# Smarter Balanced Assessment Consortium:

## Practice Test Scoring Guide

## Grade 11 Performance Task

## SPEEDING TICKETS

New York state wants to change its system for assigning speeding fines to drivers. The current system allows a judge to assign a fine that is within the ranges shown in Table 1.

**Table 1. New York Speeding Fines**

| Miles per Hour over Speed Limit | Minimum Fine | Maximum Fine |
|---|---|---|
| 1 – 10 | $45 | $150 |
| 11 – 30 | $90 | $300 |
| 31 or more | $180 | $600 |

Some people have complained that the New York speeding fine system is not fair. The New Drivers Association (NDA) is recommending a new speeding fine system. The NDA is studying the Massachusetts system because of claims that it is fairer than the New York system.

**Table 2. Massachusetts Speeding Fines**

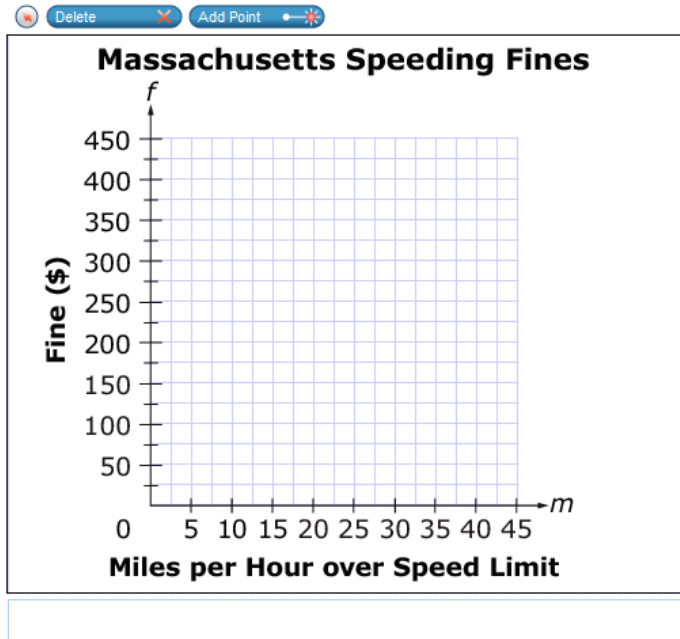| Miles per Hour over Speed Limit | Fine |
|---|---|
| 1 – 10 | $100 flat charge |
| 11 or more | $100 flat charge plus $10 for each additional mph above the first 10 mph |

In this task, you will:

- analyze the speeding fine systems for both New York and Massachusetts.
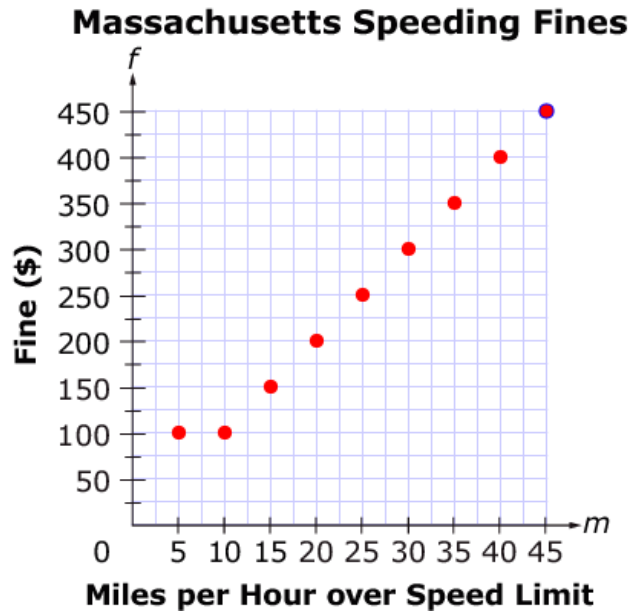- use data to propose a fairer speeding fine system for New York state.

1.

**Part A**
Use the information in Table 2 to plot data points for Massachusetts speeding fines.

- Plot a point to represent the fine for driving 5 mph over the speed limit.
- Plot additional points for each increment of 5 mph over the speed limit up to 45 mph over the speed limit.

Delete ✕   Add Point •—✳

**Massachusetts Speeding Fines**

*f*

450
400
350
300
250
200
150
100
50

0    5  10 15 20 25 30 35 40 45    *m*

**Miles per Hour over Speed Limit**

Fine ($)

For this item, a full-credit response (1 point) includes:

**Massachusetts Speeding Fines**



- 

For this item, a no-credit response (0 points) includes none of the features of a full-credit response.

2.

**Part B**
Create an equation to calculate the Massachusetts speeding fine, $f$, based on the number of miles per hour, $m$, over the speed limit when $1 \leq m \leq 10$.

| | | | | |
|---|---|---|---|---|
| 1 | 2 | 3 | f | m |
| 4 | 5 | 6 | + | - | × | ÷ |
| 7 | 8 | 9 | < | ≤ | = | ≥ | > |
| 0 | . | - | $\frac{\square}{\square}$ $\square^{\square}$ $\square_{\square}$ ( ) \|\| $\sqrt{\square}$ $\sqrt[\square]{\square}$ $\pi$ i |

sin cos tan arcsin arccos arctan

For this item, a full-credit response (1 point) includes

- $f = 100$, and equivalent responses.

For this item, a no-credit response (0 points) includes none of the features of a full-credit response.

3.

**Part C**
Create an equation to calculate the Massachusetts speeding fine, $f$, based on the number of miles per hour, $m$, over the speed limit when $m > 10$.

| ← | → | ↶ | ↷ | ⊠ |

| 1 | 2 | 3 | $f$ | $m$ |
| 4 | 5 | 6 | + | - | × | ÷ |
| 7 | 8 | 9 | < | ≤ | = | ≥ | > |
| 0 | . | - | $\frac{\Box}{\Box}$ | $\Box^\Box$ | $\Box_\Box$ | ( ) | || | $\sqrt{\Box}$ | $\sqrt[\Box]{\Box}$ | $\pi$ | $i$ |
| | | sin | cos | tan | arcsin | arccos | arctan |

For this item, a full-credit response (1 point) includes

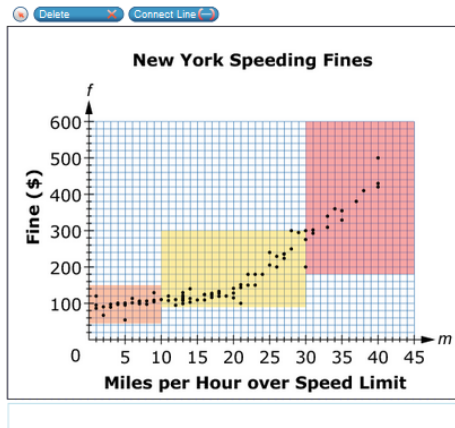- $f = 100 + 10(m - 10)$ or $f = 10(m - 10) + 100$ or $f = 10m$, and equivalent responses.

For this item, a no-credit response (0 points) includes none of the features of a full-credit response.

## 4.

The graph below shows data from a sample of actual fines for driving above the speed limit in New York.

**Part A**
Use the Connect Line tool to create a piecewise linear model with two line segments, one for $1 \leq m \leq 20$ and one for $20 \leq m \leq 40$, that approximates the best fit for the data.
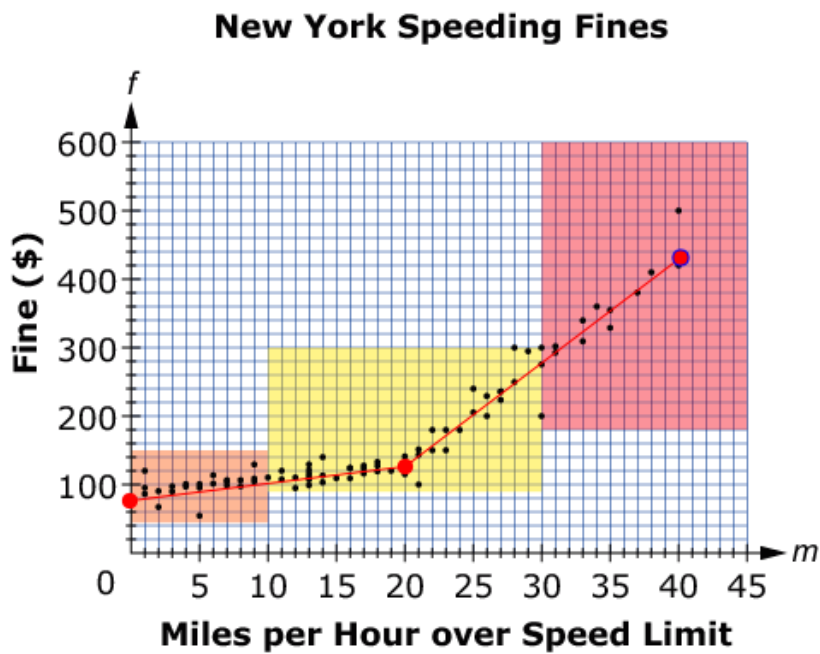


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For this item, a full-credit response includes (1 point) includes

- the graph of a piecewise linear function that approximates the data points on the graph. (Note: There is a range of acceptable answers, near $f = 2m + 90$ for $1 \le m \le 20$; $f = 15m - 170$ for $20 \le m \le 40$.)

For example:

**New York Speeding Fines**



For this item, a no-credit response (0 points) includes none of the features of a full-credit response.

5.

**Part B**
Using your model from part A, create an equation to calculate the speeding fine, $f$, based on the number of miles per hour, $m$, over the speed limit when $1 \leq m \leq 20$.

This equation will be the start of the proposed new model for the New York speeding fine system.

| 1 | 2 | 3 | f | m |
|---|---|---|---|---|
| 4 | 5 | 6 | + | - | × | ÷ |
| 7 | 8 | 9 | < | ≤ | = | ≥ | > |
| 0 | . | - | $\frac{\square}{\square}$ | $\square^{\square}$ | $\square_{\square}$ | ( ) | \|\| | $\sqrt{\square}$ | $\sqrt[\square]{\square}$ | π | i |

sin cos tan arcsin arccos arctan

For this item, a full-credit response (1 point) includes

- writing an equation with a slope ranging between 1 and 3, AND a *y*-intercept ranging between 80 and 100
  OR
- writing an equation that matches the (correct or incorrect) line graphed as the first piece of item number 1435.

For example,

- $f = 2m + 90$

For this item, a no-credit response (0 points) includes none of the features of a full-credit response.

For example,

- $f = 15.5m - 201.5$

6.

**Part C**
Using your model from part A, create an equation to calculate the speeding fine, $f$, based on the number of miles per hour, $m$, over the speed limit when $m > 20$.

This equation will complete the proposed new model for the New York speeding fine system.

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| | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | f | m | |
| 4 | 5 | 6 | + | - | × ÷ |
| 7 | 8 | 9 | < | ≤ | = ≥ > |
| 0 | . | - | $\frac{\square}{\square}$ $\square^{\square}$ $\square_{\square}$ ( ) \|\| $\sqrt{\square}$ $\sqrt[\square]{\square}$ π i | | |
| | | sin cos tan arcsin arccos arctan | | | |

For this item, a full-credit response (1 point) includes

- writing an equation with a slope ranging between 13 and 18, AND a *y*-intercept ranging between −260 and −120.
  OR
- writing an equation that matches the (correct or incorrect) line graphed as the second piece of item number 1435.

For example,

- $f = 15m - 170$

For this item, a no-credit response (0 points) includes both

- all other responses.

For example,

- $f = 2m + 95$

7.

> The NDA claims that the proposed new model for the New York speeding fine system is fairer than the current system.
>
> Do you agree or disagree with the claim? Explain your reasoning using specific examples from this task.

For this item, a full-credit response (2 points) includes

- agreeing with the claim
  AND
- justifying the response by citing at least one comparison between values used in the two systems.

For example,

- "I agree. In the current system, a driver who is ticketed for speeding by 11 mph could be fined $300. A driver who is ticketed for speeding by 30 mph could be fined $90. In the new system, any driver who speeds by 11 mph would pay $112 and a driver who speeds by 30 mph would pay $280. It is fairer that drivers who speed by the same amount will pay the same fine and the fine will increase as the excess speed increases."

For this item, a partial-credit response (1 point) includes:

- agreeing with the claim
  AND
- justifying the response WITHOUT citing any examples

  OR

- justifying the incorrect response by citing examples from previous incorrect work in any of the previous items.

For example,

- "I agree. It is fairer that drivers who are ticketed for the same excess speed will pay the same fine and the fine will increase as the excess speed increases."

For this item, a no-credit response (0 points) includes none of the features of a partial- or full-credit response.

For example,

- "I agree."

*This item is not graded on spelling or grammar.*