Year 11 Higher Revision Topics

These are the topics that you have covered so far this year. These topics, if they appear on the assessment will be the ones that your teacher will be looking closely at how well you answer them.

Number Topic	Sparx Maths Independent Practice Codes
Calculating with roots and fractional indices	U851, U985, U772, U299
Converting recurring decimals to fractions	U689
Surds	U338, U663, U872, U499
Rationalising the denominator	U707, U281
Error intervals	U657, U301, U587
Fractions	U224, U538, U793
Factors, multiples and primes	U739, U250
Percentage change	U671, U332, U988
Standard form	U330, U534, U264, U290
Error intervals	U657

Ratio & Proportion Topic	Sparx Maths Independent Practice Codes
Ratio	U687, U753, U176, U577, U921, U865
Speed	U151
Density and pressure	U910, U527
Proportion	U721, U357, U610
Algebraic direct and inverse proportion	U407, U138
Compound units: Density problem solving	U910

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Algebra Topic	Sparx Maths Independent Practice Codes
Linear equations	U325, U870, U599
Linear inequalities	U759, U738, U145, U337
Index laws	U662
Linear simultaneous equations	U760, U757, U836, U137
Linear graphs and coordinates	U315, U669, U477, U848, U377
Quadratic graphs and equations	U989, U667, U228, U601
Expanding triple brackets	U606
Operations with algebraic fractions	U685, U457, U824
Factorising quadratic expressions: ax^2+bx+c	U858
Simplifying algebraic fractions	U294
Factorising to solve quadratics equations	U228, U960
Using the quadratic formula	U665
Completing the square to solve quadratics	U397, U589
Quadratic equations in context	U150
Quadratic simultaneous equations	U547
Index laws	U235, U694, U662
Equation of a straight line: Perpendicular lines	U898
Quadratic graphs: Turning points	U769
Quadratic simultaneous equations on graphs	U875
Exponential graphs	U229
Exponential growth and decay problems	U988
Trigonometric graphs	U450
Graph transformations	U598, U487, U455
Velocity-time graphs	U937, U562, U611
Rate of change graphs	U638, U652, U862
Estimating gradient from a curve	U800
Estimating area under a curve	U882
Equation of a circles and tangents	U567
Linear inequalities as graph regions	U747
Quadratic inequalities	U133
Functions	U637, U895, U448, U996
Recurrence relations	U171
Quadratic sequences	U206
Iteration and numerical methods	U434, U168
Algebraic proof	U582

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Geometry Topic	Sparx Maths Independent Practice Codes
Area	U226, U343, U950
Volume	U786, U174, U915
Angles	U655, U826, U329, U427
Pythagoras' theorem	U385
Trigonometry	U605, U283, U545
Transformations	U196, U799, U696, U519, U766
Congruence proofs	U866, U887
Enlargements	U134
Describe combined transformations	U766
Circle theorems: Angles inside a circle	U459, U251
Circle theorems: Tangents and chords	U489, U130
Circle theorems problems	U808
Prove circle theorems	U807
Volume of frustums	U350
Volume: Problem solving	U543, U426
Similar Shapes: Area and volume	U630, U110
Pythagoras' Theorem in 2D and 3D	U385, U541
Right-angled trigonometry: Problem solving	U319, U283, U545, U967
3D trigonometry	U170
The area rule	U592
Sine rule	U952
Cosine rule	U591
Trigonometry and bearings	U164
Vectors problems	U781, U560

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Probability Topic	Sparx Maths Independent Practice Codes
Calculating probabilities	U408, U510, U683, U580
Expected outcomes	U166
Tree diagrams	U558, U729
Set notation	U748, U296
Product rule for counting	U369
Conditional probability	U246, U821, U806
Probability from Venn diagrams	U476, U748, U699

Statistics Topics	Sparx Maths Independent Practice Codes
Averages	U569, U877, U717
Averages with grouped data	U877
Sampling	U162
Scatter graphs	U199, U277, U128
Frequency polygons	U840
Cumulative frequency diagrams	U182, U642
Box plots	U879, U837, U507
Frequency polygons	U840
Histograms	U814, U983, U267
Capture-recapture	U328

How to Log Into Sparx Maths

Sparx Maths

Student Login

You're logging in to Sparx at **Ormiston Chadwick Academy.**

Not your school?

Log in using your username and password.

Your username will usually be your name and surname without spaces.

Log in to Sparx using Microsoft

or

Use your Sparx login

Username:

Password:

Show

Forgotten Sparx login details?

Log in

New Sparx user?

If you are logged into your school emails on the device, you can just click this button to log in

If you have never logged in before, click this button and follow the steps

If you can't remember your password, click this button and type in your details – this will send an email to your teacher getting them to reset your password.

Click the button again in a short while and it will then let you reset your password (make it memorable)

You will then be brought to the following page where you will find any compulsory homework set for you by your teacher – you need to be completing this weekly to ensure you are retrieving the knowledge that you have learnt throughout the year.

Sparx Maths

0 XP   Teacher

★ Compulsory

⚡ XP Boost

♔ Target

✧ Independent Learning

Hey Teacher,

This is your personalised Compulsory homework. You need to answer every question correctly to complete it.

0/1

∧ Introducing Sparx Maths

Not started

About Sparx Maths
▶ (1:35)

Start >

Try some questions
(about 5 minutes)

Locked 🔒

Sparx Maths Tips
▶ (0:39)

Locked 🔒

If you haven't been on Sparx Maths yet this year, you will need to do this short tutorial to help you understand how the website works.

How to do Sparx Maths independent Practice

Sparx Maths 0 XP Teacher

Hey Teacher,

This is your personalised Compulsory homework. You

0/1

⌃ Introducing Sparx Maths Not started

About Sparx Maths
▶ (1:35)

Start ›

Try some questions
(about 5 minutes)

Locked 🔒

Sparx Maths Tips
▶ (0:39)

Locked 🔒

On this dropdown, you can change the curriculum level (Sparx Maths sometimes categorises things at a different stage than we do)

You can change the difficulty level to suit your confidence level

From the homepage, click the 'Independent Learning' tab to open this page.

Activate Windows
Go to Settings to activate Windows.

Compulsory / XP Boost / Target / Independent Learning

Sparx Maths Independent Learning 0 XP Teacher

Independent Learning

Find topics My activity

Search for topics: Your curriculum: Default level:

M354 ⊗ Key Stage 3 ▾ Level 2 ▾

1 topic found Clear search

Number › Dividing
Using a written method to divide integers – M354 ›

Ratio and Proportion 3:2 **Geometry**

Probability 🎲 **Statistics**

Type in the code from the revision list to bring up the revision for that topic

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‹ **Sparx Maths** Independent Learning 0 XP Teacher

Independent learning › Number › Dividing

Using a written method to divide integers – M354 Level 2 ✓ ★ ★ ★ ⓘ

⌄ Show building blocks

Using a written method to divide integers

Introduce
Question 1 [Answer] Question 2 [Answer] Question 3 [Answer]

Strengthen
Question 1 [Answer] Question 2 [Answer] Question 3 [Answer]

Deepen
Question 1 [Answer] Question 2 [Answer] Question 3 [Answer]

This will bring up the task – click on each question to revise the topic in more depth

If you are finding it difficult you can try some of the 'building blocks' tasks which will help you with the prior knowledge you need to access the main task

How to complete a Sparx Maths task

BEFORE beginning the task you need to have paper to do your working out and to write down the bookwork codes.

Sparx Maths — Independent Learning   0 XP   Teacher

Independent learning ▸ Number ▸ Dividing

Using a written method to divide integers - M354   Level 2 ✓ ★ ★ ★ ⓘ

⌄ Show building blocks

Using a written method to divide integers

Introduce	Question 1 [Answer]	Question 2 [Answer]	Question 3 [Answer]
Strengthen	Question 1 [Answer]	Question 2 [Answer]	Question 3 [Answer]
Deepen	Question 1 [Answer]	Question 2 [Answer]	Question 3 [Answer]

This will bring up the task – click on each question to revise the topic in more depth

If you are finding it difficult you can try some of the 'building blocks' tasks which will help you with the prior knowledge you need to access the main task

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          0 XP   Teacher

1A   1B   1C   Summary

Bookwork code: 1A   Calculator not allowed

Copy out the calculation below **as neatly as you can**. Work out the answer.

2)8 2

1 × 2 = 2
2 × 2 = 4
3 × 2 = 6
4 × 2 = 8

🔍 Zoom

📹 Watch video   Answer

Write down the bookwork code before starting the question (you will be asked for this later)

If you are stuck, watch the video which will be a similar question with different numbers – make notes to help you understand and then try the question again

Work out the answer on your paper, note it down then click here to type in your answer

Some Key Examples for Questions we have covered that can come up

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e.g. find the LCM of 24 and 36

To find the LCM without needing to keep listing them:

STEP 1: Express the numbers as products of their prime factors

24 = 2 × 2 × 2 × 3   36 = 2 × 2 × 3 × 3

STEP 2: Draw a Venn diagram

LCM = multiply all the numbers in the Venn diagram

LCM = 2 × 2 × 2 × 3 × 3 = **72**

To find the area of a sector:

$$\frac{angle}{360°} \times \pi \times r^2$$

e.g.

Find the area

The fraction of the whole circle   The area of the circle

$\frac{40}{360}$ $\times \pi \times 6^2$

40°   6cm

= **12.57cm²**

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e.g. Factorise $6x^2 + 17x + 12$

STEP 1: Multiply the integer term by the coefficient of x^2

6 × 7 = 72

STEP 2: Find a pair of this numbers' factors that add to make the x coefficient

| 72 |
| 1 72 |
| 2 36 |
| 3 24 |
| 4 18 |
| 6 12 |
| **8 9** |

8 + 9 = 17

STEP 3: Rewrite the equation with these two factors

STEP 4: Factorise by grouping

$6x^2 + 17x + 12$
$= 6x^2 + 8x + 9x + 12$
$= 2x(3x + 4) + 3(3x + 4)$
$= (2x + 3)(3x + 4)$

TIP: Fractional indices are just another way of writing roots

e.g.

The power $\frac{1}{2} = \sqrt{\ }$

The power $\frac{1}{3} = \sqrt[3]{\ }$

The power $\frac{1}{4} = \sqrt[4]{\ }$

The power $\frac{1}{4} = \sqrt[5]{\ }$

TIP: Work out the root (denominator) first

e.g. $16^{\frac{3}{2}} = \left(16^{\frac{1}{2}}\right)^3 = 4^3 = 64$

For the **surface area**, draw out each individual face, work out the areas then add them together.

e.g.
3cm 3cm
2cm
4cm   7cm

Front = 2 × 4 ÷ 2 = 4cm²
Back = 2 × 4 ÷ 2 = 4cm²
Bottom = 4 × 7 = 28cm²
Left side = 3 × 7 = 21cm²
Right side = 3 × 7 = 21cm²

Total Surface Area = **78cm³**

TIP: Remember to ÷ 2 for triangles

TIP: When substituting, 'swap' the letter for the number (use brackets)

e.g.

$3a - 2b$ given that
$a = -3$, $b = -4$

$3(-3) - 2(4) = 9 + 8 = 17$

TIP: Multiply the number outside the bracket by the number inside the bracket

TIP: When multiplying and dividing with directed numbers:

– × – → +	÷ ÷ – → +
– × + → –	– ÷ + → –
+ × – → –	+ ÷ – → –
+ × + → +	+ ÷ + → +

TIP: If operations are directly next to each other (and no numbers in between), use the following rules:

| – – → + | + – → – |
| – + → – | + + → + |

TIP: If the index (power) is negative, it means the reciprocal

e.g.

5^{-2} means the reciprocal of 5^2

so $\frac{1}{25}$

$16^{-\frac{1}{2}}$ means the reciprocal of $16^{\frac{1}{2}}$

so $\frac{1}{4}$

TIP: Think of square numbers that are factors of the number in the surd

e.g.

$\sqrt{72} = \sqrt{9 \times 8}$
$= \sqrt{9} \times \sqrt{8}$
$= 3\sqrt{8}$
$= 3\sqrt{4 \times 2}$
$= 3 \times \sqrt{4} \times \sqrt{2}$
$= 3 \times 2 \times \sqrt{2}$
$= \mathbf{6\sqrt{2}}$

TIP: Continue until there are no more square factors

TIP: Rationalise the denominator means to make the bottom number not a surd.

TIP: If there are two terms, remember to change the sign (this makes the surds cancel)

e.g.

$\frac{2 + \sqrt{2}}{4 - \sqrt{2}} = \frac{2 + \sqrt{2}}{4 + \sqrt{2}} \times \frac{4 - \sqrt{2}}{4 - \sqrt{2}}$

$= \frac{10 + 6\sqrt{2}}{14}$

$= \frac{5 + 3\sqrt{2}}{7}$

TIP: Use the grid method to multiply two terms by two terms

TIP: Remember a quadratic equation needs to = **0 before** you factorise it!

$6x^2 + 17x + 12 = 0$
$6x^2 + 8x + 9x + 12 = 0$
$2x(3x + 4) + 3(3x + 4) = 0$
$(2x + 3)(3x + 4) = 0$

TIP: For two things to multiply together to = 0, one of the things must be zero

$2x + 3 = 0$ $3x + 4 = 0$
$2x = -3$ $3x = 4$
$x = -\frac{3}{2}$ $x = \frac{4}{3}$

TIP: Unless the bracket is the same, there will be 2 answers when solving a quadratic

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e.g. Make x the subject of $5x - 2y = tx + 3$

STEP 1: Get all the 'subject' onto one side

$5x - 2y - tx = 3$

STEP 2: Move everything else to the other side

$5x - tx = 3 + 2y$

STEP 3: Factorise the side where the 'subject' is – ONLY take out the subject

$x(5 - t) = 3 + 2y$

STEP 4: Divide by the bracket

$x = \frac{3 + 2y}{5 - t}$

TIP: Get rid of the smallest letter first

e.g.

Solve $4a + 3 = 2a + 15$
      $-2a$ $-2a$
$2a + 3 = 15$
      -3 -3
$2a = 12$
$÷2$ $÷2$

$a = 6$

The most important thing to remember is not to give up – if you write nothing for a question, you will definitely get it wrong, so have a guess, you will get marks for working out.