## CONCEPT DEVELOPMENT

## Mathematics Assessment Project CLASSROOM CHALLENGES <br> A Formative Assessment Lesson <br> Interpreting Distance-Time Graphs

Mathematics Assessment Resource Service University of Nottingham \& UC Berkeley

## Card Set A: Distance-Time Graphs



## Card Set A: Distance-Time Graphs (continued)



## Card Set B: Interpretations

| 1 Tom ran from his home to the bus stop and waited. He realized that he had missed the bus so he walked home. | 2 Opposite Tom's home is a hill. Tom climbed slowly up the hill, walked across the top, and then ran quickly down the other side. |
| :---: | :---: |
| 3 Tom skateboarded from his house, gradually building up speed. He slowed down to avoid some rough ground, but then speeded up again. | 4 Tom walked slowly along the road, stopped to look at his watch, realized he was late, and then started running. |
| 5 Tom left his home for a run, but he was unfit and gradually came to a stop! | 6 Tom walked to the store at the end of his street, bought a newspaper, and then ran all the way back. |
| 7 Tom went out for a walk with some friends. He suddenly realized he had left his wallet behind. He ran home to get it and then had to run to catch up with the others. | 8 This graph is just plain wrong. How can Tom be in two places at once? |
| 9 After the party, Tom walked slowly all the way home. | 10 Make up your own story! |

## Card Set C: Tables of Data

| P | Time | Distance | Q | Time | Distance | R | Time | Distance |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 0 | 0 |  | 0 | 0 |  | 0 | 0 |
|  | 1 | 40 |  | 1 | 10 |  | 1 | 18 |
|  | 2 | 40 |  | 2 | 20 |  | 2 | 36 |
|  | 3 | 40 |  | 3 | 40 |  | 3 | 54 |
|  | 4 | 20 |  | 4 | 60 |  | 3 | 84 |
|  | 5 | 0 |  | 5 | 120 |  | 5 | 120 |
| S | Time | Distance | T | Time | Distance | U | Time | Distance |
|  | 0 | 0 |  | 0 | 0 |  | 0 | 0 |
|  | 1 | 40 |  | 1 | 20 |  | 1 | 30 |
|  | 2 | 80 |  | 2 | 40 |  | 2 | 60 |
|  | 3 | 60 |  | 3 | 40 |  | 3 | 0 |
|  | 4 | 40 |  | 4 | 40 |  | 4 | 60 |
|  | 5 | 80 |  | 5 | 0 |  | 5 | 120 |
| V | Time | Distance | W | Time | Distance | X | Time | Distance |
|  | 0 | 0 |  | 0 | 0 |  | 0 | 120 |
|  | 1 | 20 |  | 1 | 45 |  | 1 | 96 |
|  | 2 | 40 |  | 2 | 80 |  | 2 | 72 |
|  | 3 | 40 |  | 3 | 105 |  | 3 | 48 |
|  | 4 | 80 |  | 4 | 120 |  | 4 | 24 |
|  | 5 | 120 |  | 5 | 125 |  | 5 | 0 |
| Y | Make | one up! | Z | Make | one up! |  |  |  |
|  | Time | Distance |  | Time | Distance |  |  |  |
|  | 0 |  |  | 0 |  |  |  |  |
|  | 1 |  |  | 1 |  |  |  |  |
|  | 2 |  |  | 2 |  |  |  |  |
|  | 3 |  |  | 3 |  |  |  |  |
|  | 4 |  |  | 4 |  |  |  |  |
|  | 5 |  |  | 5 |  |  |  |  |
|  | 6 |  |  | 6 |  |  |  |  |
|  | 7 |  |  | 7 |  |  |  |  |
|  | 8 |  |  | 8 |  |  |  |  |
|  | 9 |  |  | 9 |  |  |  |  |
|  | 10 |  |  | 10 |  |  |  |  |

## Matching a Graph to a Story

A. Tom took his dog for a walk to the park. He set off slowly and then increased his pace. At the park Tom turned around and walked slowly back home.
B. Tom rode his bike east from his home up a steep hill. After a while the slope eased off. At the top he raced down the other side.
C. Tom went for a jog. At the end of his road he bumped into a friend and his pace slowed. When Tom left his friend he walked quickly back home.
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B. Tom rode his bike east from his home up a steep hill. After a while the slope eased off. At the top he raced down the other side.
C. Tom went for a jog. At the end of his road he bumped into a friend and his pace slowed. When Tom left his friend he walked quickly back home.


## Making Up Data for a Graph



| Time | Distance |
| :---: | :---: |
| 0 |  |
| 2 |  |
| 4 |  |
| 6 |  |
| 8 |  |
| 10 |  |

