

Year 11 Maths Oak Academy Work – Spring Term 1

FOUNDATION:

Unit: FSSM1	
Plans and elevations	http://corbettmaths.com/2014/01/16/views-and-elevations/
Nets	https://classroom.thenational.academy/lessons/nets-of-cubes-crtp4d
Parallel lines and angles	https://classroom.thenational.academy/lessons/angles-in-parallel-lines-with-one-transversal-cgukgt
	https://classroom.thenational.academy/lessons/angles-in-parallel-lines-with-two-transversals-6ww66t
Angles in a triangle, quadrilateral, straight lines and points	https://classroom.thenational.academy/lessons/find-missing-angles-around-a-point-and-on-a-straight-line-c9k32c
	https://classroom.thenational.academy/lessons/find-missing-angles-in-a-triangle-6cvk4t
	https://classroom.thenational.academy/lessons/find-missing-angles-in-a-quadrilateral-6gukar
	https://classroom.thenational.academy/lessons/find-missing-angles-in-a-special-quadrilateral-6gtk4d
Properties of shapes	https://classroom.thenational.academy/lessons/rotational-symmetry-ccrkee
	https://classroom.thenational.academy/lessons/lines-of-symmetry-6rtk2c
	https://classroom.thenational.academy/lessons/classifying-triangles-6rv3cc

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	https://classroom.thenational.academy/lessons/comparing-quadrilaterals-cmt66t
	https://classroom.thenational.academy/lessons/internal-angles-in-a-quadrilateral-cguk8t
Solving equations in angle and shape problems	http://corbettmaths.com/2013/04/20/forming-equations-involving-perimeter-or-angles/
Angles in regular polygons	https://classroom.thenational.academy/lessons/find-missing-exterior-angles-cgu64e
	https://classroom.thenational.academy/lessons/solve-problems-involving-exterior-angles-6wrkgd
	https://classroom.thenational.academy/lessons/find-missing-exterior-angles-of-polygons-64t38r
	https://classroom.thenational.academy/lessons/finding-the-sum-of-interior-angles-in-a-polygon-ctk30e
	https://classroom.thenational.academy/lessons/find-the-number-of-sides-when-given-the-sum-of-interior-angles-68w3jc
	https://classroom.thenational.academy/lessons/find-missing-angles-when-two-or-more-polygons-are-joined-cgr64t
Measuring and drawing angles	https://classroom.thenational.academy/lessons/measuring-and-drawing-angles-cnk38d
Triangle constructions	https://classroom.thenational.academy/lessons/construct-triangles-6dk3ec

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Perpendicular bisector	https://classroom.thenational.academy/lessons/construct-a-perpendicular-bisector-74wked
	https://classroom.thenational.academy/lessons/construct-a-perpendicular-bisector-from-a-point-to-a-line-crt3cc
Angle bisector	https://classroom.thenational.academy/lessons/construct-an-angle-bisector-65jk4d
Loci	http://corbettmaths.com/2013/03/31/loci-part-1/
Scale drawings	http://corbettmaths.com/2013/11/13/maps-scales/
Bearings	https://classroom.thenational.academy/lessons/bearings-with-angle-facts-cdjpad

Unit: FSSM2	
Symmetries	https://classroom.thenational.academy/lessons/rotational-symmetry-ccrkee
	https://classroom.thenational.academy/lessons/lines-of-symmetry-6rtk2c
Translations	https://classroom.thenational.academy/lessons/translation-ccv30e
Rotations	https://classroom.thenational.academy/lessons/rotation-cgvk0t
	https://classroom.thenational.academy/lessons/rotate-an-object-around-a-given-coordinate-6gr66r
Reflections	https://classroom.thenational.academy/lessons/reflection-6gw38t
	https://classroom.thenational.academy/lessons/combining-reflections-c9j38c

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Enlargements	https://classroom.thenational.academy/lessons/enlarge-an-object-with-a-positive-scale-factor-c4v3gc
	https://classroom.thenational.academy/lessons/enlarge-an-object-with-a-positive-scale-factor-from-a-given-coordinate-6rup8d
Invariant points	https://corbettmaths.com/2019/02/04/invariant-points-video/
Similar shapes	https://classroom.thenational.academy/lessons/identify-similar-shapes-and-show-shapes-are-similar-6rtkgt
	https://classroom.thenational.academy/lessons/find-missing-lengths-in-similar-separate-shapes-6wvk8c
	https://classroom.thenational.academy/lessons/find-missing-lengths-in-similar-shapes-which-have-sides-overlapping-ctjkac
Using congruent triangles	https://classroom.thenational.academy/lessons/identify-congruent-shapes-6mwkcc

Unit: FSSM3	
Metric Conversions	https://classroom.thenational.academy/lessons/convertng-between-metric-units-of-length-6cu3cc
	https://classroom.thenational.academy/lessons/solving-problems-involving-convertng-between-metric-units-of-length-cmwk6c
	https://classroom.thenational.academy/lessons/convertng-between-units-of-metric-mass-6ww38d

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Perimeter	https://classroom.thenational.academy/lessons/perimeter-of-polygons-and-compound-shapes-65k3jt
Area of rectangle, triangle, parallelogram, trapezium	https://classroom.thenational.academy/lessons/area-of-rectangles-parallelograms-and-triangles-71jp8c
	https://classroom.thenational.academy/lessons/area-of-a-trapezium-70r34c
Parts of a Circle	https://classroom.thenational.academy/lessons/parts-of-a-circle-cmwp8d
Area and circumference of circles	https://classroom.thenational.academy/lessons/find-the-circumference-of-a-circle-c4tp6e
	https://classroom.thenational.academy/lessons/find-the-diameter-or-radius-when-given-the-circumference-68ukcc
	https://classroom.thenational.academy/lessons/find-the-area-of-a-circle-60w36c
	https://classroom.thenational.academy/lessons/find-the-radius-and-diameter-when-given-the-area-6rv66c
Area of sectors and arc length inc. answers in terms of Pi	https://classroom.thenational.academy/lessons/find-the-area-of-a-sector-c9j66t
	https://classroom.thenational.academy/lessons/find-the-radius-or-diameter-given-the-area-of-a-sector-crupad
	https://classroom.thenational.academy/lessons/find-the-length-of-an-arc-and-the-perimeter-of-a-sector-6xj34c
	https://classroom.thenational.academy/lessons/use-the-arc-length-to-find-the-radius-or-angle-of-a-sector-70wk8r

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Properties of 3D shapes	https://classroom.thenational.academy/lessons/3-d-shapes-crwp2c
Surface area of prisms	https://classroom.thenational.academy/lessons/finding-the-surface-area-of-cubes-and-cuboids-6nh68c
	https://classroom.thenational.academy/lessons/finding-the-surface-area-of-triangular-prisms-6dh3ae
Volume of a cuboid, prism	https://classroom.thenational.academy/lessons/volume-of-cubes-and-cuboids-6hhk6r
	https://classroom.thenational.academy/lessons/finding-the-volume-of-triangular-prisms-6cukgd
Surface area and volume of spheres, pyramids, cones	https://classroom.thenational.academy/lessons/volume-further-problem-solving-with-spheres-cones-and-pyramids-cgup4d
	https://classroom.thenational.academy/lessons/surface-area-and-volume-of-a-hemisphere-6nh3ce
	https://classroom.thenational.academy/lessons/surface-area-further-problem-solving-6mt3ed

Unit: FSSM4

Pythagoras' theorem	https://classroom.thenational.academy/lessons/know-and-understand-pythagoras-theorem-70vp4t
	https://classroom.thenational.academy/lessons/find-the-length-of-the-hypotenuse-6xgk6t

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	https://classroom.thenational.academy/lessons/find-the-length-of-the-shorter-side-6ru6ce
	https://classroom.thenational.academy/lessons/mixture-of-finding-a-missing-length-6mwp6r
	https://classroom.thenational.academy/lessons/use-pythagoras-theorem-to-show-that-a-triangle-is-right-angled-6hhk4r
Trigonometry - SOH CAH TOA	https://classroom.thenational.academy/lessons/know-tangent-sine-and-cosine-6mvk4d
	https://classroom.thenational.academy/lessons/use-tangent-to-find-a-length-c5gkge
	https://classroom.thenational.academy/lessons/use-sine-and-cosine-to-find-a-length-75hk0c
	https://classroom.thenational.academy/lessons/applying-trigonometry-6mup2c
	https://classroom.thenational.academy/lessons/use-trigonometry-to-find-the-perpendicular-height-of-a-triangle-c4v3ee
	https://classroom.thenational.academy/lessons/solve-basic-trigonometry-equations-6cup6r
	https://classroom.thenational.academy/lessons/use-inverse-functions-to-find-an-angle-61jp2d
	https://classroom.thenational.academy/lessons/solve-problems-mixing-angles-and-sides-6djk2e

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Exact values of Sin/Cos/Tan 0/30/45/60/90	https://classroom.thenational.academy/lessons/know-the-trigonometry-ratios-for-0-30-45-60-and-90-6nk3ee
Calculating with column vectors	https://classroom.thenational.academy/lessons/write-a-column-vector-from-a-diagram-74tkce
	https://classroom.thenational.academy/lessons/add-two-column-vectors-including-diagrams-to-give-a-resultant-vector-6xgp2d
	https://classroom.thenational.academy/lessons/add-and-subtract-two-column-vectors-to-give-a-resultant-vector-part-1-chjp2t
	https://classroom.thenational.academy/lessons/multiply-a-vector-by-a-scalar-64u3cr
	https://classroom.thenational.academy/lessons/add-and-subtract-two-column-vectors-to-give-a-resultant-vector-part-2-61k38e
Defining lines using algebraic vectors	https://classroom.thenational.academy/lessons/find-the-length-of-a-column-vector-6cu38r

HIGHER:

Unit: HSSM1

Plans and elevations	http://corbettmaths.com/2014/01/16/views-and-elevations/
Parallel lines and angles	https://classroom.thenational.academy/lessons/angles-in-parallel-lines-with-one-transversal-cgukgt

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	https://classroom.thenational.academy/lessons/angles-in-parallel-lines-with-two-transversals-6ww66t
Angles in a triangle, quadrilateral, straight lines and points	https://classroom.thenational.academy/lessons/find-missing-angles-around-a-point-and-on-a-straight-line-c9k32c
	https://classroom.thenational.academy/lessons/find-missing-angles-in-a-triangle-6cvk4t
	https://classroom.thenational.academy/lessons/find-missing-angles-in-a-quadrilateral-6gukar
	https://classroom.thenational.academy/lessons/find-missing-angles-in-a-special-quadrilateral-6gtk4d
Properties of shapes	https://classroom.thenational.academy/lessons/rotational-symmetry-cckee
	https://classroom.thenational.academy/lessons/lines-of-symmetry-6rtk2c
	https://classroom.thenational.academy/lessons/classifying-triangles-6rv3cc
	https://classroom.thenational.academy/lessons/comparing-quadrilaterals-cmt66t
	https://classroom.thenational.academy/lessons/internal-angles-in-a-quadrilateral-cguk8t
Solving equations in angle problems	http://corbettmaths.com/2013/04/20/forming-equations-involving-perimeter-or-angles/
Angles in regular polygons	https://classroom.thenational.academy/lessons/find-missing-exterior-angles-cgu64e

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	https://classroom.thenational.academy/lessons/solve-problems-involving-exterior-angles-6wrkgd https://classroom.thenational.academy/lessons/find-missing-exterior-angles-of-polygons-64t38r https://classroom.thenational.academy/lessons/finding-the-sum-of-interior-angles-in-a-polygon-ctk30e
	https://classroom.thenational.academy/lessons/find-the-number-of-sides-when-given-the-sum-of-interior-angles-68w3jc https://classroom.thenational.academy/lessons/find-missing-angles-when-two-or-more-polygons-are-joined-cgr64t
Triangle constructions	https://classroom.thenational.academy/lessons/construct-triangles-6dk3ec
Perpendicular bisector	https://classroom.thenational.academy/lessons/construct-a-perpendicular-bisector-74wked https://classroom.thenational.academy/lessons/construct-a-perpendicular-bisector-from-a-point-to-a-line-crt3cc
Angle bisector	https://classroom.thenational.academy/lessons/construct-an-angle-bisector-65jk4d
Loci	http://corbettmaths.com/2013/03/31/loci-part-1/
Bearings (not including trigonometry)	https://classroom.thenational.academy/lessons/bearings-with-angle-facts-cdjpad

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Using circle theorems	https://classroom.thenational.academy/lessons/circle-theorems-angle-at-the-centre-and-angle-at-the-circumference-70u66r
	https://classroom.thenational.academy/lessons/circle-theorems-angle-in-a-semicircle-is-90-degrees-68vkat
	https://classroom.thenational.academy/lessons/circle-theorems-angles-in-the-same-segment-c5gkad
	https://classroom.thenational.academy/lessons/circle-theorems-angles-in-a-cyclic-quadrilateral-6xh6ar
	https://classroom.thenational.academy/lessons/circle-theorems-a-tangent-and-radius-are-perpendicular-at-the-point-of-contact-cgwkac
	https://classroom.thenational.academy/lessons/circle-theorems-the-perpendicular-from-the-centre-to-a-chord-bisects-the-chord-6rvk6c
	https://classroom.thenational.academy/lessons/mixed-circle-theorem-problems-70r3et
Alternate Segment Theorem	https://classroom.thenational.academy/lessons/circle-theorems-the-alternate-segment-theorem-74tkge
Proving circle theorems	See using circle theorems

Unit: HSSM2

Translations

<https://classroom.thenational.academy/lessons/translation-ccv30e>

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Rotations	https://classroom.thenational.academy/lessons/rotation-cgvk0t
	https://classroom.thenational.academy/lessons/rotate-an-object-around-a-given-coordinate-6gr66r
Reflections	https://classroom.thenational.academy/lessons/reflection-6gw38t
	https://classroom.thenational.academy/lessons/combining-reflections-c9j38c
Enlargements	https://classroom.thenational.academy/lessons/enlarge-an-object-with-a-positive-scale-factor-c4v3gc
	https://classroom.thenational.academy/lessons/enlarge-an-object-with-a-positive-scale-factor-from-a-given-coordinate-6rup8d
Enlargement of negative scale factors	https://classroom.thenational.academy/lessons/enlargement-with-a-negative-scale-factor-69jp4d
	https://classroom.thenational.academy/lessons/describe-an-enlargement-with-a-negative-scale-factor-69jk6d
Invariant points	https://corbettmaths.com/2019/02/04/invariant-points-video/
Transformations - Combined	https://classroom.thenational.academy/lessons/mixed-transformations-cmrk6t
	https://classroom.thenational.academy/lessons/combining-translations-and-reflections-74tk0c
Similar shapes	https://classroom.thenational.academy/lessons/identify-similar-shapes-and-show-shapes-are-similar-6rtkgt

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	https://classroom.thenational.academy/lessons/find-missing-lengths-in-similar-separate-shapes-6wvk8c
Similar shapes- area and volume scale factor problems	https://classroom.thenational.academy/lessons/find-missing-lengths-in-similar-shapes-which-have-sides-overlapping-ctjkac https://classroom.thenational.academy/lessons/enlargements-74vkjd https://classroom.thenational.academy/lessons/enlargements-and-area-60wkjd
	https://classroom.thenational.academy/lessons/find-areas-of-similar-shapes-given-corresponding-lengths-ccr6ae https://classroom.thenational.academy/lessons/find-volumes-of-similar-shapes-given-corresponding-lengths-70ukgt
Using congruent triangles	https://classroom.thenational.academy/lessons/identify-congruent-shapes-6mwkcc
Proving triangles are congruent	See using congruent triangles

Unit: HSSM3	
Metric Conversions	https://classroom.thenational.academy/lessons/converting-between-metric-units-of-length-6cu3cc
	https://classroom.thenational.academy/lessons/solving-problems-involving-converting-between-metric-units-of-length-cmwk6c

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	https://classroom.thenational.academy/lessons/converting-between-units-of-metric-mass-6ww38d
Perimeter	https://classroom.thenational.academy/lessons/perimeter-of-polygons-and-compound-shapes-65k3jt
Area of rectangle, triangle, parallelogram, trapezium	https://classroom.thenational.academy/lessons/area-of-rectangles-parallelograms-and-triangles-71jp8c
	https://classroom.thenational.academy/lessons/area-of-a-trapezium-70r34c
Area of compound shapes	https://classroom.thenational.academy/lessons/area-of-compound-shapes-65k64c
	https://classroom.thenational.academy/lessons/calculate-area-of-compound-shapes-with-circles-68r34d
Area and circumference of circles including answers in terms of Pi	https://classroom.thenational.academy/lessons/find-the-circumference-of-a-circle-c4tp6e
	https://classroom.thenational.academy/lessons/find-the-diameter-or-radius-when-given-the-circumference-68ukcc
	https://classroom.thenational.academy/lessons/find-the-area-of-a-circle-60w36c
	https://classroom.thenational.academy/lessons/find-the-radius-and-diameter-when-given-the-area-6rv66c
Area and perimeter of sectors	https://classroom.thenational.academy/lessons/find-the-area-of-a-sector-c9j66t
	https://classroom.thenational.academy/lessons/find-the-radius-or-diameter-given-the-area-of-a-sector-crupad

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	https://classroom.thenational.academy/lessons/find-the-length-of-an-arc-and-the-perimeter-of-a-sector-6xj34c
	https://classroom.thenational.academy/lessons/use-the-arc-length-to-find-the-radius-or-angle-of-a-sector-70wk8r
Surface area of prisms	https://classroom.thenational.academy/lessons/finding-the-surface-area-of-cubes-and-cuboids-6nh68c
	https://classroom.thenational.academy/lessons/finding-the-surface-area-of-triangular-prisms-6dh3ae
Volume of a cuboid, prism	https://classroom.thenational.academy/lessons/volume-of-cubes-and-cuboids-6hhk6r
	https://classroom.thenational.academy/lessons/finding-the-volume-of-triangular-prisms-6cukgd
Surface area and volume of Spheres, Pyramids, Cones	https://classroom.thenational.academy/lessons/volume-further-problem-solving-with-spheres-cones-and-pyramids-cgup4d
	https://classroom.thenational.academy/lessons/surface-area-and-volume-of-a-hemisphere-6nh3ce
	https://classroom.thenational.academy/lessons/surface-area-further-problem-solving-6mt3ed
Surface area and volume of frustrums	https://classroom.thenational.academy/lessons/find-the-volume-of-a-frustum-c4wk6d

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Compound units	https://classroom.thenational.academy/lessons/use-and-apply-the-speed-formula-6xj3jd
Using density formula	https://classroom.thenational.academy/lessons/use-and-apply-the-density-formula-68u38t
Problem solving with density	See using density formula
Rate of change/flow with volume	https://classroom.thenational.academy/lessons/understanding-rate-cgv34r

Unit: HSSM4

Pythagoras' theorem	https://classroom.thenational.academy/lessons/know-and-understand-pythagoras-theorem-70vp4t
	https://classroom.thenational.academy/lessons/find-the-length-of-the-hypotenuse-6xgk6t
	https://classroom.thenational.academy/lessons/find-the-length-of-the-shorter-side-6ru6ce
	https://classroom.thenational.academy/lessons/mixture-of-finding-a-missing-length-6mwp6r
	https://classroom.thenational.academy/lessons/use-pythagoras-theorem-to-show-that-a-triangle-is-right-angled-6hhk4r
Pythagoras in 3D	http://corbettmaths.com/2012/08/19/3d-pythagoras/

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Trigonometry - SOH CAH TOA	https://classroom.thenational.academy/lessons/know-tangent-sine-and-cosine-6mvk4d
	https://classroom.thenational.academy/lessons/use-tangent-to-find-a-length-c5gkge
	https://classroom.thenational.academy/lessons/use-sine-and-cosine-to-find-a-length-75hk0c
	https://classroom.thenational.academy/lessons/applying-trigonometry-6mup2c
	https://classroom.thenational.academy/lessons/use-trigonometry-to-find-the-perpendicular-height-of-a-triangle-c4v3ee
	https://classroom.thenational.academy/lessons/solve-basic-trigonometry-equations-6cup6r
	https://classroom.thenational.academy/lessons/use-inverse-functions-to-find-an-angle-61jp2d
	https://classroom.thenational.academy/lessons/solve-problems-mixing-angles-and-sides-6djk2e
Exact values of Sin/Cos/Tan 0/30/45/60/90	https://classroom.thenational.academy/lessons/know-the-trigonometry-ratios-for-0-30-45-60-and-90-6nk3ee
Trigonometry in 3D	https://classroom.thenational.academy/lessons/know-when-to-use-pythagoras-or-trigonometry-to-solve-problems-6wt3ac
	http://corbettmaths.com/2013/12/07/3d-trigonometry/

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Sine and cosine rules	https://classroom.thenational.academy/lessons/use-the-sine-rule-to-find-a-missing-length-cmup4c
	https://classroom.thenational.academy/lessons/use-the-sine-rule-to-find-a-missing-angle-6rvkjd
	https://classroom.thenational.academy/lessons/use-the-cosine-rule-to-find-a-missing-length-cmwk6c
	https://classroom.thenational.academy/lessons/use-the-cosine-rule-to-find-a-missing-angle-6thk8t
Areas of triangles using $\frac{1}{2}ab\sin C$	http://corbettmaths.com/2012/08/02/area-of-a-triangle-sinetrigonometry/
Calculations with column vectors	https://classroom.thenational.academy/lessons/write-a-column-vector-from-a-diagram-74tkce
	https://classroom.thenational.academy/lessons/add-two-column-vectors-including-diagrams-to-give-a-resultant-vector-6xgp2d
	https://classroom.thenational.academy/lessons/add-and-subtract-two-column-vectors-to-give-a-resultant-vector-part-1-chjp2t
	https://classroom.thenational.academy/lessons/multiply-a-vector-by-a-scalar-64u3cr
	https://classroom.thenational.academy/lessons/add-and-subtract-two-column-vectors-to-give-a-resultant-vector-part-2-61k38e
Calculations with vectors using algebra	https://classroom.thenational.academy/lessons/find-the-length-of-a-column-vector-6cu38r



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Vectors and ratio problems	https://classroom.thenational.academy/lessons/vector-diagrams-involving-ratios-6gv3ad
Proving vectors are parallel or on a line	https://classroom.thenational.academy/lessons/vector-diagrams-involving-midpoints-68wp2d
Finding the value of a scalar in vector problems	See calculations with column vectors