



PART 1:	/ 10
PART 2:	/ 30
PART 3:	/ 10
TOTAL:	/ 50

Mole High School

Grade 10

Physical Sciences

Practical Task – Motion

LEARNER NAME: _____

GRADE 10: _____

RUBRIC TO ASSESS PART 1:

CRITERIA	1	2	3	4
Measuring				
Recording				
Data presentation				
TOTAL:	/ 10			



PART 1: DOING

Benjamin rides on his skateboard along a track without pushing it forward with his foot. Kelly, observes his motion and records his change in position every second.

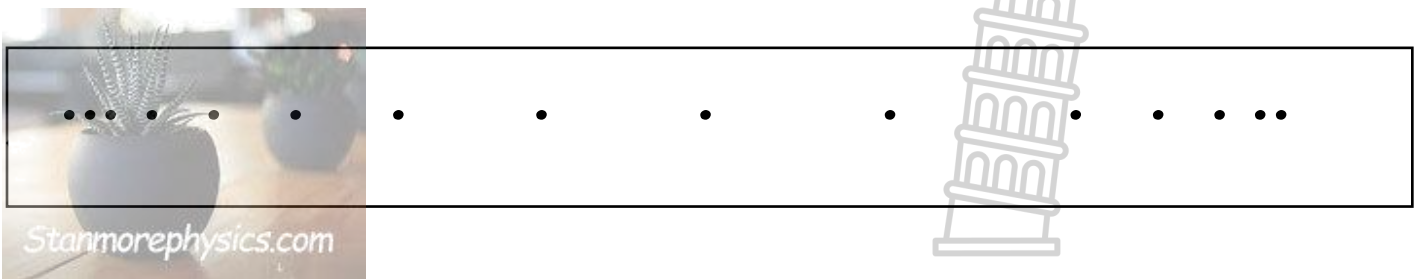


Benjamin stands in the middle of the street, and when Kelly says go, he starts moving. The surface of the street is smooth, and Benjamin starts skateboarding faster and then he slows down for the last few seconds. Kelly records his displacement after every second for 6 seconds.

The results of his motion can be determined by referring to the ticker-tape below.

Your results can be written in a table – include the quantities [time (s) and displacement (m)]

To measure displacements, use a scale of 1cm: 2m



PART 2 - WRITE-UP [30 marks]

REFER TO THE TABLE OF RESULTS BELOW TO ANSWER YOUR QUESTIONS.

Table 1: Results of position for each second.

Time (s)	0	1	2	3	4	5	6
Displacement (m)	0	4	12	18	22	24	26

1. Write down the:
 - 1.1 dependent variable (1)
 - 1.2 independent variable (1)
2. Draw a graph of displacement vs time. (5)
3. Calculate the velocity (v_1) between 0 – 1s. (3)

The velocity calculated in Q3 is the instantaneous velocity at 0,5s.
4. Calculate the instantaneous velocity at:
 - 4.1 2,5s (v_2) (1)
 - 4.2 4,5s (v_3) (1)
 - 4.3 5,5s (v_4) (1)
5. Use the values for $v_1 - v_4$ and draw a graph of velocity vs time for Benjamin's motion. (6)
6. Describe this motion, using the results obtained in Q5. Why is this happening? (3)
7. What is the relationship between speed and stopping distance. (2)
8. Explain 3 precautions that can be taken to reduce the number of accidents on the roads. (6)

(30 marks)

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PART 3 - TEST [10 marks]

1. Write down the definition for the term 'displacement'. (2)
2. What is the difference between average velocity and instantaneous velocity? (2)
3. The results obtained for Benjamin's motion were as follows:

Table 1: Results of position for each second.

Time (s)	0	1	2	3	4	5	6
Displacement (m)	0	4	12	18	22	24	26

- How can you describe Benjamin's motion from $t = 0\text{s}$ to $t = 2\text{s}$? (1)
4. When referring to a velocity vs time graph, which physical quantity does the:
 - 4.1 gradient of the graph represent? (1)
 - 4.2 area under the graph represent? (1)
 5. Calculate the velocity of Benjamin's motion between $t = 3\text{s}$ and $t = 5\text{s}$. (3)

(10 marks)