per Year by Anna



Define the variables: _____

Equation: _____

Write the slope in the form of a ratio: _____

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Part B

Determine the cost for Anna to drive 12,000 miles using her pre-paid gasoline.

Show All Work

Answer \$ _____

Part C

Like Anna, Evan also pre-pays for gasoline so that the cost for gasoline will always be \$2.40 per gallon forever. Evan and Anna will each drive an average of 12,000 miles per year. Evan's gasoline car gets a combined city and highway average of 30 miles per gallon. Based on fuel costs only, to the nearest whole number, how many years will it take Anna to recover the cost of the higher purchase price she paid for her hybrid compared to the cost of Evan driving his gasoline car?

Show All Work

Answer _____ Years

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Process Standards: 1, 2, 4, 5, 6, 7 and 8

Item Type: Extended-Response

6 Points Total: 3-Content, 3-Process

DOK: 3

Calculator: Yes

Content Standard: AI.L.5: Represent real-world problems that can be modeled with a linear function using equations, graphs, and tables; translate fluently among these representations, and interpret the slope and intercepts.

Exemplary Response:

Let **C** represent the Total Cost of the gasoline,

Let **m** represent the miles driven

$$C = \frac{m}{48} (2.40)$$

Or

$$C = (0.05) m$$

Or other valid equation and definition of the variable

AND

\$600

AND

21 Years

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Sample Process:

Gallons per Mile

$$C = \frac{m}{48} (2.40)$$

$$C = \frac{12000}{48} (2.40)$$

$$C = 250 (2.40)$$

$$C = 600$$

Or other valid process

$$31,140 - 23,740 = 7400$$

Anna

$$12,000 \div 48 = 250$$

$$250 \times 2.40 = 600$$

Evan

$$12,000 \div 30 = 400$$

$$400 \times 2.40 = 960$$

$$960 - 600 = 360$$

$$7400 \div 360 = 20.\bar{5}$$

So 21 years

Or other valid process