Mathematics—Sample Content
Levels 16 through 18

Marcus is making containers of orange paint. He starts by putting $\frac{1}{8}$ gallon of yellow paint in each container. He has $\frac{3}{4}$ gallon of yellow paint.

How many containers can Marcus put enough yellow paint in to make his orange paint?

- ○ 4
- ● 6
- ○ 8
- ○ 12

This item assesses:

M.11.1 – Demonstrate proficiency in computation procedures, solve real-world computation problems, apply a variety of estimation strategies, and determine reasonableness of results: computation

Thinking Skill – Organize Information—Represent: change for, but not substance, of information

6.NS.1 – Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.

NO CALCULATOR

Which expression is equivalent to $\frac{2}{3}\left(6x + \frac{1}{3}\right)$?

- ● $4x + \frac{2}{9}$
- ○ $4x + \frac{1}{3}$
- ○ $\frac{20x}{3} + \frac{1}{3}$
- ○ $\frac{20x}{3} + 1$

This item assesses:

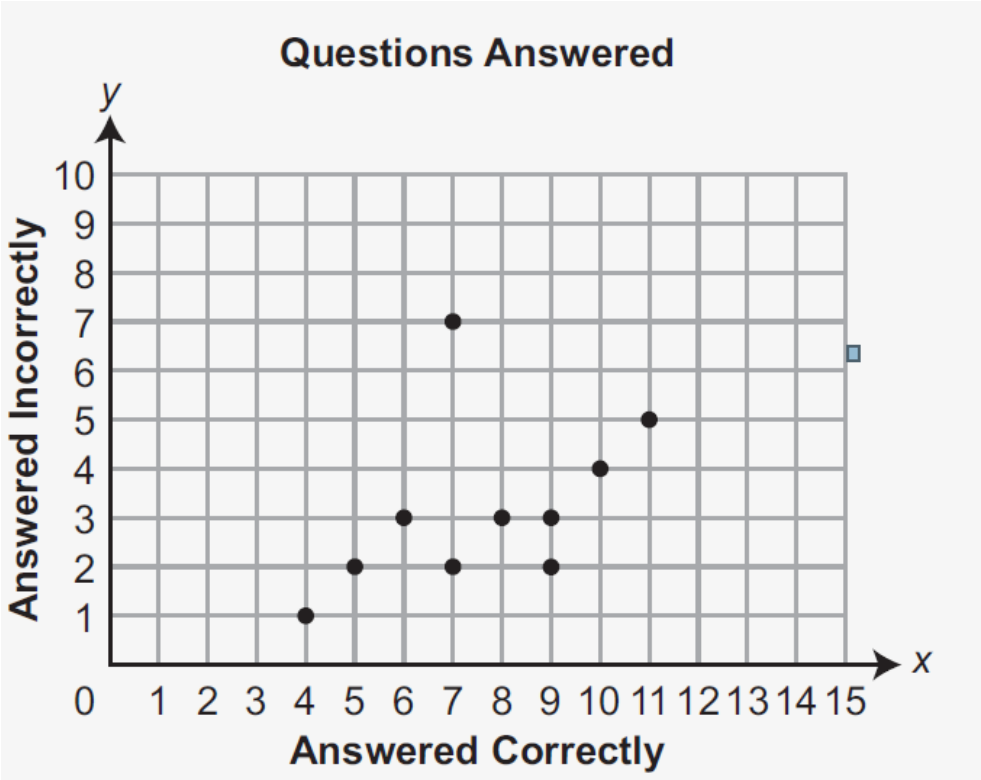
M.12.5 – Demonstrate an understanding of the properties and relationships of operations, relate mathematical representations to problem situations, and apply operational processes to solve problems: operation properties

Thinking Skill – Organize Information—Represent: change for, but not substance, of information

7.EE.1 – Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

CALCULATOR

Javier makes a scatter plot to show the number of questions each member of his school quiz team answered correctly and incorrectly in ten minutes.



How many members of Javier's school quiz team answered at least 10 questions in total?

- ○ 1
- ○ 2
- ○ 5
- ● 6

This item assesses:

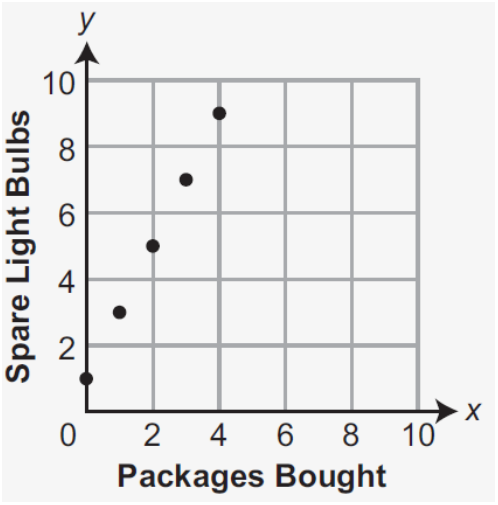
M.15.7 – Analyze, interpret, and evaluate data in various forms; apply the concepts and processes of data analysis, statistics, and probability to real-world situations: interpret data display

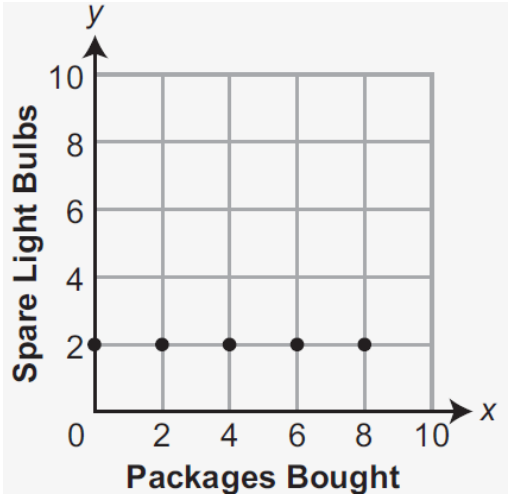
Thinking Skill – Analyze Information—Identify Attributes and Components: determine characteristics or parts of something

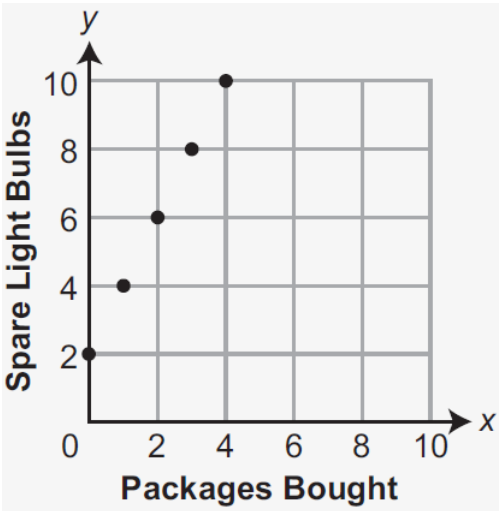
8.SP.1 – Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.

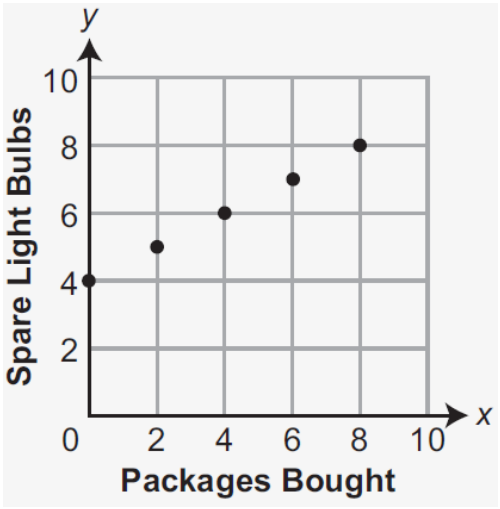
CALCULATOR

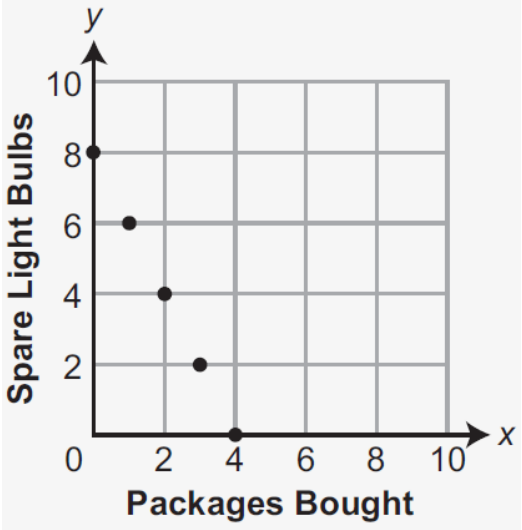
Clarissa had fewer than 3 spare light bulbs. She bought more light bulbs. The new light bulbs came in packages of two. Which <u>two</u> graphs could show the total number of light bulbs Clarissa now has, *y*, based on the number of packages of light bulbs she bought, *x*.

● 

○ 

● 

○ 

○ 

This item assesses:

M.16.10 – Recognize and extend patterns; demonstrate an understanding of functional relationships, algebraic processes, variables, and inequality; recognize algebraic representations of problem situations and apply algebraic methods to solve real-world problems: graph linear equation

Thinking Skill – Analyze Information—Recognize Relationships and Patterns: identify patterns and the way elements are related

8.F.4 – Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (*x*, *y*) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.

CALCULATOR