



How we use Isaac Physics

Wednesday 23rd October 2024



Nick Davies
Team leader, Physics
Wilmslow High School
ndavies@wilmslowhigh.com



Who uses it?

- A Level
 - Physics (75)
 - Chemistry (80)
 - Biology (80) – not yet
- GCSE Physics, (500)
- Year 8 & 9 Physics, (300)
 - GCSE quizzes with Y9 very useful
- Maths and GCSE Science use Sparx
- Some Physics students use Isaac Maths



Mark book structure

- Each class has **two worksheets in excel**

5	10c	s	10t	b	11b	c	11c	h	11h	t	11t	3	122	4	124	1	131	2	132

- The first of each pair is the **Isaac download** worksheet
- The second is the **main mark-book** worksheet where all class and homework and tests (etc) are recorded



The Isaac download worksheet

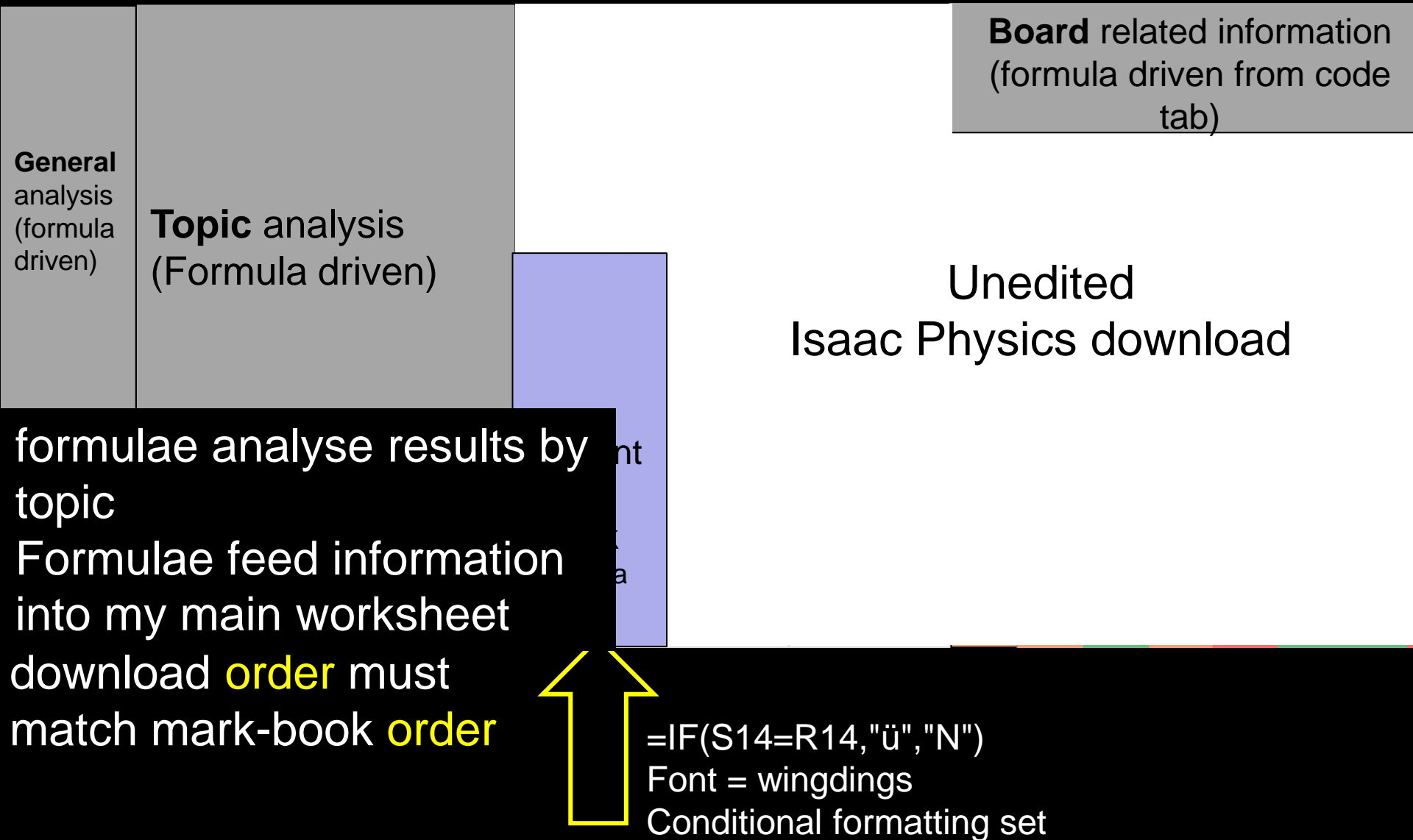
Cut & paste Isaac **download**

- Conditional formatting
- ?? ZDavies

Assignments for 'ND Y10 2018-20 Curie' (14755)						
Downloaded on Mon Jun 24 06:35:14 UTC 2019						
Generated by: Nick ZDavies						
	Due		10-Sep	14-Sep	19-Sep	26-Sep
Last Nam	First Na	% Co	% Cor	% Cor	% Cor	% Cor
The Hun	Attila	60	84	100	100	100
Khan	Genghis	83	88	95	100	100
Smith	Tom	95	100	0	100	100
Smith	Dick	100	100	100	12	100
Smith	Harry	99	100	100	100	100
ZDavies	Nick	95	92	91	100	100



Isaac download worksheet structure





How does the Isaac download worksheet work?

Not started?	6	4	7	1	3	13	3	0	boards on each topic				Enter the topic area using the dropdown ⇒				Skills	Skills	Forces		
	92	85	91	92	94	89	90		class average				class average ⇒				89.2	97.8	86.4	89.3	
	Skills	Energy	Electricity	Particles	Atomic S	Forces	Waves	Magnetism	Rank/ 27				Year 10 Curie				All	1	3	4	
									paste in ⇒				Assignments for 'Y10 2019-21 Curie' (21029)								
													Downloaded on Mon Jul 06 08:58:40 UTC 2020								
													Generated by: Nick Z-Davies								
													Due					16-Sep	16-Sep	24-Sep	
									check column				Last Name				First Name	% Cori	% Cori	% Cori	% Cori
	0	100	88	97	100	93	93	100		8	s1	✓	s1	s1	96	100	100	100			
	0	80	80	88	100	96	86	90		18	s2	✓	s2	s2	85	76	73	84			
1	100	82	96	100	85	89	100		11	s3	✓	s3	s3	90	100	100	100				
0	100	100	100	100	100	100	100		1	s4	✓	Miscpelling	s4	100	100	100	100				



Enter the topic area using the dropdown ⇒								Skills	skill
class average ⇒								Skills	8
Year 10 Curie									
Assignments for 'Y10 2019-21 Curie' (21029)									
Downloaded on Mon Jul 06 08:58:40 UTC 2020									
Generated by: Nick Z-Davies									
Due									
16-Sep 16-Sep 24-Sep 2									
Last Name First Name % Cori % Cori % Cori									
14	s14	68	100						

All the boards used are categorised on the code tab Or **manually select categories** from drop down lists and write your own '**short name**', if it's a new board.

Or, if feeling brave, **edit the code tab** to add and classify your own new board



Enter the topic area using the dropdown					all	Thermal	Thermal	Thermal	
Enter source, AL or GCSE or PS (problem solving)					all	GCSE	AL	PS	
↑ class average					class average ⇒	80.2	AL	PS	
Y12-4 2019-21					All	GCSE			
paste in ⇒					Assignments for 'Y12-4 2019-21' (20986)				
					Downloaded on Mon Jul 06 09:58:28 UTC				
					Generated by: Nick Z-Davies				
					Due				
					19-Jun				
					22-Jun				
					22-Jun				
Check column					Last Name	First Name	% Co	% Co	% Co
2	Student 1	✓	Student 1	Student 1	93	100	75	100	
10	Student 2	✓	Student 2	Student 2	67	100	100	100	

A level boards have an **extra category**



The 'Isaac download worksheet'

boards on topic										Topic area ⇒	all	Thermal	Mechanics	Thermal
Source, AL/ GCSE/ PS (problem solving)										all	AL	PS	AL	
class average										class average ⇒	90.5	91.7	91.7	23.6
Y12-1										All	G3 HC	Newt 2nd	G4 LH & HC	
paste in ⇒ Assignments for 'Y12-1 2022-24' (43000)														
Downloaded on Fri May 12 06:52														
Generated by: Nick Davies														
Due														
Last Name														
First Name														
Check columr														
8 s1										wrong name s1				

How many **boards** are set on **each topic**

class **averages**

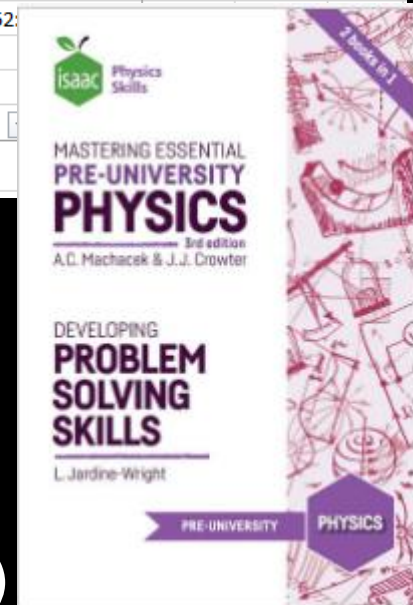
boards complete, **not started**, below thresholds

Performance **topic by topic**

Performance on **GCSE** questions (easier)

Performance on A Level **skills** questions (the book)

Performance on **problem solving** questions (harder)





Main mark-book worksheet

Shared with TA												27-Jan	27-Feb	31 days	13-Sep	20-Sep			
Not started?	Boards < 60	Boards < 80	Boards < 90	IP Rank	48%	D	65%	C	61%	C	57%	B	class average →		88.1	87.9	-0.1	87	98
					Dec 21 Mock	Jun 22 Mock	Jan 23 Mock	Apr 23 Mock	13-1 TH7DF3	Target band	IP old	IP new	Inc	IP23,24/25					
					12	38	54	64	15	21%	U	39%	E	36%	E	71%	A	s2	B-C
0	0	0	0	1	43%	D	59%	C	53%	D	31%	E	s3	A	100	99	-1	100	100
1	10	26	33	6	40%	E	53%	C	65%	C	42%	D	s4	A	94	93	-1	32	100

I add **class code** to class name.



Rank within class



I like to know who has not started a board
Student #20 has 5 boards with **zero progress**.
and 6 boards < 60% (trilogy group)



I also like to know who is doing the minimum*.

Student #20 has 6 boards with **insufficient progress** (threshold < 60%).



Main mark-book worksheet

Shared with TA		27-Jan	27-Feb	31 days
class average →		88.1	87.6	-0.5
13-1 TH7DF3	Target band	IP old	IP new	Inc
s2	B-C	79	72	-7
s3	A	100	99	-1
s4	A	94	93	-1
s5	B-C	80	92	12

⇐ Class average score

⇐ issue?

⇐ needs recognition

About once a month, I manually cut and paste the overall% scores for each student – and add the date



Year 9 boards

Key board	9	A Bold year indicator means that this is one of the 'key boards' to be set									
Step Up to GCSE		GCSE Trilogy		Separates only		Quiz		Y7&8 board			
Skills		Energy		Electricity		Particles		Mechanics		Waves & Optics	
1. units (Y9, Y10F)	9	Energy Stores	9	22 Q=It F	9	Density	9	Weight Quiz A	9	Waves Quiz a	9
2 standard form F	9	Energy Stores Practice	9	Q & I Quiz A	9	Density practice	9	9-11 Weight & F-res	9		
5 Var & constants	9	Work Done	9	9-18 Q=It 1	9	Density Expt	9	8 s, v, t F	9		
6 straight line graphs F	9	Work Done Practice	9			Density Quiz a	9	9-2 Units of distance	9		
9-20 Large/small Nos	9	Work done Quiz A	9			9-30 Density	9	Speed Quiz A	9		
		9-24 Work	9			9-31 Floating	9	9-28 moments	9		
		9-26 Power	9			Pressure	9				
		9-27 Energy flow & eff	9			Pressure practice	9				
		Power & Energy Quiz A	9			9-34 Pressure	9				

Not all GCSE boards are in this selection



GCSE mixed ability classes

Key board	9	A Bold year indicator means that this is one of the 'key boards' to be set									
Step Up to GCSE		GCSE Trilogy			Quiz	Y7&8 board	Note some B Quizzes are omitted, they could be set as extension questions				
Skills		Energy	Electricity	Particles	Atomic Structure	Mechanics	Waves & Optics	Magnetism			
1. units (Y9, Y10F)	9	Work done Quiz A	22 Q=It F	Density Quiz A	51 atomic numbers F	Weight Quiz A	Waves Quiz A	F = BIL Quiz A	11		
5 Variables & constants	9	9-24 Work	Q & I Quiz A	9-30 Density	52 rad. decay F	9-11 Weight & F-res	9-35 Frequency				
6 straight line graphs F	9	9-26 Power	9-18 Q=It 1	9-31 Floating	53 half life F	8 s, v, t F	9-36 λ , v = f λ				
7 proportionality F	10	9-27 Energy flow & eff	9-17 V. in circuits	9-34 Pressure	Half life Quiz A	9-2 Units of distance	38 wave props F				
2 standard form F	10	Power & Energy Quiz A	9-20 Current	SHC Quiz A	Half life Quiz B	Speed Quiz A	38A add. wave F				
Practical skills GCSE	11	Power & Energy Quiz B	22A add. Q&I F	9-29 Energy & Temp		9-28 Bal & moments	Waves Quiz B				
9-20 Large/small Nos	9	GPE Quiz A	Q & I Quiz B	30 thermal energy F		8A addl s, v, t F	9-46.1 Waves SQ				
		GPE Quiz B	23 circuit rules F	30A add. Thermal F		Weight Quiz B	9-46.2 Waves SQ				
		9-25 GPE	9-23 Sharing voltage	31 latent heat F		9-33 Springs	9-37 Echoes				
		34 kinetic energy F	Resistance Quiz A	Latent heat Quiz A		37 springs F					
		KE Quiz A	24 resistance F	Density Quiz B		Springs Quiz A					
		36 power & body F	9-21 Resistance	SHC Quiz B		10 s-t graphs F					
		33 work PE, power F	Series res. Quiz A	59 Boyle's law F		9-4 Velocity					
		EPE Quiz A	25 IV graphs F			9-6 Calc velocities					
		EPE Quiz B	26 power F			11 acceleration F					
		35 efficiency F	27 R & Power F			Acceleration quiz A					




Boards with **F suffix** are the **easier** questions - an alternative to the **quick boards** available on the Isaac Physics website. Boards are all hyper-linked in the spreadsheet. I avoid setting **B quizzes** for mixed ability groups.

Not all GCSE boards are in this selection




GCSE Higher students

Step Up to GCSE		GCSE Trilogy		Separates only		Quiz		Y7&8 board							
Skills		Energy		Electricity		Particles		Atomic Structure		Mechanics		Waves & Optics		Magnetism	
1 units	9	Work done Quiz A	9	22 Q=It	9	Density Quiz a	9	51 atomic numbers	10	Weight Quiz a	9	Waves Quiz a	9	F = BIL Quiz A	11
2 standard form	9	9-24 Work	9	Q & I Quiz A	9	Density Quiz b	9	52 rad. decay	10	Weight Quiz b	9	9-35 T & f	9	F = BIL Quiz B	11
5 Variables & constants	9	9-26 Power	9	Q & I Quiz B	9	9-30 Density	9	53 half life	10	9-11 Weight & F-res	9	9-36 λ, $v = f\lambda$	9	28 EM ind'n & gen (H)	S
9-5 Re-arr equations	9	9-27 E flow & eff	9	9-18 Q=It 1	9	9-31 Floating	9	Half life Quiz A	10	8 s, v, t	9	38 wave props	10	29 transformers	S
1A add. units	10	Power & Energy Quiz A	9	9-20 Current	10	9-34 Pressure	9	Half life Quiz B	10	9-2 Units of distance	9	38A add. wave props	10		
6 straight line graphs	10	Power & Energy Quiz B	10	9-17 V in circuits	10	SHC Quiz A	10	55 fission reactor	S	Speed Quiz A	9	Waves Quiz B	10		
7 proportionality	10	work done Quiz B	10	22A add. Q & I	10	9-29 Energy & Temp	10			9-28 moments	9	9-46.1 Waves SQ	10		
7A add. proportionality	10	33 work PE, power	11	23 circuit rules	10	30 thermal energy	10			8A addl s, v, t (H)	10	9-46.2 Waves SQ	11		
Practical skills GCSE	11	GPE Quiz a	11	Series res. Quiz A	10	SHC Quiz B	10			Springs Quiz A	10	9-37 Echoes	11		
3 rearr. equations	11	9-25 GPE	11	24 resistance	10	30A add. Th. energy	10			9-33 Springs	10	39 reflection plane	S		
9-47 challenge Qs	11	GPE Quiz b	11	Resistance Quiz A	10	31 latent heat	10			37 springs	10	45 seismic waves	S		
9-48 Dimens. Anal	11	34 kinetic energy	11	9-21 Resistance	10	Latent heat Quiz A	10			Springs Quiz B	10	48 convex lenses	S		
9-20 Large/small Nos	9	KE Quiz a	11	9-23 Sharing p.d.	10	Latent heat Quiz B	11			10 s-t graphs	10	49 concave lenses	S		
		KE Quiz B	11	9-16 E=QV	10	59 Boyle's law	11			9-3 s-t graphs	10				

I will never set all these boards! I pick and choose.



Track each class - GCSE

Step Up to GCSE		Y9-11 Trilogy		Separates only		Quiz									
Skills		Energy		Electricity		Particles		Atomic Structure		Mechanics		Waves & Optics		Magnetism	
1 units	9	Work done Quiz A	9	22 Q=It	9	Density Quiz a	9	51 atomic numbers	10	Weight Quiz a	9	Waves Quiz a	9	F = BIL Quiz A	11
2 standard form	9	9-24 Work	9	Q & I Quiz A	9	Density Quiz b	9	52 rad. decay	10	Weight Quiz b	9	9-35 T & f	9	F = BIL Quiz B	11
5 Variables & constants	9	9-26 Power	9	Q & I Quiz B	9	9-30 Density	9	53 half life	10	9-11 Weight & F-res	9	9-36 λ , $v = f\lambda$	9	28 EM ind'n & gen (H)	S
9-5 Re-arr equations	9	9-27 E flow & eff	9	9-19 Large/small Nos	9	9-31 Floating	9	Half life Quiz A	10	8 s, v, t	9	38 wave props	10	29 transformers	S
1A add. units	10	Power & Energy Quiz A	9	9-20 Current	10	9-34 Pressure	9	Half life Quiz B	10	9-2 Units of distance	9	38A add. wave props	10		
6 straight line graphs	10	Power & Energy Quiz B	10	9-17 V in circuits	10	SHC Quiz A	10	55 fission reactor	S	Speed Quiz A	9	Waves Quiz B	10		
7 proportionality	10	9-29 Energy & Temp	10	22A add. Q & I	10	30 thermal energy	10			9-28 moments	9	9-46.1 Waves SQ	10		
7A add. proportionality	10	work done Quiz B	10	23 circuit rules	10	SHC Quiz B	10			8A addl s, v, t (H)	10	9-46.2 Waves SQ	11		
Practical skills GCSE	11	33 work PE, power	11	Series res. Quiz A	10	30A add. Th. energy	10			37 springs	10	9-37 Echoes	11		
3 rearr. equations	11	GPE Quiz a	11	24 resistance	10	31 latent heat	10			Springs Quiz A	10	39 reflection plane	S		
9-47 challenge Qs	11	9-25 GPE	11	9-21 Resistance	10	Latent heat Quiz A	10			Springs Quiz B	10	45 seismic waves	S		
9-48 Dimens. Anal	11	GPE Quiz b	11	9-23 Sharing p.d.	10	Latent heat Quiz B	11			10 s-t graphs	10	48 convex lenses	S		
		34 kinetic energy	11	9-18 Q=It 1	10	59 Boyle's law	11			9-3 s-t graphs	10	49 concave lenses	S		
		KE Quiz a	11	Resistance Quiz A	10	17 pressure	S			9-4 Velocity	10				
		KE Quiz B	11	25 IV graphs	11	17A Add Pressure	S			9-6 Calc velocities	10				

Allows me to keep a **track** of what I have **set** for classes



Track each class – A Level

out of spec	AL book	GCSE board	Quiz	PS boards							
Skills	Mechanics	Materials	Circuits	Waves	Particles/ quantum	Periodic M	Gases & thermal	Fields	Capacitors	Nuclear Physics	Astroph
A1 re-arranging equations	9 displacement	Density	22 Charge & Current	38 wave props	D6 photoelectric effect	18 moving in circle	G1 Kelvin scale of temperature	F5 newtonian gravity	I1 Charge and energy stored	51 atomic numbers	Telescop
A2 derived and base SI units	13 Fres & acc	37 Springs	23 circuit rules	39 reflection plane mirrors	The Photoelectric effect	Radians and Geometry	30A additional thermal energy	F6 Gravity & Orbits	I2 Capacitor networks	52 radioactive decay	D1 Amp Inter As
A3 standard form and prefixes	14 terminal V	B7 Springs	24 resistance	40 reflection concave	D7 quantum calculations	F3 units of rotary motion	31 latent heat	Gravitational Fields L4	I3 Discharge of a capacitor	53 half life	Star cla
A4 converting units	15 stopping	B6 stress, strain & Young's mod	25 IV char	42 refraction	Quantum Calculations	Circular mtn & ang vel ND	G3 Heat Capacity	Gravity and orbits	Charging capacitors	Half life Quiz B	Spectro qu
A5 Gradients & graph intercepts	17 pressure	B9 Energy, Springs, mats	IV characteristics	Wave motion	D9 Energy levels	F4 centripetal acceleration	G4 Latent heat and heat cap	H1 uniform electric fields	Discharging a capacitor	J1 Nuclear equations	L7 S
A6 Equations of graph	B1 components of a vector	Materials 345	26 power	Electromagnetic spectrum	L2 Fundamental particles & inter.	Centripetal force	59 Boyle's law	H2 E field near point charges	Capacitor ac	J2 Activity and decay	K1 red Hubbl
A7 area under a graph	B2 adding vectors		27 R & P	D3 path difference	L6 MRI & PET scanning	F7 oscillators	60 pressure law	H3 speed of electron in E field	Capacitors in series & parallel	J3 Nuclear decay with time	Dopple (ha
A8 area under a graph II	Resolving vectors		Electrical power	wave equation		SHM time period	61 Charles' law	Electrons in E field		K2 Exponential extrapolation	L8 Histo univ
A9 Factor & % Changes	Adding Vectors ND v2		GCSE Hard Electricity	D4 interference		SHM2	62 general gas law	Properties E fields		J4 Energy in nuc. reactions	Stars ar



Main mark-book worksheet



Parental contact (2)

if more detailed information needed

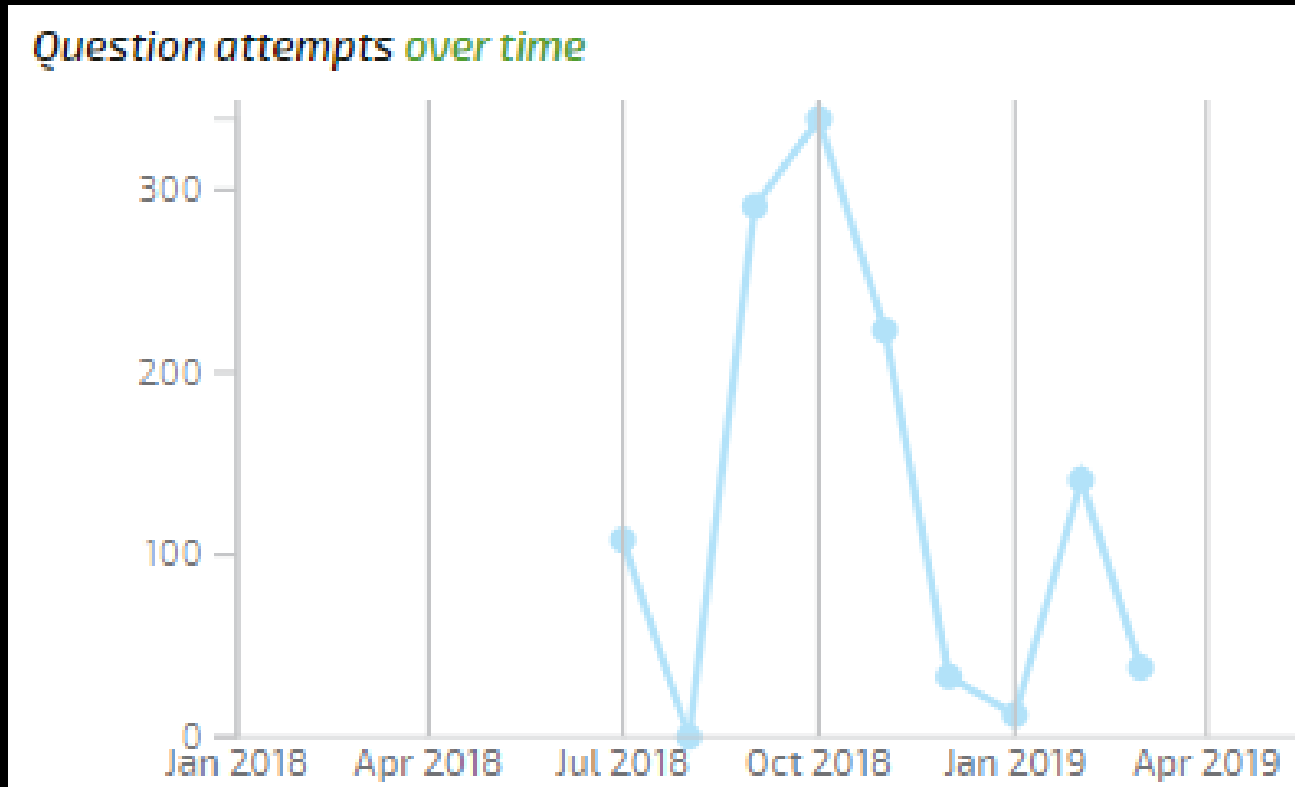
Not started?	6	4	7	1	3	13	3	0	↑ boards on each topic	Enter the topic area using the dropdown →		Skills			
	92	85	91	92	94	89	90		↑ class average	class average 5	89.2	97.8			
	Skills	Energy	Electricity	Particles	Atomic S	Forces	Waves	Magnetism	Year 10 Curie						
	Rank/ 27								paste in → Assignments for 'Y10 2019-21 Curie' (21029)						
										Downloaded on Mon Jul 06 08:58:40 UTC 2020					
										Generated by: Nick Z-Davies					
										Due	16-Sep				
										Last Name	First Name	% Cor	% Cor		
10	33	75	84	0	93	73	93		25	s14	✓	s14	s14	68	100

1. Compare student's overall% (All) with class average
2. Compare student's Particle% with class average

Isaac Download worksheet



Trend analysis

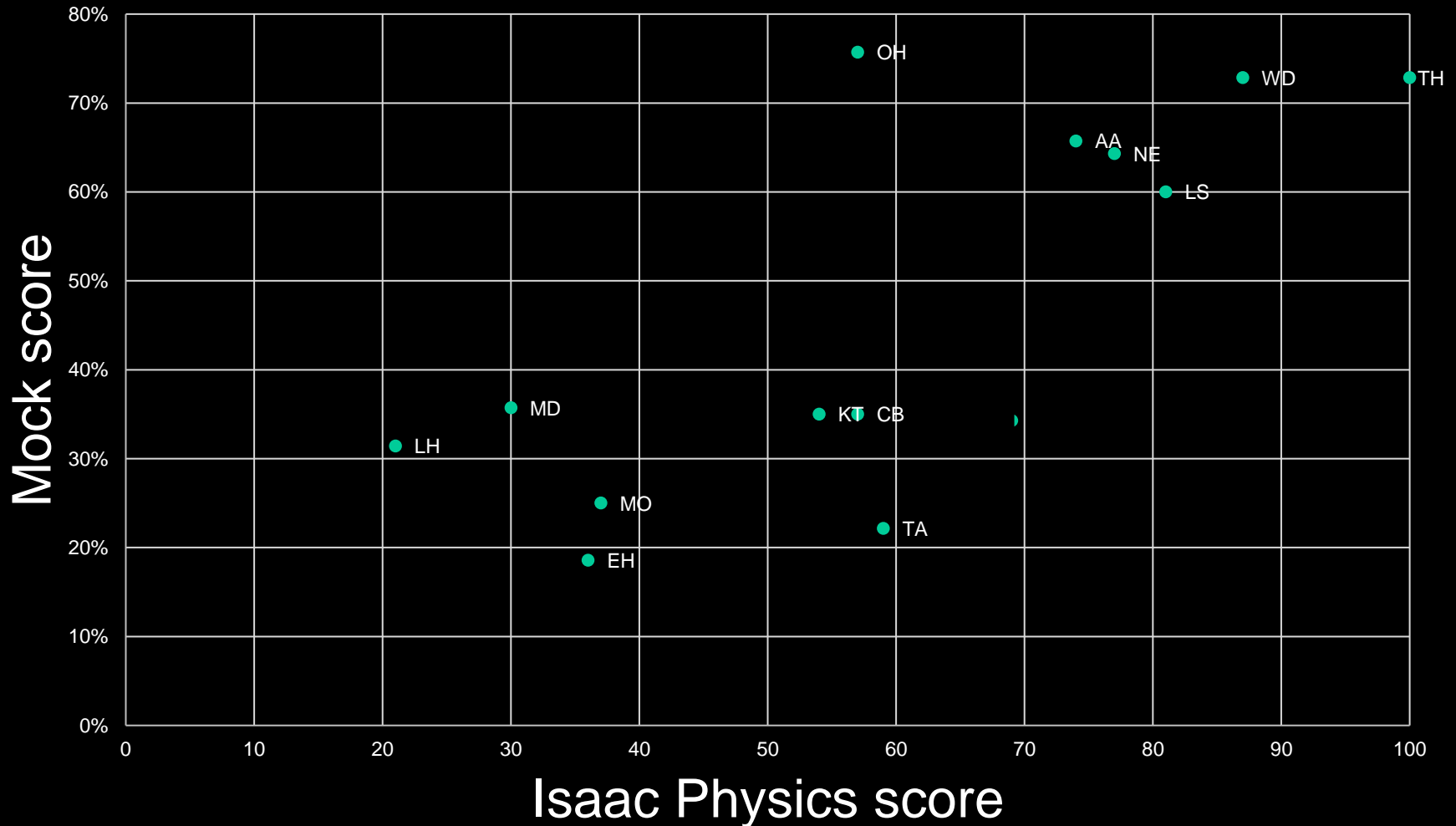


Go to **Manage Groups** on Isaac, select relevant **class** and then click on the student's name and scroll down.



Graphs for leadership

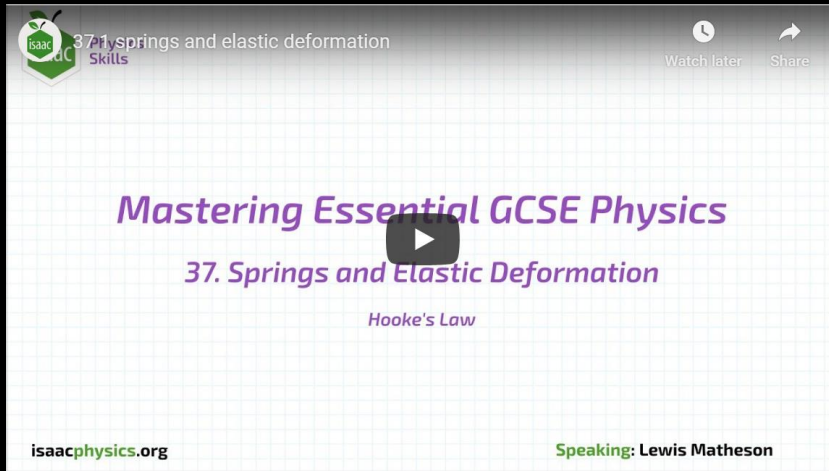
Isaac Physics vs examination%



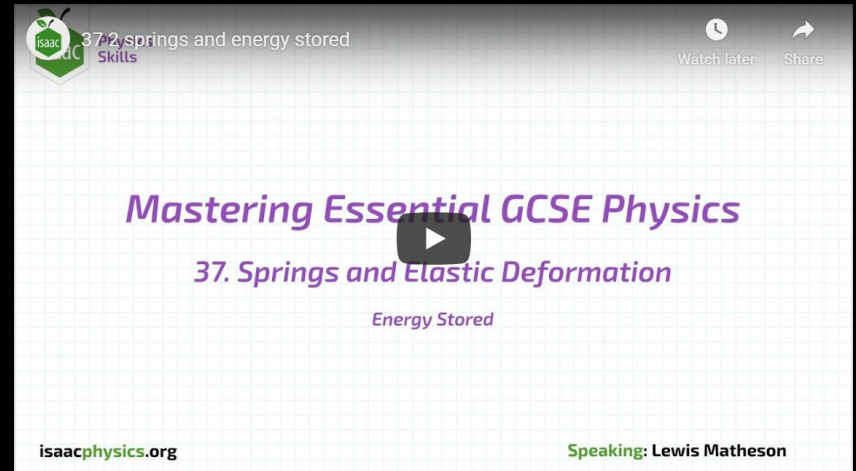


Relevant Isaac Physics questions

- 37 springs

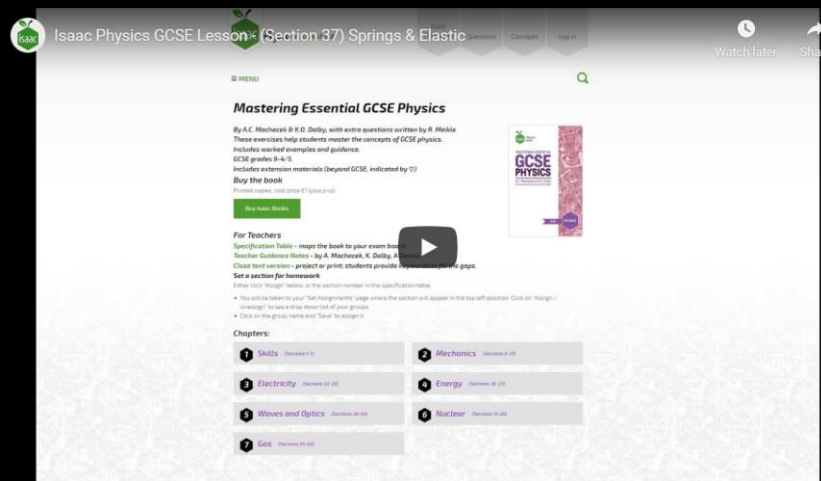


(3:07)



(2:15)

Isaac Physics is fully **integrated** into how we teach Physics here.



(Tutorial
27:13)



My view of



- ✓ Helps my understanding of students' **strengths & weaknesses**
- ✓ Saves huge amount of **time**,
- ✓ I re-invest this time into **formative** assessment etc.
- ✓ Harder for students to copy work (in registration)
- ✓ Improves my **subject knowledge**
- ✓ Isaac Physics at WHS:
 - ✓ Physics - fully **integrated**
 - ✓ Chemistry – A level Physical chemistry only
 - ✓ Maths – only really used by Physics dept.
- ✓ Useful for **spaced learning**.



(minor) Issues with



- ☹ Start with numeric boards
 - ☹ Must demonstrate **equation editor** to class first.
 - ☹ Equation editor on 'phones challenging
- ☹ Don't set boards you **can't do!**
- ☹ Many students, initially, did not like it.
 - ☹ Parents wrote, asking to **go back** to paper.
 - ☹ IP is hard to **copy** in morning registration.
 - ☹ Don't like **lack of feedback** about what is wrong.
 - ☹ Some struggle to understand that they need to **learn to struggle!**



Exam analysis tool

Nothing to do with Isaac Physics*

Enter maximum marks for question part ➡		85			37			25	23	31	3	11	11	20		9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													</
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* Other than the fact that Isaac buys me the time to do this.

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