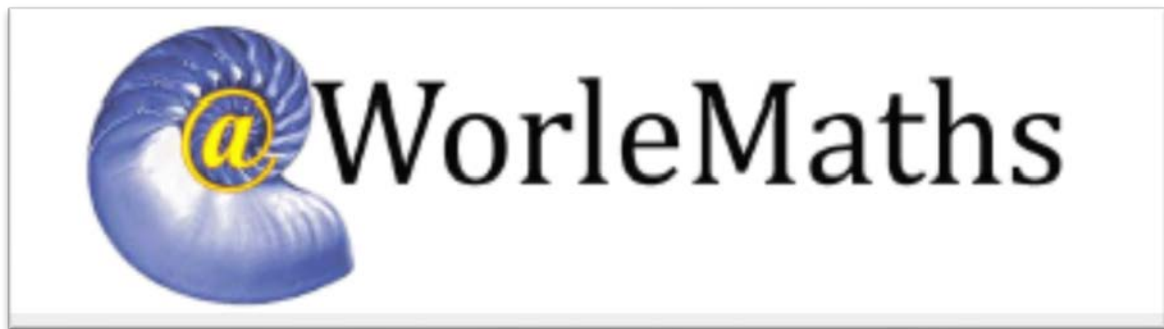


# Mathematics

Home Learning Book – Learning Cycle 1



## Mathematics Year 10 Set 1

Name: \_\_\_\_\_ Tutor Group: \_\_\_\_

Maths Teacher(s): \_\_\_\_\_

## Learning Cycle 1

Cycle.Week							
Sep 2018	1.1	3	4	5	6	7	
	1.1	10	11	12	13	14	Week 1 HW due
	1.2	17	18	19	20	21	Week 2 HW due
	1.3	24	25	26	27	28	Week 3 HW due
Oct 2018	1.4	1	2	3	4	5	Week 4 HW due
	1.5	8	9	10	11	12	Week 5 HW due
	1.6	15	16	17	18	19	Week 6 HW due
		22	23	24	25	26	Half Term
		29	30	31	1	2	Half Term
Nov 2018	1.7	5	6	7	8	9	Week 7 Hegarty Revision due (x4)
	1.8	12	13	14	15	16	Assessment Week
	1.9	19	20	21	22	23	Super Teaching Week

- During the Assessment Week (week 8), students will be assessed on the material that they have covered the previous seven weeks.
- The questions in the homework are mainly consolidation of work covered in previous years and of key skills. However, if there are any topics students are not understanding there are Hegarty Maths video clips to watch that explain that topic. Please see the opposite page for further information.
- In week 7 teachers will be checking that all 4 Hegarty Maths revision templates have been completed. The idea is that these are completed throughout the cycle and not all left until week 7. Please see the 'Revision Guide' document to inform what topics should be covered as part of this revision.
- Alongside completing the tasks in this booklet we also expect students to be making regular use of the Hegarty Maths website for independent study.

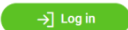
This can be to go over things covered in class, to revise for upcoming tests or to work on areas of weakness that were identified in previous tests.

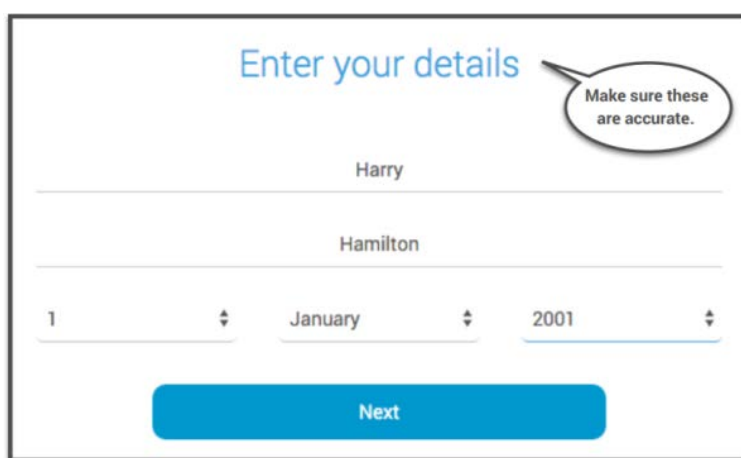
## Cycle 1 Homework help

Please use the clip numbers in the table below to look up areas of weakness on the Hegarty Maths website.

Question	Topic	Hegarty Maths clip number
1, 2	Expressing as a product of primes/ HCF / LCM	27, 30, 31, 33, 34
3, 4	Finding the nth term	198
5, 6	Order of operations	75
7, 8	Multiplying decimals	21, 48
9, 10	Division	22
11, 12	Arithmetic with fraction and mixed numbers	64, 66
13, 14	Increasing and decreasing by a given percentage	88
15, 16	Expanding and simplifying brackets	160, 161
17, 18	Solving linear equations	182, 184, 185
19, 20	Substitution	278, 279

To log in to Hegarty Maths, go to <https://hegartymaths.com/>

Click on the green  button and select 'Student Log in'.



Enter your details

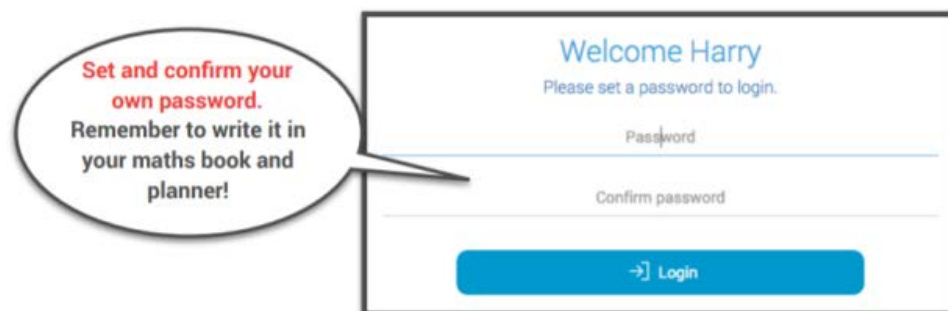
Make sure these are accurate.

Harry

Hamilton

1 January 2001

Next



Welcome Harry

Please set a password to login.

Password

Confirm password

→ Login

Set and confirm your own password. Remember to write it in your maths book and planner!

Teachers do not have access to student passwords. If you forget your password please click on 'request a password reset' and speak to your teacher during your next lesson.

# Cycle 1 Week 1

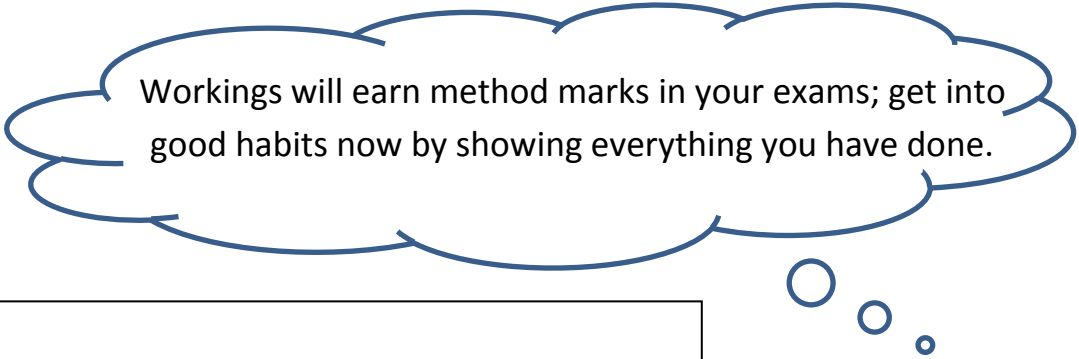
HA1.1

<b>Question 1</b> Express 3080 as a product of prime factors	<b>Question 2</b> Express 81 as a product of prime factors	<b>Question 3</b> Find the nth term of 4, 11, 18, 25,...	<b>Question 4</b> Find the 50th term of 8, 10, 12, 14,...
<b>Question 5</b> Work out $5 \times 4 - 2 \times 5$	<b>Question 6</b> Work out $40 - 9 \times 4$	<b>Question 7</b> Work out $7.1 \times 5.6 =$	<b>Question 8</b> Work out $14972 \div 38 =$
<b>Question 9</b> Work out $15.6 \times 2.2 =$	<b>Question 10</b> Work out $9945 \div 39 =$	<b>Question 11</b> Work out $2\frac{1}{4} \div \frac{2}{3} =$	<b>Question 12</b> Work out $1\frac{2}{3} \div \frac{1}{2} =$
<b>Question 13</b> Increase £1340 by 10%	<b>Question 14</b> Decrease £5480 by 10%	<b>Question 15</b> Expand and simplify $5(2x - 5) - 5(3x - 2)$	<b>Question 16</b> Expand and simplify $2x(2x + 3) + 2x(3x + 5)$
<b>Question 17</b> Solve $8x + 2 = 4x - 14$	<b>Question 18</b> Solve $3(9x + 5) = -66$	<b>Question 19</b> Work out the value of $5x - 9$ when $x = 4$	<b>Question 20</b> Work out the value of $30 + 5b$ when $b = 4$

# SKILLS CHECK

Score

You must show your workings here:



Workings will earn method marks in your exams; get into good habits now by showing everything you have done.

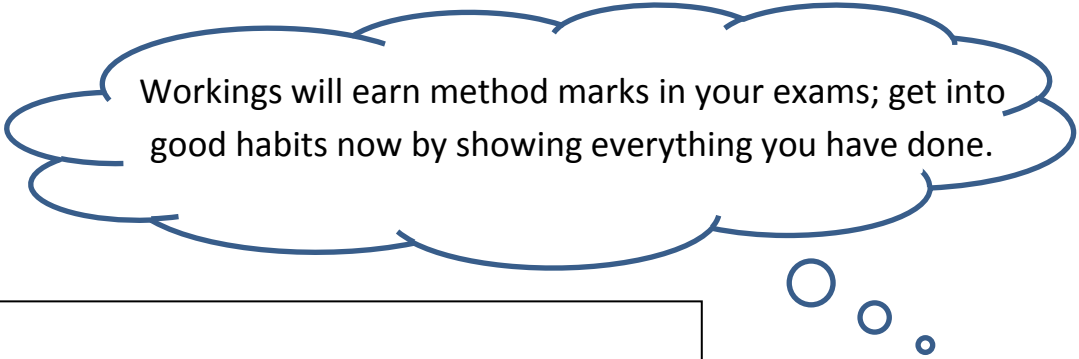
Parent/Carer Comment:

<b>Question 1</b> Express 720 as a product of prime factors	<b>Question 2</b> Express 35 as a product of prime factors	<b>Question 3</b> Find the nth term of 5, 16, 27, 38,...	<b>Question 4</b> Find the 50th term of 7, 15, 23, 31,...
<b>Question 5</b> Work out $9 \times (5 + 4)$	<b>Question 6</b> Work out $9 + 12 \times 4$	<b>Question 7</b> Work out $16.5 \times 8.6 =$	<b>Question 8</b> Work out $12818 \div 29 =$
<b>Question 9</b> Work out $4.7 \times 8.1 =$	<b>Question 10</b> Work out $4928 \div 32 =$	<b>Question 11</b> Work out $2\frac{7}{9} - \frac{1}{3} =$	<b>Question 12</b> Work out $3\frac{1}{4} - 2\frac{2}{5} =$
<b>Question 13</b> Increase £340 by 5%	<b>Question 14</b> Decrease £5480 by 10%	<b>Question 15</b> Expand and simplify $3(3x - 4) - 3(2x - 3)$	<b>Question 16</b> Expand and simplify $5x(3x + 5) + 2x(5x - 3)$
<b>Question 17</b> Solve $4x - 4 = 2x$	<b>Question 18</b> Solve $5(2x + 4) = 60$	<b>Question 19</b> Work out the value of $6x - 4$ when $x = 2$	<b>Question 20</b> Work out the value of $27 - 2x^2$ when $x = 2$

# SKILLS CHECK

Score

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Parent/Carer Comment:

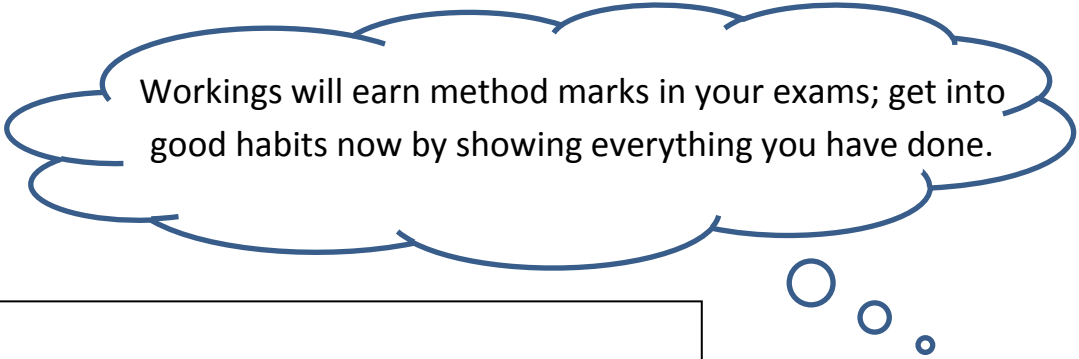
<b>Question 1</b> Express 220 as a product of prime factors	<b>Question 2</b> Express 55 as a product of prime factors	<b>Question 3</b> Find the nth term of 6, 10, 14, 18,...	<b>Question 4</b> Find the 50th term of 14, 24, 34, 44,...
<b>Question 5</b> Work out $12 \times (8 + 4^2)$	<b>Question 6</b> Work out $47 - 2 \times 4$	<b>Question 7</b> Work out $3.1 \times 3.1 =$	<b>Question 8</b> Work out $5487 \div 31 =$
<b>Question 9</b> Work out $12 \times 4.4 =$	<b>Question 10</b> Work out $17950 \div 50 =$	<b>Question 11</b> Work out $3\frac{1}{5} \times \frac{1}{2} =$	<b>Question 12</b> Work out $2\frac{4}{5} - \frac{1}{2} =$
<b>Question 13</b> Increase £400 by 10%	<b>Question 14</b> Decrease £500 by 20%	<b>Question 15</b> Expand and simplify $2(2x + 3) + 5(2x + 4)$	<b>Question 16</b> Expand and simplify $4x(2x + 4) + 3x(4x - 3)$
<b>Question 17</b> Solve $5x - 3 = 4x + 1$	<b>Question 18</b> Solve $4(8x - 3) = -76$	<b>Question 19</b> Work out the value of $27 - 4c$ when $c = -5$	<b>Question 20</b> Work out the value of $20 - 3a$ when $a = 4$

# SKILLS CHECK

Score



You must show your workings here:



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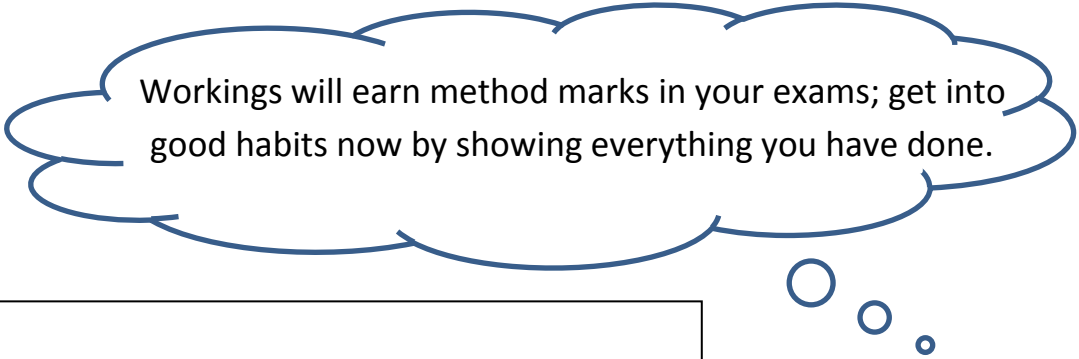
Parent/Carer Comment:

<b>Question 1</b> Express 154 as a product of prime factors	<b>Question 2</b> Express 105 as a product of prime factors	<b>Question 3</b> Find the nth term of 14, 25, 36, 47,...	<b>Question 4</b> Find the 50th term of 16, 27, 38, 49,...
<b>Question 5</b> Work out $3 + 11 \times 3^2$	<b>Question 6</b> Work out $34 - 7 \times 4$	<b>Question 7</b> Work out $19.2 \times 6.8 =$	<b>Question 8</b> Work out $2574 \div 66 =$
<b>Question 9</b> Work out $2.9 \times 7.9 =$	<b>Question 10</b> Work out $1408 \div 44 =$	<b>Question 11</b> Work out $1\frac{1}{3} \times 1\frac{1}{2} =$	<b>Question 12</b> Work out $1\frac{1}{4} \div 2\frac{1}{2} =$
<b>Question 13</b> Increase £340 by 5%	<b>Question 14</b> Decrease £7200 by 5%	<b>Question 15</b> Expand and simplify $5(2x + 5) + 4(4x - 5)$	<b>Question 16</b> Expand and simplify $3(2x - 3) - 3(5x - 4)$
<b>Question 17</b> Solve $7x - 4 = 5x - 10$	<b>Question 18</b> Solve $5(8x - 2) = -130$	<b>Question 19</b> Work out the value of $4c + 8$ when $c = 2$	<b>Question 20</b> Work out the value of $21 - 3y$ when $y = 0.5$

# SKILLS CHECK

Score

You must show your workings here:



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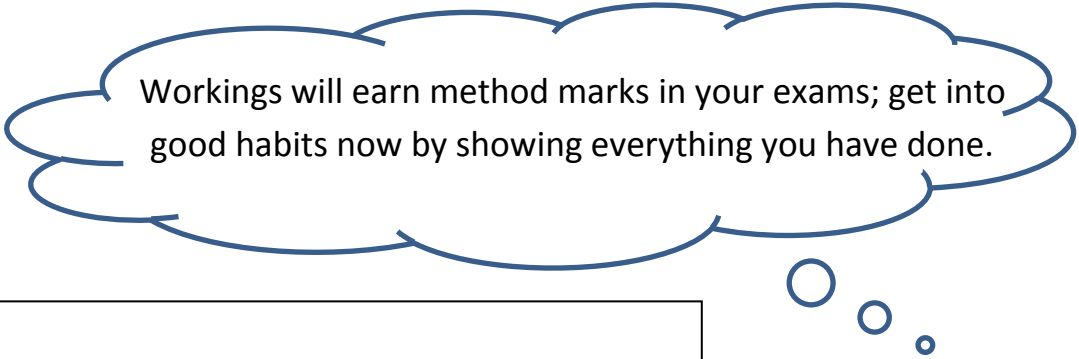
Parent/Carer Comment:

<b>Question 1</b> Express 288 as a product of prime factors	<b>Question 2</b> Express 60 as a product of prime factors	<b>Question 3</b> Find the nth term of 4, 14, 24, 34,...	<b>Question 4</b> Find the 50th term of 4, 10, 16, 22,...
<b>Question 5</b> Work out $8 \times (2 + 5)$	<b>Question 6</b> Work out $11 \times 5 - 2 \times 6$	<b>Question 7</b> Work out $14.8 \times 4.7 =$	<b>Question 8</b> Work out $18424 \div 56 =$
<b>Question 9</b> Work out $13.9 \times 4.3 =$	<b>Question 10</b> Work out $25193 \div 61 =$	<b>Question 11</b> Work out $1\frac{2}{3} \div 2\frac{1}{2} =$	<b>Question 12</b> Work out $2\frac{1}{5} \div \frac{1}{3} =$
<b>Question 13</b> Increase £1260 by 10%	<b>Question 14</b> Decrease £7720 by 20%	<b>Question 15</b> Expand and simplify $5(2x + 5) + 4(5x - 2)$	<b>Question 16</b> Expand and simplify $4(5x - 4) - 4(2x - 3)$
<b>Question 17</b> Solve $6x - 2 = 5x$	<b>Question 18</b> Solve $5(4x + 5) = 15$	<b>Question 19</b> Work out the value of $4a - 2$ when $a = -3$	<b>Question 20</b> Work out the value of $21 - 3a^2$ when $a = 2$

# SKILLS CHECK

Score

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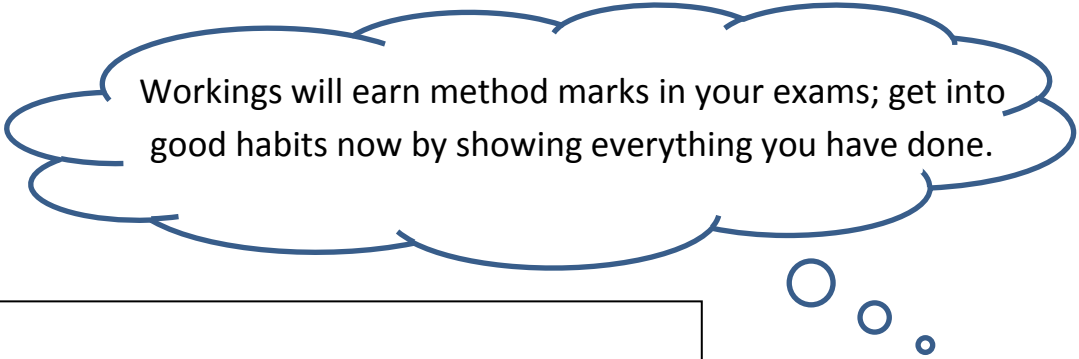
Parent/Carer Comment:

<b>Question 1</b> Express 231 as a product of prime factors	<b>Question 2</b> Express 864 as a product of prime factors	<b>Question 3</b> Find the nth term of 14, 26, 38, 50,...	<b>Question 4</b> Find the 50th term of 14, 24, 34, 44,...
<b>Question 5</b> Work out $9 \times 7 - 4 \times 6$	<b>Question 6</b> Work out $12 \times 5 + 5 \times 3$	<b>Question 7</b> Work out $15.4 \times 7.5 =$	<b>Question 8</b> Work out $22814 \div 61 =$
<b>Question 9</b> Work out $10.9 \times 6.9 =$	<b>Question 10</b> Work out $2444 \div 52 =$	<b>Question 11</b> Work out $3\frac{1}{9} + 2\frac{1}{3} =$	<b>Question 12</b> Work out $3\frac{5}{6} \times \frac{2}{3} =$
<b>Question 13</b> Increase £2720 by 10%	<b>Question 14</b> Decrease £560 by 5%	<b>Question 15</b> Expand and simplify $4(3x + 4) + 5(5x - 4)$	<b>Question 16</b> Expand and simplify $3(3x + 4) + 3(4x - 3)$
<b>Question 17</b> Solve $8x + 1 = 3x - 14$	<b>Question 18</b> Solve $3(6x + 3) = -9$	<b>Question 19</b> Work out the value of $4a + 3$ when $a = 0.5$	<b>Question 20</b> Work out the value of $24 - 3b$ when $b = 2$

# SKILLS CHECK

Score

You must show your workings here:



Workings will earn method marks in your exams; get into good habits now by showing everything you have done.

Parent/Carer Comment:

## **Revision – Week 7**

**In Week 7 we will collect 4 pages of revision.**

**These can be completed at any time during the cycle, but they will all be checked in Week 7.**

**Please plan your time carefully so that you meet this deadline.**

**You should choose topics from the list opposite which details what has been covered during this cycle.**

Getting in to good revision habits is vital for success in GCSE maths.

Revision is most effective when it involves ‘doing’ – this approach is proven to aid retention and recall of information. This is why we are asking that you;

- Take notes from the videos on Hegarty Maths, writing down key information and examples.
- Write down your workings out for each quiz that you complete and mark this as you go, noting corrections for any questions that you got wrong.
- Record your quiz score and rate your confidence level.

If you can make the above a habit revision will be much easier for you when you are preparing for exams. We have provided an example of what good revision looks like.

Hegarty Maths also tracks everything that you do, so if you complete lots of revision from Y7 then by the time you get to Y11 it will be able to tell you your weaknesses; these can then form a big part of your final revision plan. The ‘Fix Up 5’ feature will give you questions and support on these.

As ever, if you have any questions please see your teacher well before the deadline.



## **Cycle 1 – Revision Guide**

The list below contains topics we would advise revising before the cycle 1 assessment




<b>Topic</b>	<b>Hegarty Maths</b>	<b>Method Maths</b>
Ratio and Proportion Sharing	332-334	N23
Angles Parallel Lines	481-483	S14
Expressions	151-153	A08
Volume and Surface area	570-571	S19
Proportionality	339-341	N31
Probability Tree Diagrams	361-363	D22
Sequences	248-250	A16
Fractions Four Rules	66-70	N24
Ratio and Proportion Sharing	330, 335-337	N23
Percentages Introduction	88, 91-92	N14
Cumulative Frequency	437-439	D20
Averages Combining Means	407-408	D18
Recurring Decimals	53-54	N32
Volume Advanced	580-581, 131	S33
Indices Advanced	104, 108-109	A25
Changing the Subject	285-286	A26
Factorising Double Brackets	161-164, 223-228	A22
Simplifying Advanced	172, 229	A33
Surds	118-119	N33
Proof Show that	325-327	A28
Vectors	628-636	S37
Similarity Area and Volume	615-621	S35
Proof Geometrical Congruency	684-690	A30

## Hegarty Maths Revision

<b>Topic:</b> 30 : Prime Factorisation 2	Have you checked through the required 'Building Blocks'? <input checked="" type="checkbox"/> 29
<p><b>Notes from the video:</b></p> <p>Any composite number can be uniquely expressed as a product of primes.          Product means times/multiply.</p> <p>Prime numbers 2, 3, 5, 7, 11, 13, 17, 19, ...</p> <p>Divisibility tests      Divisible by 2      number ends in 0, 2, 4, 6, 8                                           Divisible by 3      sum of digits is divisible by 3                                           Divisible by 5      ends in 0, 5</p> <p>Write 140 as a product of primes</p> <div style="display: flex; align-items: center;"> <div style="flex: 1;"> <pre>       140      /  \     (2) x 70          /  \         (2) x 35              /  \             (5) x (7)           </pre> </div> <div style="flex: 1;"> <p><math>140 = 2 \times 2 \times 5 \times 7</math></p> <p>in index form</p> <p><math>140 = 2^2 \times 5 \times 7</math></p> </div> </div>	
<p><b>Quiz questions (showing workings and marking work as you go):</b></p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <p>1. <math>125 = 5^3</math> ✓</p> <p>2. <math>81 = 3^4</math> ✓</p> <p>3. <math>72 = 2^3 \times 3^2</math> ✓</p> <pre>       72      /  \     (2) x 36          /  \         (2) x 18              /  \             (2) x 9                  /  \                 (3) (3)           </pre> <div style="border: 1px solid black; border-radius: 15px; padding: 5px; width: fit-content; margin: 10px auto;">             Use X on online keyboard not letter x           </div> </div> <div style="width: 50%;"> <p>6. <math>12 = 2^2 \times 3</math> ✓</p> <p>7. <math>20 = 2^2 \times 5</math> ✓</p> <p>8. <math>48 = 2^4 \times 3</math> ✓</p> <pre>       48      /  \     (2) x 24          /  \         (2) x 12              /  \             (2) x 6                  /  \                 (2) (3)           </pre> </div> </div> <div style="display: flex; flex-wrap: wrap; margin-top: 20px;"> <div style="width: 50%;"> <p>9. <math>168 = 2^3 \times 3 \times 7</math> ✓</p> <p>10. <math>36 = 2^2 \times 3^2</math> ✓</p> </div> <div style="width: 50%;"> <pre>       168      /  \     (2) x 84          /  \         (2) x 42              /  \             (2) x 21                  /  \                 (3) (7)           </pre> </div> </div> <p>4. <math>200 = 2^3 \times 5^2</math> ✓</p> <p>5. <math>24 = 2^3 \times 3</math> ✓</p>	
<p><b>Quiz score:</b></p> <p style="text-align: center;">100 %</p>	<p><b>My confidence level:</b></p> <div style="display: flex; justify-content: center; gap: 10px;"> <span>😊</span> <span>😐</span> <span>☹️</span> </div>

## Hegarty Maths Revision




**Checklist:** 1. Watched video and taken notes; 2. Completed the quiz, writing down your workings and score; 3. Completed the 'My confidence level' section.

Topic:	Have you checked through the required 'Building Blocks'? <input type="checkbox"/>
Notes from the video:	
Quiz questions (showing workings and marking work as you go):	
Quiz score: %	My confidence level:   

*Remember to see your teacher if you have watched the video on Hegarty Maths and still do not understand.*

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Notes from the video:	
Quiz questions (showing workings and marking work as you go):	
Quiz score: %	My confidence level:   

*Remember to see your teacher if you have watched the video on Hegarty Maths and still do not understand.*