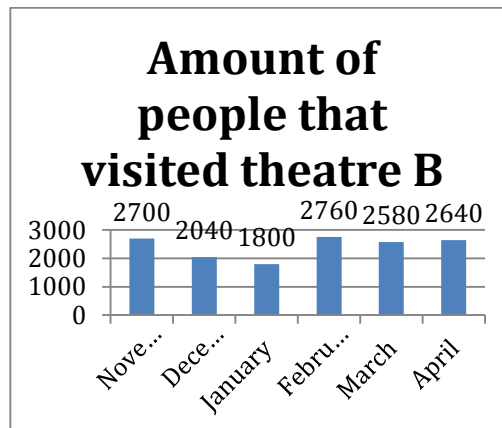
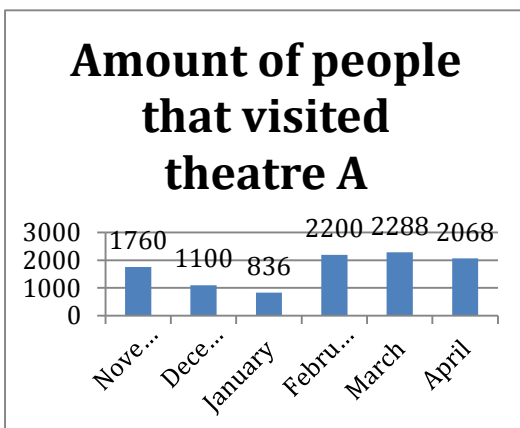


# SHARP

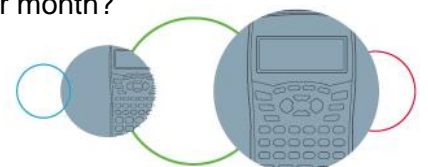
## Worksheet 1 – Patterns, Relationships and Representations

### Mathematical Literacy – Grade 11

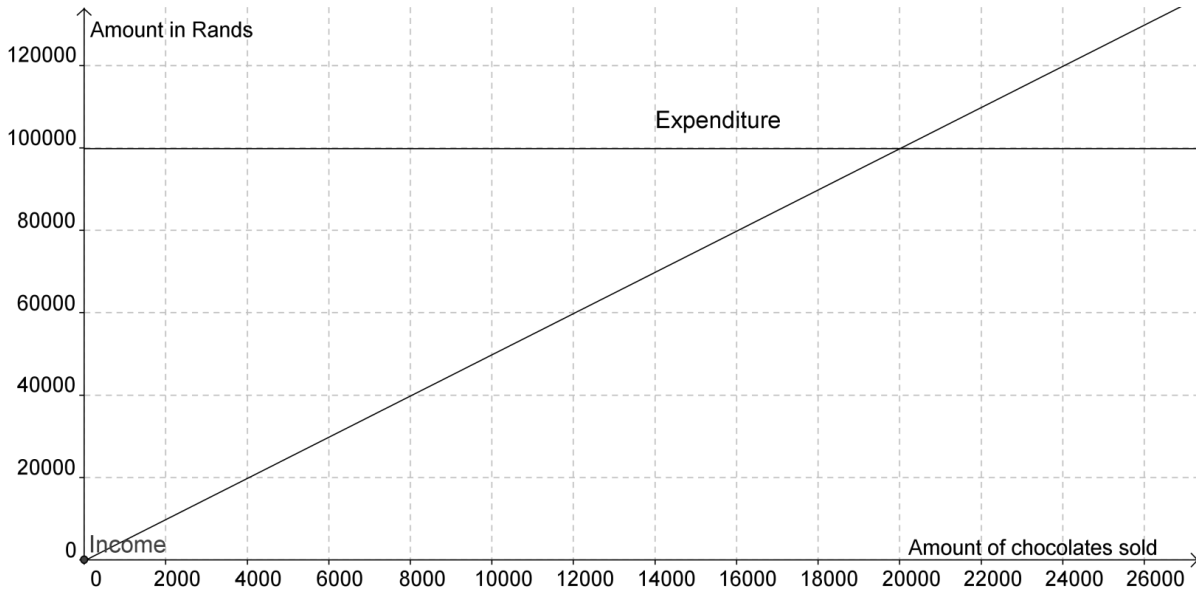
1. Mr McCarthy has a business that manufactures T-shirts. It costs R 30 to produce one shirt and he will sell each shirt for R80. The company can produce a maximum of 70 shirts in a week.
- Write an expression for the total income that will come from producing  $x$  number of shirts.
  - Write an expression for the weekly expenses for the factory be if  $x$  shirts are produced and they have a fixed starting cost of R 1 000.
  - Draw the graph showing both the income and expenses on one set of axis.
  - What is the break-even point of the graph?
  - Mr McCarthy got an order of 300 T-shirts from a company in Canada. What is the cost of a T-shirt in Canadian dollars? The exchange rate is 1 CAD = 8.88 ZAR
  - How much profit per T-shirt will Mr McCarthy make in Canadian dollars?
  - Mr McCarthy quotes the Canadian company 9 \$ per T-shirt and then he finds out that the exchange rate has changed to 1 CAD = 10.30 ZAR. Is this a good or a bad thing for Mr McCarthy? Why?
2. Use the graphs below to help you answer the following questions:



- What is the maximum amount of people that visited theatre A in one month and which month is it?
- What is the maximum amount of people that visited theatre B in one month and which month is it?
- Which theatre do you think is more popular? Why?
- What is the average number of people to visit theatre A per month?

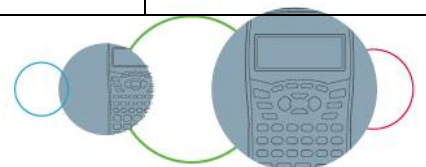


3. The D-vine Chocolate Company is looking at their income and expenditure to determine how they can better their business, use the graph below to answer the questions that follow:



- The formula for the expenditure is  $y = 100\,000$ , what does this tell you about the expenditure of the company?
  - What is the profit/loss made if they sell 12 000 chocolates?
  - What is the break even point of the graph?
  - Calculate the formula for the income of the D-vine Chocolate Company.
  - How much income will come in if they sell 78 000 chocolates?
  - Calculate the profit made if they sell 24 000 chocolates.
4. Michael is looking at getting a new cellphone contract, he has decided that he wants the Blackberry Z10 but he wants to get the best deal on his phone. He sends a minimum of 300 SMS's per month and uses about 1 GB (1 GB = 1000 MB) of data per month but he rarely makes any phone calls. He is looking for the best deal. Use the information in the table below to answer the questions that follow:

	Option 1	Option 2	Option 3	Option 4
SMS bundle	100 SMS, thereafter 77 c per SMS	150 SMS, thereafter R 1.20 per SMS	500 SMS, thereafter R 65c per SMS	200 SMS, thereafter R 75c per SMS
Data Bundle	500 MB free, thereafter 10c per MB	700 MB free, thereafter 9c per MB	2 GB free, thereafter 20c per MB	1 GB free, thereafter 11c per MB
Free Minutes	100 free minutes	100 free minutes	25 free minutes	50 free minutes
Cost of the contract	R249.90	R 339.00	R 550.00	R 345.00

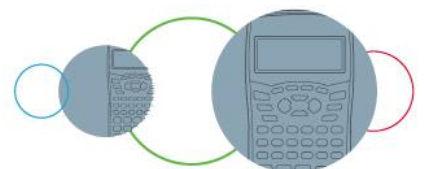


- Calculate what the monthly bill would be on each of the four options.
- Which option should he take? Why?
- If he takes option 3 and in one month he uses 3.2 GB of data and sends 450 SMS's and phones for 20 minutes. What will his bill be?
- Draw a graph that compares the cost of data used on option 1 and on option 2 on the same set of axis.

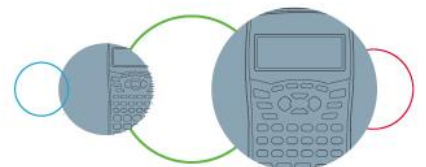
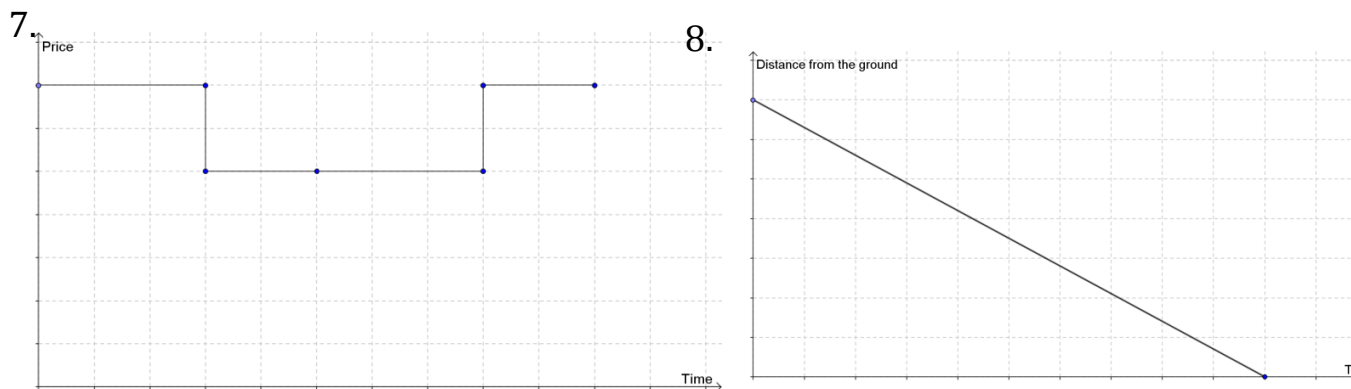
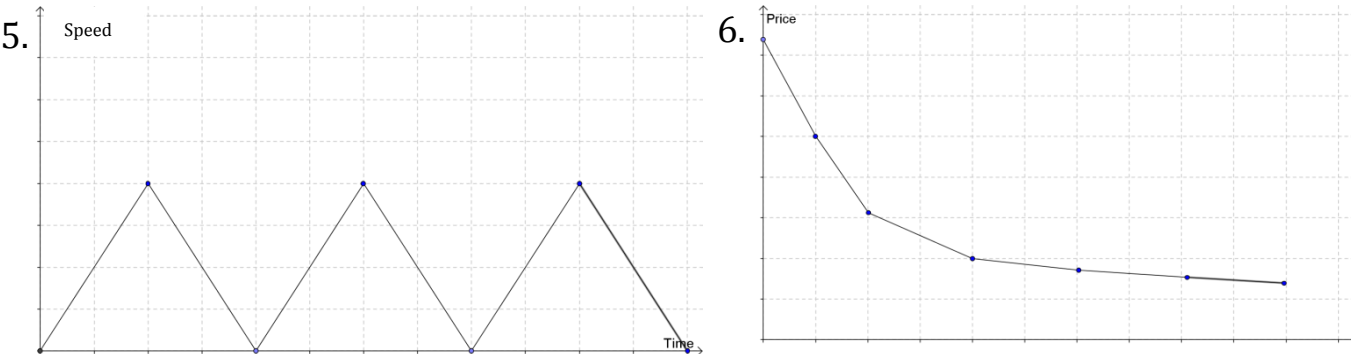
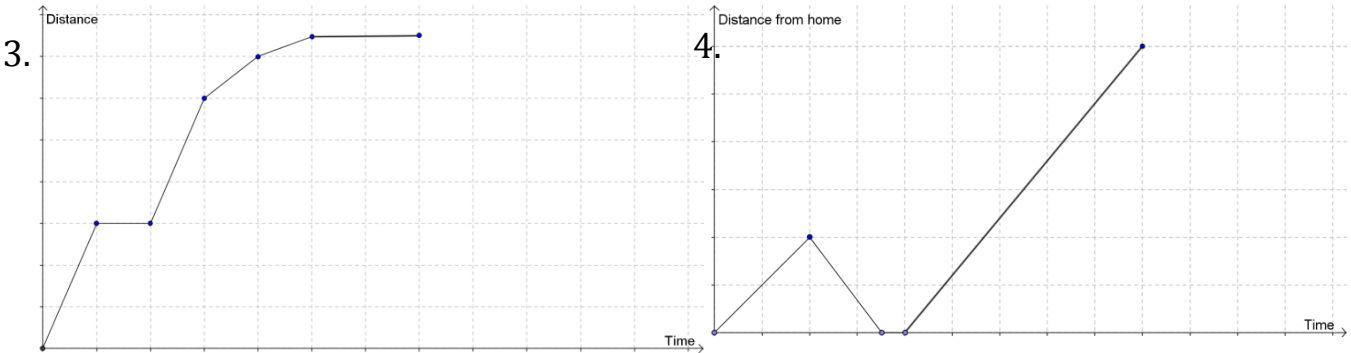
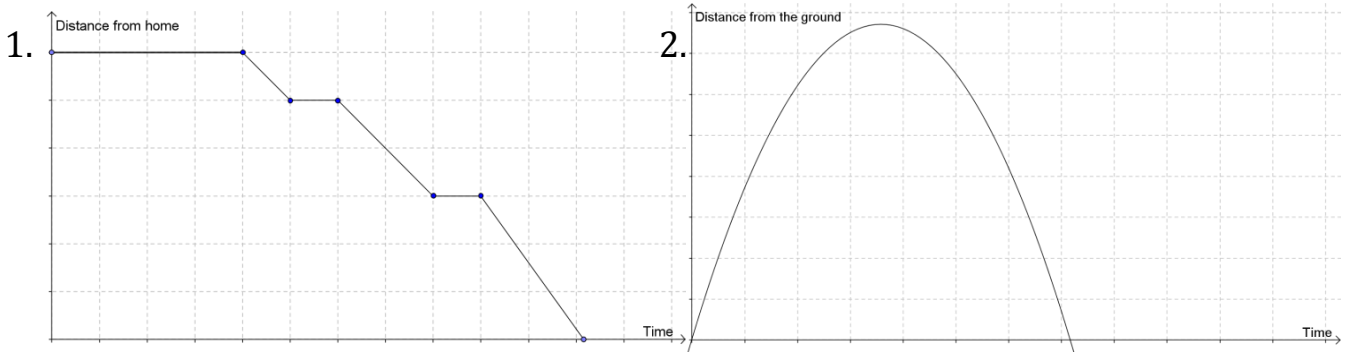
5. A study was done on the temperature of various cities in South Africa; use the data in the table below to answer the questions that follow:

Temperature (°C)	Bloemfontein	Cape Town	Durban	George	Johannesburg	Pretoria	Richards Bay	Upington
Summer (Min)	15	16	21	15	15	18	21	20
Summer (Max)	31	26	28	25	26	29	29	37
Winter (Min)	-2	7	10	7	4	5	12	4
Winter (Max)	17	18	21	19	17	20	23	21

- Which city has the highest maximum temperature in winter?
- Which city has the lowest maximum temperature in summer?
- Which city has the greatest difference in summer minimum and maximum temperatures?
- How big is the difference between the minimum and maximum temperatures in Johannesburg in winter?
- Draw a bar graph showing the maximum temperatures for Bloemfontein, Cape Town, Richards Bay and Pretoria in both summer and Winter.
- Which city would you like to live in and give a reason why?



6. Look at the graphs below and match the graph with the appropriate explanation.



- a) John leaves home in the morning, he has not gone far when he realises he left his cell phone at home, he goes back home, looks for the phone and then he leaves the house and heads to work.
- b) Jason drops his cell phone from the top of a building and it falls to the ground.
- c) Kabelo is accelerating until he gets to 40km/h then he slows down to a stop and immediately he speeds up again so that he gets to 40 km/h and then he slows down to a stop again, he speeds up to 40 km/h again before slowing down to a stop.
- d) Damien throws a ball up in the air and then catches it.
- e) The price of a product decreases rapidly when a newer model is released.
- f) A retailer sells a product for a certain price and then for one week they discount the product for a promotion, after that the product returns to the original price.
- g) Sarah is driving home from the gym, she has to stop at two red robots on the way home.
- h) Jabulile is riding on her bicycle and then she stops for a while because she is getting tired, she then carries on going at a constant speed and she starts to get tired again so she drives slower as she gets tired.

