Algebra 1
Constructed Response

Suppose you start work and earn $600 per week. After one year, you are given two choices for getting a raise:

Option 1) 2% per year or

Option 2) A flat $12.50 per week raise for each successive year

PART A: What type of function would best represent an exponential function?

PART B: Construct a table that models each option for the first 5 years

OPTION 1								
0	1	2	3	4	5	6	7	8

OPTION 2								
0	1	2	3	4	5	6	7	8

PART C: Which option is better? Use mathematical reasoning to explain your choice.

KEY:

<table>
<tr><td>POINTS</td><td>DESCRIPTION</td></tr>
<tr><td>4</td><td>PART A: Option 1
PART B:
Note: 600 per week would be 600*52 for the year = 31,200
<table><tr><td colspan="9">OPTION 1: f(x) = 31000(1.02)^x</td></tr><tr><td>0years</td><td>1 yrs.</td><td>2 yrs.</td><td>3 yrs.</td><td>4 yrs.</td><td>5 yrs.</td><td>6 yrs.</td><td>7 yrs.</td><td>8 yrs.</td></tr><tr><td>31,200</td><td>31,824</td><td>32,460.48</td><td>33,109.69</td><td>33,771.88</td><td>34,447.32</td><td>35,136.27</td><td>35,838.99</td><td>36,555.77</td></tr></table>
15 per week raise would be 12.50*52 = 650 raise for the year
<table><tr><td colspan="9">OPTION 2: f(x)= 31,200 + 650x</td></tr><tr><td>0 years</td><td>1 yrs.</td><td>2 yrs.</td><td>3 yrs.</td><td>4 yrs.</td><td>5 yrs.</td><td>6 yrs.</td><td>7 yrs.</td><td>8 yrs.</td></tr><tr><td>31,200</td><td>31,850</td><td>32,500</td><td>33,150</td><td>33,800</td><td>34,450</td><td>35,100</td><td>35,750</td><td>36,400</td></tr></table>
PART C:
For the first 5 years option 2 gives you more money but if you plan on saving money in the account for 5 or more years you will make more money with option 1.</td></tr>
<tr><td>3</td><td>Student will receive 3 points if they get any 3 of the four parts listed above (note that part B counts for 2 points). If part C does not include a description of when the most profitable option will change it does not receive points.</td></tr>
<tr><td>2</td><td>Student will receive 2 points if they get any 2 of the four parts listed above (note that part B counts for 2 points). If part C does not include a description of when the most profitable option will change it does not receive points.</td></tr>
<tr><td>1</td><td>Student will receive 1 point if they get any 1 of the four parts listed above (note that part B counts for 2 points). If part C does not include a description of when the most profitable option will change it does not receive points.</td></tr>
<tr><td>0</td><td>No response</td></tr>
</table>

Georgia Milestones Assessment System

Algebra 1
Constructed Response

Bert's cab company charges $1.00 plus an additional $3.00 per mile for a ride. Madeline's cab company charges $3.00 plus an additional $2.00 per mile for a ride.

PART A: Write a system of linear equations that shows the cost in dollars, y, for a cab ride of x miles for each cab driver.

Bert's: _____

Madeline's:_____

PART B: At what distance, in miles, will the cost be the same for both companies?

_____

PART C: Jackson wants to visit his friend but it just started snowing and he doesn't want to ride his bike. His friend lives 10.5 miles away. Which company should he use and why?

KEY:

POINTS	DESCRIPTION
4	**PART A:** (2 points) Bert's: $y = 1 + 3x$ Madeline's: $y = 3 + 2x$ **PART B:** Two Miles (both cost $7) (Note only need the answer of two miles for full points) **PART C:** Jackson should call Madeline because it will cost him $24 where Bert will cost him $32.5
3	Student will receive 3 points if they get any 3 of the four parts listed above (note that part A counts for 2 points). If part C does not include a comparison of the two different prices then it does not receive points.
2	Student will receive 2 points if they get any 2 of the four parts listed above (note that part A counts for 2 points). If part C does not include a comparison of the two different prices then it does not receive points.
1	Student will receive 1 point if they get any 1 of the four parts listed above (note that part A counts for 2 points). If part C does not include a comparison of the two different prices then it does not receive points.
0	No response

Georgia Milestones Assessment System

Algebra 1
Constructed Response

Katie decided that she wants to build a sandbox for her son to play in. In order to look nice in her backyard she knows that she wants the length of the sandbox to be 4 feet longer than its width.

PART A: Write an expression that expresses the perimeter of the sandbox in terms of x.

PART B: Katie will need to put down a tarp before filling the sandbox with sand. Write an expression that will show the total square footage of tarp she will need for her sandbox in terms of x feet.

PART C: Assuming that Katie wants the width of the sandbox to be 6 feet, how much square footage of tarp will she need?

PART D: Katie plans on making the sandbox 2 feet deep. Assuming the width of the sandbox is 6 feet, how much cubic feet of sand will she need to buy?

PART E: Katie went to the home improvement store and noted the following prices
Wood (for the perimeter of the sandbox): $0.50 per foot
Tarp: $0.75 per Square foot
Sand: $1.25 per cubic foot.

Assuming that the width of the sandbox is still 6 feet, how much will it cost for the full construction of the sandbox?

POINTS	DESCRIPTION
4	**PART A: (0.5 pt)** $4x + 8$ [x + x+ (x+4) +(x+4)] **PART B: (0.5 pt)** $x^2 + 4x$ [(x)(x+4)] **PART C: (0.5 pt)** 60 ft^2 [$(6)^2 + 4(6)$] **PART D: (0.5 pt)** 120 ft^3 [60*2] **PART E: (2 pts, 0.5 points for each part)** Wood will cost: 4(6)+ 8 = 32*$0.50 = **$16** Tarp will cost: 60*$0.75 = **$45** Sand will cost: 120*$1.25 = **$150** **So total cost will be $211**
	Students can receive individual points on each section **SCORING NOTE:** • If an error is made in one of the response elements, future responses based off of that answer should be counted as correct.