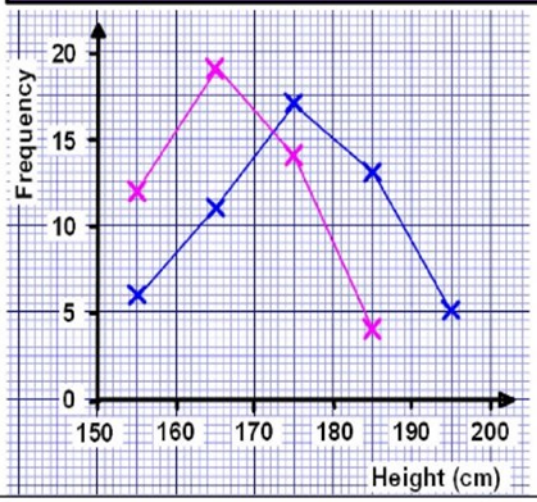
Day 16
Statistics

Question 1 – Foundation & Higher Tier GCSE



The heights of some boys (blue) and girls (pink) are represented on these frequency polygons. Copy and complete this grouped frequency table for boys:

Height (cm)	Frequency
150 ≤ H < ?	?

Question 2 – Higher Tier GCSE only

A histogram is going to be drawn for this data. Calculate the frequency densities for each group of weights:

Weight (kg)	Frequency
50 ≤ W < 100	75
100 ≤ W < 120	60
120 ≤ W < 130	45
130 ≤ W < 135	40
135 ≤ W < 150	30
150 ≤ W < 180	30

Question 1

$a = 180 - 123 = 57^0$
$b = 123 - 89 = 34^0$
$c = 360 \div 5 = 72^0$

Yesterday's solutions

$d = 180 - 72 = 108^0$
$e = 180 - 142 = 38^0$
$f = 142^0$ (alternate)

Question 2

(a) (i) G = 4, I = -5 (ii) G = -2, I = 6
(iii) G = ⅓, I = 0

(b) $4\pi r^2 + 3r^2$

(c) $3(2x - 1) \equiv 6x - 3$

Day 17
Number & Algebra

Question 1 – Foundation & Higher Tier GCSE

a) State the rule for continuing this sequence and the next term:

128, 32, 8, 2, ...

b) What is the n^{th} term and 100^{th} term of this sequence:

3, 10, 17, 24, ...

c) The rule for continuing this sequence is "multiply the previous term by 2 and then add 4". Find the 1^{st} and 2^{nd} terms:

?, ?, 32, 68, ...

Question 2 – Higher Tier GCSE only

a) Fully simplify: $\sqrt{12} \times \sqrt{6}$

b) Expand and simplify: $(1 - \sqrt{3})^2$

c) Rationalise the denominator: $\dfrac{3\sqrt{10}}{\sqrt{6}}$

d) Fully simplify: $\sqrt{175} - \sqrt{28}$

Yesterday's solutions

Question 1

Height (cm)	Frequency
$150 \leq H < 160$	6
$160 \leq H < 170$	11
$170 \leq H < 180$	17
$180 \leq H < 190$	13
$190 \leq H < 200$	5

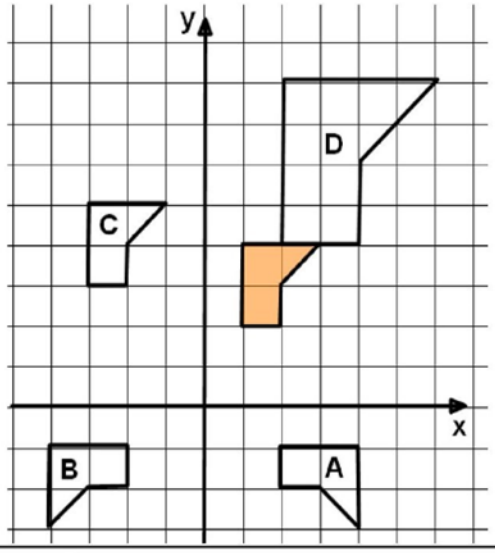
Question 2

Weight (kg)	Frequency	Class width	Frequency Density
$50 \leq W < 100$	75	50	1.5
$100 \leq W < 120$	60	20	3
$120 \leq W < 130$	45	10	4.5
$130 \leq W < 135$	40	5	8
$135 \leq W < 150$	30	15	2
$150 \leq W < 180$	30	30	1

Day 18
Geometry & Measures

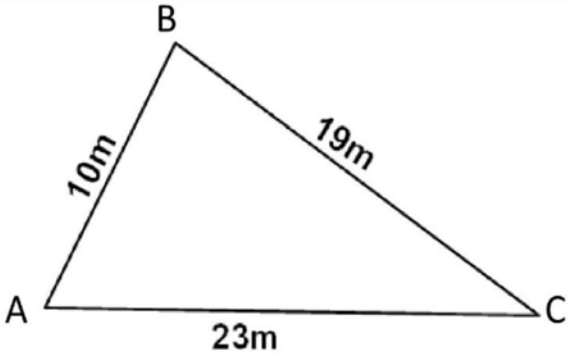
Question 1 – Foundation & Higher Tier GCSE

Fully describe the single transformations from the shaded shape to shapes A, B, C and D:



Question 2 – Higher Tier GCSE only

Calculate the area of this triangle (answer to 3 s.f.):



Yesterday's solutions

Question 1

a) Rule is "Divide by 4": 128, 32, 8, 2, ½ ...

b) 3, 10, 17, 24, ...
n^{th} term = $7n - 4$ and 100^{th} term = 696

c) Working backwards "take 4 then divide by 2": 5, 14, 32, 68, ...

Question 2

a) $\sqrt{12} \times \sqrt{6} = \sqrt{72} = \sqrt{36} \times \sqrt{2} = 6\sqrt{2}$

b) $(1 - \sqrt{3})(1 - \sqrt{3}) = 1 - 2\sqrt{3} + 3 = 4 - 2\sqrt{3}$

c) $\frac{3\sqrt{10}}{\sqrt{6}} \times \sqrt{6} = \frac{3\sqrt{60}}{6} = \frac{\sqrt{4} \times \sqrt{15}}{2} = \sqrt{15}$

d) $\sqrt{175} - \sqrt{28} = 5\sqrt{7} - 2\sqrt{7} = 3\sqrt{7}$

Day 19
Probability & Statistics

Q1 – Foundation & Higher Tier GCSE

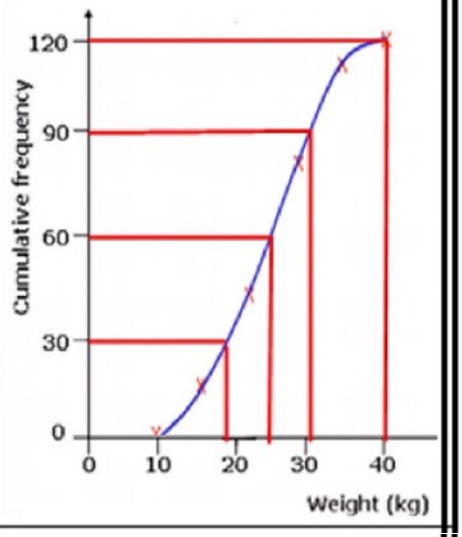
This spinner is to be spun once. What is the probability of :

i) Spinning an A
ii) Spinning an A or a B
iii) Not spinning a B

Show these answers on this number line:

Q2 – Higher Tier GCSE only

Choose the correct answers from the cumulative frequency diagram here:



i) Median = 60 or 24.5 or 30 ?
ii) Lower quartile = 30 or 40 or 19 ?
iii) Inter-quartile range = 11.5 or 60 or 30 ?

Question 1

A) 90^0 clockwise rotation using (0, 0) as the centre of rotation
B) Reflection using the mirror line y = -x
C) Translation using vector $\begin{bmatrix} -4 \\ 1 \end{bmatrix}$
D) Enlargement s.f. x 2 using (0, 0) as centre

Yesterday's solutions

Question 2

Step 1 – Calculate one of the angles using Cosine Rule → e.g. Angle A = 54.365766^0
Step 2 – Use ½abSinC to find the area of the triangle → 93.46657 → 93.5 m^2

Day 20
Algebra

Question 1 – Foundation & Higher Tier GCSE

a) Kelsey is k years old. Her sister is 3 years older than her, her brother is 5 years younger than her and her mum is 4 times her age. Write an expression in terms of k for the sum of their ages and simplify it fully.

b) If their total age is 68 years, form an equation and solve it to find Kelsey's age.

Question 2 – Higher Tier GCSE only

Look at the following identity:

$$(y - a)^2 - 7 \equiv y^2 - 6y + b$$

Use it to calculate the value of integers "a" and "b".

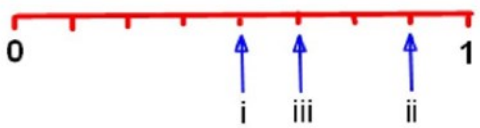
Yesterday's solutions

Question 1

i) Probability of spinning an A = 4/8 = ½

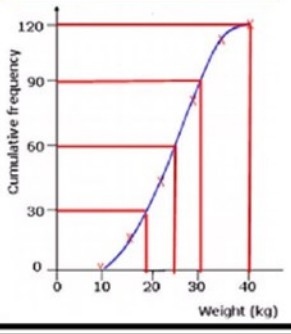
ii) Probability of spinning an A or a B = ⅞

iii) Probability of not spinning a B = ⅝



Question 2

i) Median = **24.5**

ii) Lower quartile = **19**

iii) Inter-quartile range = **11.5**