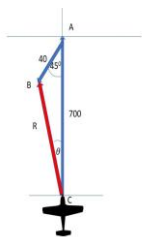


1. Goals



Source: <https://bit.ly/3OWGQZL>

By the end of this unit, students:

- understand the concepts and techniques in combinatorics, geometry and vectors
- apply reasoning skills and solve problems in combinatorics, geometry and vectors
- communicate their arguments and strategies when solving problems
- construct proofs in a variety of contexts including algebraic and geometric
- interpret mathematical information and ascertain the reasonableness of their solutions to problems.

This week's focus:

- Vectors – introduction.
- Polygon of vectors & Position vectors
- Applications of vectors

2. Theoretical Components

WK13:

Vectors: <http://goo.gl/dFhTAv>

Position Vectors: <http://goo.gl/0vurhL>

Watch videos with examples:

Vectors:

Intro: <https://goo.gl/ZrcGL7>

+/-: <https://goo.gl/PGOJMg>

WK14:

Vectors: <http://goo.gl/dFhTAv>

Position Vectors: <http://goo.gl/0vurhL>

Linear Independence: <http://goo.gl/k7rTQ5>
<http://goo.gl/bJgiWy>

Dot Product:

- [Notes & Worked Examples](#)
- [More Examples & Quiz](#)
- [Better explained](#)

Watch the following videos:

Dot Product

- <https://goo.gl/y3hlrj>
- <https://goo.gl/2rYWLn>

Vector Projections:

- <https://goo.gl/q5Sf9B>
- <https://goo.gl/yKTPp4>
- <https://goo.gl/H41y35>
- <https://goo.gl/y3BAVP>

3. Practical Components

STEP 2:

ABOUT/RESOURCES/WK13_14 Vectors

WK13: Ex 13B, 13C, 13D (at least 7 questions from each set)

WK14: Ex 13E (attempt all questions).

4. Investigation

None this week (WK13), but you can attempt this question for fun!

A ship has a speed in still water of 5.7 m/s and is sailing on a heading of 230° . However, there is a current in the water of speed 2.5 m/s flowing on a bearing of 330° . Find the resultant velocity of the ship, giving the speed in m/s to one decimal place and the bearing to the nearest degree.



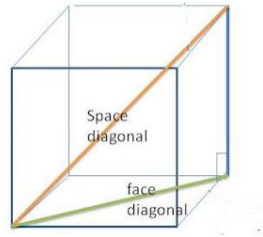
WK14: see next page!

5. QFO

Quiz/Forum/Other

Do this quiz: <https://goo.gl/RU6gmV>

WK14 Investigation:



Consider the cube shown above and study its diagonals.

Use vector methods to find the angle between the space diagonal and the face diagonal.

Hint: you may set one of the vertices of the cube at $(0, 0, 0)$, the next at $(s, 0, 0)$ and so forth.

20 marks