THE RIVERS SECONDARY COLLEGE
The heart of secondary education for Lismore

Assessment Task Notification

RICHMOND RIVER HIGH CAMPUS

Task Number	2	**Task Name**	Desmos Art
Course	Year 10 Mathematics	**Faculty**	Mathematics
Teacher	Mrs Tyson, Mr Whitehall, Ms McClure, Ms Humphrys	**Head Teacher**	Ms Humphrys
Issue date	Friday 23/5/2025	**Due date**	Friday 13/6/2025
Focus (Topic)	Linear and Non-Linear Relationships	**Task Weighting**	25%

Outcomes

MAO-WM-01 develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly

MA5-LIN-C-01 determines the midpoint, gradient and length of an interval, and graphs linear relationships, with and without digital tools

MA5-LIN-C-02 graphs and interprets linear relationships using the gradient/slope-intercept form

MA5-NLI-C-01 identifies connections between algebraic and graphical representations of quadratic and exponential relationships in various contexts

Task description

This task is being delivered via Google classroom, and must be submitted digitally via the Google Classroom Assignment. (ssyto26)

The task uses the free graphing software Desmos (www.desmos.com/calculator) to work with linear relationships.

Part A – Modifying an existing design

Part B – Creating an original design

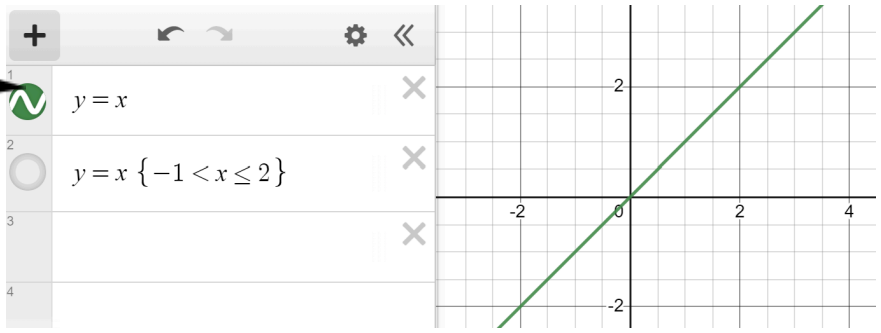
Marking Guidelines

Refer to rubric in each part for marking guidelines,
Plagiarism will result in a zero mark

Desmos Reference

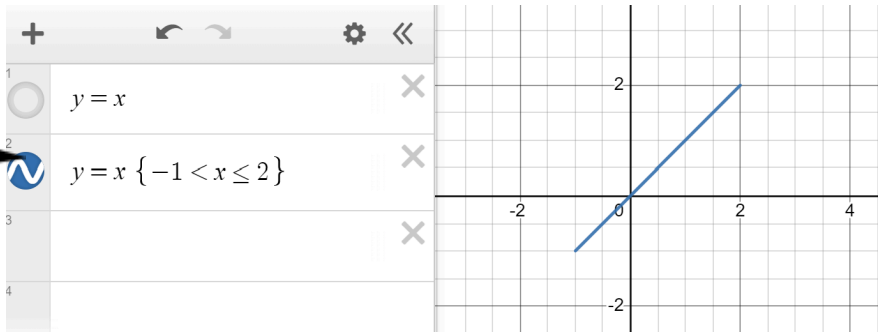
Go to: www.desmos.com/calculator
Sign Up/Log In: select “Sign in with Google”

Type equations in here and press enter.



Use { } brackets to add restrictions.

To make a sign type <=

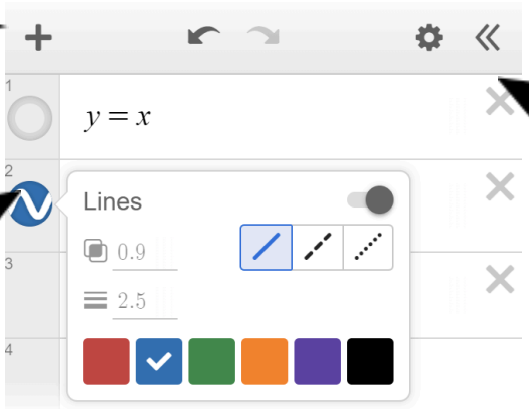


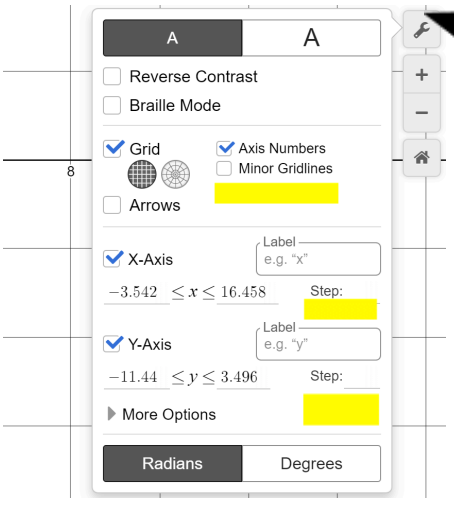
Click the + button to add saved images or to create folders.

Click a cross to delete the equation.

Show or hide a graph by clicking the circle.

Hold the click for 2 sec to access line settings.



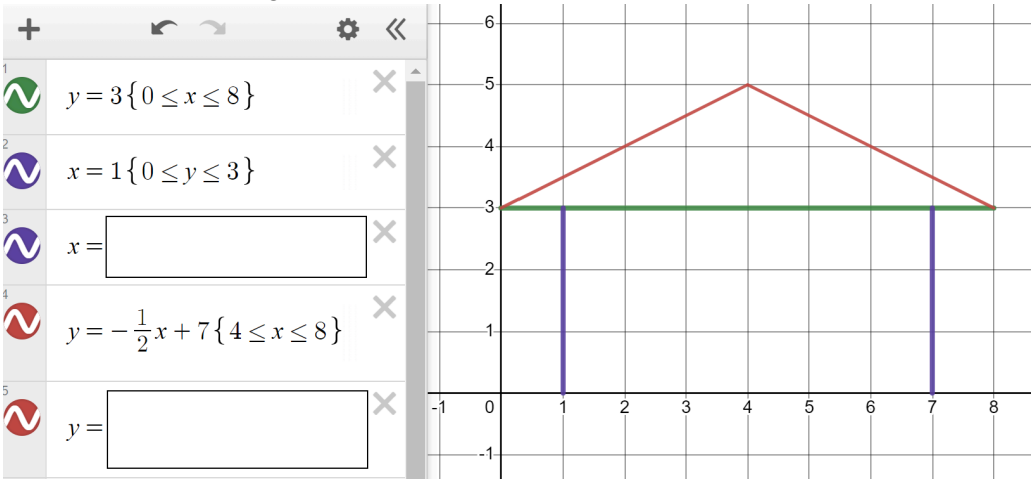


In the top right corner click the spanner button to access graph settings

Consider turning “minor gridlines” off and setting Step:1 for x-axis and y-axis.

Part A

This house has been drawn using Desmos (www.desmos.com/calculator).



What are the equations that have been blanked out?

Equation 3:	x=7{0≤y≤3}
Equation 5:	y=½x{0≤y≤3}

Recreate the house in Desmos (www.desmos.com/calculator).

Make a modification to the drawing of the house by changing the equations in some way.
For example:

- Make the roof steeper or flatter,
- Raise or lower the height of the roof and make the house taller or shorter,
- Make the house wider or thinner, etc

Your finished drawing should be neat, with no unreasonable gaps or crossing over of intervals.

Screen clip and paste below, including all the equations.

Explain the changes you made and how you modified the lines.

Original line	Modified line	Explanation
e.g. $y = 3\,\{0 \leq x \leq 8\}$	$y = 3.5\,\{1 \leq x \leq 7\}$	Changing the 3 to 3.5 keeps the line horizontal (gradient = 0) and moves it up by 0.5 Changing the restriction of x to between 1 and 7 stops this interval from crossing over the red lines
$y = \frac{3}{4}x + 3\{0 \leq x \leq 4\}$ $y = \frac{1}{2}x + 3\{0 \leq x \leq 4\}$		

Insert additional rows as needed

Part A - Marking Rubric

Criteria	0	1	2	3	4
Identifying equations from a graph	No equations provided	One correct equation	Two correct equations	Two correct equations with correct restrictions	
Modifications to house	No modifications	At least one equation changed	At least two equations changed	At least three equations changed	More than three appealing appropriate equations changed
Neatness of house	No attempt to fix gaps and overlaps	Some corrections to fix gaps and overlaps	No gaps or overlaps		
Explanation of changes to equations and restrictions	No explanations	Explanations are brief, muddled, or incomplete	Some explanations are clear, but some are muddled or incomplete	Explanations are clear, but some modifications not explained	Explanations are clear and address all modifications
Mathematical terminology	Uses incorrect or no precise mathematical terms	Uses at least one precise mathematical term correctly	Uses at least two precise mathematical terms correctly	Consistently and correctly uses a variety of precise mathematical terms	

Part B

Use your understanding of graphing to create a drawing in Desmos (www.desmos.com/calculator)

Your drawing should include:

- A recognisable image, shape, pattern, etc.
- A variety of linear relationships,
    - At least one pair of parallel lines,
    - At least one pair of perpendicular lines,
    - At least one pair of lines that are reflected.

Your drawing may include:

- A variety of colours,
- Non-linear relations, e.g. circle, parabola; cubic; hyperbola; etc,
- Shading or animations created in Desmos using mathematical equations.

Your drawing should **NOT** include:

- Inappropriate images or words,
- Plagiarism of other people's work.

Save your Desmos drawing and insert a link here:

Once you have completed your drawing in Desmos, screen clip and paste it below:

- Ensure the *x*-axis and *y*-axis are visible with a scale on both axes;
- Ensure the grid is visible in the background;
- Ensure the equations and restrictions are fully visible

Hide the *x*-axis and *y*-axis, grid and equations, then screen clip and paste another copy of the drawing below:

Identify pairs of lines in your drawing that have the following relationships:

Relationship	Equation 1	Equation 2
Parallel		
Perpendicular		
Reflected		

Choose one pair of lines from above and hide all the other lines in your drawing, then screen clip and paste the drawing below:

- Ensure the *x*-axis and *y*-axis are visible with a scale on both axes,
- Ensure the grid is visible in the background,
- Ensure the equations and restrictions are fully visible.

Identify the relationship between the lines and verify it using the equations.

Identify 2 non-linear relationships and hide all the other lines in your drawing, then screen clip and paste the drawing below:

- Ensure the *x*-axis and *y*-axis are visible with a scale on both axes,
- Ensure the grid is visible in the background,
- Ensure the equations and restrictions are fully visible.

Part B - Marking Rubric

Criteria	0	1	2	3	4
Number of equations	Less than 3 linear equations	3 or 4 linear equations	5 or 6 linear equations	7 or 8 linear equations and 1 different nonlinear equations	More than 8 linear equations and 2 different nonlinear equations
Quality of drawing	No recognizable image or shape	Drawing is simplistic with some gaps or overlaps. Drawing has less than 2	Drawing is simplistic with all lines meeting neatly. Drawing must contain 2-3 angled lines.	Drawing is complex with some gaps or overlaps. Drawing must contain 4-5 angled lines.	Drawing is complex with all lines meeting neatly. Drawing must contain 6 or more angled lines.
Variety and relationships between pairs of lines	No or incorrectly identified pairs	Correctly identifies **one** of the following: ●Parallel ●Perpendicular ●Reflected	Correctly identifies **two** of the following: ●Parallel ●Perpendicular ●Reflected	Correctly identifies **all** the following: ●Parallel ●Perpendicular ●Reflected	Correctly identifies **all** the following: ●Parallel ●Perpendicular ●Reflected ●Nonlinear relationships
Verifies relationship between pair of lines	No screen clip or verification	Provides a screen clip and correctly identifies relationship but does not use equations to verify	Provides a screen clip, and correctly identifies features of the equations to verify the relationship	Provides screen clip, and detailed verification using formal definitions and precise mathematical terms	