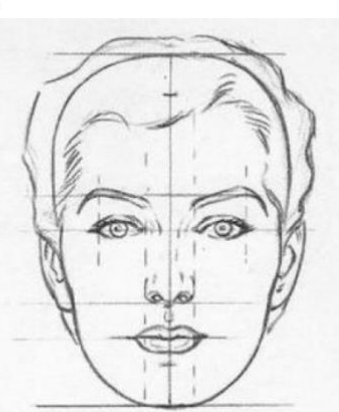
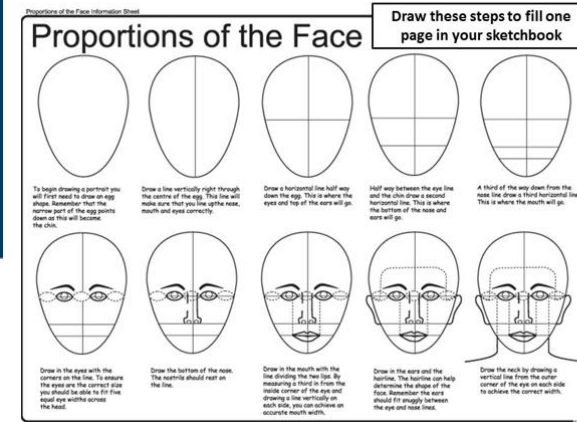
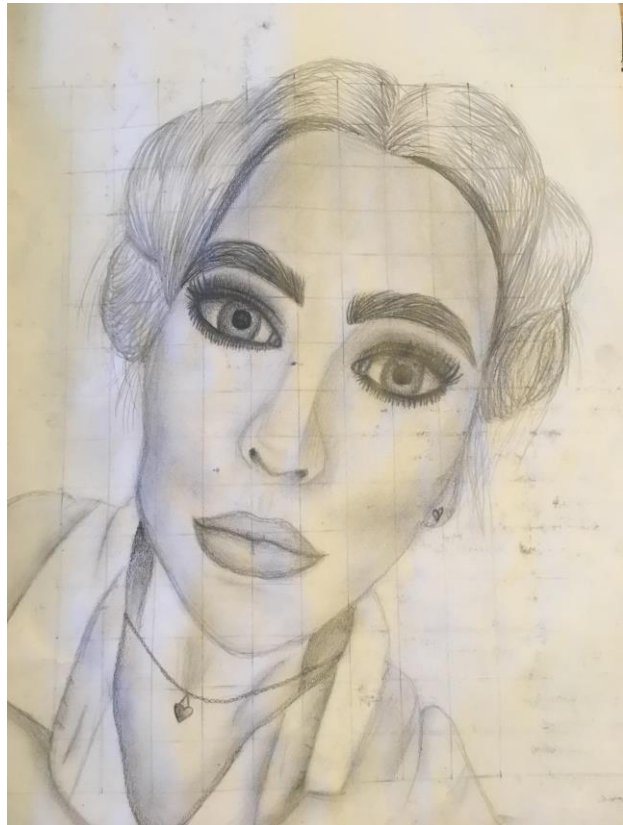




PERFECT PORTRAITS

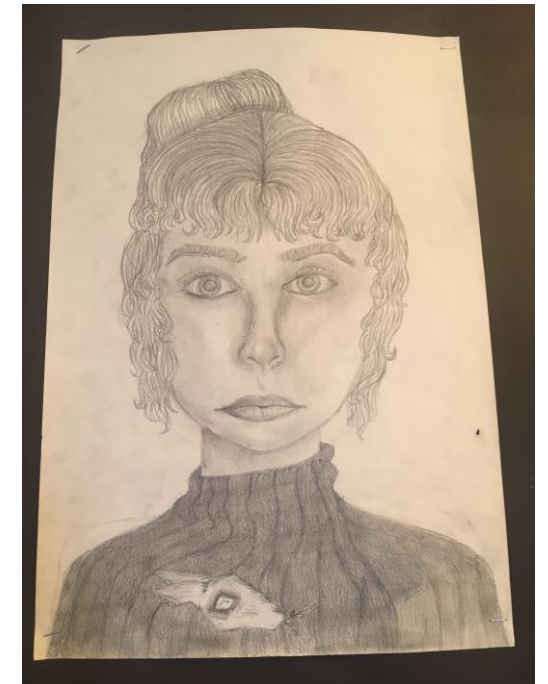
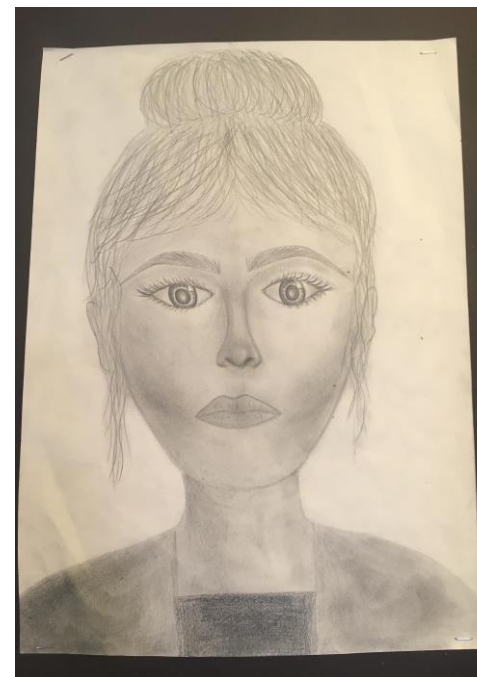


Year 8 Groups have been using facial proportions to create realistic tonal portraits.



GCSE Art students have been practicing using a grid to draw from their own photos. The grid technique allows students to copy and enlarge images accurately.

A more traditional way of copying your photo would be to divide it up into squares or rectangles and just scaling it up from there. Viewing each block as a separate sketch makes the task much easier to complete.





Numeracy in PE

Athletics Season

During the Summer term, pupils participate in a variety of athletics skills and techniques. Within athletics lessons pupils use tools such as, a tape measure to measure the distance of their jump, a stop watch to time the distance they have ran and used props to make their throw technique accurate by using set angles.

Athletics Lesson-800 metre run

The aim of this lesson is to complete a long distance run and develop pacing techniques based on time, personal fitness and running style.

Pupils learn and develop a running style, using set techniques to complete the 800m run in task 1. In task 2, pupils work in pairs, 1s (coach), 2s (perform a 800m run), and decide how they will complete the run by dividing the run into 4 200m laps or 2 400m laps. This is to provide pupils with breaks if needed without making them feel uncomfortable/ lack confidence. Some pupils will run 800m without a break. Coaches will time using a stop watch and help motivate their partner to complete the long distance run. The pupils who run the full 800m distance without breaks will be asked to beat their time and create their own personal best for a 800m race. All pupils will record their times and grade themselves based on the success criteria bronze, silver and gold.

Those who attend athletics club during lunch or afterschool will have the ability to continue to beat their previous time.





Languages

Numeracy

The MFL department clearly has a role to play in contributing towards the numeracy skills of pupils. We actively contribute to the following strands of the KS 3 Numeracy Framework: -

Numbers and the Number System

Pupils should be able to count in sequence. Possible activities are:-

- Count forwards up to e.g. 20, then backwards!
- Give the next number in the sequence e.g. *six, huit, dix,*
- Give the number which precedes e.g. Teacher says *dix*, pupil says *neuf*.
- Give the number which follows e.g. Teacher says *dix*, pupil says *onze*.
- Play buzz e.g. *un, deux, trois, quatre, buzz, etc.*
- Teach the time: analogue, digital, 12 hour and 24 hour.

• Ordinal numbers

- Give directions e.g. Prenez la *troisième* rue à gauche.
- Talk about the timetable e.g. Mon *premier* cours. *c'est* le dessin.

• Decimals

- Teach pupils how to express a decimal number in the target language.
- E.g. 10.5 → 10.5 = dix *virgule* cinq.

• Percentages

- Encourage pupils to write up results of a survey in sentence form.
- E.g. *Vingt pour cent des garçons vont au collège à pied.*

• Ratio and Proportion

- The most obvious application for this in MFL is the conversion of Euros into pounds sterling and vice versa e.g. €1 = 60p, €2 = £1.20 etc.
- This can be practised with the topics of shopping and ordering food in a restaurant, where a basic understanding of the value of money is essential.
- Other applications could include the conversion of kilometres to miles, kilos to pounds etc.

• Number operations (basic arithmetic)

- Add up items on a menu / shopping list.



Numeracy in History

Heart Rate Graphs

The aim of this activity is to develop the student's empathy skills and challenge them to go beyond the generic terms like happy/ sad etc.

Students are given a series of events and must plot their heartrate graph.

60=resting. Students must think about the impact of the event on their heart rate.

Students the analyse their graph and discuss any turning points and why this may have happened.

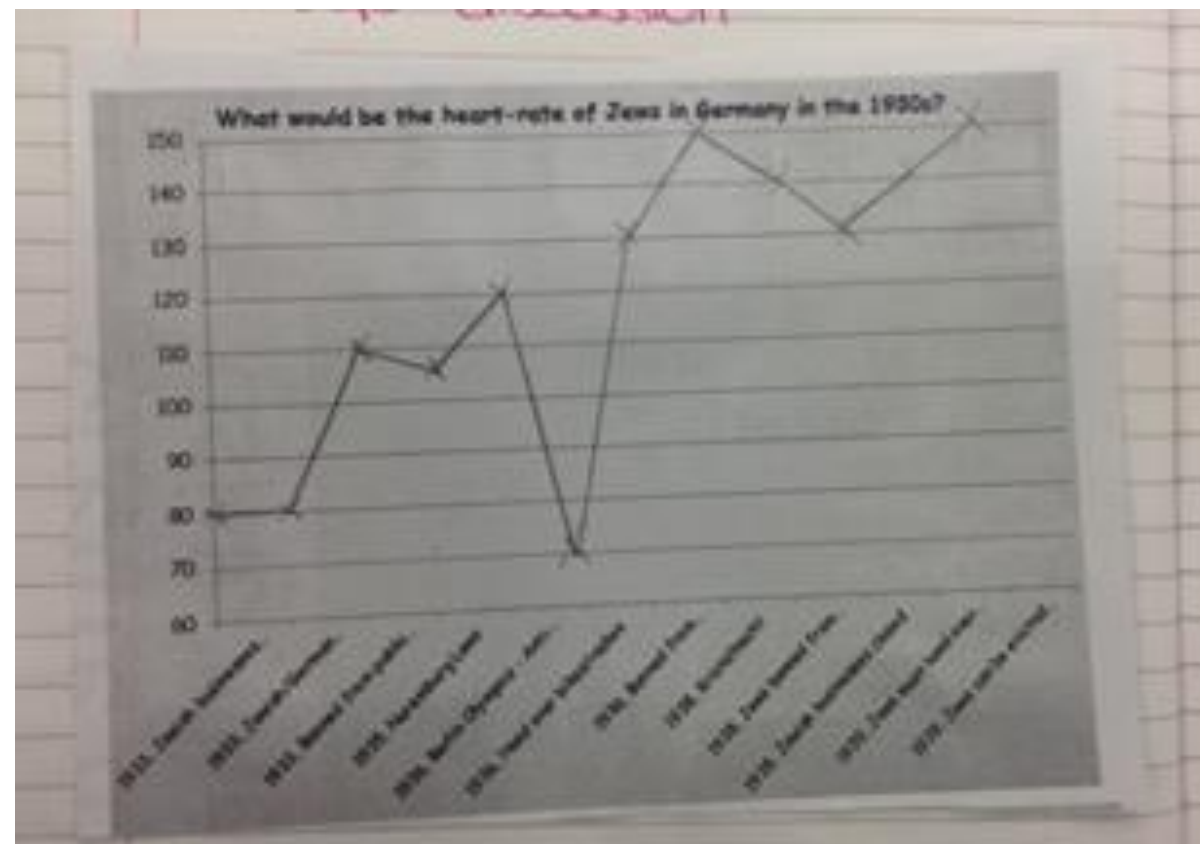
In History we ensure the Numeracy rules are followed:

The graph should have a title.

X and Y axis should also be titled.

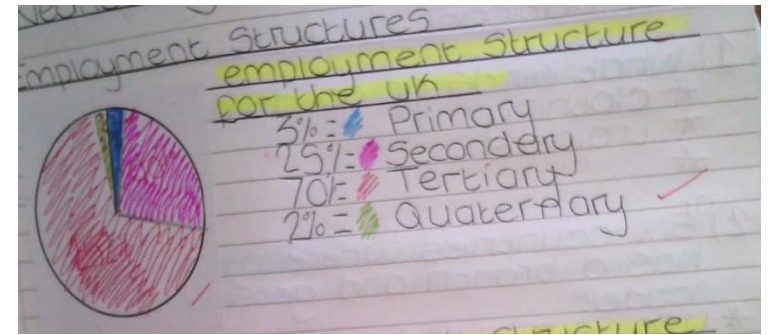
Students should plot using an x

Lines should be drawn with a ruler and pencil

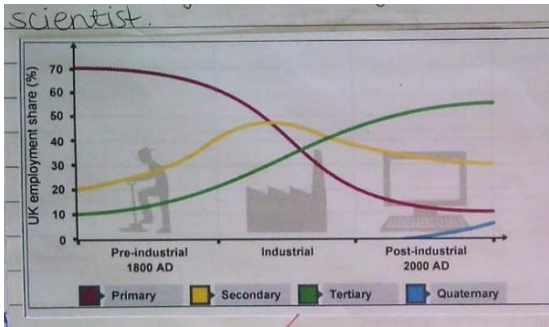




Geography



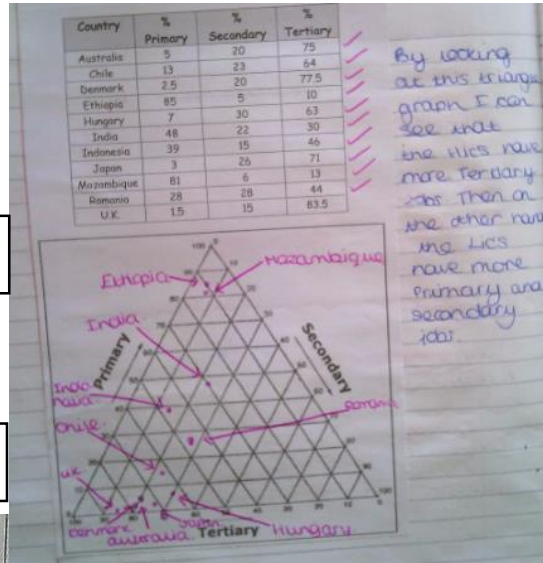
Drawing pie charts after calculating the percentages



Interpreting line graphs Y9

The jobs down as machines are doing them instead of people. The secondary jobs went up to 50% but then they went back

Y9 Triangular graphs



Calculating the median and they went on to do the interquartile range (Y11)

Study Figure 8, data collected for a river enquiry.

Figure 8
River enquiry, April 2016
Stream flow

Date of the month	Flow (cumecs, approx.)
4	4
5	4
6	5
7	3
8	7
9	9
10	6
11	5
12	4
13	4
14	3
15	5
16	6

Cumecs = cubic metres per second

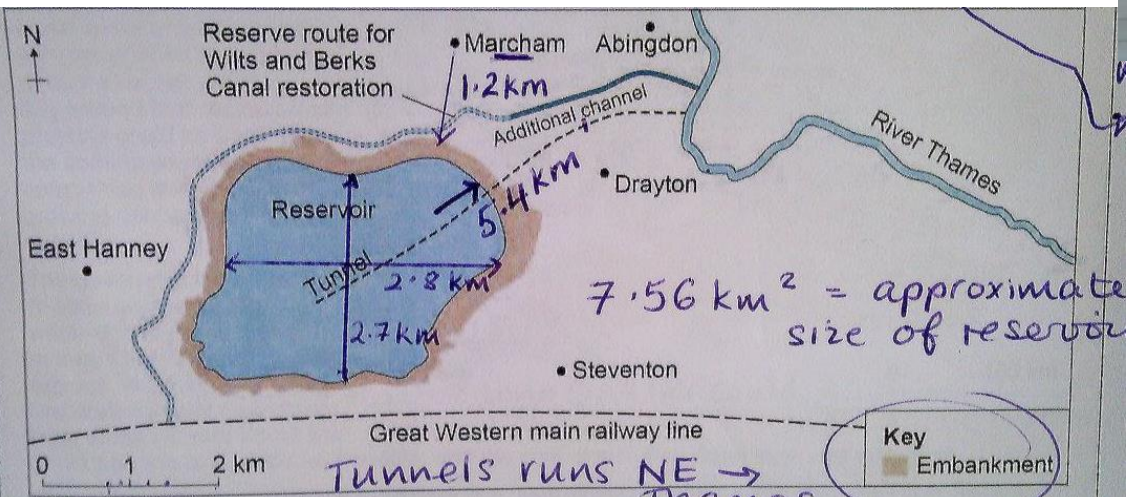
Rank

0 4 . 7 Complete the following table by using the stream flow data in Figure 8. [2 marks]

median = $n+1 \div 2$
 $13+1 \div 2 = 7^{\text{th}}$ value

Mean	5.0
Median	5
Mode	4

Calculating distance and area using a scale line. (Y11)





Roman Numerals

I = one	V = five	X = ten	L = 50	C = 100
----------------	-----------------	----------------	---------------	----------------

I	II	III	IV	V	VI	VII	VIII	IX	X
XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX
XXI	XXII	XXIII	XXIV	XXV	XXVI	XXVII	XXVIII	XXIX	XXX
XXXI	XXXII	XXXIII	XXXIV	XXXV	XXXVI	XXXVII	XXXVIII	XXXIX	XL
XLI	XLII	XLIII	XLIV	XLV	XLVI	XLVII	XLVIII	XLIX	L
LI	LII	LIII	LIV	LV	LVI	LVII	LVIII	LIX	LX
LXI	LXII	LXIII	LXIV	LXV	LXVI	LXVII	LXVIII	LXIX	LXX
LXXI	LXXII	LXXIII	LXXIV	LXXV	LXXVI	LXXVII	LXXVIII	LXXIX	LXXX
LXXXI	LXXXII	LXXXIII	LXXXIV	LXXXV	LXXXVI	LXXXVII	LXXXVIII	LXXXIX	XC
XCI	XCII	XCIII	XCIV	XCV	XCVI	XCVII	XCVIII	XCIX	C

ROMAN NUMERALS CHART 1 TO 100

1	I	21	XXI	41	XLI	61	LXI	81	LXXXI
2	II	22	XXII	42	XLII	62	LXII	82	LXXXII
3	III	23	XXIII	43	XLIII	63	LXIII	83	LXXXIII
4	IV	24	XXIV	44	XLIV	64	LXIV	84	LXXXIV
5	V	25	XXV	45	XLV	65	LXV	85	LXXXV
6	VI	26	XXVI	46	XLVI	66	LXVI	86	LXXXVI
7	VII	27	XXVII	47	XLVII	67	LXVII	87	LXXXVII
8	VIII	28	XXVIII	48	XLVIII	68	LXVIII	88	LXXXVIII
9	IX	29	XXIX	49	XLIX	69	LXIX	89	LXXXIX
10	X	30	XXX	50	L	70	LXX	90	XC
11	XI	31	XXXI	51	LI	71	LXXI	91	XCI
12	XII	32	XXXII	52	LII	72	LXXII	92	XCII
13	XIII	33	XXXIII	53	LIII	73	LXXIII	93	XCIII
14	XIV	34	XXXIV	54	LIV	74	LXXIV	94	XCIV
15	XV	35	XXXV	55	LV	75	LXXV	95	XCV
16	XVI	36	XXXVI	56	LVI	76	LXXVI	96	XCVI
17	XVII	37	XXXVII	57	LVII	77	LXXVII	97	XCVII
18	XVIII	38	XXXVIII	58	LVIII	78	LXXVIII	98	XCVIII
19	XIX	39	XXXIX	59	LIX	79	LXXIX	99	XCIX
20	XX	40	XL	60	LX	80	LXXX	100	C

Roman numerals

The numeric system represented by Roman numerals originated in ancient Rome and remained the usual way of writing numbers throughout Europe well into the Late Middle Ages. Numbers in this system are represented by combinations of letters from the Latin alphabet.



Broughton Hall Catholic High School
One Heart One Mind

Numeracy in PSHE

As part of Y9 PSHE this term Brook delivered a presentation on the issue of consent with a focus on the age of consent and what consent actually means.

Age of consent



Question:

What is the age of consent in the UK?

Answer:

16. This means that no one under the age of 16 can give legal consent to a sexual relationship. The law is there to protect children.



Business Studies

This is a worked example of an A2 question on two types of Investment Appraisal

Pupils look at two investments and recommend which the business should choose based on future monetary returns

NPV

Bungee mania

0	120 000 000	0	(120 000 000)
1	40 000 000	0.935	37 400 000
2	26 000 000	0.873	22 699 000
3	44 000 000	0.816	35 904 000
4	60 000 000	0.763	45 780 000
5	40 000 000	0.713	28 520 000
			50,260,000

cobra:

0	80 000 000	0	(80 000 000)
1	140 000 000	0.935	37 400 000
2	20 000 000	0.873	17 460 000
3	20 000 000	0.816	16 320 000
4	30 000 000	0.763	22 890 000
5	30 000 000	0.713	21 390 000
			£35,460,000

ARR ~~NPV~~ Bungee

$$\frac{(40 + 26 + 44 + 60 + 40) - 120}{120} \times 100 = 15\%$$

cobra

$$\frac{(40 + 20 + 20 + 30 + 30) - 80}{80} \times 100 = 15\%$$

Europark (Investment appraisal)

Specification topic: Investment appraisal

Case Study: Europark - which investment?

Europark is a complex of fun rides and shows located just outside Paris. Recently the company has experienced disappointing profits and weak cash flow largely due to intense competition from heavily promoted Parc Asterix and Eurodisney. Europark's performance has also worsened due to the recession in the Eurozone. Long term borrowing has increased, affecting the gearing position of Europark, which currently stands at 60%.

The management are currently considering two new rides to attract customers back to the park and boost sales. The first option is Bungee Mania where customers would be strapped into the ride with elastic around their feet. They would then be pulled at speeds of up to 69 miles per hour in 27 different directions. The second ride, Cobra involves a 360 degree rotating snake which carries up to eight people at speeds of 96 miles per hour. The firm can only afford to buy one of these new rides. Marketing manager, Leon Thatcher, has prepared some data on the two rides following some market research gathered from a friend in the industry and some cost forecasts from the suppliers.

not have a clear perspective
high cost
transport
should they invest? enough money?
not enough money
intense competition
recession in the Eurozone
Long term borrowing
gearing position
60%
what interest?
pay back time, more interest
short - will be success?
non
both fair rides
dangerous
if someone goes wrong it's a mess
eg Alton Towers
niche
enough
Eurodisney has all audiences
too keen, forced

£m	Bungee Mania	Cobra
Initial cost	120	80

	Net Cash Flow (£m)	
	Bungee Mania	Cobra
Year 1	40	40
Year 2	26	20
Year 3	44	20
Year 4	60	30
Year 5	40	30

Interest rates are forecast to be 7% over the next few years
7% Discount Factors: Year 1 0.935; Year 2 0.873; Year 3 0.816, Year 4 0.763; Year 5 0.713

Exam-style questions

- Using the data shown in the tables above, calculate the net present value and average rate of return for both proposals. Based purely on these results, which proposal would you recommend that Europark invest in? (12 marks)
- The management at Europark are keen to make a final decision, as footfall and sales are continuing to fall. Using both non-financial factors and the quantitative data already calculated from question 1, together with any further calculations you believe are relevant, recommend which ride the business should invest in. Justify your choice (20 marks)



Broughton Hall Catholic High School
One Heart One Mind

Numeracy in Science

Calculating density in ecology

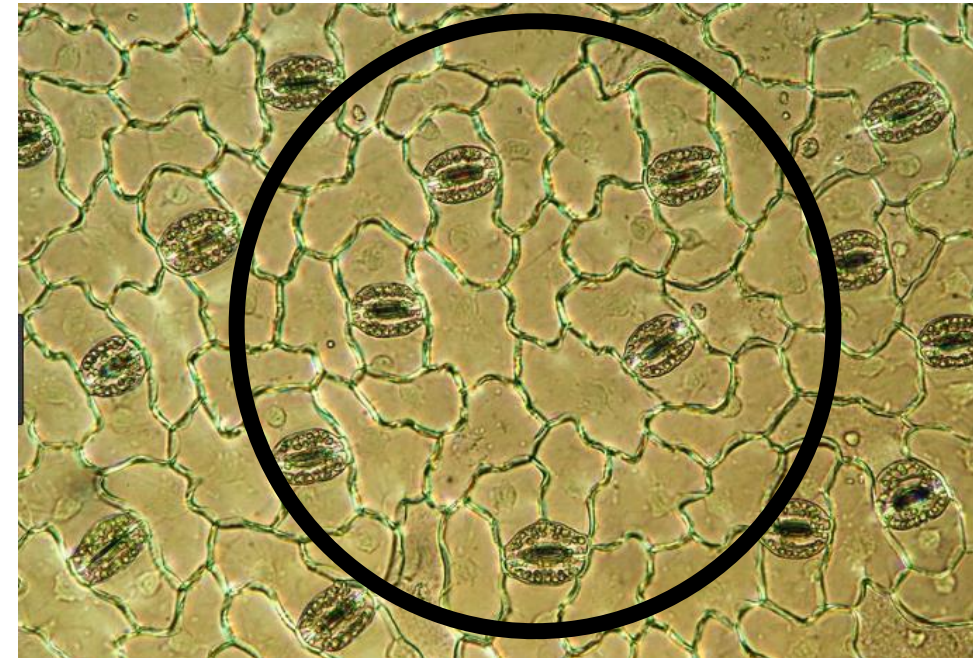
In biology scientists often have to count large numbers of features or organisms. Sometimes there are so many organisms to count that subsampling is done to find a number in a smaller area and then the numbers are scaled up to give an accurate estimate of the total number. If measuring tiny objects this can get even more difficult

Year 9 have recently been doing this to calculate the density of pores (stomata) that can be found on the underside of leaves.

First the area viewed through the microscope is calculated in micrometres μm ($1000 \mu\text{m} = 1\text{mm}$) using a ruler on the microscope stage and the circle area formula

$$\pi r^2$$

Then the number of stomata is counted. The number per μm is then calculated by dividing the number counted by the area. All units must be in μm for this to work!





Numeracy in ICT

Different counting systems

Year 8 have been working with different systems used to count.

In ICT/Computing, we use binary numbers (0,1 –or base 2) and hexadecimal (0 to F or base 16)

Year 8 have to be able to convert from our normal numbering system (denary or base 10) to both binary and hex.

1 = I	20 = XX
2 = II	30 = XXX
3 = III	40 = XL
4 = IV	50 = L
5 = V	60 = LX
6 = VI	70 = LXX
7 = VII	80 = LXXX
8 = VIII	90 = XC

CONVERSION TO HEXADECIMAL

1. Split the binary into groups of 4

8	4	2	1	8	2	4	1	8	4	2	1	8	4	2	1
1	0	1	0	0	1	1	1	0	0	0	1	1	1	0	0

2. Using the table system convert to denary numbers

10 7 1 12

3. Use the Hex table to convert

A 7 1 C

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

Binary numbers - self marking exercise

Fill in the gaps in the table below

Binary	Denary
10	2
110	6
1011	11
1000	8
1111	15
11	3
111	7
1100	12
1101	13
10000	16



Score

1010 out of 10100

(10 out of 20)



Numeracy in Music

Chords

In Music, understanding Western **tonality** is key to combining different notes to make a pleasing overall sound.

Chords are where two or more notes are played simultaneously. To understand and be able to play different types of chord such as **major** or **minor**, we need to know the correct **intervals** used to form each chord. We can work this out both mathematically and aurally.

When composing music, it's important to check that the notes in your melodies are sounding well against the chords and overall harmonies you are using. We use Logic software's piano roll function (which uses a grid to indicate pitches) & can use the grid alongside our listening skills to check our melodies and chords against each other, to make sure they sound good.

Scientists believe there are links between musical participation & improvements in mathematical skills. The high-level cognitive functions which develop via playing an instrument support one's ability to achieve in academic subjects such as mathematics.

