

ASSESSMENT COVER SHEET SEMESTER 2 2018

This sheet must be attached to the front of the assessment item you submit. Read it carefully before signing. If you have been asked to submit an item electronically, this sheet must still be completed to validate submission details.

COURSE TITLE & No.: Mathematical Applications T – 1286
UNIT TITLE & No.: Unit 2 – 13810
ASSESSMENT NAME: Assignment 2
ASSESSMENT WEIGHTING: 15%
ISSUE DATE: Week 12 – 22/10/2018 Monday
DUE DATE: Week 14 – 05/11/2018 Monday by COB(4pm)
UNIT TEACHER NAME: Chris Cutting, Ganesh Prasad, David Stone

UNIT VALUE: 1.0

STUDENT NAME: _____

STUDENT ID: _____

I certify that:

- (a) This submission is my own work and is not taken from any other source.
- (b) This piece of work has not already been submitted for assessment in this, or any other context.
- (c) This test is based on my own preparation.

I understand that:

- (a) Plagiarism is a serious matter and that I may be penalised if this declaration is false.
(Refer to the BSSS publication 'What is Plagiarism – How you can avoid it' for more information.)
- (b) An appeal against the mark for this item will be processed according to College/BSSS policies.
- (c) All assessment tasks are expected to be submitted by 4.00 pm on the specified due date.
- (d) Where marks are awarded for assessment tasks, a late penalty will apply unless an extension is granted. The penalty for late submission is 5% of possible marks per calendar day late, including weekends and public holidays, until a notional zero is reached. If an item is more than 7 days late, it receives the notional zero. Submission on weekends or public holidays is not acceptable. Calculation of a notional zero is based on items submitted on time or with an approved extension. (Refer to section 4.3.11 Notional Zeros of the BSSS Policies and Procedures Manual)

All BSSS publications and policies can be found at <http://www.bsss.act.edu.au/>

STUDENT SIGNATURE: _____ **DATE:** _____ / _____ / 2018

Marks Allocated

Part 1:	/25	Part 2:	/25	Total:	/50
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(✗ Student to remove and retain after teacher has signed)

ASSESSMENT SUBMISSION RECEIPT

COURSE TITLE & No.: Mathematical Applications T – 1286
UNIT TITLE & No.: Unit 2 – 13810
ASSESSMENT NAME: Assignment 1
ASSESSMENT WEIGHTING: 15%
DUE DATE: Week 14 – 05/11/2018 Monday by COB(4pm)
UNIT TEACHER NAME: Chris Cutting, Ganesh Prasad, David Stone

UNIT VALUE: 1.0

STUDENT NAME: _____

RECEIVED BY: _____ **DATE** ____ / ____ / 2018
(Teacher Signature)

TEACHER NAME: _____
(If other than Unit Teacher)

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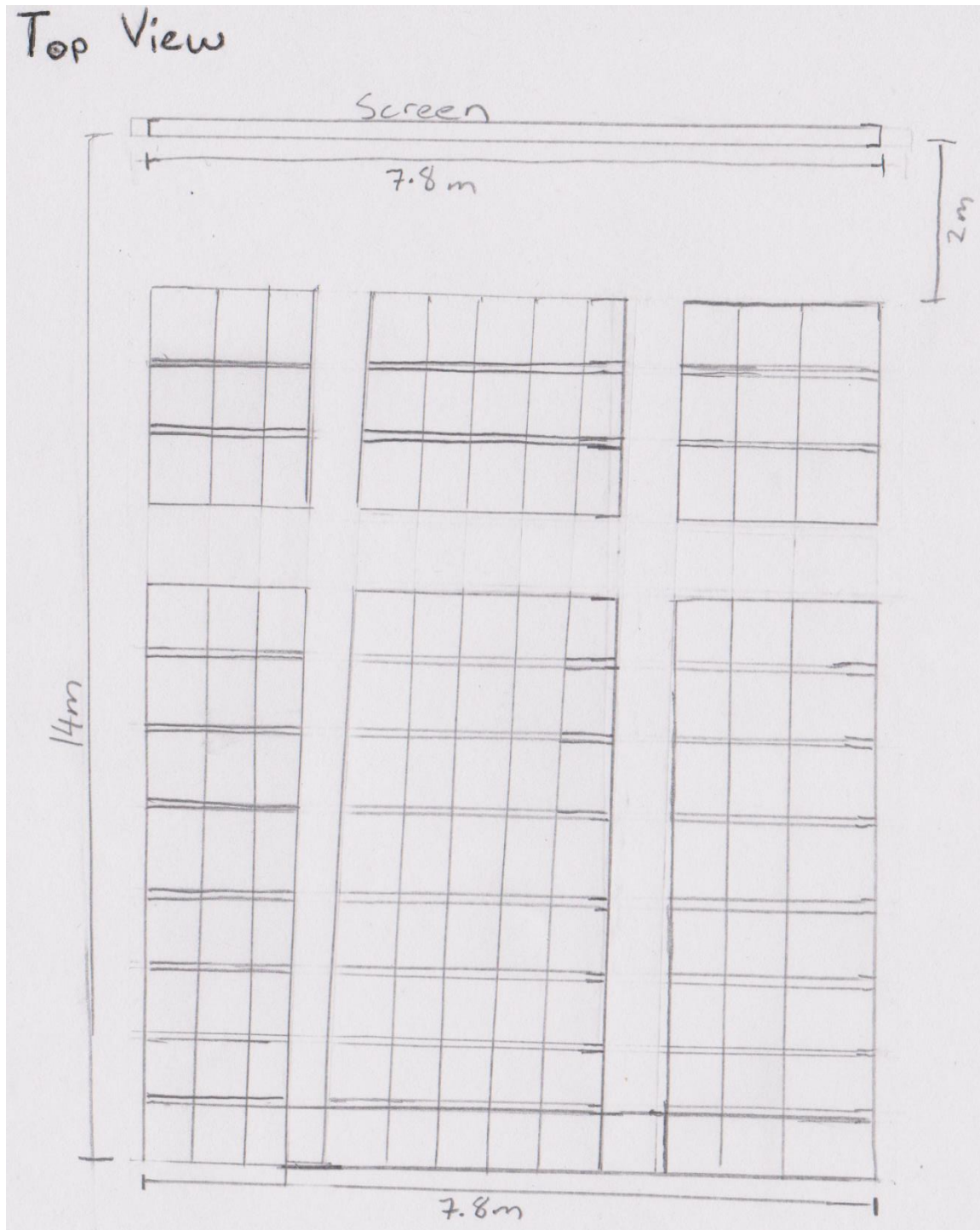
Applied Mathematics Unit 2

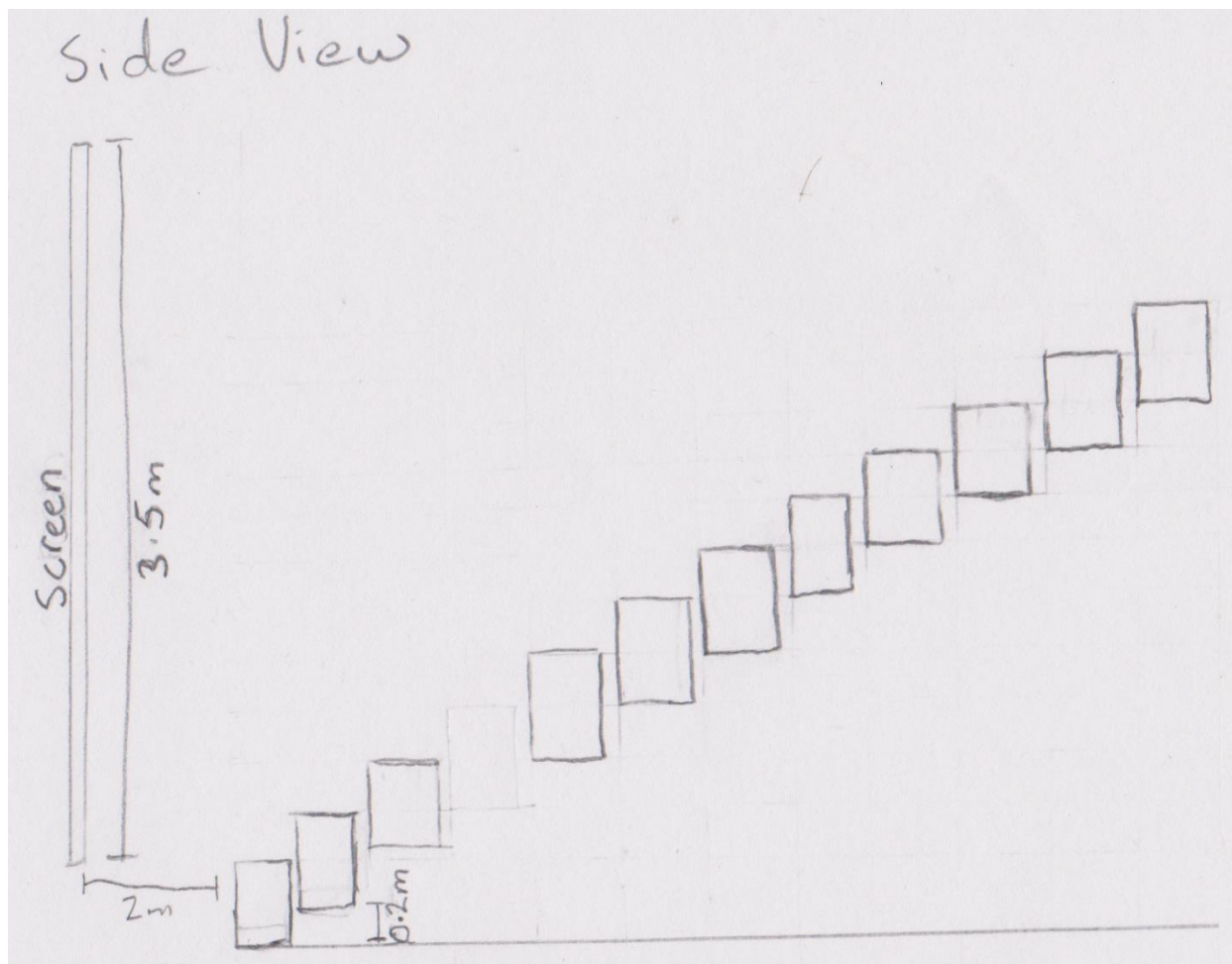
Assignment 2

In this assignment you will be using your knowledge of trigonometry to assess and then create a movie theatre.

Part 1: Assessing a movie theatre

Below is a top and side view of a movie theatre with a screen that is 7.8m wide by 3.5m tall. Each box represents a seat within the theatre with aisles for easier access to the seats. Assume that the seats are all the same size and the isles are of the same length and width as a row/column of chairs and that they are all position in front of the screen.





Question 1) The vertical viewing angle is the angle from the bottom of the screen to the top from the viewers perspective. Assume the viewers eyes are positioned at the top of each box and that the front row is at a right angle to the base of the screen.

a) What is the vertical viewing angle of the front row? **(2 Marks)**

b) What is the distance from the front row of seats to the top of the screen? **(2 Marks)**

c) What is the vertical viewing angle of the back row? **(4 Marks)**

d) The best vertical viewing angle to watch the screen is the smallest vertical viewing angle as it gives the least neck strain. Which row would it be best to sit in and what is its vertical viewing angle?
(4 Marks)

Question 2) The horizontal viewing angle is the angle from one side of the screen to the other from the viewers perspective. Assume the viewers eyes are positioned in the middle of each seat.

a) What is the horizontal viewing angle of the person sitting in the middle of the front row of seats?
(2 Marks)

b) Given that the projector is positioned in the centre of the screen, with a horizontal viewing angle of 30° . What is the distance from the projector to the left edge of the screen? **(2 Marks)**

c) The worst horizontal viewing angle is the smallest horizontal viewing angle as it means a smaller picture to watch. Which seats have the worst horizontal viewing angle and what is this angle?
(3 Marks)

a) Calculate to the nearest centimetre the distance from the centre of the screen would you need to be to achieve this horizontal viewing angle. **(2 Marks)**

b) Which seats would get within 2 degrees of this angle? (identify the seats using the number of rows from the front and columns from the left) **(4 Marks)**

Part 2: Cinema Design

The SMPTE (Society of Motion Picture and Television Engineers) guidelines suggests that for a cinema the maximum vertical viewing angle is 35° and the minimum horizontal viewing angle is 36° .

Question 1) You are to design a rectangular seating plan for a cinema similar to the one provided in part 1, using the following guidelines while also trying to maximise the number of seats. **(20 Marks)**

- The size of the screen is 21m wide by 9m tall
- No chair is to have a vertical viewing angle greater than 35°
- No chair is to have a horizontal viewing angle of less than 36°
- The top of the front row of seats is at a right angle to the bottom of the screen.
- As in the images provided in part 1 ensure you include all appropriate measurements in your seating plan.

Question 2) Given your information on viewing angles, highlight the best 8 seats in your cinema?
(5 Marks)

Side View

Top View