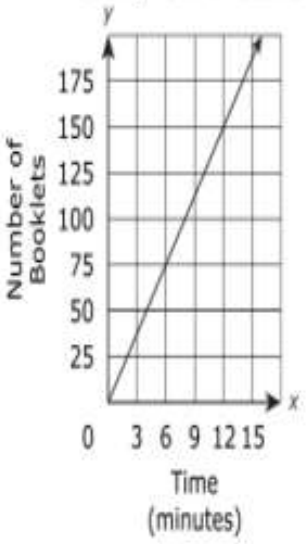
Timed Extended Construction Response (ECR) Task—Grade 8 February

Name: _____ Date: _____

A company uses a new machine and an old machine to print booklets. Each machine prints booklets at a constant rate. The graph and the equation represent the relationships between x, the number of minutes the machines print, and y, the number of booklets printed.

Printing Booklets Using New Machine



Printing Booklets Using Old Machine

$y = 9x$

The company uses both machines to print a total of 1,250 booklets. Both machines start printing at the same time. During printing, the old machine breaks down and stops printing. The new machine continues printing for an additional 14 minutes and completes the order.

What is the total number of minutes the new machine prints? Show or explain all your work.

Enter your answer and your work in the space provided.

ANSWER KEY

Rubric	
Score	**Description**

3	Student response includes the following 3 elements.
	• Computation component = 1 point
	  ○ The student indicates that the new machine prints for 64 minutes.
	• Modeling component = 1 point
	  ○ The student provides a correct process to determine unit rates for each machine.
	• Modeling component = 1 point
	  ○ The student provides a correct process to determine the number of minutes the new machine prints.
	Sample Student Response
	"From the graph, the new machine prints 75 booklets in 6 minutes. This means that the new machine prints booklets at a rate of 75/6 = 12.5 booklets per minute. From the equation, the old machine prints booklets at a rate of 9 booklets per minute."
	
	"Let x represent the number of minutes the old machine prints booklets. Then x + 14 minutes, the new machine prints a total of 12.5(x + 14) booklets.
	
	Since 1,250 booklets are printed, the equation 1,250 = 12.5(x + 14) + 9x represents this situation. The equation can be solved to determine x, the number of minutes the old machine prints.
	1,250 = 12.5(x + 14) + 9x
	1,250 = 12.5x + 175 + 9x
	1,075 = 21.5x
	50 = x
	
	So, the old machine prints 50 minutes. Since the new machine prints for 14 minutes more than the old machine, the new machine prints 50 + 15 = 64 minutes."
	
	Notes:
	• The student may show the equations without the verbal description. If equations are shown that represent valid modeling for this situation, credit should be awarded.
	• The student may receive a combined total of 2 points if the modeling processes are correct but he or she makes one or more computational errors resulting in an incorrect answer.
	• The student may receive a total of 1 point if he or she computes the correct answer but shows no work or insufficient work to indicate a correct modeling process.
	
	The student may receive 1 point for modeling part 1 if the unit rates for each machine are not explicitly stated but are used correctly to determine the number of minutes either machine prints.

2	Student response includes 2 of the above elements.
1	Student response includes 1 of the above elements.
0	Student response is incorrect or irrelevant.

Glow	Grow