

REVIEW: EXPERIMENTAL DESIGN

1. Explain the differences and similarities between the following pairs of words:

- a) independent & dependent variable - independent var. is the cause - dependent " is the effect.
- b) control & variable - control - remains the same variable - can change
- c) purpose & hypothesis - purpose - why exp. is done hypothesis - what you think will happen
- d) qualitative & quantitative - quantitative - has a numerical value qualitative - judgement observation

2. Explain each of the following terms:

- a) positive correlation - when IV ↑ and DV ↑
- b) negative correlation - " ↓ " " ↓
- c) procedure - steps taken during the experiment.
- d) conclusion - your findings and whether hypothesis is correct or not.
- e) extrapolation - graphing results and using a line that best fits and extending it.

3. In the following statements, indicate the independent variable dependent variable. Also, identify them as Positive, Negative, or Non-existent correlations.

- a) The slower I run the less the less energy I need. - **POSITIVE**
- b) As the growth of mold increases, the value of the crop decreases. **NE**
- c) An increase in marks is due to an increase in studying. **PO**
- d) The more I eat causes an increase in professional football games. **NO correlation**

4. The following table shows the performance of a motorcycle:

Time (s)	Distance (m)
0	0
1	10
2	20
3	30
4	40

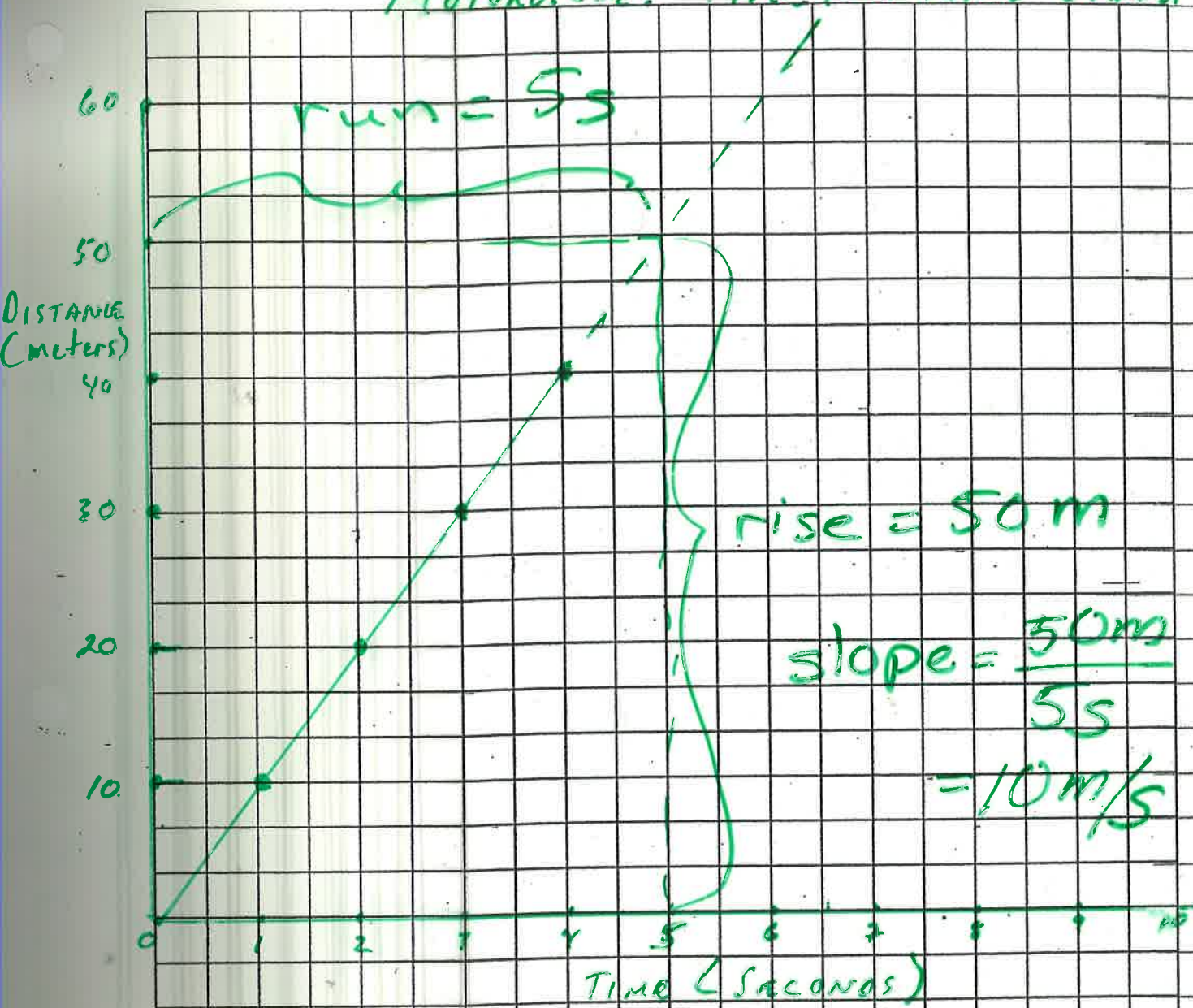
- a) Draw a line graph with time of the x-axis and distance on the y-axis
- b) Use a dotted line to extrapolate the graph for a total of 10s.
- c) What distance would be covered after 10s?

5. Design a complete lab which test the following, and includes:

- purpose
- hypothesis
- dependent & independent variables
- controls
- materials
- procedure
- observations
- conclusions

- a) Which type of bicycle brake works the best?
- b) What type of fruit produces the most juice?

MOTORCYCLE: TIME / DISTANCE GRAPH



The distance covered after 10 sec
would be 100m.

Title: Bicycle Brakes

Purpose: to determine the strongest bicycle brakes

Hypothesis: I predict CCM brakes are the best

Procedure:

1. Obtain 2 bicycles with CCM and Reebok brakes
2. Take both to top of hill.
3. Determine distance to stopping point
4. Ride bikes to stopping point and hit brakes.
5. Record the stopping distance.
6. Repeat 5 times and calculate average.

(Materials: 2 bikes with brakes, chalk, area with hill, measuring tape, person, pencil + paper)

Dependent: stopping distance

Independent: type of brakes

Controls: speed
 weather
 distance travelled
 same person
 same type of bike
 same road conditions
 same hill
 same force
 same brakes (both front + back)

Observations

	Types of Brakes									
	CCM					Reebok				
	1	2	3	4	5	1	2	3	4	5
Stopping Distance (m)										
Average	2m					3m				

Conclusion: CCM makes better stopping brakes than Reebok and the hypothesis was correct since they stopped in 2m rather than 3m