Information for Interested Schools/Institutions

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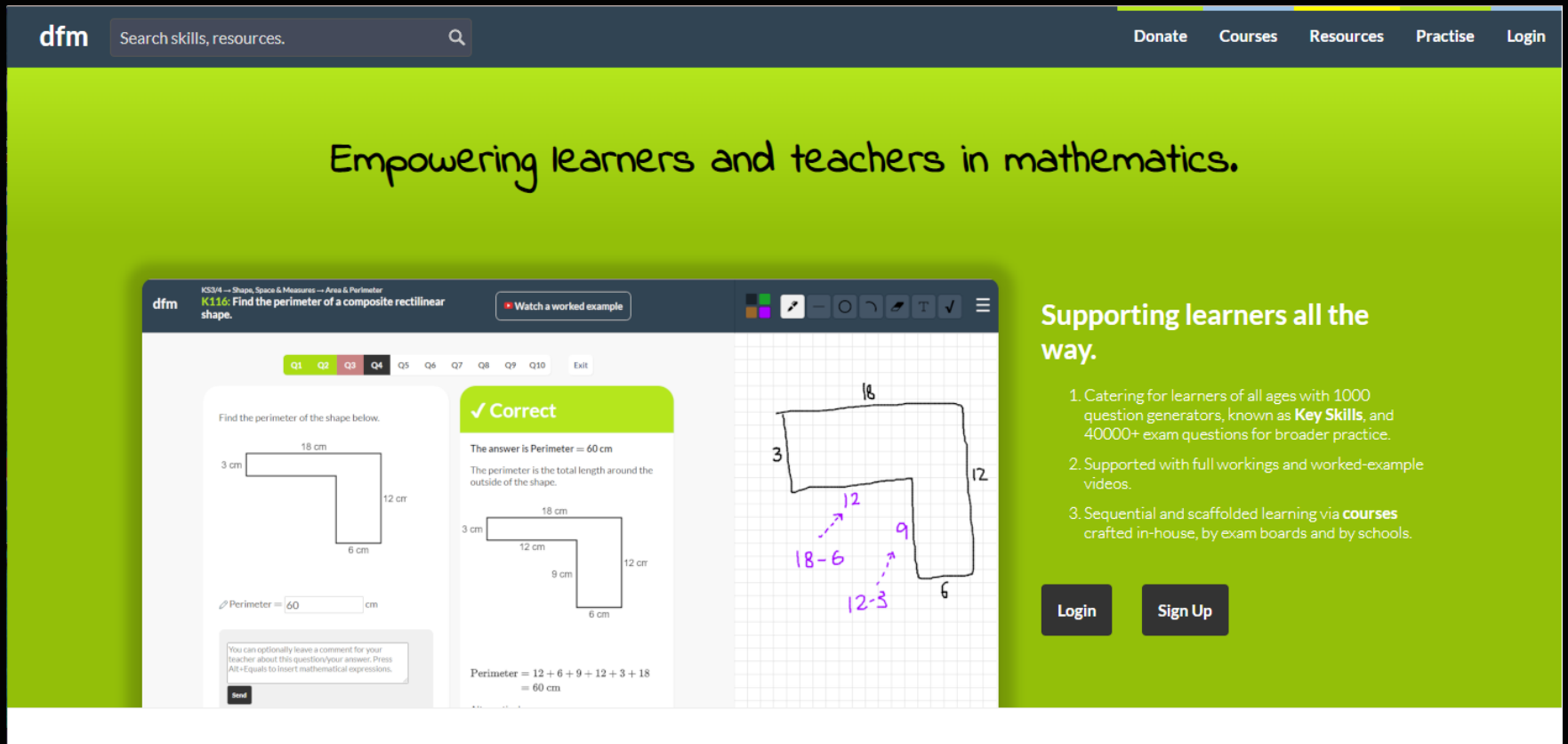
DFM Learning is a registered charity in England and Wales (no 1194954)

What is DrFrostMaths?

We are a charity offering a diverse set of teaching resources and tools including

1. **downloadable teaching slides/worksheets and videos for KS3-5,**
2. **tools for building worksheets**
3. **a online platform for KS2-5 students to practise questions and teachers to set work.**
4. **the capacity for schools, publishers and trusts to design a curriculum.**



Site Structure

Analytics
Student performance.
Export reports.

Courses

Questions

Downloadable Resources
Downloadable slides + worksheets intended for classroom use.
+ Computer Science platform.

Utilities

Numeracy
Times/divide tables games.

'Fixed Questions'
42,000 questions, incl Edexcel, AQA, OCR, SQA, Eduqas, UKMT. Broader topic structure but questions can have multiple topics assigned.

Longer topic-based videos.

Key Skills
Randomly generated questions intended for repetitive practice, more fine-grained in skills involved.

Shorter worked solution videos.

DFM Whiteboard
Can connect with student whiteboards and ability to import exam questions to annotate over.

DFM Live!
Whole class interactive game played on mobile devices.

Build/Output worksheet
to Word, with markscheme.

Set to Students
as homework or 'assessment'. Or students can initiate practice themselves.

dfm Key Features

dfm

Calculator Permitted
Author: Edexcel
Difficulty: 1 2 3 4

Get Video Help on this Topic

Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Exit

[Edexcel Linked Pair June 2017 Methods 2H Q14]

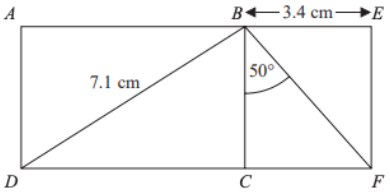


Diagram **NOT** accurately drawn

$ABCD$ and $BEFC$ are rectangles.
$BD = 7.1$ cm
$BE = 3.4$ cm
Angle $CBF = 50°$

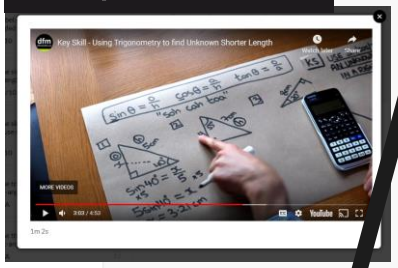
Work out the size of angle BDC.
Give your answer correct to one decimal place.

(5 marks)

°

Submit Answer Skip for Now

Help videos.



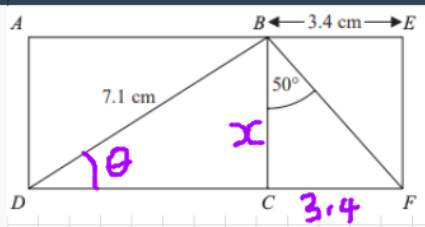


Diagram **NOT** accurately drawn

$\tan 50 = \frac{3.4}{x}$

$x = \frac{3.4}{\tan 50} = 2.8529$

$\sin\theta = \frac{2.8529}{7.1}$

$\theta = \sin^{-1}\left(\frac{2.8529}{7.1}\right)$

=

Mini-Whiteboard.
Teachers can require working be submitted.

Teachers can also set work as a 'formal assessment', such that feedback is not given.

The 'Key Skills' system randomly generates questions on fine-grained question types.

dfm

You've gained a point for this key skill.

Get to 6 to complete this skill, or get to 10 to reach Master level.

Example

Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Exit

Informative dynamically generated feedback.

Work out

$$\frac{3}{8} + \frac{9}{16}$$

Give your answer in its simplest form.

$\frac{15}{16}$

You can optionally leave a comment for your teacher about this question/your answer. Press Alt+Equals to insert mathematical expressions.

Send

Written feedback system between student and teacher.

✓ Correct

The answer is $\frac{15}{16}$

To begin with, find the Lowest Common Denominator (LCD), which is the smallest number that 8 and 16 go into.

The LCD is 16.

Then multiply the first fraction top and bottom by 2 so that both denominators are 16.

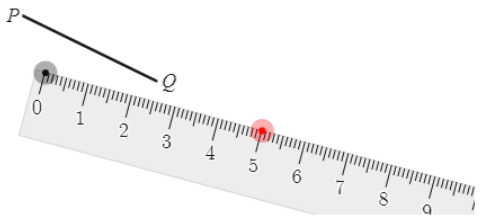
$$\frac{3}{8} + \frac{9}{16} = \frac{6}{16} + \frac{9}{16}$$
$$= \frac{6+9}{16}$$
$$= \frac{15}{16}$$

Next Question Continue Later

Teachers can either set a fixed set of questions, or set an automated task with Key Skills within a specific topic, where the difficulty increases and decreases within the task based on the performance of the student.

Q1 Exit

Use the ruler to measure the length of the line PQ drawn below.



Give your answer in centimetres.

Instructions:
- drag the black dot to move the ruler
- drag the red dot to rotate

cm

Solve for x:

$$\frac{5}{3x+4}+\frac{4}{3x+1}=3$$

$x =$ -1

or $x =$ $\frac{1}{3}$

You can optionally leave a comment for your teacher about this question/your answer. Press Alt+Equals to insert mathematical expressions.

Send

✓ Correct

The answer is $x=\frac{1}{3}$ or $x=-1$

$$\frac{5}{3x+4}+\frac{4}{3x+1}=3$$
$$\frac{5(3x+1)+4(3x+4)}{(3x+4)(3x+1)}=3$$
$$\frac{15x+5+12x+16}{(3x+4)(3x+1)}=3$$
$$\frac{27x+21}{(3x+4)(3x+1)}=3$$
$$27x+21=3(3x+4)(3x+1)$$
$$27x+21=3(9x^2+3x+12x+4)$$
$$27x+21=$$
$$27x+21=$$
$$0=$$

Using the quadratic formula:

$x=\frac{1}{3}$ or $x=-1$

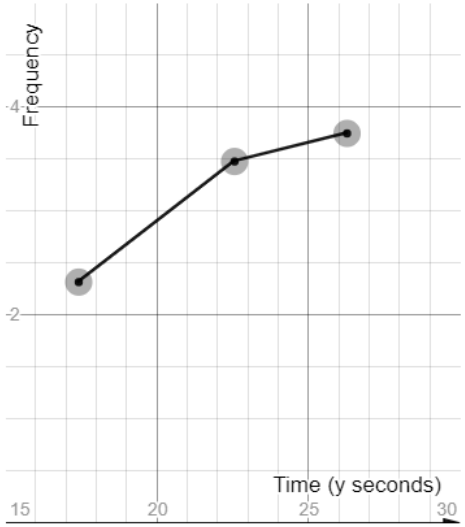
Next Question Continue Later

Draw a frequency polygon.

Joana collects the running times of 7 athletes and records the data in the table below.

Draw a frequency polygon for the data in the table.

Time (y seconds)	Frequency
$15 < y \leq 20$	3
$20 < y \leq 25$	1
$25 < y \leq 30$	3



900 Key Skills so far and new ones created every week.

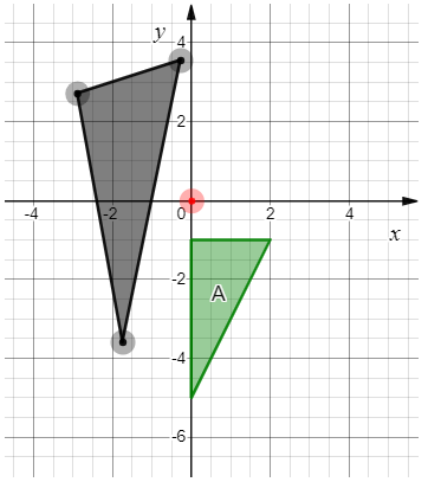
desmos

Get Fresh Example

Enlarge a shape by an integer scale factor.

Enlarge the shape by scale factor 2 about the point $(0, -6)$.

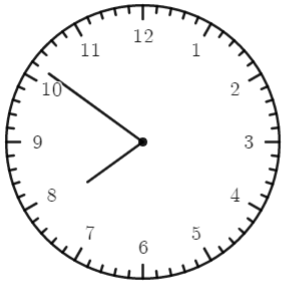
You can use the red dot to mark the centre of enlargement.



Submit Answer

Tell the time from an analogue clock.

Write down the time shown on the clock below, using the 12-hour clock.



Input note: do not include "am" or "pm" in your answer.

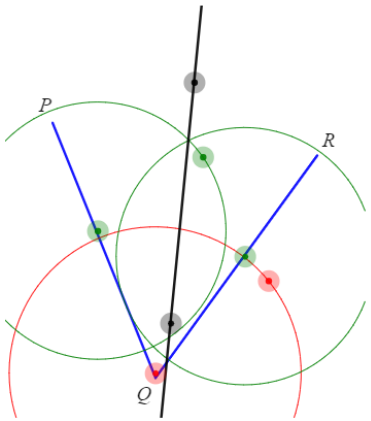
7 : 51

Get Fresh Example

Construct the bisector of an angle.

Bisect $\angle PQR$ drawn below.

Instructions:
*- Move the **red** dots and use these as a compass.*
- Move the green dots and use these as a compass.
Changing the radius of one green compass will change the radius of the other.
- Move the black dots to move the answer line.

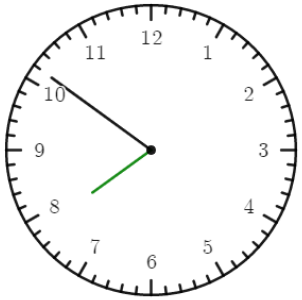


Submit Answer

✓ Correct

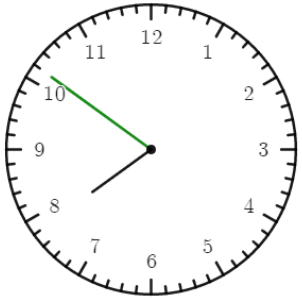
The answer is $7 : 51$

Use the little hand to read the hour: it is between 7 and 8 so it is in the 7 o'clock hour.



Use the big hand to read the minutes: it is between 10 and 11 so use 10, multiply this number by 5 and add the 1 remaining tick.

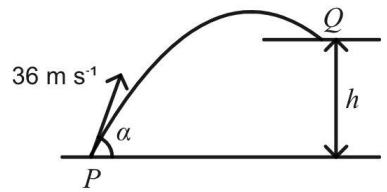
$10 \times 5 + 1 = 51$



Therefore the time is $7 : 51$

We use **Desmos** to allow high quality interaction from students, as well as generating diagrams for questions and answer explanations.

A small ball is projected with speed 36 m s^{-1} from a point P on horizontal ground. The angle of projection is α above the horizontal. A horizontal platform is at height h metres above the ground.



The ball moves freely under gravity until it hits the platform at the point Q, as shown. The speed of the ball immediately before it hits the platform at Q is 23 m s^{-1}.

Find the value of h.

$h =$ 39 m

You can optionally leave a comment for your teacher about this question/your answer. Press Alt+Equals to insert mathematical expressions.

Send

...including Key Skills for age 16+.

✔ Correct

The answer is $h = 39$ m

① Resolve the velocity at A:

$$R(\rightarrow) : u_x = 36\cos\alpha$$
$$R(\uparrow) : u_y = 36\sin\alpha$$

② Resolve the velocity at B
The horizontal component remains constant; use Pythagoras' theorem to find the vertical component at B.

$$R(\rightarrow) : v_x = 36\cos\alpha$$
$$R(\uparrow) : v_y = \sqrt{23^2 - (36\cos\alpha)^2}$$

③ Use *suvat* from A to B:

$$s = h$$
$$u = 36\sin\alpha$$
$$v = \sqrt{23^2 - (36\cos\alpha)^2}$$
$$a = -g$$
$$t =$$

$$\begin{aligned} v^2 &= u^2 + 2as \\ 23^2 - (36\cos\alpha)^2 &= 1296\sin^2\alpha - 2gh \\ 529 - 1296\cos^2\alpha &= 1296\sin^2\alpha - 2gh \\ 2gh &= 1296\cos^2\alpha + 1296\sin^2\alpha - 529 \\ 2gh &= 1296(\cos^2\alpha + \sin^2\alpha) - 529 \\ 2gh &= 1296 - 529 \\ 2gh &= 767 \\ h &= \frac{767}{2g} \\ h &= 39 \text{ m (to 2 sf)} \end{aligned}$$

Next Question | Continue Later

Lots of classroom tools for teachers…

'**Annotate**' button, when viewing a question on the site, loads it up in the DFM Whiteboard for quick annotation.

dfm

[Edexcel Linked Pair June 2017 Methods 1H Q18 Edited]

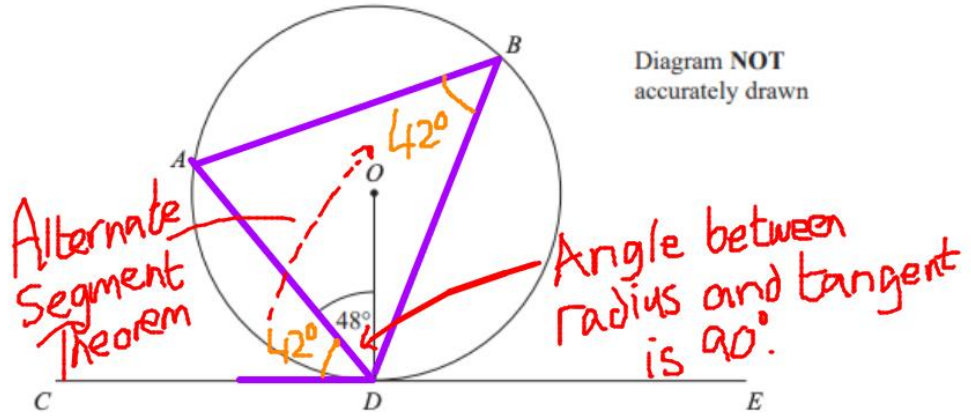


Diagram **NOT** accurately drawn

A, B and D are points on a circle, centre O.
CDE is a tangent to the circle.
Angle $ADO = 48°$

Work out the size of angle ABD.

(4 marks)

°

dfm Key Features

dfm | Search students, resources | Courses | Resources | 22 | J Frost

Courses → Schools → Tiffin School →

Year 7

Welcome to Tiffin School! In Year 7 you will reencounter some of the topics you learnt in Year 6, although in more depth, as well as some new ones. The topics you learn in Years 7-11 are broadly divided into four 'strands': Number (e.g. factors, primes, divisibility, decimals, percentages), Algebra (e.g forming and solving equations), Shape & Space (e.g. angle laws, area/perimeter of shapes) and Data Handling & Probability.

Assigned Classes: 7KEH | 7RC | 7SER | 7HXB | 7MAG | 7RG

Autumn 1

- Negative Numbers
- BIDMAS and Calculator Use
- Algebraic Expressions
- Fractions
- Revision

Autumn 2

- Sequences
- Number Theory

Spring 1

- Fractions, Decimals & Percentages
- Angles

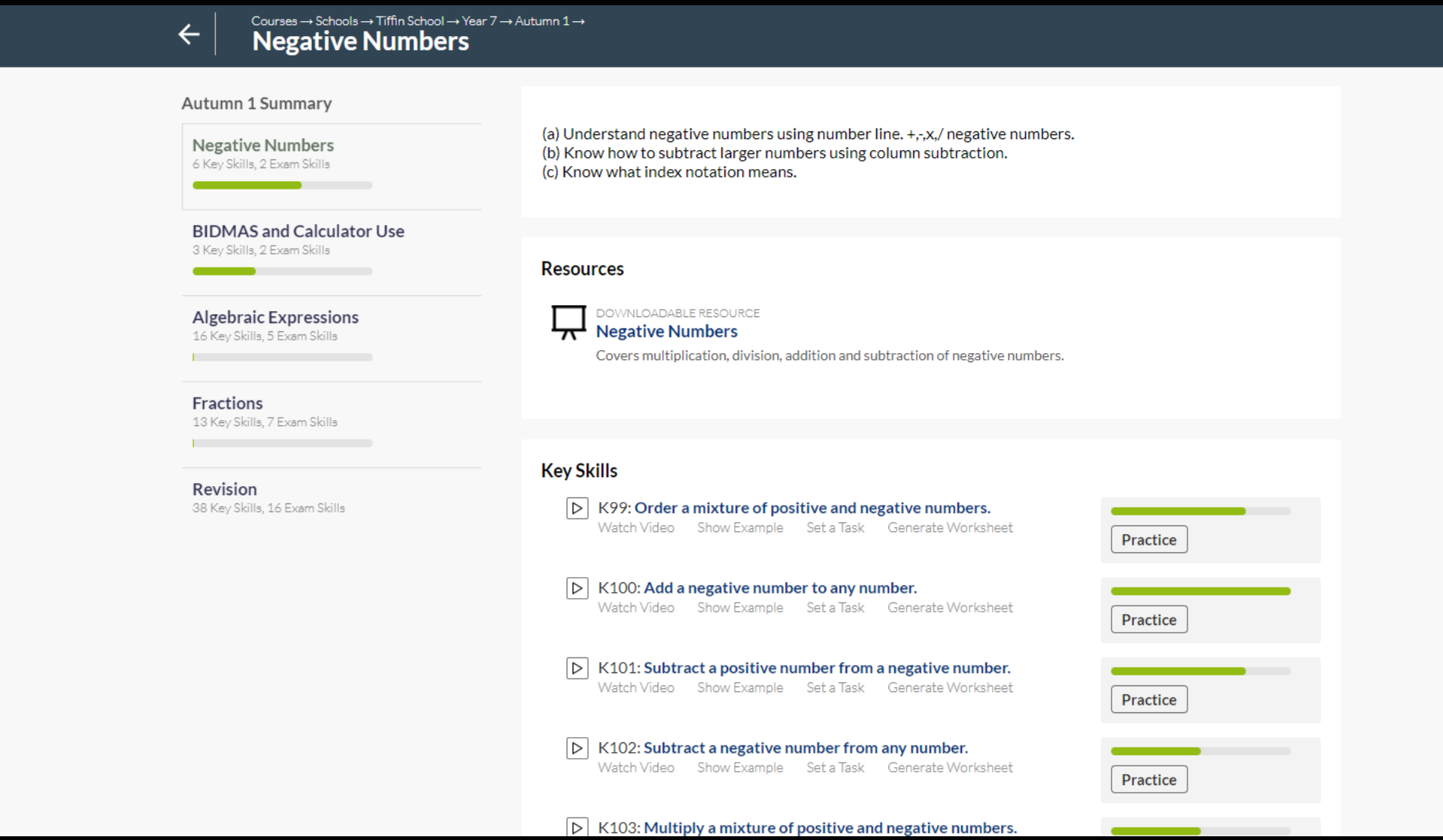
Easily **design courses/Schemes of Work** for your institution…

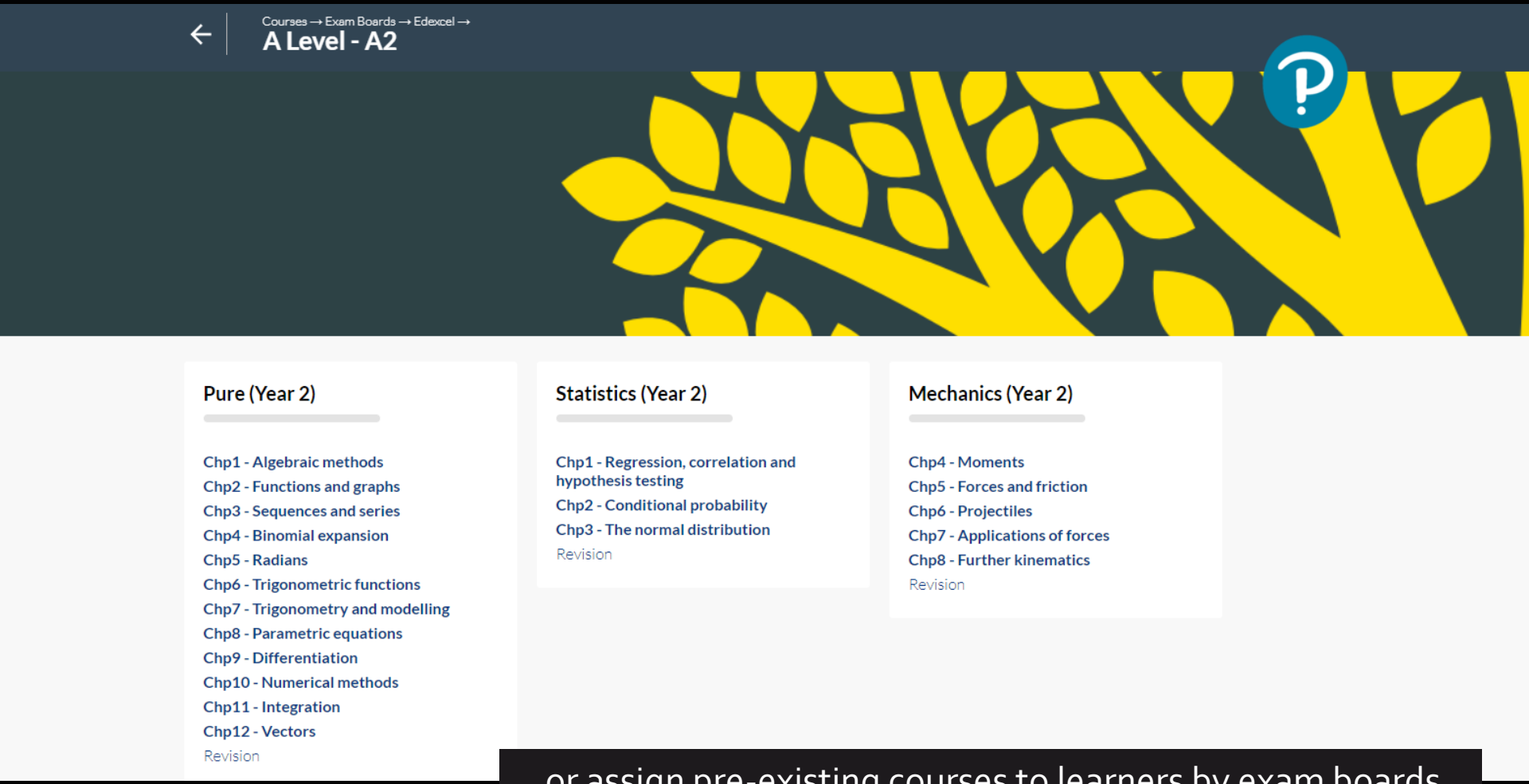
Spring 2

Summer 1

Summer 2

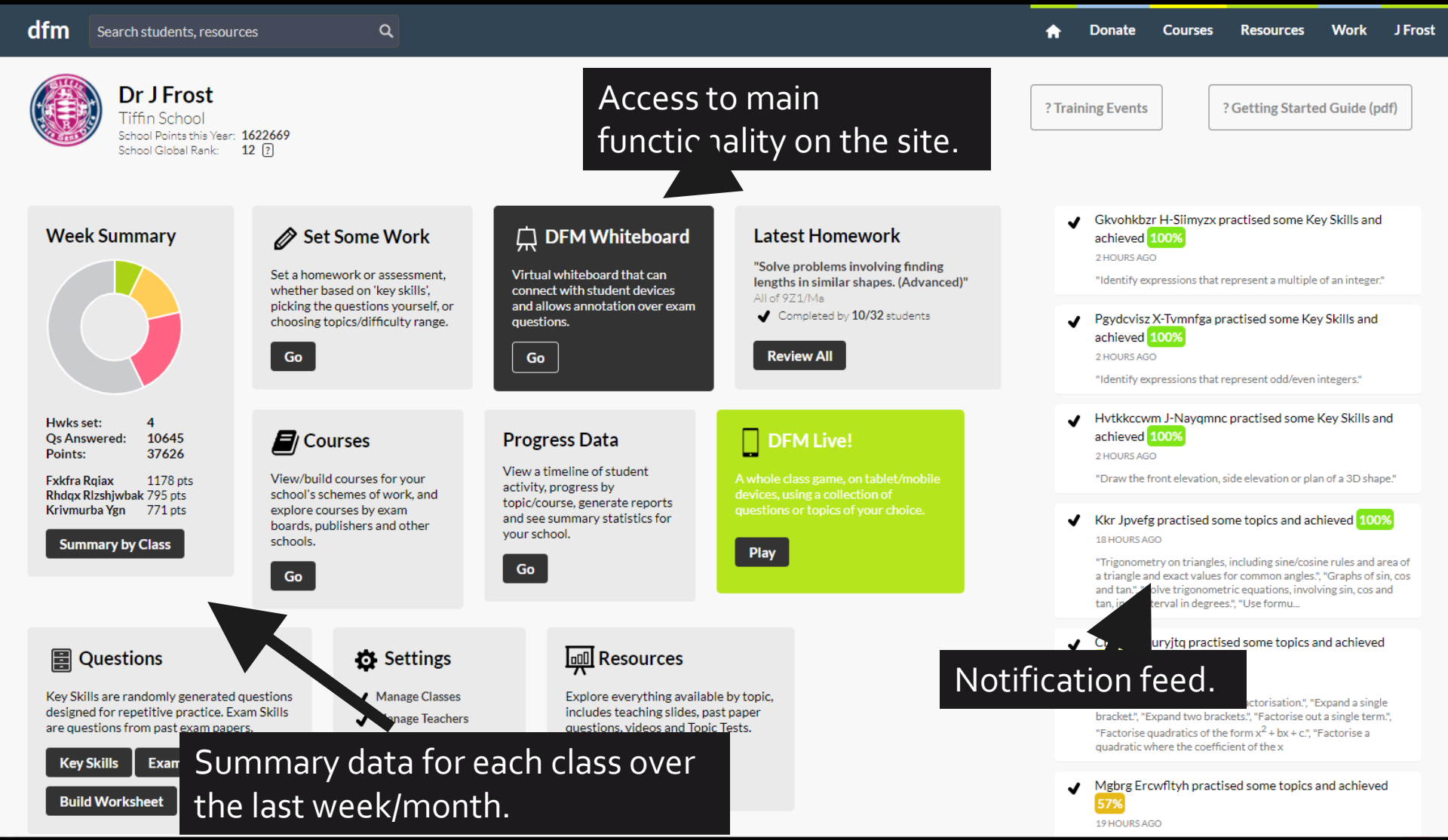
...that involves a mixture of rich-text content, reference to PowerPoints on the site/external resources, use of the Key Skill system, collections of questions and Topic Tests.
Students can see their progress on the course and teachers can monitor.



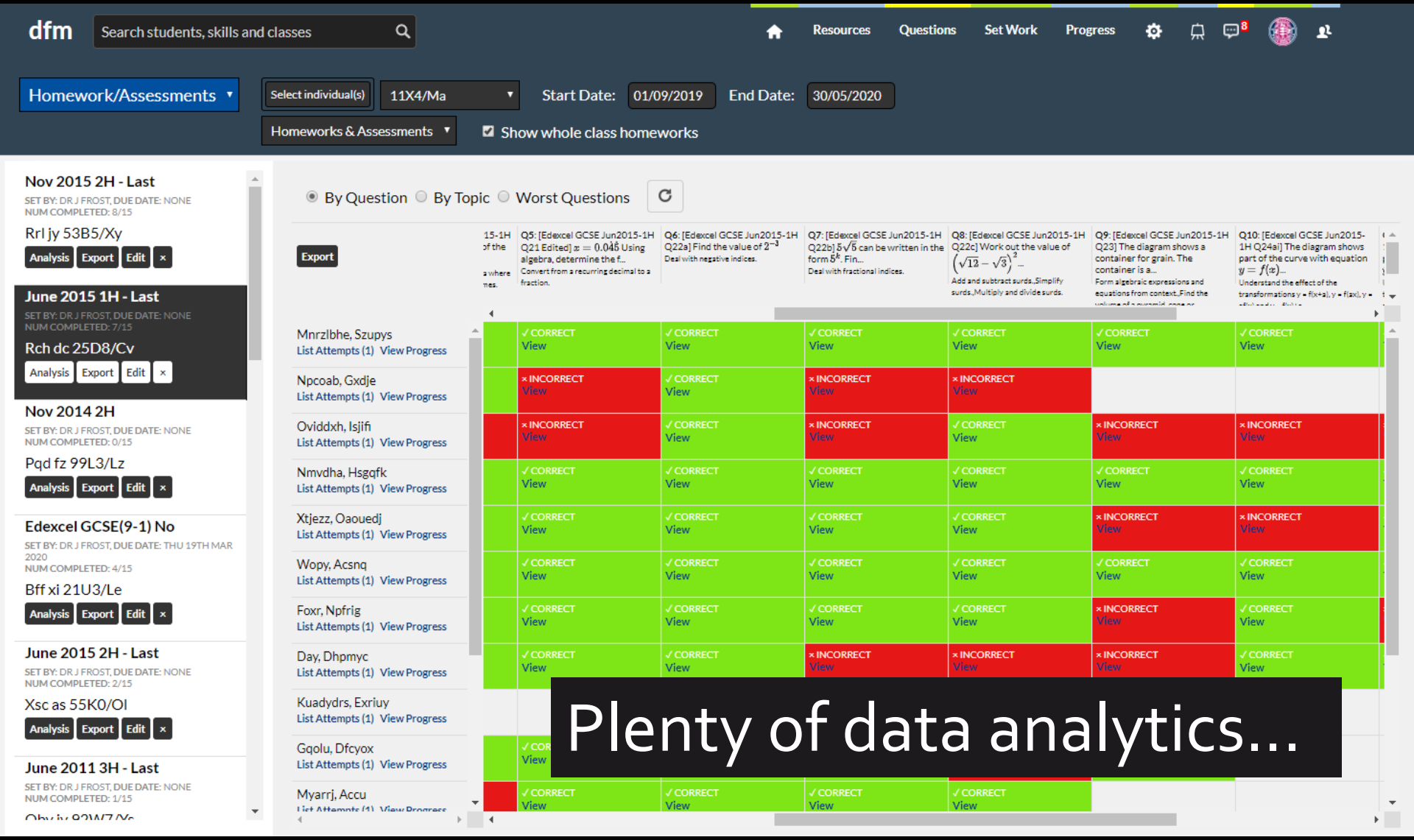


...or assign pre-existing courses to learners by exam boards (e.g. Edexcel) and publishers such as **White Rose Maths**.

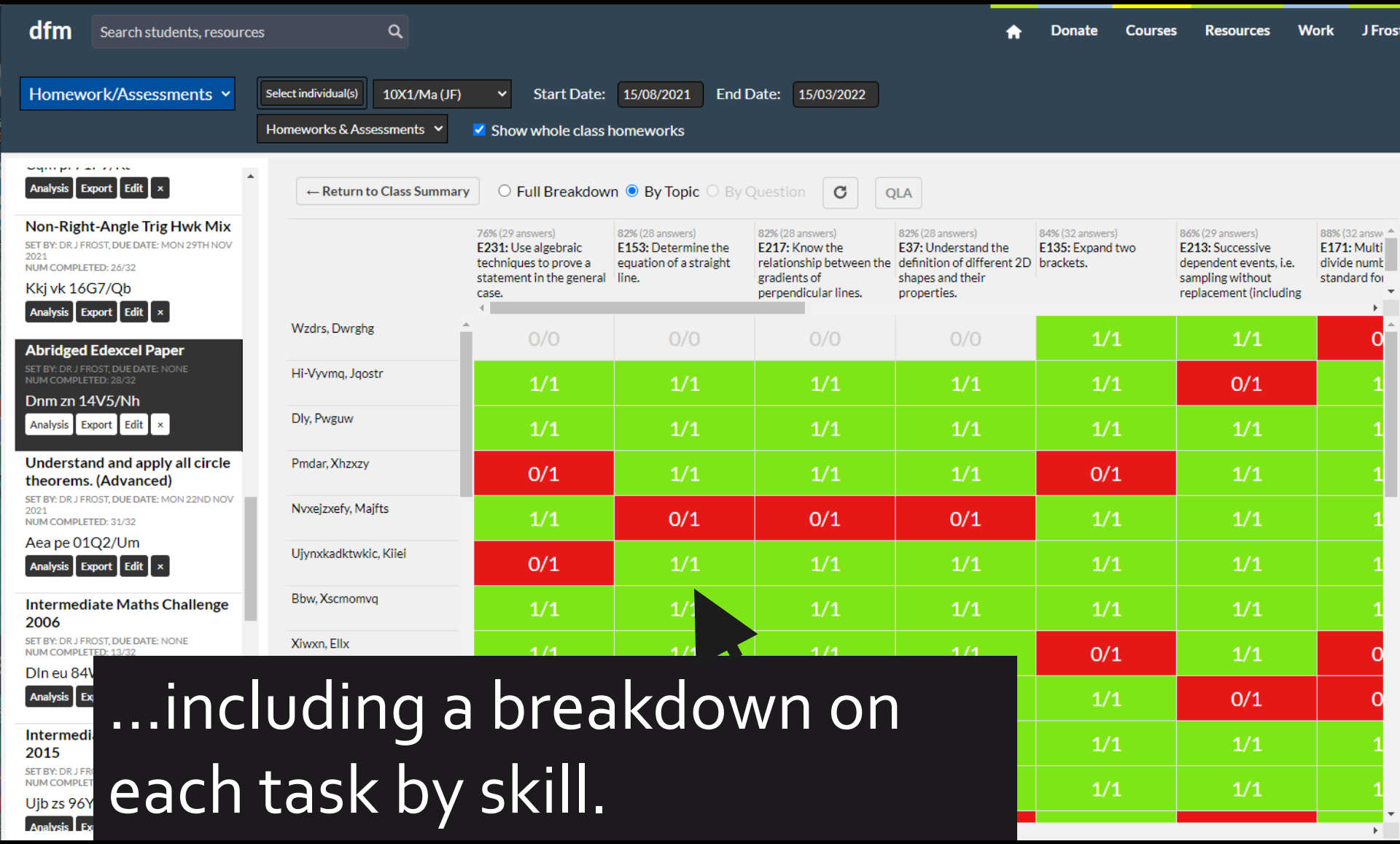
Home dashboard



dfm Key Features



dfm Key Features



...including a breakdown on each task by skill.

dfm Key Features

Full Breakdown | By Topic | By Question | Worst to Best

Export to Word

Question 7

35% correct (17 attempts)

$3+\frac{6}{x+5}+\frac{1}{x+1}$

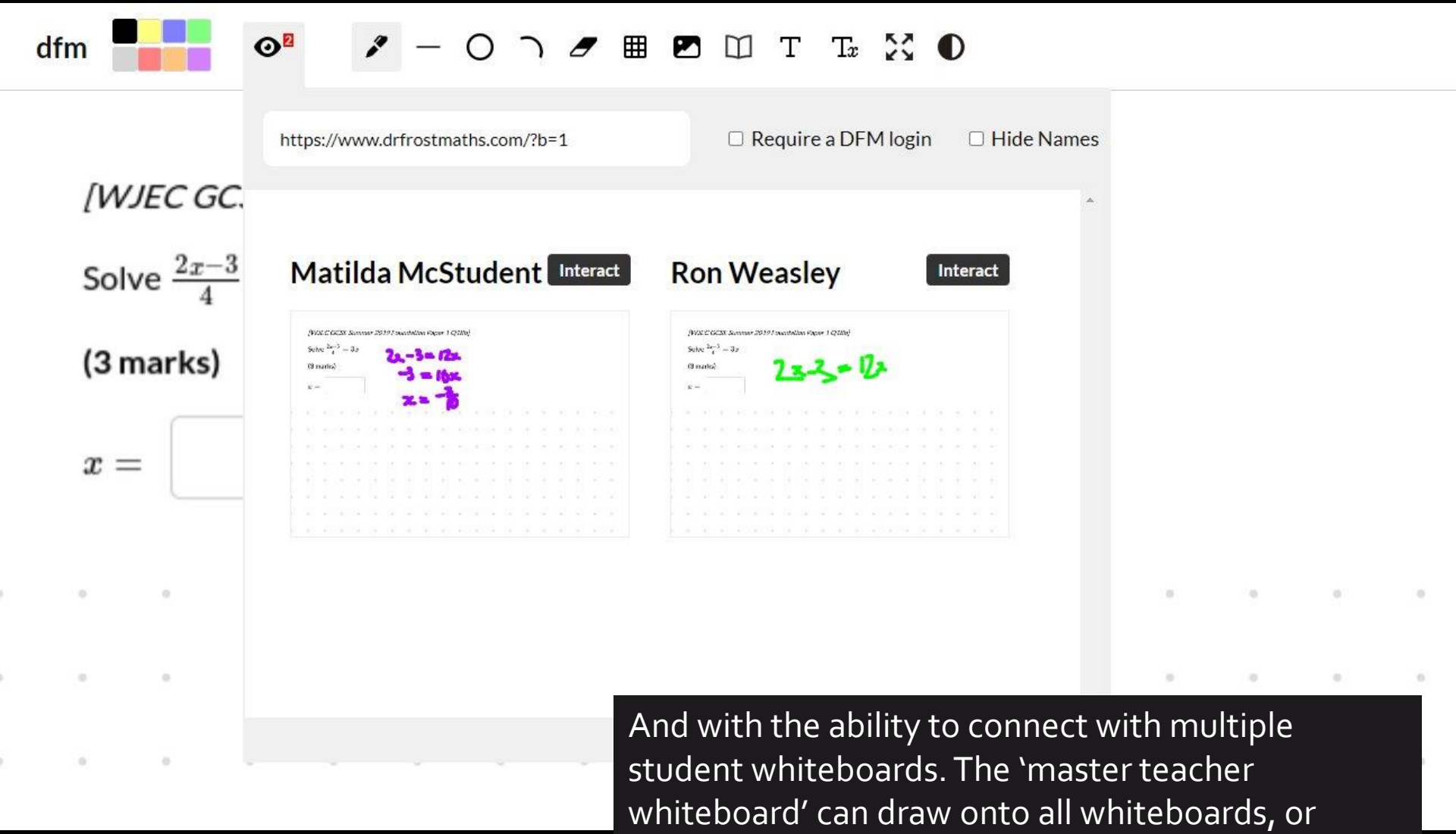
✓ 12%	$3+\frac{6}{x+5}+\frac{1}{x+1}$
✓ 12%	$3+\frac{1}{(x+1)}+\frac{6}{(x+5)}$
✓ 6%	$3+\frac{1}{x+1}+\frac{6}{x+5}$
✓ 6%	$\frac{6}{x+5}+\frac{1}{x+1}+3$
× 18%	$\frac{1}{x+1}\div\frac{6}{x+5}$
× 6%	$\frac{-6}{x+5}\div\frac{1}{x+1}$
× 6%	$3+\frac{7x+11}{x^2+6x+5}$
× 6%	$\frac{6}{\ldots}\div\frac{1}{\ldots}$

Express

$$\frac{3x^2+25x+26}{x^2+6x+5}$$

in partial fractions

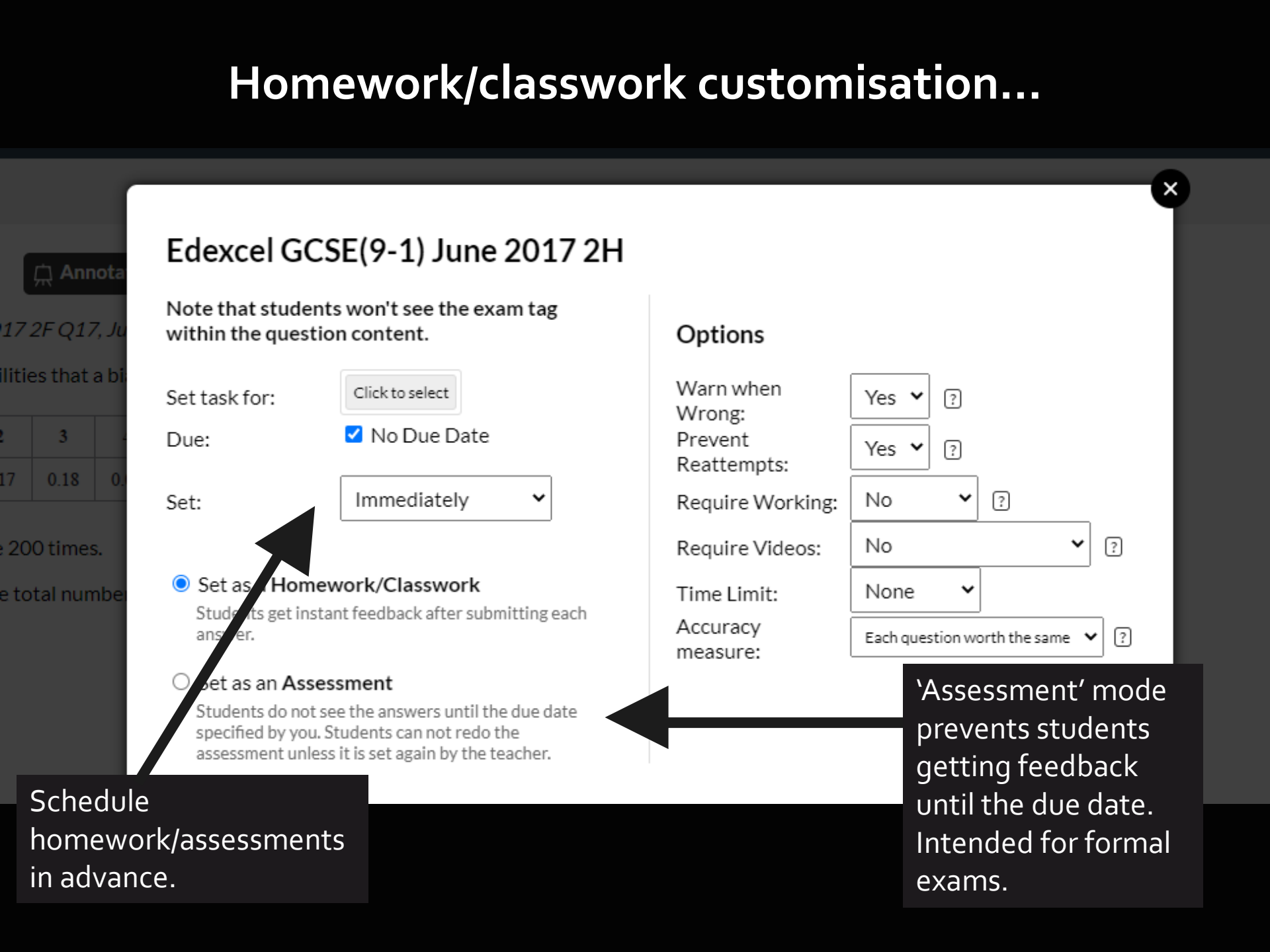
...and identifying misconceptions.



And with the ability to connect with multiple student whiteboards. The 'master teacher whiteboard' can draw onto all whiteboards, or interact with individual ones.

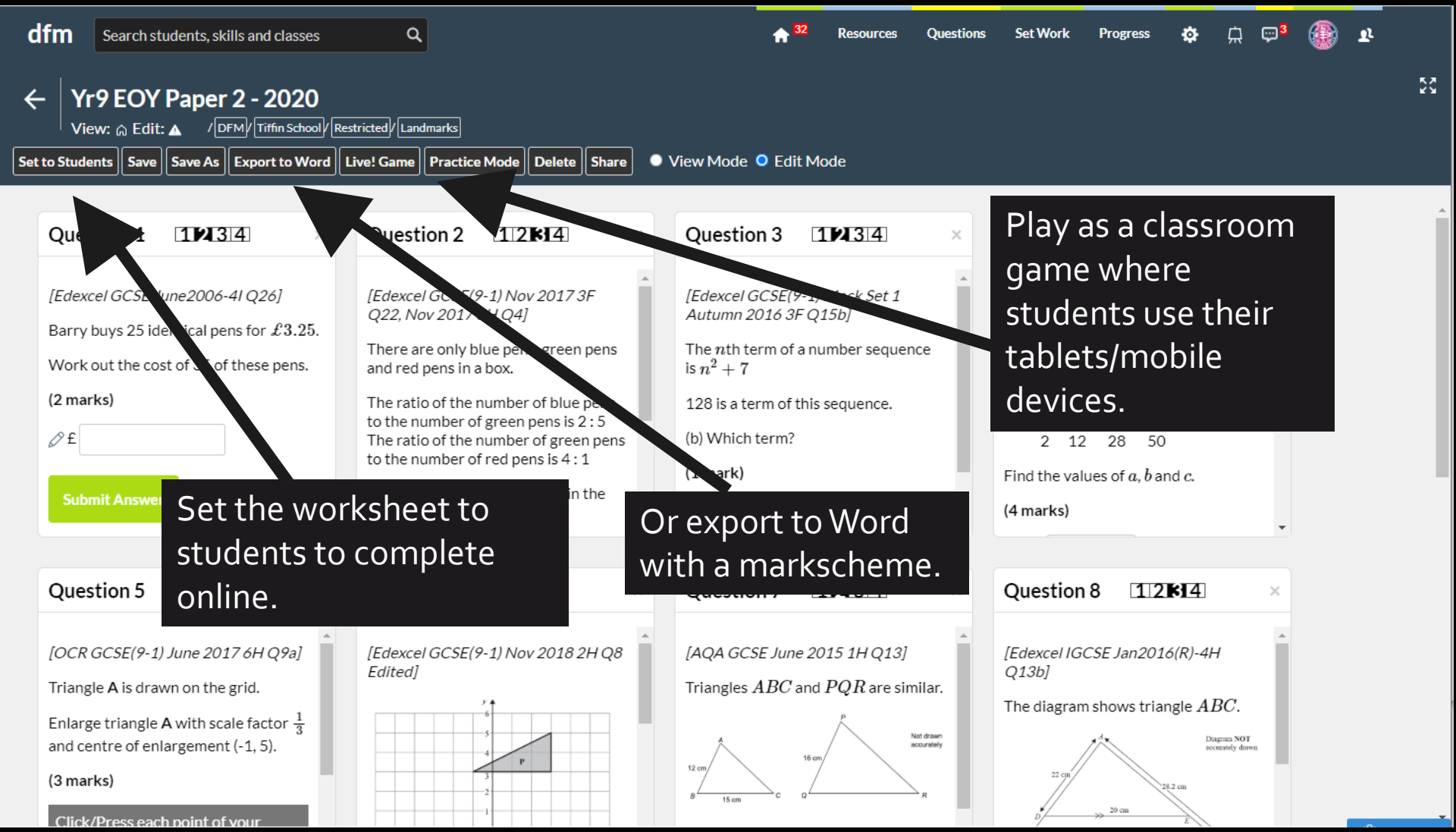
You can choose from ~41,000 questions (mostly past papers) to 'project' onto the student screens.

Homework/classwork customisation…



Build collections of questions with ease…

41,000 questions in the fixed database, with a mixture of Edexcel, AQA, OCR, UKMT, Eduqas/WJEC, KS2/3 SATs.



13X2 Homework

Question 1

Solve $\tan(2x - 20) = 0$ in the interval $-180^\circ < x < 90^\circ$

Give your solution(s) correct to 2 decimal places where appropriate.

$x =$ ..... $^\circ$

$x =$ ..... $^\circ$

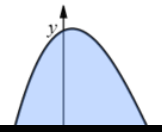
$x =$ ..... $^\circ$

Question 2

The diagram below shows the graph of

$$f(x) = (x + 1)(x - 2)(x - 3).$$

Find the exact area of the shaded region.



Exported paper in Word with mark scheme automatically generated.

				$x < \frac{1.75}{2.25}$ is A0

Question 14

$\frac{8}{42}$

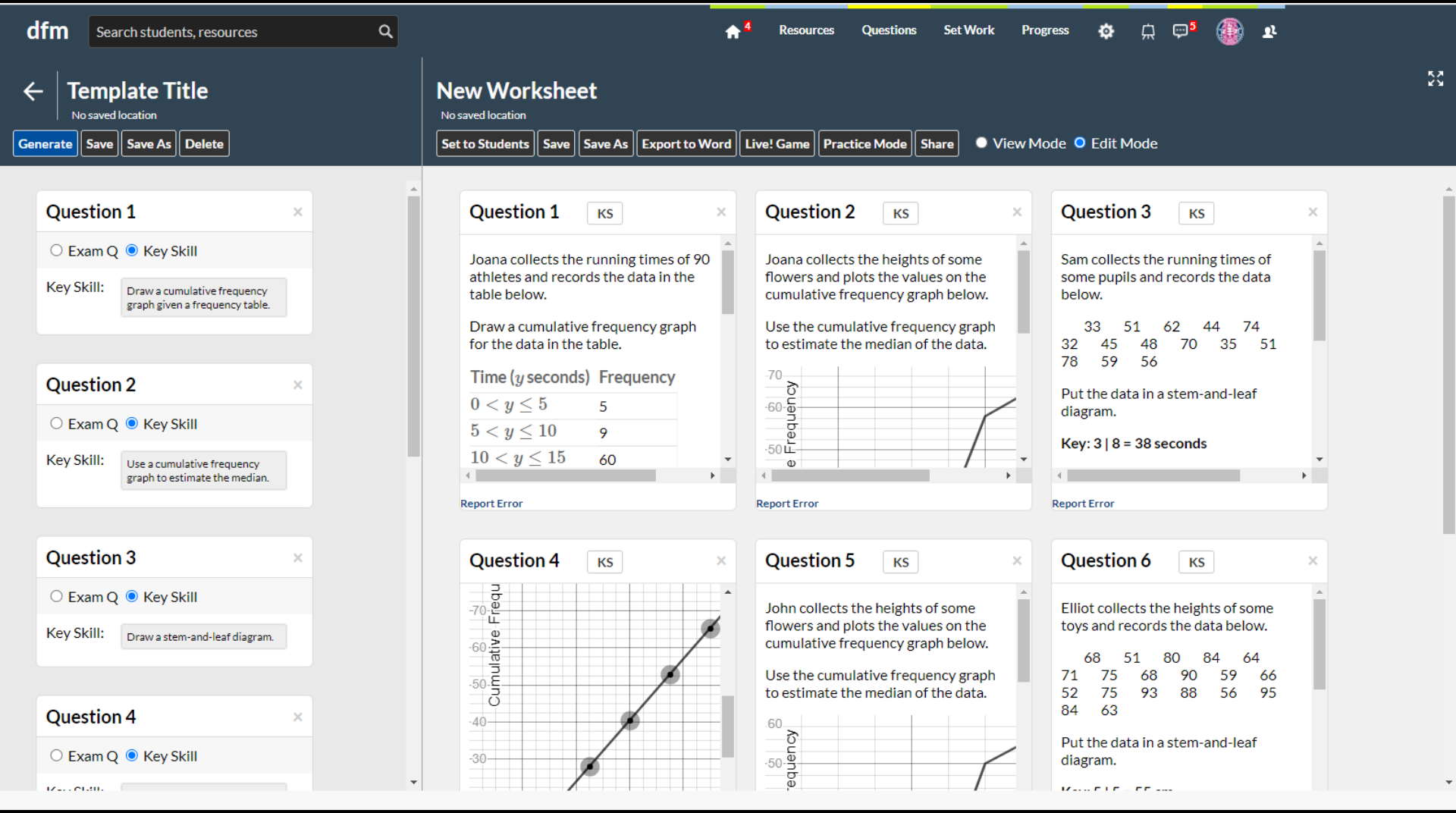
$\frac{2}{7}\times\frac{1}{6}$ or $\frac{3}{7}\times\frac{2}{6}$		3	M1	Replacement - $\frac{2}{7}\times\frac{2}{7}$ or $\frac{3}{7}\times\frac{3}{7}$
$\frac{2}{7}\times\frac{1}{6}+\frac{3}{7}\times\frac{2}{6}$			M1	Replacement - $\frac{2}{7}\times\frac{2}{7}+\frac{3}{7}\times\frac{3}{7}$
	$\frac{8}{42}$		A1	$\frac{8}{42}$ oe

Question 15

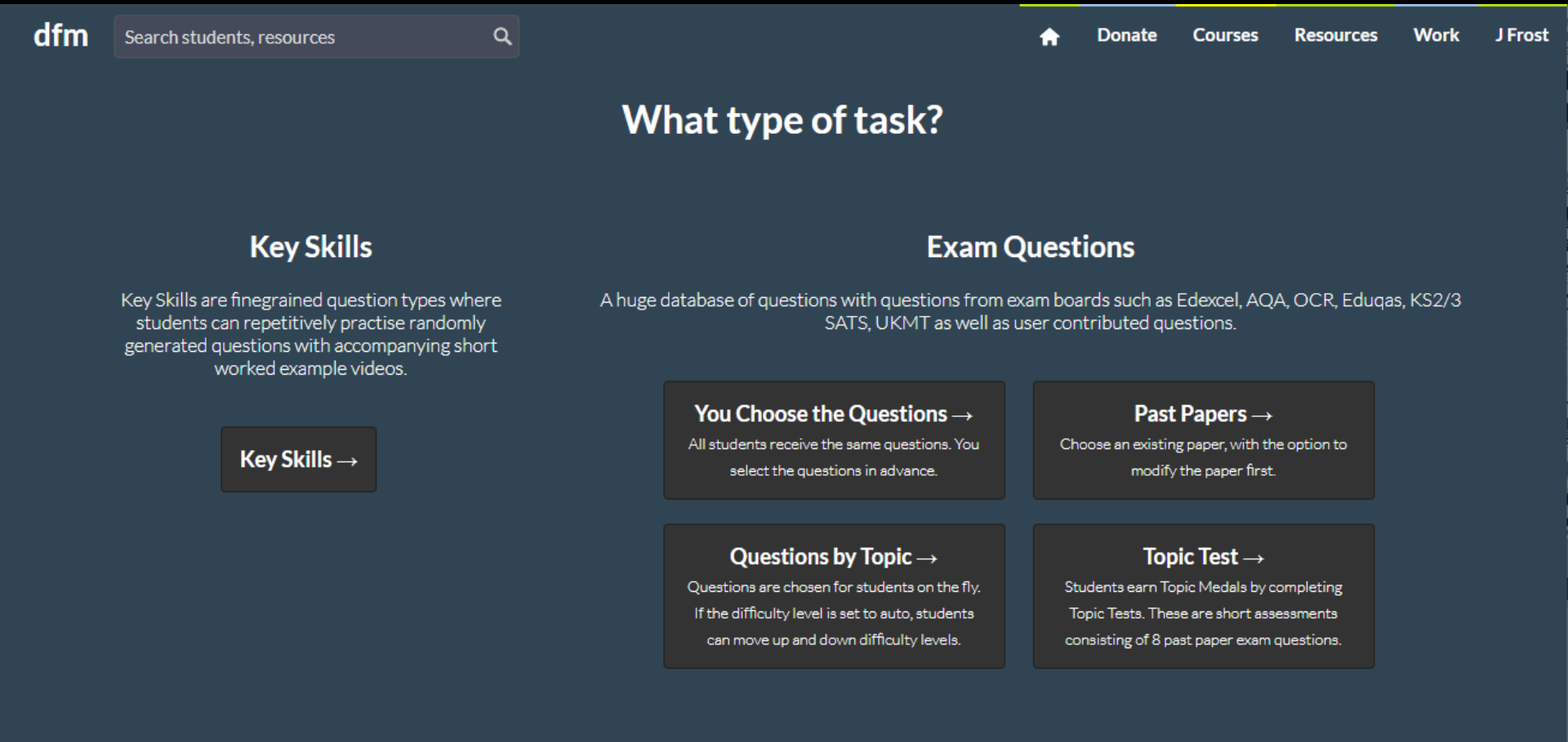
$\frac{n}{2n+1}$

Conclusion from accurate algebra	C1	for method to find probability of two red, e.g. $\frac{n}{2n+1}\times\frac{n-1}{2n}$ or two blue, e.g. $\frac{n+1}{2n+1}\times\frac{n}{2n}$ or different colours, e.g. $\frac{n+1}{2n+1}\times\frac{n}{2n}$ or $\frac{n}{2n+1}\times\frac{n+1}{2n}$
	C1	for probability of two of the same colour, e.g. $\frac{n}{2n+1}\times\frac{n-1}{2n}+\frac{n+1}{2n+1}\times\frac{n}{2n}$ or $1-\left[\frac{n+1}{2n+1}\times\frac{n}{2n}+\frac{n}{2n+1}\times\frac{n+1}{2n}\right]$
	C1	for method to reduce to a single fraction

From the Key Skills system, you can select a collection of skills, select the number of questions you want, and DFM will instantly make a random worksheet generator for you; each click of **Generate** makes a random new one!

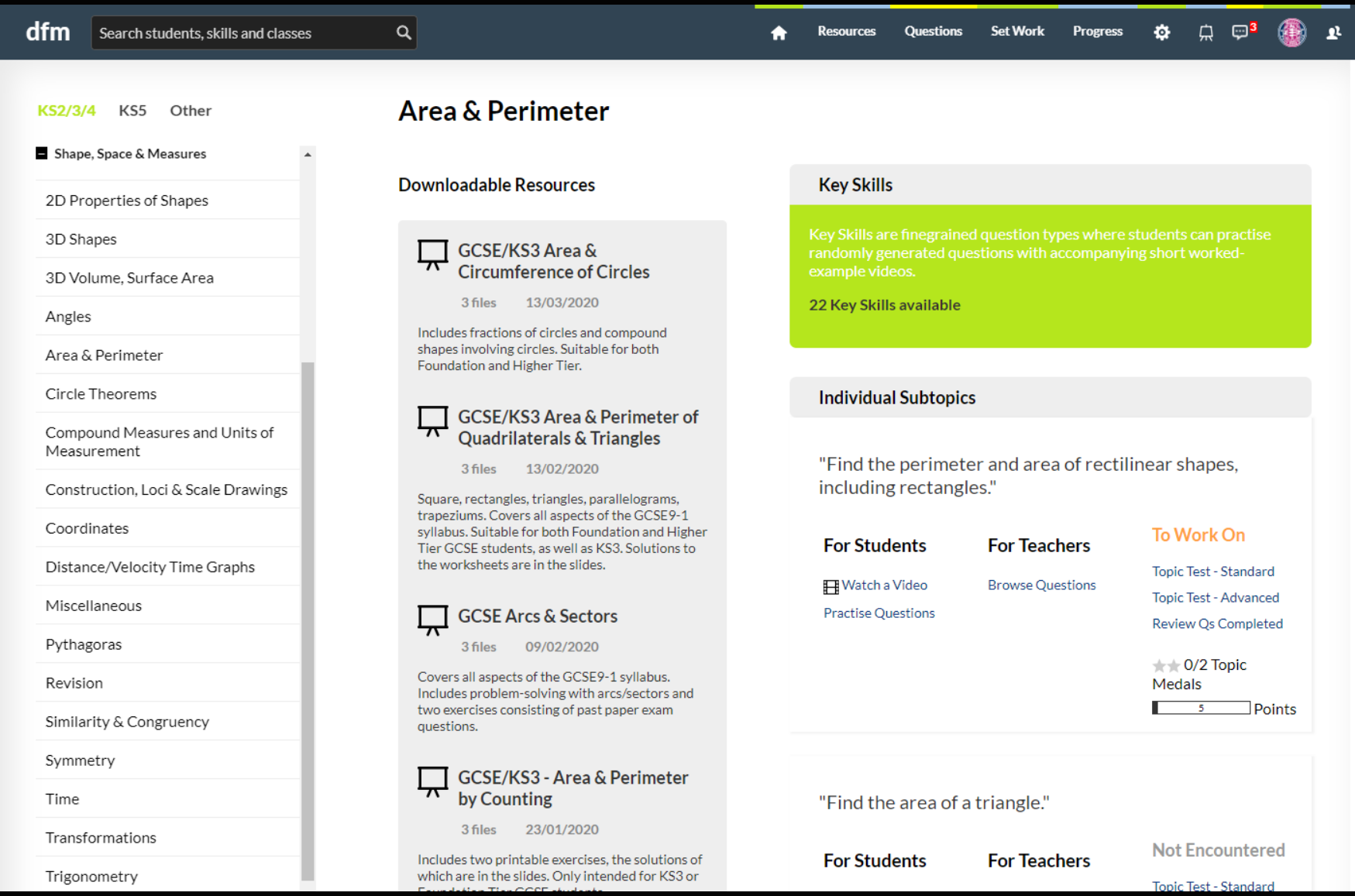


We're all about **giving teachers control** whilst **providing autonomy** where wanted, to save time. Teachers have a variety of different formats of task they can set, whether using Key Skill or Exam Skill questions, and either choosing the questions, using a pre-existing collection of questions, or allowing the system to intelligently pick the questions for each student as they progress through a task, based on past performance and meeting accuracy criteria.



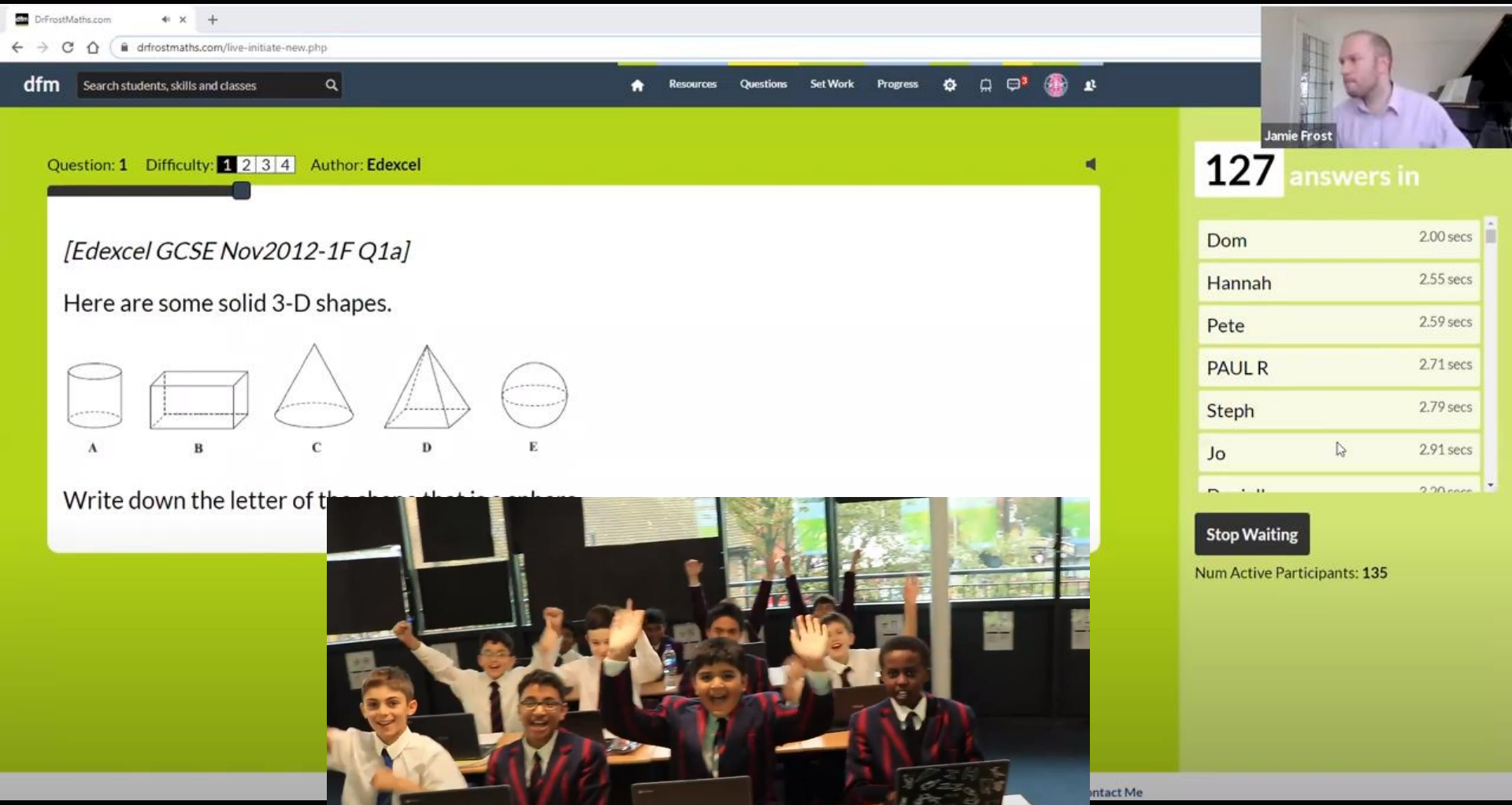
Resource Explorer

See all the downloadable resources, Key Skills, videos and Topic Tests available for each topic.



"DFM Live!"

Whole-class game where students participate on their mobile/tablet device. Can be used with main question database or with Key Skills.



And it's all damn smart...

$x + 2y = 0$

$y = -\frac{1}{2}x$

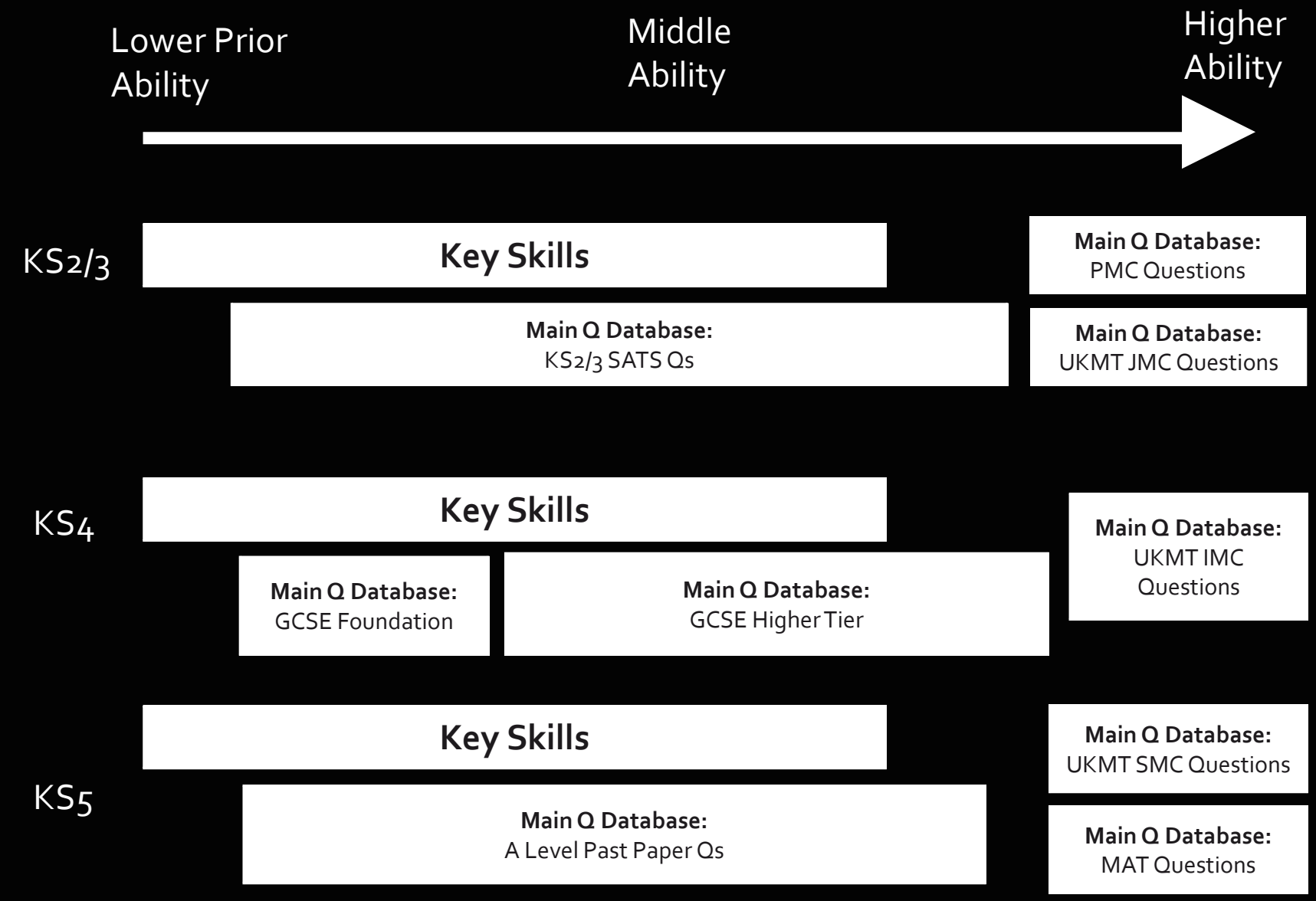
$\ln\left(x^2\right)$

$2\ln x$

DrFrostMaths uses highly advanced algorithms to spot algebraically equivalent expressions and equations.

These kick in when mark schemes allow **'or equivalent'**.

Trying to provide for all learners…



Testimonials

“The new style homework platform launched by Dr Frost is just brilliant. It is so well thought of at Rushey Mead Academy that we have completely ditched the subscription to a similar paid homework platform as we view Dr Frost’s as far superior in terms of the usability and quality of questions. This has also freed up some much needed funds to buy manipulatives for students to use to support their learning. All of our KS4 students are set homework from the Dr Frost website and many students in both KS3 and KS4 use it on a regular basis for personal revision. Feedback from students and staff is always positive and it is cited as a key strength by our Leavers when asked what helped them in maths. Since becoming familiar with Dr Frost’s resources I have introduced them to more and more teachers at Rushey Mead Academy and lots of them have now be linked into our curriculum as recommended resources to use.

The Dr Frost resources are definitely having a hugely positive impact on students’ outcomes and enjoyment of mathematics at Rushey Mead Academy. Our Maths Progress 8 score has risen from 0.5 to 1.2 in the last three years and I think that the website has definitely contributed to that success.”

Rushey Mead Academy
Formerly #1 school on Hegarty Maths for number of questions answered.

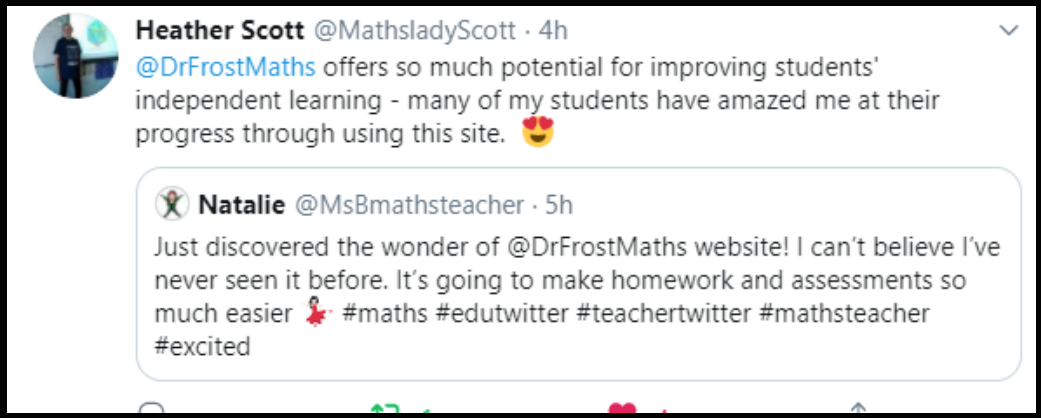
Testimonials

"Being on the remote British Island of St Helena resources and funds are rather hard to come by, so you have been a saviour in that regard." **(Teacher)**

"Since we found it maths has become a lot more enjoyable and we understand it more. You are a great inspiration and we would love to meet you. From Year 9 Set 4"
(Student)

I wanted to say thank you for how you have inspired me since I took my role a couple of years ago. We have managed to change Maths from the most loathed subject to the most liked. We have increased our end of year 8 attainment from 35% at age related expectations 2 years ago to 90% this year.
(Teacher)

I have conducted a project as part of my NPQML qualification using your site as the basis of improving the progress in mathematics. I did a quick chi squared test using actual GCSE grades and DrFrost points and it showed a strong link between engagement with your site and GCSE performance. So a great big thank you - it really has made a difference!
(Teacher)



Testimonials

"My child has been disinterested in maths at best - DrFrostMaths has completely changed their attitude to the subject. The format of questions and example videos has allowed them to self study, and for the first time they're enjoying maths and even going as far as saying how easy it is, given their new found understanding. **Your site has been quite likely life changing for my child**."

Parent (via email)

Book a Training Session!

www.drfrostmaths.com/training

Free regular webinars with one of our DFM Champions.

If you have any questions…

support@drfrostmaths.com

For general support and assistance.

jamie@drfrostmaths.com

For direct contact with Jamie, more general enquiries or bug reports.