

Problem Solving in Context - Accessing the right/best tools from the tool-box

Notes such as this plan below prompt students to unpack a question such as "find x"

Solving for unknowns in

3 things (1 of which we need to find)

3 sides
Pythagoras' theorem

2 sides,
1 angle
trig ratios

3 angles
internal angles = 180°

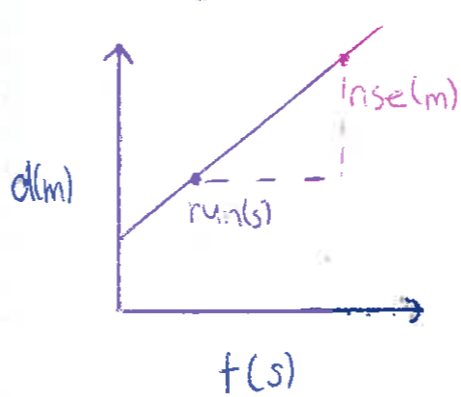
Trainer writing, many students have been introduced to trigonometry problems with drills of similar questions and maybe with tricks such as which replace

* 2

Drills of similar questions tend to build a dependence on rehearsing a method shown, rather than encouraging students to think through each task for themselves.

Motion Graphs (Kinematics) (Science)

In science we often measure distance against time and graph our results. Why?



Because the gradient of this graph is

$$\frac{\text{rise}}{\text{run}} = \frac{\Delta \text{ distance (m)}}{\Delta \text{ time (s)}} = \frac{\text{m}}{\text{s}}$$

"Δ = change in"

or ms⁻¹ (metres per second)

eg. Find Meg M's speed for this sprint (with a 3m handicap)



2 Replacing the task of rearranging a simple formula such as $F=ma$ with

a. Find $D=1$
 $by=n$



$$\frac{\text{rise}}{\text{run}} = \frac{\Delta d}{\Delta t} = \frac{10\text{m}}{9\text{s}} = 1.1\text{ms}^{-1}$$

are often used by teachers to replace accessible algebra habits with the task of

memorising and then getting an answer with algebra-avoidance

Why?
Remembering the good habit of algebra makes the short term seem more accessible but does major long term damage