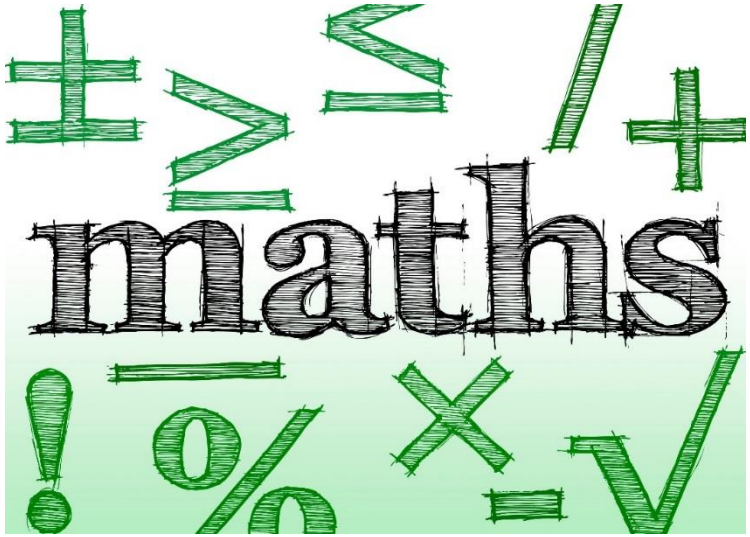
Year 10 Information evening

Maths

Changes to the GCSE and how parents can help

Mr B.Warr - Head of Mathematics



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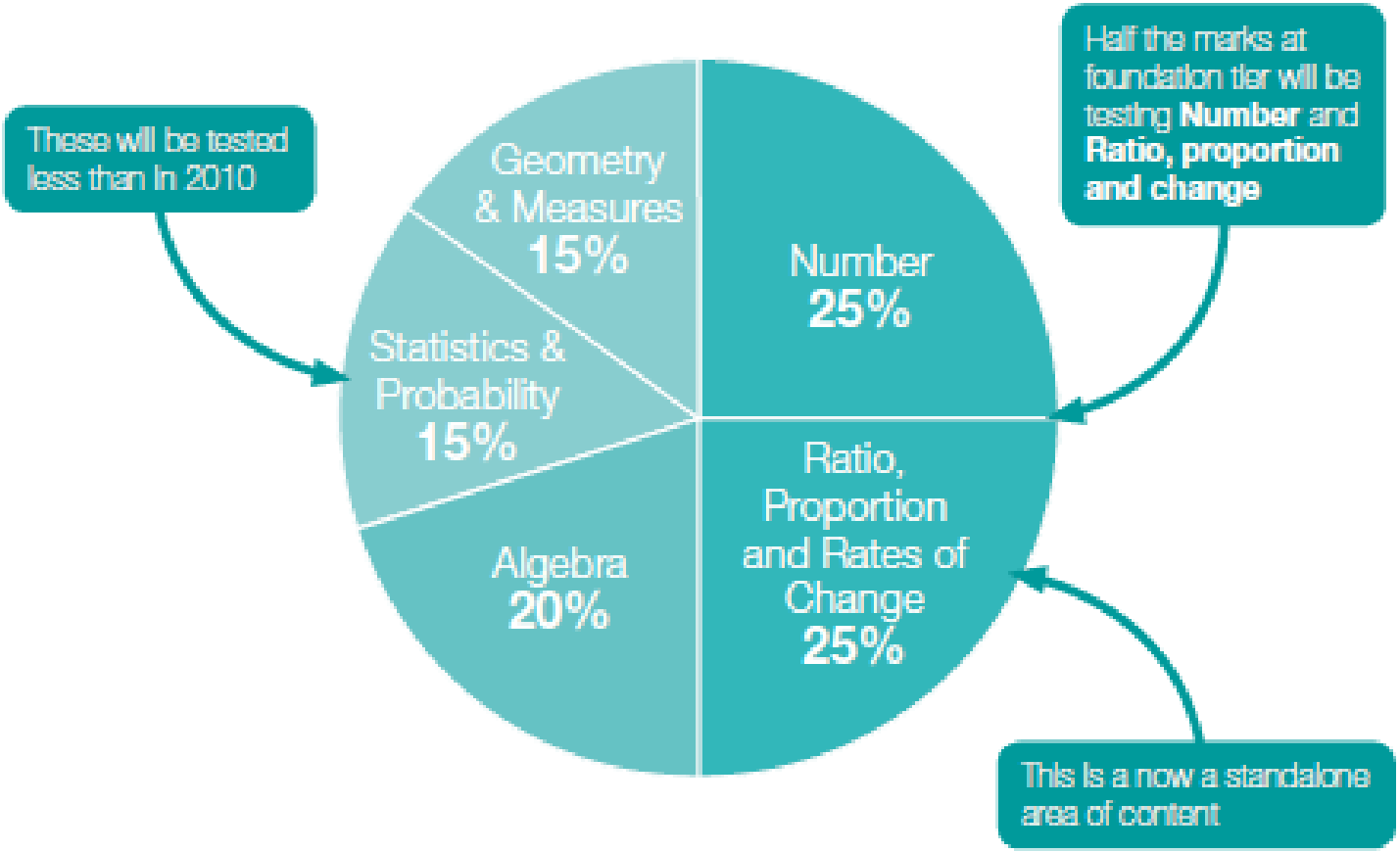
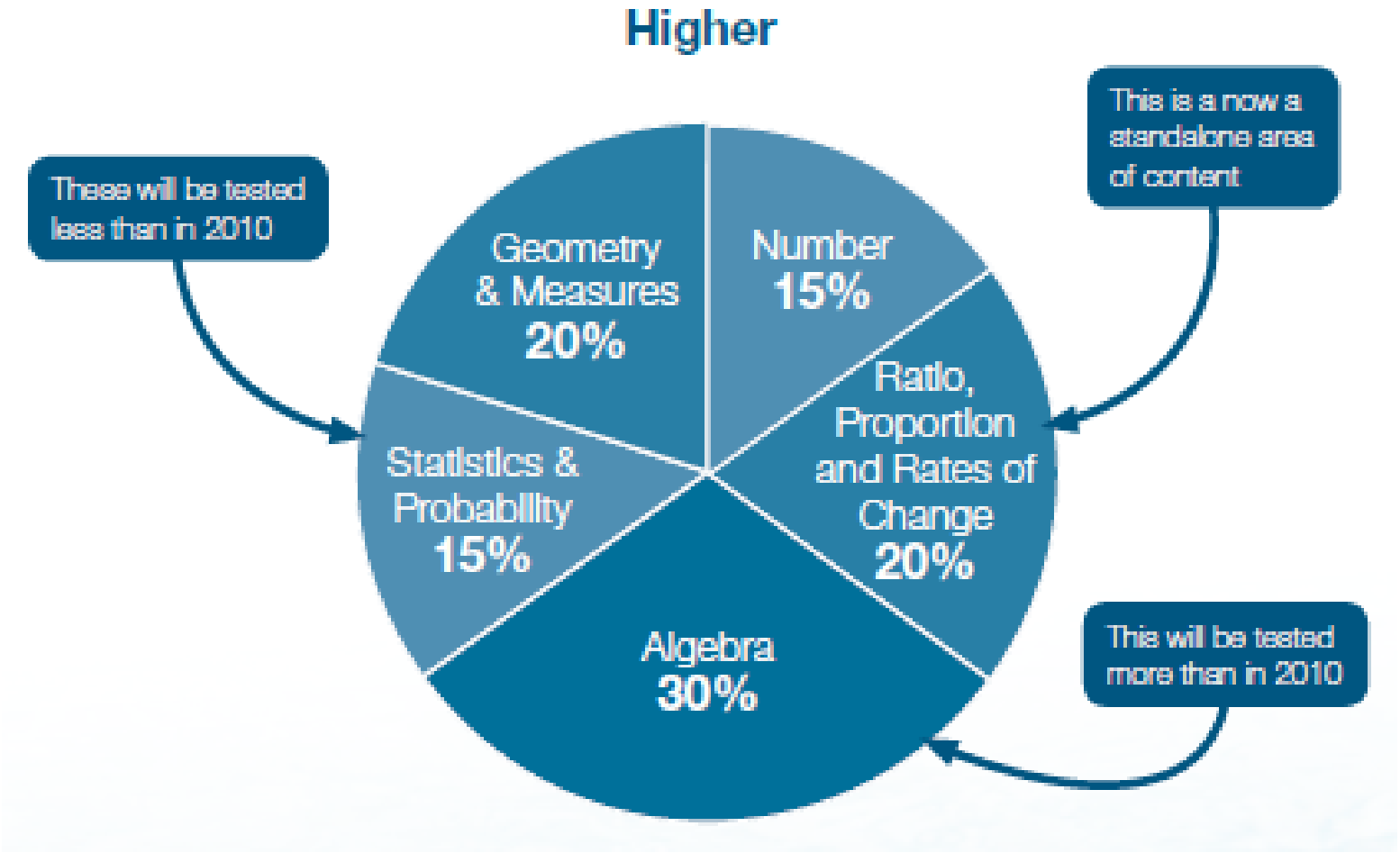
Changes to Foundation tier



Topics new to Foundation tier (previously Higher tier only in 2010)

- Index laws: zero and negative powers (numeric and algebraic)
- Standard form
- Compound interest and reverse percentages
- Direct and indirect proportion (numeric and algebraic)
- Expand the product of two linear expressions
- Factorise quadratic expressions in the form $x^2 + bx + c$
- Solve linear/linear simultaneous equations
- Solve quadratic equations by factorisation
- Plot cubic and reciprocal graphs, recognise quadratic and cubic graphs
- Trigonometric ratios in 2D right-angled triangles
- Fractional scale enlargements in transformations
- Lengths of arcs and areas of sectors of circles
- Mensuration problems
- Vectors (except geometric problems/proofs)
- Density
- Tree diagrams

Changes to Higher tier



Topics new to Higher tier

- Expand the products of more than two binomials
- Interpret the reverse process as the 'inverse function'; interpret the succession of two functions as a 'composite function' (using formal function notation)
- Deduce turning points by completing the square
- Calculate or estimate gradients of graphs and areas under graphs, and interpret results in real-life cases (**not** including calculus)
- Simple geometric progressions including surds, and other sequences
- Deduce expressions to calculate the nth term of quadratic sequences
- Calculate and interpret conditional probabilities through Venn diagrams

Some students likely to sit AQA Further Maths qualification as well.

Topics new to both tiers

- Use inequality notation to specify simple error intervals
- Identify and interpret roots, intercepts, turning points of quadratic functions graphically; deduce roots algebraically
- Fibonacci type sequences, quadratic sequences, geometric progressions
- Relate ratios to linear functions
- Interpret the gradient of a straight line graph as a rate of change
- Know the exact values of sin θ and cos θ for $\theta = 0°, 30°, 45°, 60°$ and $90°$; know the exact value of tan θ for $\theta = 0°, 30°, 45°$ and $60°$

Omitted topics

- Trial and improvement
- Tessellations
- Isometric grids
- Imperial units of measure
- Questionnaires
- 3D coordinates
- Rotation and enlargement of functions

Changes to Examinations

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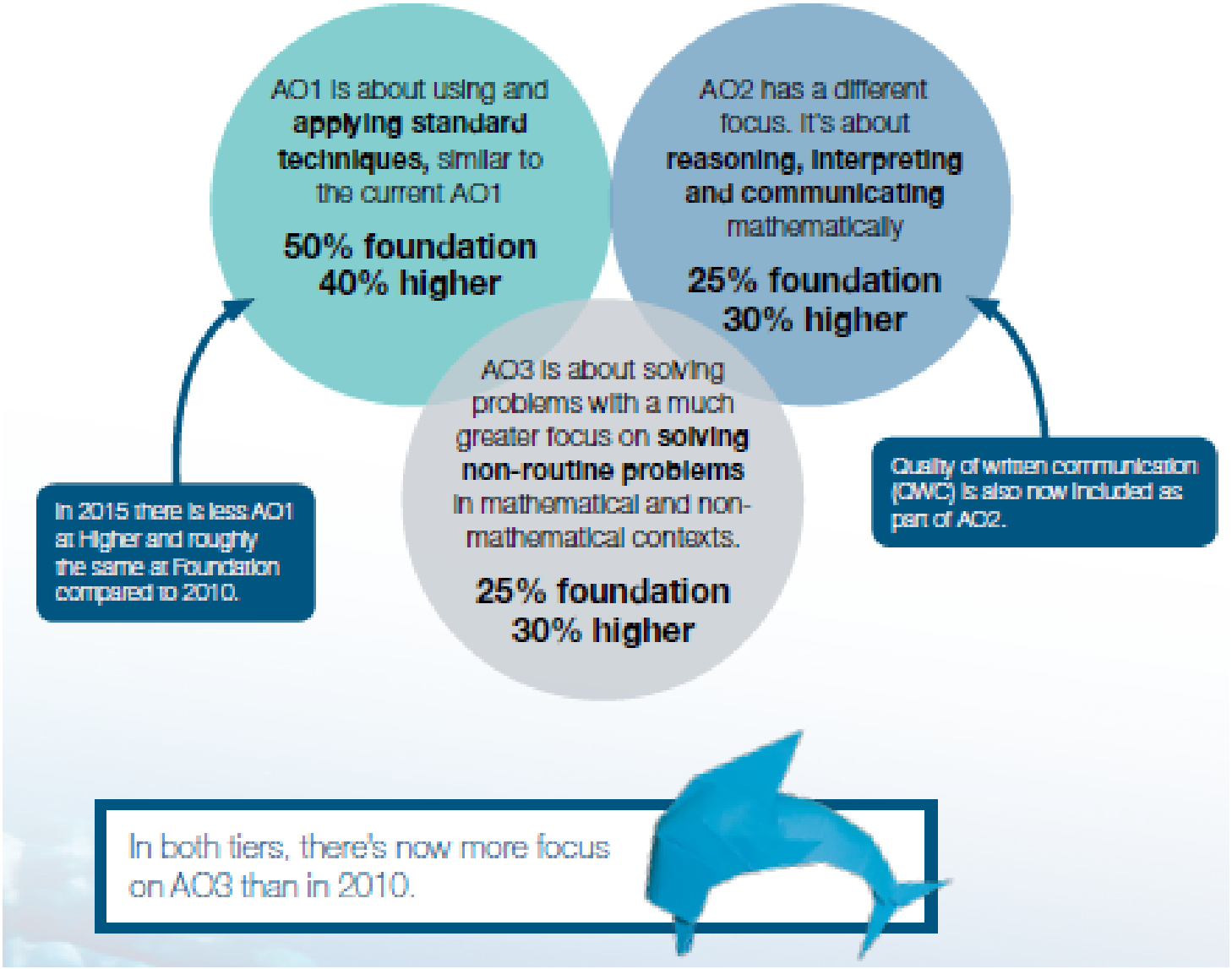

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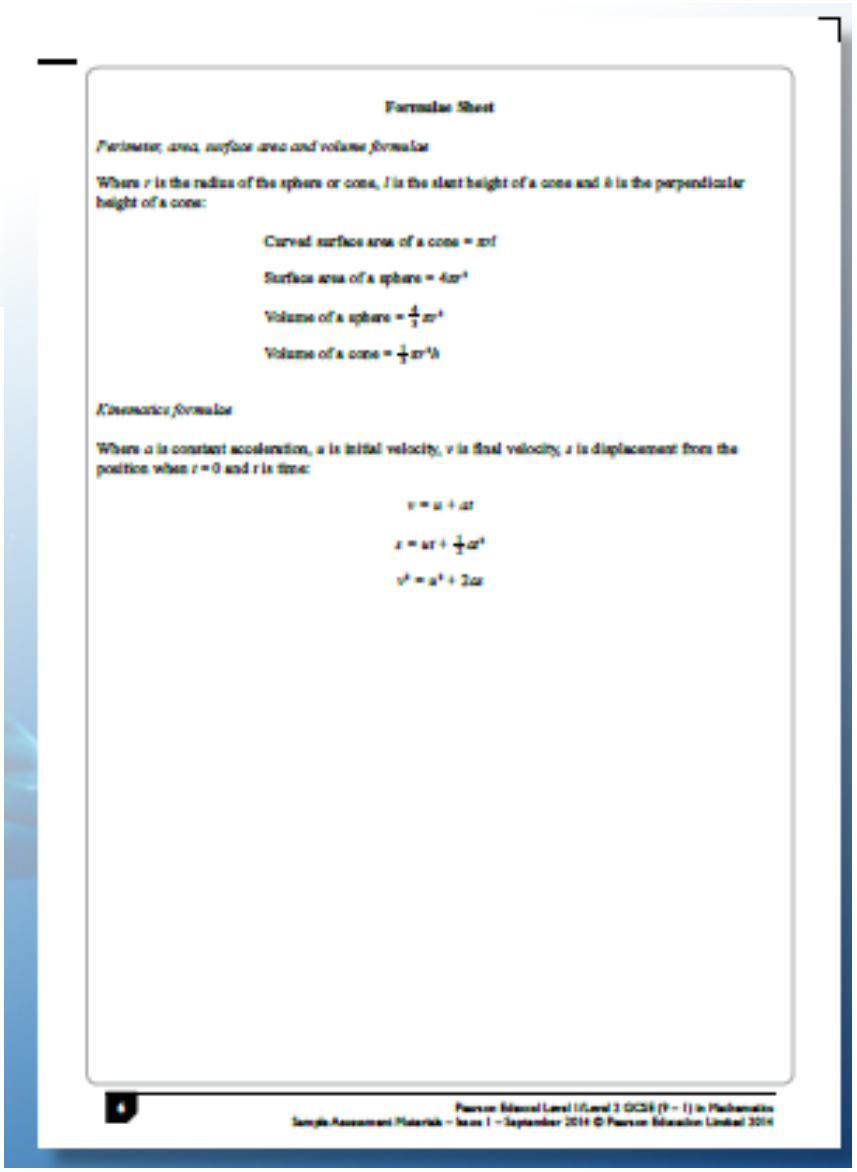
Formulae sheets

Students will need to memorise many of the formulae currently given in the formulae sheets at the front of the exam papers. These are:

- Volume of a prism
- Area of a trapezium
- The Quadratic equation (Higher tier only)
- The sine rule, cosine rule, and area of a triangle (Higher tier only).

Here's the formulae sheet that will be provided:



Formulae Sheet

Perimeter, area, surface area and volume formulae

Where r is the radius of the sphere or cone, l is the slant height of a cone and h is the perpendicular height of a cone:

Curved surface area of a cone = πrl

Surface area of a sphere = $4\pi r^2$

Volume of a sphere = $\frac{4}{3}\pi r^3$

Volume of a cone = $\frac{1}{3}\pi r^2 h$

Kinematics formulae

Where a is constant acceleration, u is initial velocity, v is final velocity, s is displacement from the position when $t = 0$ and t is time:

$v = u + at$

$s = ut + \frac{1}{2}at^2$

$v^2 = u^2 + 2as$

Pearson Edexcel Level 1/Level 2 GCSE (9 – 1) in Mathematics
Sample Assessment Materials – Issue 1 – September 2016 © Pearson Education Limited 2016

What can you do to help?

Be positive

"I was never very good at Maths…"
"I always hated Maths when I was at school…"

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- Encourage students to get into the habit of revising now. We subscribe to the best resource your child can use for revision – Mathswatch. Either logon at www.mathswatchvle.com or use the app from the app store. Speak to a member of the maths team if your child does not have their login and password.

- Work through problems at home with your child. They may need the help - and you may learn something!

- If your child struggles with maths do they know their tables? Times tables unlock many areas of mathematics – such as arithmetic, fractions and factors. Learning them is not an onerous task and can be done relatively quickly.

- Encourage your child to ask for help with topics that they do not understand

- Download copies of old exam papers and get your child to go through them. The specifications change but the maths doesn't. **The only way to get better at maths is to do maths.**

- Buy CGP revision guides and workbooks as early as possible – students then get into the habit of referring to them early in their GCSE course.

- Invest in a scientific calculator and a maths set now. The sooner students get used to a calculators' functions the better.

- Any questions? Please email me at bw@priory.shropshire.sch.uk

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