Risky Business

During the pandemic, education became a risky business for many due to the sudden shift to remote learning, which highlighted disparities in access to technology and created challenges in maintaining effective and equitable education.

We are trying to find a solution for this kind of situation by creating an engaging and informative animation that explains the concepts of Pythagoras' theorem and basic trigonometry, highlighting their applications and relevance in real-world scenarios. This animation will serve as an educational tool for students learning these mathematical principles, *especially in the context of remote and digital education, which has become increasingly prevalent since the onset of Covid-19 in New Zealand in February 2020.*

- ➔ **Introduction:**
    - ◆ Briefly introduce the significance of mathematics in everyday life.
    - ◆ Explain how the recent pandemic has shifted education towards digital and remote learning, making engaging content like animations crucial for effective learning.
- ➔ **Pythagoras' Theorem:**
    - ◆ Definition: State the theorem (In a right-angled triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides).
    - ◆ Visual Explanation: Use simple graphics to show a right-angled triangle and visually demonstrate the theorem.
    - ◆ Example Problem: Walk through a basic problem using Pythagoras' theorem to find the length of the hypotenuse or a missing side.
    - ◆ Real-World Application: Show how Pythagoras' theorem is used in fields like architecture, engineering, and navigation.
- ➔ **Introduction to Trigonometry:**
    - ◆ Definition: Introduce the concept of trigonometry and its importance in studying triangles.
    - ◆ Basic Trigonometric Ratios: Explain sine, cosine, and tangent using a right-angled triangle.
    - ◆ Visual Explanation: Illustrate how these ratios are calculated and how they relate to the angles and sides of the triangle.
    - ◆ Example Problem: Solve a problem involving finding an angle or a side length using trigonometric ratios.
    - ◆ Real-World Application: Highlight the use of trigonometry in areas such as astronomy, physics, and construction.
- ➔ **Integration of Concepts:**
    - ◆ Show how Pythagoras' theorem and trigonometric ratios can be used together to solve more complex problems.
    - ◆ Example: Present a scenario where both concepts are applied to find missing measurements in a triangle.
- ➔ **Conclusion:**
    - ◆ Summarise the key points covered in the animation.
    - ◆ Emphasise the importance of understanding these mathematical concepts for academic success and their practical applications.

Technical Requirements:

- The animation should be clear, concise, and visually appealing.
- Use appropriate software tools (such as [Adobe Animate](#), [Blender](#), [powtoon](#), [synfig](#), [pencil2d](#), [toonz](#)or any other animation software) to create the visuals.
- Include voice-over or text annotations to explain the concepts step-by-step.
- Ensure the content is accessible and easy to understand for students at the middle or high school level. Convert your animation of MP4 to you tube.

Targeted Learning Intentions

I can use and apply Pythagoras' theorem to find the length of an unknown side in a right-angled triangle

I can use the properties of similarity in two-dimensional shapes, including right-angled triangles, to find unknown lengths

use simple trigonometric identities to simplify calculations

Task Instructions

You will create an educational teaching aid to explain how Pythagoras or Trigonometry works.
You will work in a small group of two to create a detailed educational resource for future students and teachers to use. Please make a youtube link for your assessment and upload it on Google classroom..
You are expected to use digital tools to present this You can select any topic from the following list:

1. Find the hypotenuse when short sides are given (Pythagoras)
2. Find the short side when hypotenuse and a short side is given
3. Identify sides in trigonometry and identify an unknown side.
4. Identify an unknown angle.
5. Create a clinometer and use it.
6. This is a group assignment for measurements only.
7. Your trigonometry learning is focussed on working. You will prepare a video presentation for future Year 10 students, to use as a guide to learning steps.
8. You will be assessing your peers on the work input.
9. Part of this assessment grade will be based on your EP assessment.

Using correct formula with working steps	You shown some understanding of ability on how to apply formula using the concepts of Risky Business	You have shown an understanding of creating an animated example for pythagoras theorem and created an informative video using the concepts of Risky Business	You have shown a strong understanding of creating an animated example to apply trig ratio to find unknown side and an unknown angle to create a video using the concepts of Risky Business	You have shown a comprehensive understanding of creating an animated example of showing angle of elevation and angle of depression in a practical situation in your video using the concepts of Risky Business
identifying sides and angles	You have shown some understanding and attempted to find some simple solutions to find unknown lengths of a right angle triangle on Risky Business	You have shown an understanding of finding simple unknown lengths of a right angle triangle on Risky Business	You have shown a strong understanding of formulas to find unknown lengths and unknown angles of a right angle triangle on Risky Business	You have shown a comprehensive understanding of right-angle triangle formula accurately showing all the steps clearly in solving trigonometry problems on Risky Business
Time Management	You have not submitted your assessment	You have not submitted your assessment by the due date	You have submitted your assessment by the due date	You have submitted your assessment by the due date
Overall	**WORKING TOWARDS Curriculum expectation**	**Working AT curriculum expectation**	**Working ABOVE curriculum expectations**	**Working BEYOND curriculum expectation**