

SPIRIT Maths



Students' Perceptions Informing and Redefining Innovative Teaching of Mathematics in Higher Education

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Background & motivation

- MTU: 6 campuses; over 100 degree programmes; 18,000 students.
- Mathematics is a service department to other (applied) disciplines.
- Typical degree programme at MTU: 6×5 credit modules.
- Students are assessed in all 6 modules, hence a heavy assessment schedule.
- A typical maths module: 3h lectures + 1h tutorial/lab + 3h of independent learning per week.
- Many students work part-time jobs.

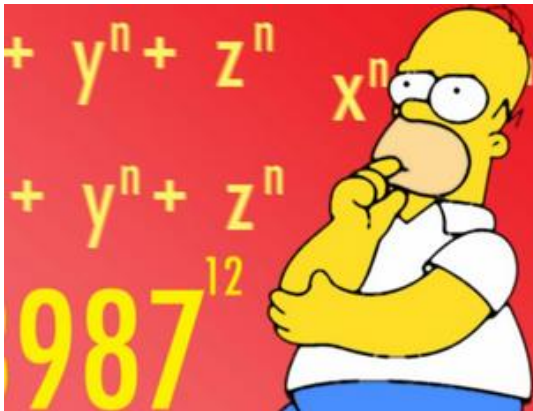


Centrality of Mathematics in MTU

Numbers (2021)



- Total of 3169 first year students in MTU
- Out of 120 programmes in MTU 81 include at least one maths/stats module
- 2260 (71.3%) of first year students had at least one maths/stats module



Challenges:

- Over half of first year students find mathematics difficult
- Two in five students don't think they can get better at maths
- One in three students just want to pass the module

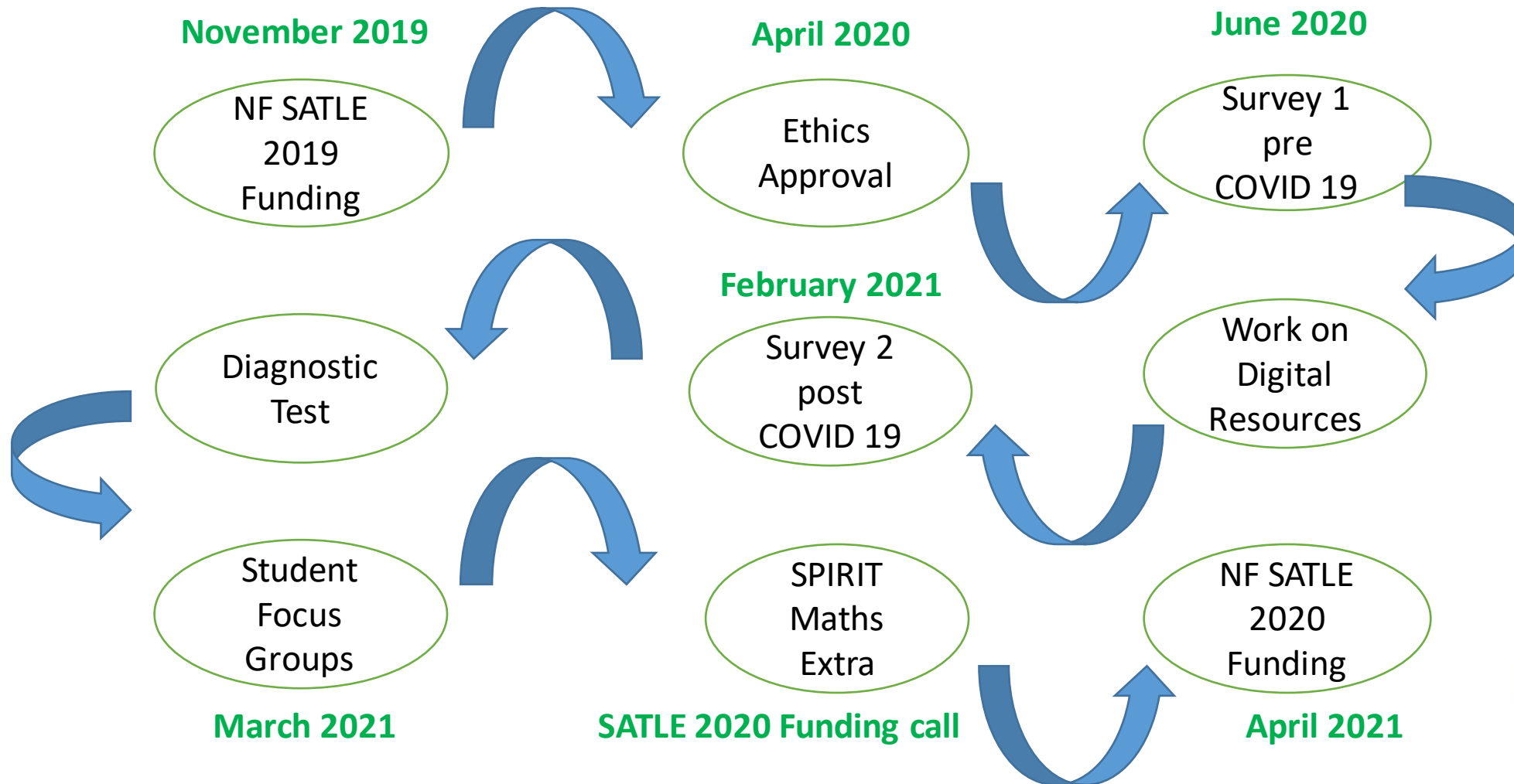
SPiRiT Maths

Mission

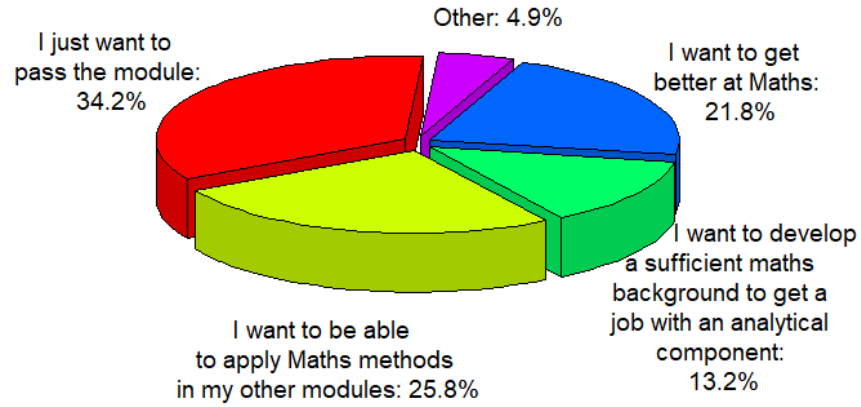
- gain insights into students perceptions and dispositions towards mathematics;
- uncover factors behind students difficulties;
- explore students' preferences for digital learning resources;
- develop a suite of novel digital tools to support learning of mathematics;
- develop a diagnostic test that will identify 'at risk' first year students.



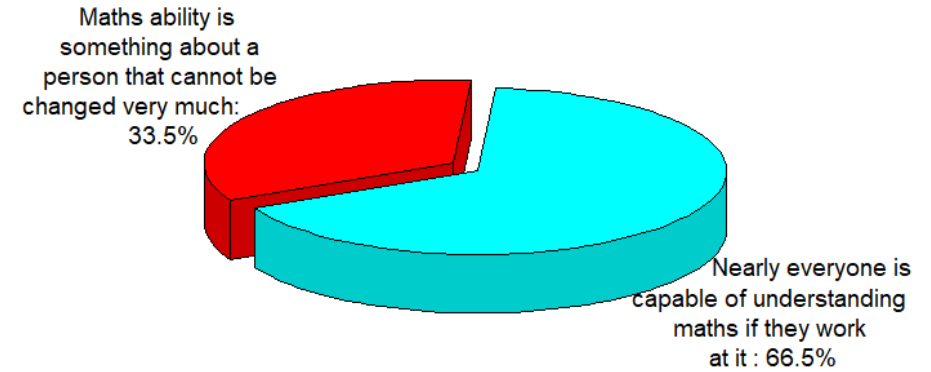
SPiRiT Maths Timeline 2020/2021



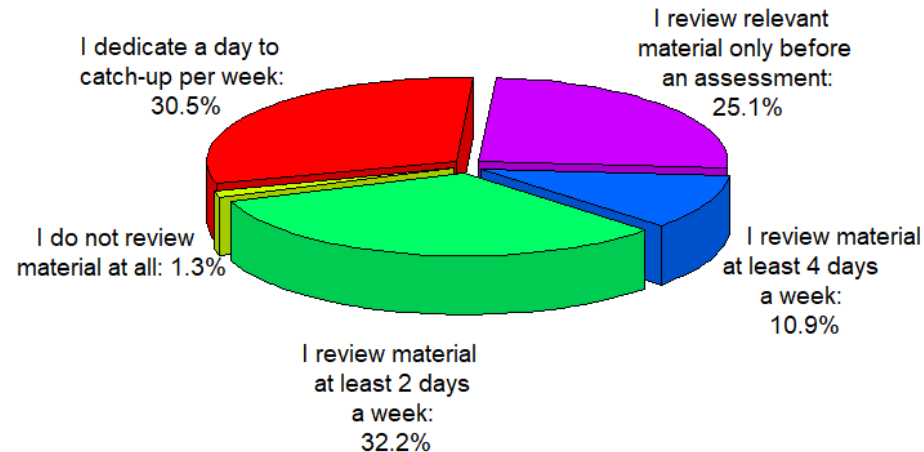
Main motivation for doing well in a Maths modules (n = 325)



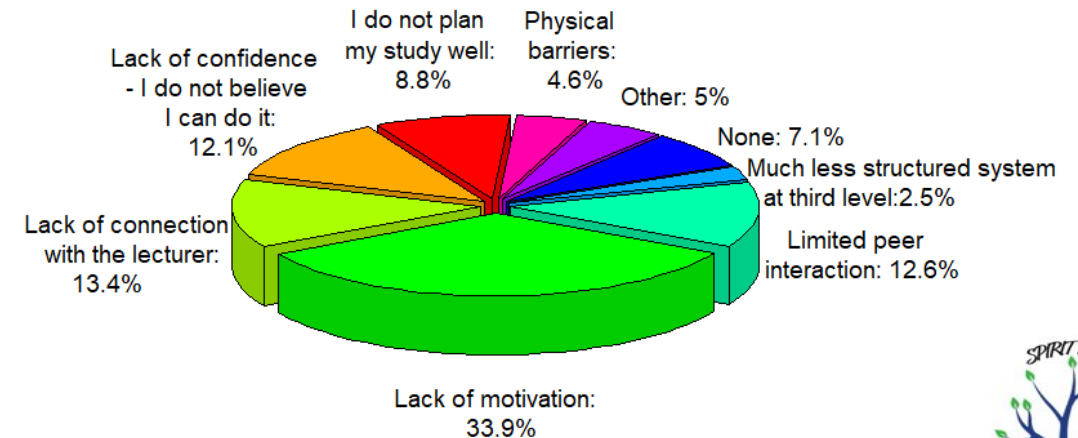
Which of the following two statements best describes your opinion of Maths? (n = 325)



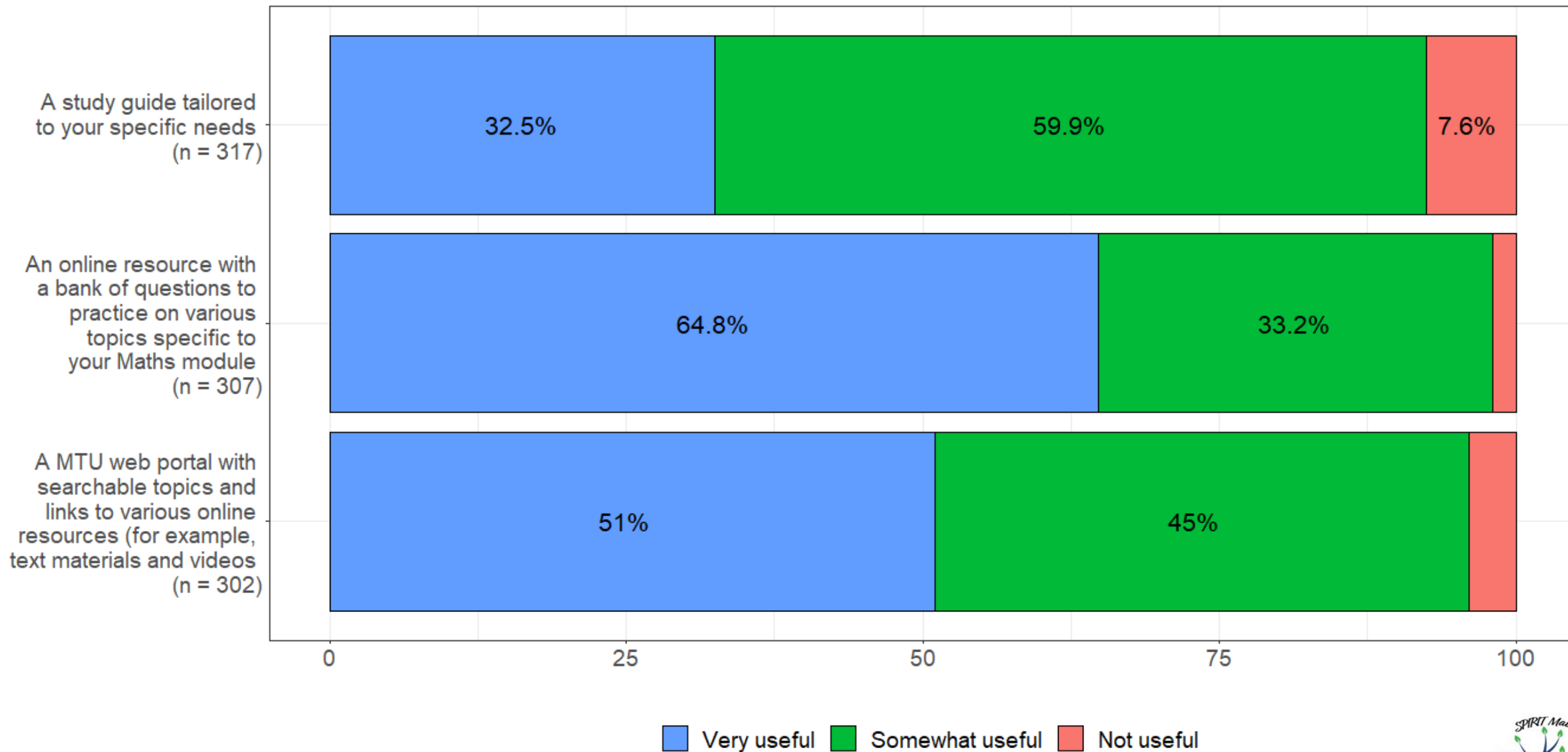
Which of the following best describes your study approach to your Maths module? (n = 239)

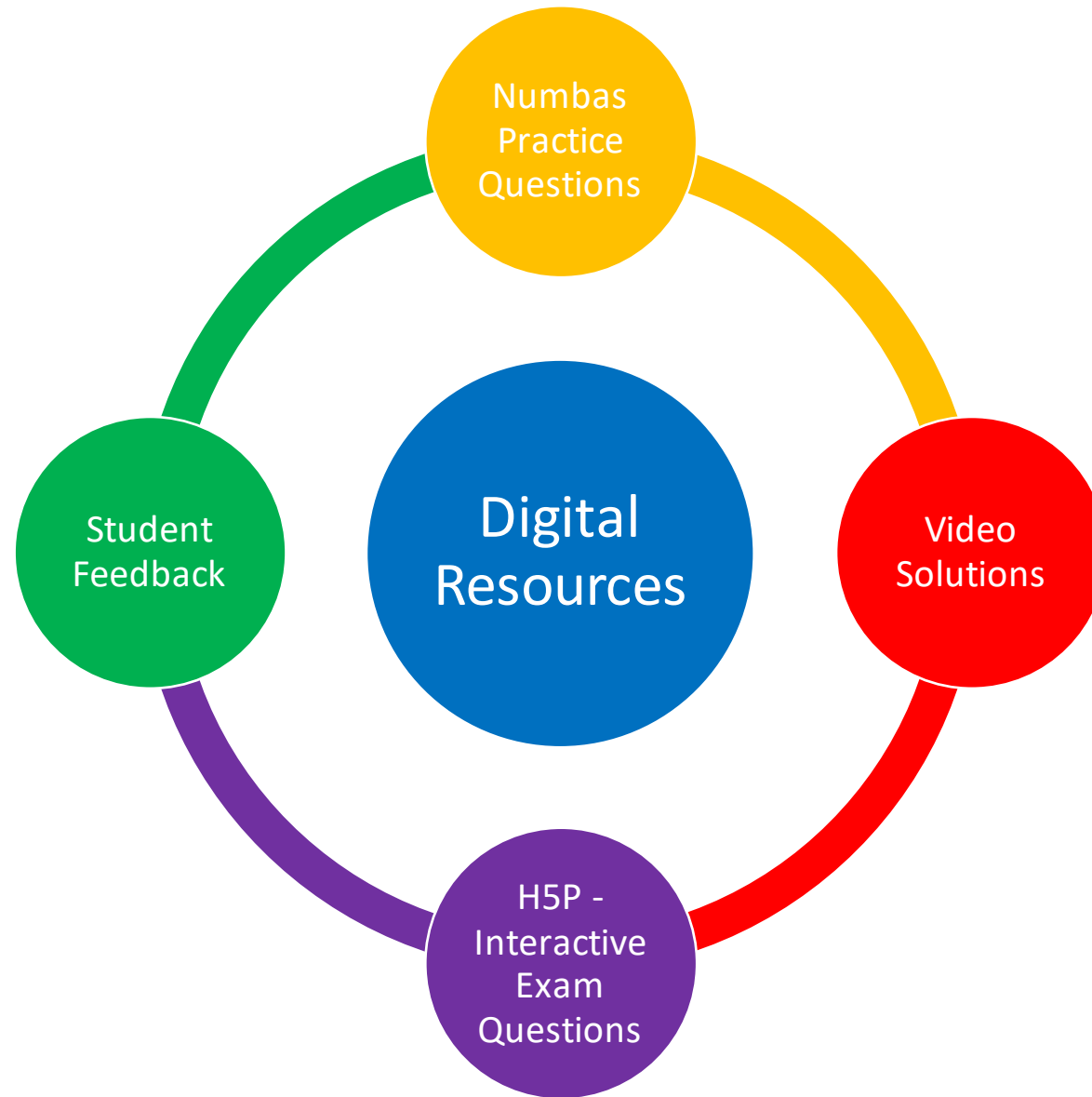


While learning Maths remotely, what is the biggest obstacle to your active participation in the module? (n = 239)



Rate the following digital resources in terms of their usefulness to you





Novel digital learning resources



Work out your answer and enter it to check if it's correct

Exercise: Solve for x in the following equation, rounding your answer to 3 decimal places:

$$6e^{3.1x} = 23$$

Write in your answer below.

$x =$

Q1 (b)

A car was purchased for €17,500. It depreciates at a rate of 1.2% per month. Calculate the value of the car after 4 years. Round your answer to the nearest cent.

€

H5P

Practise more questions of this type, get hints and instant feedback

Question progress: **Solve for x**

Solve for x in the following equation, giving your answer to 3 decimal places:

$$3e^{0.8x} = 5$$

$x =$ Round your answer to 3 decimal places.

Or, you could:

Solve for x	0/2
Total	0/2

A car was purchased for €28500. It depreciates at a rate of 2.25% per month.

Calculate the value of the car after 3 years. Round your answer to the nearest cent.

Value of the car after 3 years: €

Advice

The formula for depreciation is:

$$A = P(1 - i)^n$$

where:

- A represents the value of the asset after n months
- P represents the original value of the asset
- i represents the rate of depreciation per month
- n represents the number of months

In this example:

$P = €28500$

$i = 0.0225$

$n = 12 \times 3 = 36$

then

$$A = €28500(1 - 0.0225)^{36} = €12561.7$$

NUMBAS

Watch a video of worked solution

Worked Example Video:

Solve for x in the following equation, rounding your answer to 3 decimal places:

$$3e^{-2.7x} = 8$$

$$\frac{3e^{-2.7x}}{3} = \frac{8}{3}$$

MULTIPLICATION by 3
cancels
DIVISION by 3

Video

(b) A car was purchased for €17,500. It depreciates at a rate of 1.2% per month. Calculate the value of the car after 4 years? Round your answer to the nearest cent. (4 marks)

$A = P(1 - i)^n$ → age of asset (in months)

In this example,

$P = 17500$

$i = 1.2\% = 0.012$

Current value of asset (after 4 months)

SPIRIT Maths Team



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