

Curriculum links

Year 9 Maths

Investigate Pythagoras' Theorem and its application to solving simple problems involving right angled triangles (VCMMG318)

Learning intention and success criteria

Learning intention

- To use Pythagoras Theorem to solve a problem.

Success criteria

- Draw right angled triangles based information provided on other diagrams and tables.
- Use Pythagoras Theorem to solve the hypotenuse side of a triangle.
- Make conclusions based on a set of calculated values.

Instructions to teachers

This activity has been developed as a problem solving task for students that have a sound understanding of Pythagoras Theorem. Links to resources to help students complete different tasks have been included in the activity.

The worksheet that students complete is a word document that has been designed using the developer function. This means that students can save the document to their device and are able to modify certain sections to record their answers. Although students are able to quickly adapt to this format, it is recommended that you briefly familiarise yourself with the document before you distribute it to students.

Answers including photos of the working out have been provided to you to make feedback to students easier.

Instructions for students

1. Download the activity, save to your device and then select view and select edit document.
2. Complete the activity and resave to your device.
3. Submit the task with a photo of your working out to your teacher for feedback.

Pythagoras Final

Name: Answers

Introduction

Three of your friends have been lucky enough to get tickets to the AFL Grand Final. They are all sitting in different positions and each of them is boasting on an online group chat that they have the best viewing position. You ask each of them to message in their seating position and then draw the diagram below to try to work out who actually has the seat the closest to the action.

Seating position diagram

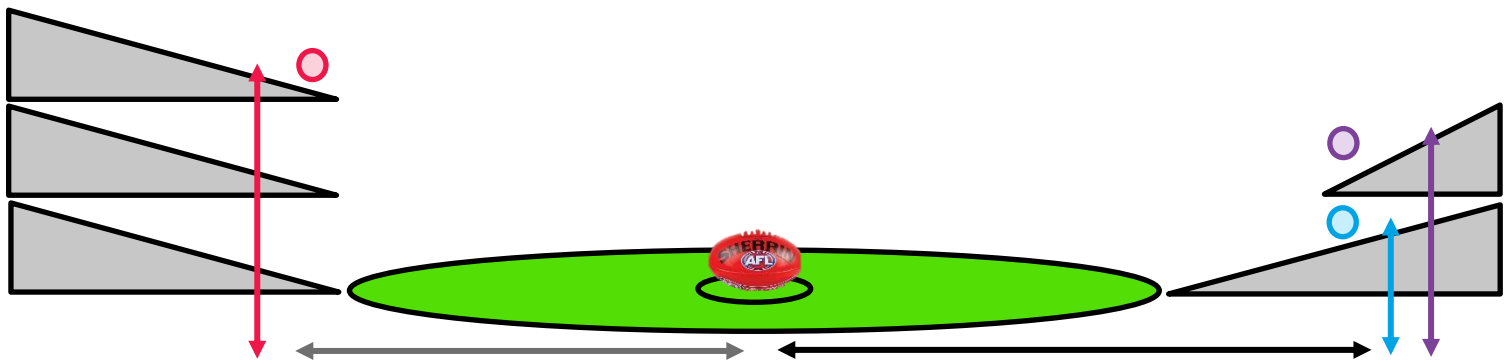





Table One: Key

Structure	Diagram
Playing field	
Stand	
Friends	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  Rodney Red </div> <div style="text-align: center;">  Penny Purple </div> <div style="text-align: center;">  Billy Blue </div> </div>
Measurements	

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Table Two: Measurements

Coloured arrow	Distance in metres
Black	111 m
Grey	82 m
Red	41 m
Blue	13 m
Purple	26 m

Aim

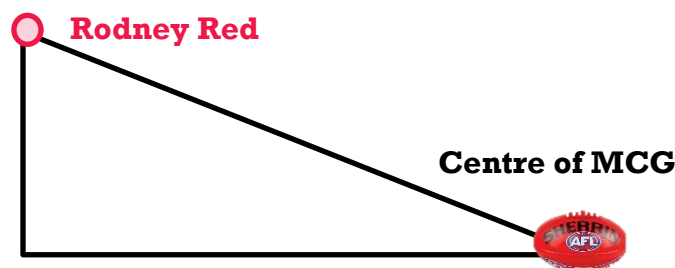
Use Pythagoras Theorem to work which of your friends is sitting closest to the middle of the MCG and tell your friends who actually has the best seat.

If you need help with Pythagoras Theorem, try this online resource:

<https://www.khanacademy.org/math/basic-geo/basic-geometry-pythagorean-theorem/geo-pythagorean-theorem/v/the-pythagorean-theorem>

Tasks

- On a separate piece of paper draw out 3 right angle triangles with your friend as one point, the centre of the MCG as the other point and the point directly below your friend as the third point (see example below)



- Use the measurements in the table above to mark in the known measurements on each of the triangles you have created.
- Use Pythagoras Theorem to solve the unknown length of the triangle to work out who is sitting closest to the action (show working out).
- Complete the table below:

Friend	Distance to middle of MCG (metres)
Rodney Red	91.7 m
Penny Purple	114 m
Billy Blue	111.8 m

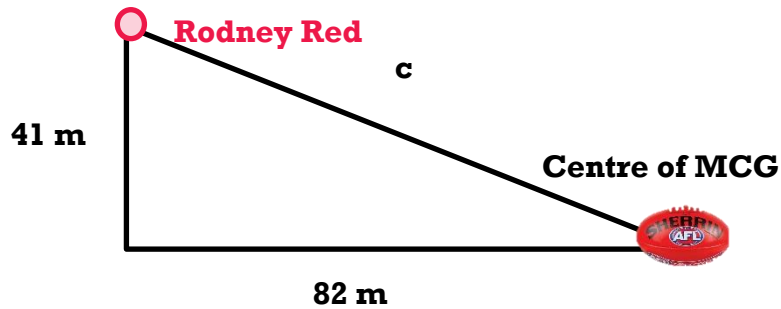
- Complete the sentence below:

Based on the distance to the centre of the MCG, Rodney Red has the best seat at the AFL Grand Final.

- Submit this worksheet along with a photo of your working out to your teacher for feedback.

Working out

Rodney Red



Working out

$$c^2 = a^2 + b^2$$

$$c^2 = 41^2 + 82^2$$

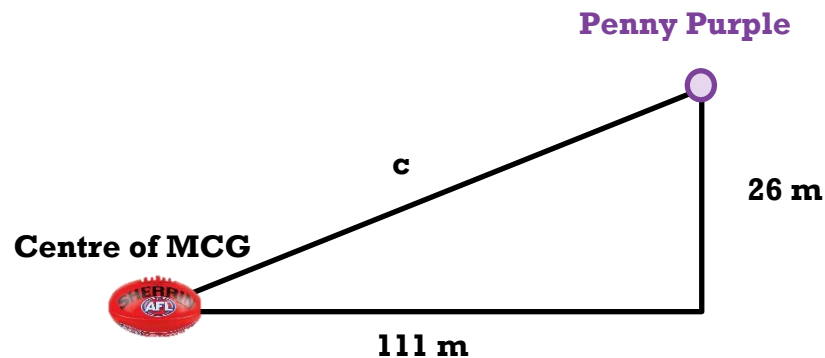
$$c^2 = 8405$$

$$c = \sqrt{8405}$$

$$c = 91.7 \text{ m}$$

Rodney Red is sitting 91.7 m away from the centre of the MCG

Penny Purple



Working out

$$c^2 = a^2 + b^2$$

$$c^2 = 26^2 + 111^2$$

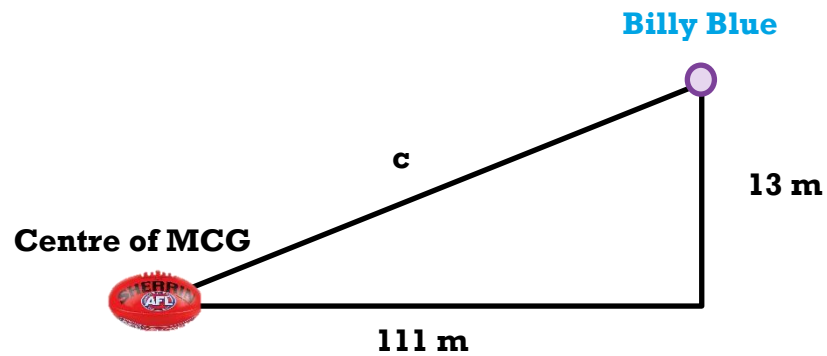
$$c^2 = 12997$$

$$c = \sqrt{12997}$$

$$c = 114 \text{ m}$$

Penny Purple is sitting 114 m away from the centre of the MCG

Billy Blue



Working out

$$c^2 = a^2 + b^2$$

$$c^2 = 13^2 + 111^2$$

$$c^2 = 12490$$

$$c = \sqrt{12490}$$

$$c = 111.8 \text{ m}$$

Billy Blue is sitting 111.8 m away from the centre of the MCG