Teacher notes and rubric

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| Student instructions | Teacher notes | Questions to ask students |
| Understand : your jobCongratulations! You have just been appointed as the Business Development Manager of the Happy Holiday Hotel chain. Happy Holidays want to open a brand new 100-bedroom hotel/resort.Your job is to choose a location for the hotel/resort and set the room pricing structure so that you can calculate how much income your hotel will generate in a year. Your boss isn’t concerned about costs at this stage just how much money the new hotel can generate from room bookings. You will present your findings in a report that needs to address the following points. | In reality, a hotel would generate revenue from areas including restaurants, bars, conference bookings, but the scenario has been simplified to make modelling easier. Mathematicians often make assumptions when building models to simplify calculation. | * Can you explain to me what you have been asked to do?
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| Understand: choose the hotel / resort location |  |  |
| Choose a location. This can be in Australia or overseas, provided you choose a destination that you can easily find information about.Decide what type of hotel you think should be built – is it a super-luxury hotel or an affordable destination?Include a paragraph in your final report explaining where your hotel is located and describing the type of hotel. | Familiar and easier to understand data is available for Australian locations. For overseas locations, students may struggle to find dates for public and school holidays and may need to manage exchange rates when analysing competitor rates.  | * Where have you been, or want to go, on holiday?
* What kinds of locations are popular for holidays?
* What types of location do you think you could collect a lot of data about?
* Why did you choose that location?
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| Plan and do: collect data  |  |  |
| As your hotel is mainly aimed at holiday-makers weather is a big concern. Collect data on the climate at your location. You could include temperature, rainfall, sunshine hours, snow, humidity or wind. Good sources of information are:* + Australian Government Bureau of Meteorology
	+ World Meteorological Organization
 | The BOM website provides rich data for Australian locations, but students may need assistance in identifying, extracting and displaying the appropriate data. The WMO website meanwhile provides readily copyable graphs of temperature and rainfall data. | * What kind of weather is preferred for your kind of holiday location?
* So, what weather data is most useful to know if you are on holiday?
* What level of detail would your boss want to see in your report for the weather info: daily, weekly or monthly?
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| There are times of year when your hotel might be more popular, such as public holidays, school holidays or major events. Make a list of dates of significant events. For example, if you chose Melbourne, popular times could include the Australian Open Tennis Tournament, Melbourne Grand Prix, Comedy Festival, Melbourne Cup or Taylor Swift concerts. | Students may wish to consider school holidays in neighbouring states or territories.Local council or tourism body sites should list local events. | * How far would people travel to get to your hotel and where might they come from?
* How and from where could you find out about local events in your location?
* Would all local events create the same demand for accommodation? How can you decide?
* Whose website would display a list of school holiday dates?
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| There will already be hotels in the local area. Using a hotel booking site, try to find a hotel that is similar to yours in location, target market, facilities and size, and collect data on room prices throughout the year. | It is not practical to collect data for every day or week in the year. Collecting data for a week, for example, from 1st to 8th of every month (including weekends) will provide some reliable baseline data.Students should ensure that they collect consistent data, that is, the same room at the same hotel at different times. | * How can you find prices for a hotel similar to yours?
* Is it practical to collect data on every single day in the year? If not, what is a reasonable time period to collect data on?
* Do hotels charge the same price on every day of the week? Can you spot any trends? How can you account for this in the data that you collect so the data is comparable?
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| Plan and do: present and analyse data |  |  |
| Present the data you have collected and comment on the impact on your hotel. For example, in Melbourne the cold weather in winter will deter many visitors, yet in Queensland, winter is a popular time to visit as it is pleasantly warm compared to some other states or territories.Present your data in a way that is visibly appealing and easy to understand. Think about using line graphs, bar graphs, tables, timelines or calendars (see template). You can create your own data displays or use graphs already presented, provided you reference them appropriately.Be specific when analysing your data rather than just making general statements like ‘summer is warmer’. Use mathematical terms such as ‘mean’ and ‘range’. | A graph such as that used in the slow reveal activity is an excellent way to display temperature and rainfall on the same axes. Very capable students may wish to include more complex graphs or create their own data displays.For the events data, a calendar or timeline approach would be more appealing and easier to interpret. Provide the template to students.Encourage students to write precise comments such as, ‘Ideal temperatures for a beachside location are in the range 25–30$℃$, which occurs from November to January.’ or ‘The climate in X is not well suited to holiday travellers as the mean number of rainy days exceeds 10 in every month and for 3 months of the year (Jun–Aug). The average maximum temperature is below 15$℃$, which is quite cold and therefore likely to be unattractive to many tourists’.  | * What kind of data have you collected and what graphs suit this kind of data?
* Is it helpful to combine any of the data sets on one graph?
* What might be a good way to display data for the whole year?
* Can you find any videos or help guides to help you to create graphs in Excel, Sheets or similar?
* How can you make a comment more precise? Are there actual numbers in the graph or data table?
* What data supports the comment you have made and how can you incorporate it to help justify your comment?
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| Consider: decide pricing model |  |  |
| Use all the data you have collected to decide your pricing model or structure. Often hotels use a range of pricing bands and place different weeks into each band. See the next page for an example and use this (or a similar) structure. For each band, explain how you chose which weeks to place in the band to justify your choice. | In reality, most hotels vary prices on a daily basis, with weekend rates higher than weekday rates. To build a simpler pricing model, it would be easier if the students assume a single rate applied to each full week.To encourage bookings in the off-peak season, students should substantially discount the peak prices, particularly if they are assuming significant levels of occupancy. | * What do you think is a good maximum (peak) and minimum (off-peak) price people would pay per night for a room at your hotel?
* What data that you have collected is most useful in helping you set your prices? Can you start by building a pricing model around the data and then tweaking it based on other data?
* How will you use the weather and events data to decide prices?
* Why would you follow or not follow the competitor data?
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| Communicate: report your findings |  |  |
| Produce a report for your boss explaining your findings and how you arrived at your pricing model.You will need to produce a calculation showing the total expected income for the year.Not every room in your hotel will be full every night. Occupancy is a measure of how full a hotel is and is typically 70% to 95%. You must choose an occupancy rate for your hotel and include it in your calculations. | Excel would be an ideal way for students to calculate the total income for the year. Students may choose to apply a single occupancy rate across the year. Or they may apply different rates, with higher occupancy in peak periods and lower occupancy as demand decreases, which is a more realistic assumption. | * What data do you need to calculate the revenue for the year?

(How many rooms = 100; occupancy = assumption; how many weeks in each pricing band; the price per week for each pricing band.)* Rather than use a calculator, can you use a spreadsheet to multiply and add numbers?

(On a spreadsheet you must always type ‘=’ for any calculation and then select the relevant cells. Use ‘\*’ for multiplication and ‘/’ for division. Check the formula in the example spreadsheet for guidance.)* What occupancy rate(s) do you think makes sense for your hotel?
* Do you think occupancy rates will be same throughout the year? When might the hotel be busiest?
* Have you explained all your assumptions in your report so that your boss would know how you prepared your calculations?
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Assessment rubric

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| Criteria | Developing | Achieving | Exceeding | To improve you could … |
| Introduction | Identifies either the location or type of hotel but does not fully describe the hotel and its location. | Clearly identifies the location and type of hotel. | Exceeds expectation when identifying the location and type of hotel. |  |
| Collection and presentation of data | Attempts to collect and present some data related to climate, local events, holidays and competitor pricing. Data is incomplete or is presented in an unclear and disorganised manner, for example, missing labels, illegible graphs. | Collects and presents relevant data related to climate, local events, holidays and competitor pricing. Data is clearly presented using appropriate and properly labelled data displays. | Effectively collects and presents a wide range of detailed and relevant data related to climate, local events, holidays and competitor pricing. Data is presented in a clear and organised manner, including using student-generated data displays. |  |
| Analysis of data  | Comments and analysis on the data are limited or missing or are not related to the task. | Demonstrates sound understanding of the data, providing some interpretation and analysis relevant to the task. | Demonstrates thorough understanding of the data, providing insightful interpretation and analysis, highlighting key trends and patterns of relevance to the task. |  |
| Application of data to pricing model | Makes some attempt to apply the collected data to a pricing model but makes only limited reference to the data and uses overly simplistic or unrealistic pricing assumptions. | Makes a sound attempt to apply the collected data to a five-band pricing model, considering at least two of the data sets and making reasonable and justified pricing assumptions. | Effectively applies the collected data to a five-band pricing model. Takes account of all the collected data and uses sophisticated banding strategies, supported by reasonable and clearly justified pricing assumptions. |  |
| Revenue calculation  | Attempts to prepare a revenue budget calculation using mathematical modelling and calculation strategies, but the effort is incomplete or inaccurate and assumptions about occupancy levels are missing or unrealistic. | Prepares a revenue budget calculation using mathematical modelling and calculation strategies, making a reasonable assumption about occupancy levels. | Effectively prepares a detailed and accurate revenue budget calculation using appropriate mathematical modelling and calculation strategies, leveraging spreadsheet functionality and making differentiated and reasonable assumptions about occupancy levels.  |  |
| Overall communication  | Struggled to work in a team, producing a report that was missing some required elements. | Worked soundly in a team, producing a report addressing all criteria. | Worked well in a team, helping produce a clear and consistent report using headings and good reporting structure.  |  |