

MATHEMATICS/CALCULUS

MX03042Y1

INTERNAL ASSESSMENT ACTIVITY

ACHIEVEMENT STANDARD 91576 (VERSION 2) MATHEMATICS AND STATISTICS 3.4

Use critical path analysis in solving problems

Level 3, Internal assessment

2 credits

STUDENT INSTRUCTIONS

Overview:

In this activity you will be examining:

- Using critical path analysis to solve a problem in context.

Conditions:

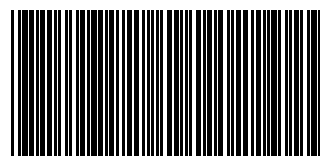
- This is an open book assessment activity so you may refer to any related modules or any other resources.
- This must be your own work.
- There is no time limit for the completion of this activity but you should allow at least one hour.
- Resource A contains important information for your report.
- Any scientific, graphics, or CAS calculator may be used or computer graphing software such as Desmos.
- Plagiarism detection software may be used to check this is your own work.

You will need:

- Quad and lined paper or a computer based word document.

Supervisor requirements

A supervisor must be present for the entire time you are working on this assessment. You must provide the full name of the supervisor and their relationship to you (e.g. parent, teacher, teacher aide, friend etc.) when you upload your assessment to the MX03042Y1 assessment dropbox.



ASSESSMENT CRITERIA

ACHIEVEMENT STANDARD 91576 (VERSION 2) MATHEMATICS AND STATISTICS 3.4

Use critical path analysis in solving problems

Achieved	Achieved with Merit	Achieved with excellence
Apply critical path analysis in solving problems.	Apply critical path analysis, using relational thinking, in solving problems.	Apply critical path analysis, using extended abstract thinking, in solving problems.

ASSESSMENT ACTIVITY

MATHEMATICS/CALCULUS

INSTRUCTIONS

- Read the introduction and the information in the tasks carefully.
- Write your answers on your own paper or use an appropriate computer programme.
- Write your name and Te Kura ID on each page used.
- Your supervisor must be present to observe you.

INTRODUCTION: THE COOKING CHALLENGE

The Cooking Challenge is a secondary school cooking competition. Teams from each school prepare and cook a three course meal for a table of four guests. Each team is required to prepare an entrée, main course and dessert.

For this challenge, the main course is a chicken dish with accompanying vegetables. The dessert is a cold dish that needs time to set in the fridge.

Students have a total of 2 hours 30 minutes to prepare, cook and serve the food and allow time for the guests to eat. Assume that the competition starts at 5 pm. Details of the project tasks, the tasks that must precede them and the time required to complete each task are in Resource A.

In this assessment activity you will write a report, using critical path analysis, to the organisers of the 'The Cooking Challenge' recommending the number of students that should be in each team and explaining how tasks could be allocated to different team members.

The quality of your report and how well you link your findings to this context, including the implications of unexpected delays, will determine the overall grade. Clearly communicate the different parts of your report including any diagrams that you use.

TASK

1. Use the information in **Resource A** to prepare a report for the organisers of the Cooking Challenge.

The report should include:

- a network diagram showing all the tasks in the project
- the tasks in the critical path
- the minimum length of time required to complete all the tasks
- the start and finish time for each task.

Your report will recommend to the organisers of the Cooking Challenge:

- the minimum number of students that should be in each cooking team
 - how the food preparation tasks could be allocated to the team members.
 - suggest a suitable time for the guests to arrive.
2. Imagine a situation where something goes wrong with the preparation of the dessert and one team has to remake the dessert. Discuss the implications of this situation on the completion time of the overall Cooking Challenge for this team.

Your overall grade will be determined by the quality of your reasoning and how well you link this to the context.



Upload your assesment to the MXO3042Y1 assessment dropbox.

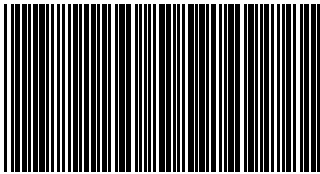
ASSESSMENT RESOURCES

RESOURCE A

The table below shows the project tasks, the tasks that must precede them, and the time (in minutes) required to complete each task.

Task	Time (minutes)	Precedence
A Prepare and cook entrée	35 min	–
B Guests are served and eat entrée	20 min	A
C Prepare chicken dish for the main course	25 min	–
D Chicken dish is cooking in the oven	70 min	C
E Prepare vegetables for the main course	15 min	–
F Cook the vegetables	20 min	E
G Guests are served and eat main course	30 min	A B C D E F
H Prepare the dessert	30 min	–
I Dessert is chilled in the fridge	75 min	H
J Guests are served and eat dessert	20 min	A B C D E F G H I

MX03042Y1



STUDENTS – PLACE STUDENT ADDRESS LABEL BELOW OR WRITE IN YOUR DETAILS.	
Full Name	_____
ID No.	_____
Address	_____
(If changed)	