Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Class \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Slope – The Big Race

Algebra Write Up – The Big Race (2-53)

*Answer ALL the questions and complete ALL tasks in this packet.*

*You will need to SHOW ALL YOUR WORK in* ***pencil*** *to receive credit.*

*This is YOUR work, treat it with respect; turn it in on time, draw precise lines, keep it safe.*

Afterschool, teachers at BTECH are racing down the hallway with rolling chairs. Three teachers will be racing at a time (because there’s not enough space for all of us). The winner of each race will advance to the FINALS. Your job is to determine who wins each race by looking at their speed and creating both a graph and equation for each teacher.

**Check List (check off when you’re done)**

*Heat 1*

* Create a **reasonable** scale for your axes on Graph #1. [x-values 0-35, y-values 0-25)
* Label the x and y axes with the appropriate measurement units.
* Use a RED color pencil to draw a HORIZONTAL line on x = 20 and write FINISH LINE.
* Write the equation for the Mr. Perales, Ms. Ma, and Ms. Quinones.

Use a ruler to graph the equation for these teachers. Label with the teacher’s name and equations.

* Answer the questions for Heat #1.

*Heat 2*

* Create a **reasonable** scale for your axes on Graph #2. [x-values 0-35, y-values 0-25)
* Label the x and y axes with the appropriate measurement units.
* Use a RED color pencil to draw a HORIZONTAL line on x = 20 and write FINISH LINE.
* Determine the missing information for Mr. Singh, Ms. Hunter, and Mr. Castillo.

Use a ruler to graph the equation for these teachers. Label with the teacher’s name and equation.

* Answer the questions for Heat #2.

*Heat 3- Finals!*

* Create a **reasonable** scale for your axes on Graph #3. [x-values 0-35, y-values 0-25)
* Label the x and y axes with the appropriate measurement units.
* Use a RED color pencil to draw a HORIZONTAL line on x = 20 and write FINISH LINE.
* Determine the missing information for Ms. Hayes, Mr. Lee, and Ms. Kwok.

Use a ruler to graph the equation for these teachers. Label with the teacher’s name and equation.

* Answer the questions for Heat #2.

Heat #1 – In the first heat, Mr. Perales, Ms. Ma, and Ms. Quinones raced rolling computer chairs towards the finish line. The winner of this race moves into the finals, while the losers sit and watch for the remainder of the races.

1. Mr. Perales began at the starting line and rode at a constant rate of 2 meters every second.

Starting point (# of meters) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Speed (# of meters/second) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Equation \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Using a ruler, graph this line in BLUE on GRAPH #1. Label with the teacher’s name and equation.

1. Ms. Ma got an 8-meter head start (she convinced Ms. Tu to allow this) and rode 2 meters every 5 second.

Starting point (# of meters) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Speed (# of meters/second) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Equation \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Using a ruler, graph this line in ORANGE on GRAPH #1. Label with the teacher’s name and equation.

1. Ms. Quinones rode 5 meters every 4 seconds and got a 6-meters head start.

Starting point (# of meters) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Speed (# of meters/second) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Equation \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Using a ruler, graph this line in GREEN on GRAPH #1. Label with the teacher’s name and equation.

1. After how many seconds did Mr. Perales catch up to Ms. Quinones? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. How far were they from the starting line when Mr. Perales caught up to Ms. Quinones? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. How did you use your graph to justify the answer? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Which teacher won the race (20 meters)? Label the line WINNER. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. How long did it take Mr. Perales to finish the race (20 meters)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. How long did it take Ms. Ma to finish the race (20 meters)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. How long did it take Ms. Quinones to finish the race (20 meters)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Heat #2 - In the second heat, Mr. Singh, Ms. Hunter, and Mr. Castillo raced rolling computer chairs towards the finish line. The winner of this race moves into the finals, while the losers sit and watch for the remainder of the races.

1. When the line representing Mr. Singh’s race is graphed, the equation is f(x) = $\frac{3}{2}x+1$.

Did Mr. Singh get a head start (# of meters)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Speed (# of meters/second) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Using a ruler, graph this line in YELLOW on GRAPH #2. Label with the teacher’s name and equation.

1. Ms. Hunter’s race is given by the equation f(x) = $\frac{12}{16}x+11$.

Can you simplify her speed? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Starting point (# of meters) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Speed (# of meters/second, simplified) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Who is going faster, Mr. Singh or Ms. Hunter? How do you know?

Using a ruler, graph this line in PURPLE on GRAPH #2. Label with the teacher’s name.

1. Just as Mr. Castillo is rolling down the hallway, he noticed that his shoelace came untied! Being careful not to get his shoelace tangled in the wheels, he rode slowly. Mr. Castillo’s race is represented by the table to the right.

Using a ruler, graph this line in BROWN on GRAPH #2. Label with the teacher’s name.

|  |
| --- |
| Mr. Castillo’s Race |
| Time (sec) | Distance (meters) |
| 5 | 10 |
| 10 | 12 |
| 15 | 14 |

Starting point (# of meters) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Speed (# of meters/second) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Equation \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Which teacher won the race (20 meters)? Label WINNER on the line. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. How long did it take Mr. Singh to finish the race (20 meters)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. How long did it take Ms. Hunter to finish the race (20 meters)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. How long did it take Mr. Castillo to finish the race (20 meters)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The Final Heat! Each teacher has tag teamed with another teacher for the final round.

Mr. Perales tag teamed with Ms. Hayes and allowed her to race in his place for the finals.

Ms. Hayes reached 12 meters in 8 seconds. It took her 24 seconds to finish the race.

Using a ruler, graph this line in PINK on GRAPH #3. Label with the teacher’s name.

Head start (# of meters)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Speed (# of meters/second) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Equation \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ms. Hunter tag teamed with Mr. Lee and allowed him to race in her place for the finals.

Mr. Lee sneaked into the finals with a head start of 10 meters. He rolled 1 meter every 2 seconds.

Head start (# of meters)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Speed (# of meters/second) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Equation \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Using a ruler, graph this line in LIGHT GREEN on GRAPH #2. Label with the teacher’s name.

Ms. Kwok needs your help to join the race. If she wanted to come in 2nd place (let Mr. Lee win, but pass Ms. Hayes) which of the following equation would she choose?

$y= \frac{5}{3}x$ OR $y=\frac{3}{5}x+5$

 EXPLAIN how you made your decision. Graph the lines in LIGHT BLUE.

To entertain the crowd, Ms. Tu rode a scooter in the hallway during the race described by the equation

$$f\left(x\right)=20-x.$$

Can you **rewrite** this in y = SLOPE x + STARTING POINT? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Describe Ms. Tu’s ride. Is it a positive or negative slope? Which direction is she going? How fast is she moving? From which point did she start riding her tricycle?

Graph this equation in PURPLE. Write the name of the teacher and equation.