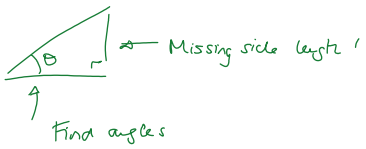
Bearings

Wednesday, 21 February 2018 9:18 AM



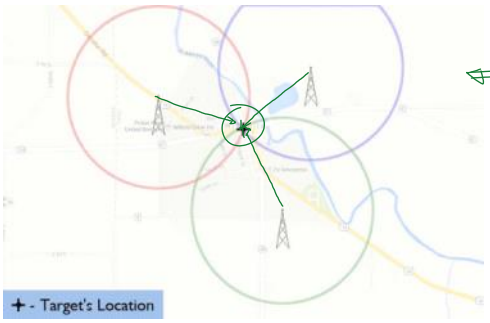
Work to be complete once teaching has finished:

4.4 Bearings	Exercise 4D	Understanding 1-3	2
Let's start: *Navigating a square*		Fluency 4-8	4, 6, 8
Key ideas		Problem-solving 9-12	11, 12
Example 7, 8		Reasoning 13-15	14, 15
		Enrichment 16-17	16, 17

RECAP

There are lots of ways angles are used in real life.
Your mobile phone, for example, is a very clever piece of equipment which is connect to between 3 and 5 satellites at any onetime.
The reason … to help you with GPS functionality.
Google Maps (for example) uses this information to help you get from A to B.

Your mobile phone provider also uses your phone, in a different way, to locate where you are.
It uses, triangulation:



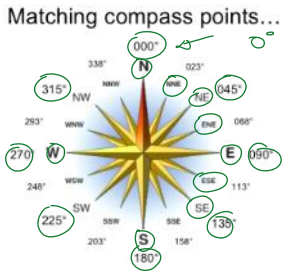
Bearings

Type into Google the word bearing and the chances are you get all sorts of things.

Deep groove ball bearing

Bear ring LOL

Sadly, the Mathematics behind bearings … has nothing to do with jewellery.
And everything to do with angles.



It's always good to ensure you know the points on the compass and how we can reference certain points using NNE notation (for example).

Ships use bearings to help them get around.
It's not like there are roads in the water!

What is a bearing?

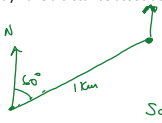
5. the direction or position of something, or the direction of movement, relative to a fixed point. It is usually measured in degrees, typically with magnetic north as zero.
"the Point is on a bearing of 015°"
synonyms: direction, orientation, course, trajectory, heading, tack, path, line, run
"the point is on a bearing of 315°"

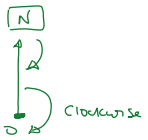
Google.com Dictionary definition

The important thing to know … it's given as an angle (relative to due north) and may have a distance associated with it.

Examples of bearings:

- 060° for a distance of 1 km
- 120° for a distance of 5 cm
- 003° for a distance of 10 miles





Difference between True Bearings and Bearings

TRUE bearings are measured with respect to Magnetic North.
Bearings are measured starting from the direction you are facing.

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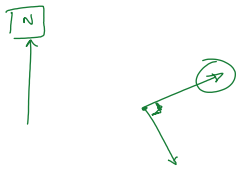
We generally always use True bearings.

They can be written as 110°T

True bearings are always written with three digits.



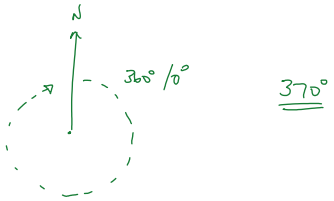
Bearings have some really important features which MUST be present in every diagram.

Bearings are always measured with respect to NORTH.

When you draw a bearing diagram you always need a vertical line.

Bearings are always measured in a clockwise direction.

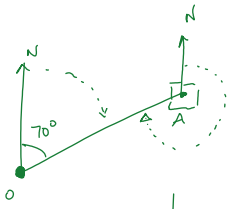
They always start from North 0°.

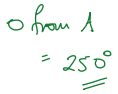


Make sure you understand what the word FROM means

When we try and find a bearing of A **from** O ... it means something very different from finding the bearings of O **from** A.

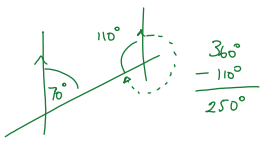
I always make sure I put my pen/pencil on the FROM letter pointing NORTH. And then turn clockwise to make sure I'm finding the correct angle.



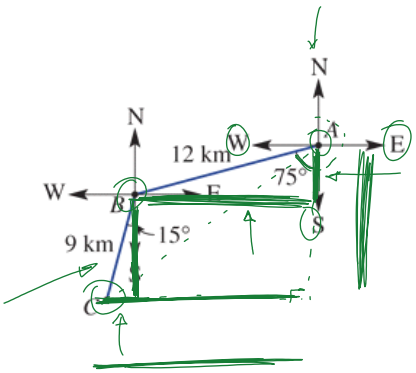


Bearings use the FUZX rules for angles.

They can also use trigonometry!
Which is probably why it's in the trig section.

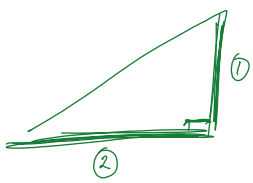


EXAMS



This is a (deliberately) complex example from the end of the chapter, which highlights how bearings can be used with Trig and FUXZ along with other geometry terms.

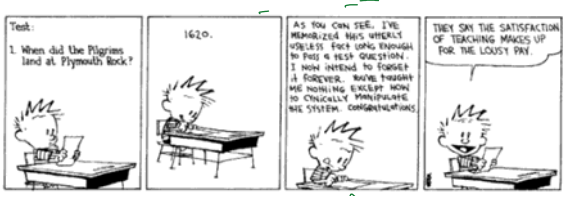
Remember, that Maths is NOT a subject which should be learnt in chapters, revised for when there is a test, and then promptly forgotten.



Pythag

Remember:

There is a **HUGE** difference between understanding vs cramming and remembering for a test.

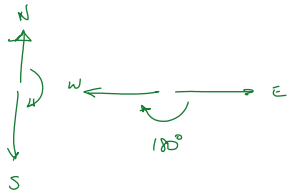


Examples:

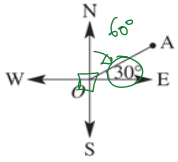
Write down the bearing which is opposite to 030°T

+180°

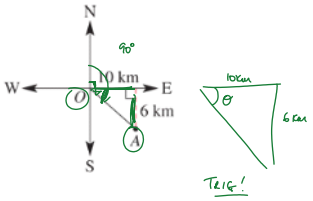
210°T



Give the true bearings from O to A.



Find the true bearing, correct to the nearest degree, of point A from O.



Tan θ

θ + 90° = True Bearing