Mathematics

Home Learning Book – Learning Cycle 1

@WorleMaths

Mathematics Year 11 Sets 2A & 2B

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 (×4)
	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.
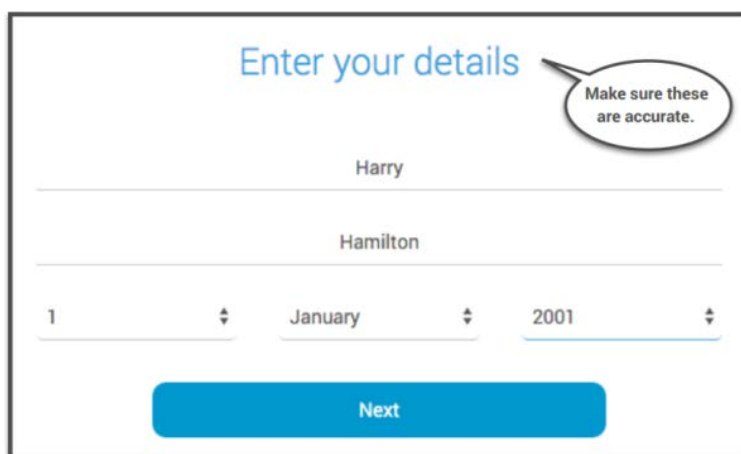
Cycle 1 Homework help

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	Writing large numbers in standard form	122
3, 4	Expanding a single bracket	160
5, 6	Multiplying by a 2 digit number	21
7, 8	Rounding to 2 significant figures	130
9, 10	Stating the gradient of line y=mx +c	207
11, 12	Rounding measures	17
13, 14	Calculating the percentage change	97
15, 16	Solving direct proportion problems	339
17, 18	Solving linear equations	184 – 186
19, 20	Stating exact trig ratios	306

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

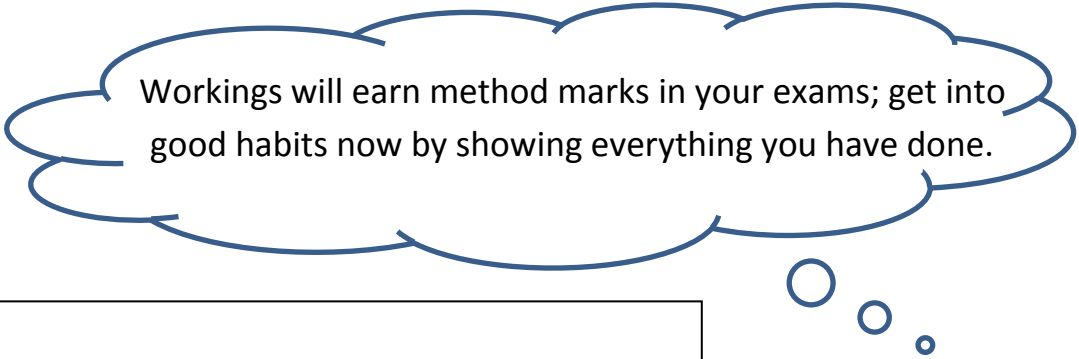Click on the green [→] Log in button and select 'Student Log in'.
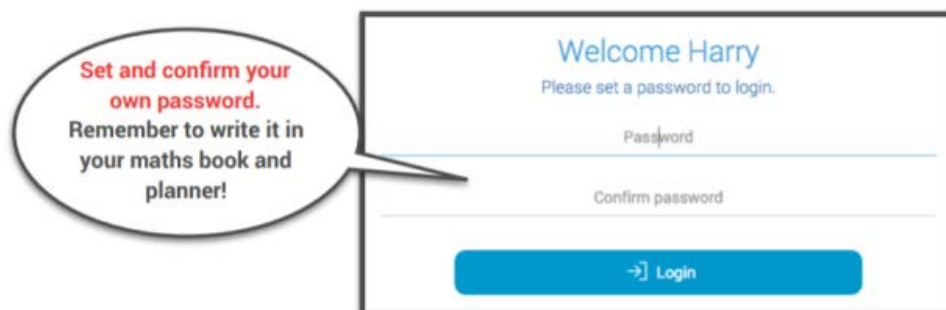
Teachers do not have access to student passwords. If you forget your password please click on 'request a password reset' and speak to your teacher during your next lesson.

Cycle 1 week 1

Question 1 Express 696000 in standard form	**Question 2** Express 6300 in standard form	**Question 3** Expand 3x(2 + 11x)	**Question 4** Expand $5x^3(5x + 1)$
Question 5 Work out 73 × 75 =	**Question 6** Work out 2.9 × 19 =	**Question 7** Round 749168 correct to 2 significant figures	**Question 8** Round 2117 correct to 2 significant figures
Question 9 State the gradient of the line y = 5 - 5x	**Question 10** State the gradient of the line y = 3x - 4	**Question 11** Round 9.775 km to the nearest km	**Question 12** Round 4.624 km to the nearest 10 m
Question 13 Sales fall from 800 per week to 520 per week. Calculate the percentage change	**Question 14** Sales rise from 2000 per week to 2500 per week. Calculate the percentage change	**Question 15** If 8 pens cost £2.80 how much would 10 pens cost?	**Question 16** If 7 pens cost £2.45 how much would 4 pens cost?
Question 17 Solve 4x -1 = 3x - 5	**Question 18** Solve 3x - 3 =27 - 2x	**Question 19** State the exact value of sin 30°	**Question 20** State the exact value of cos 0°

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.
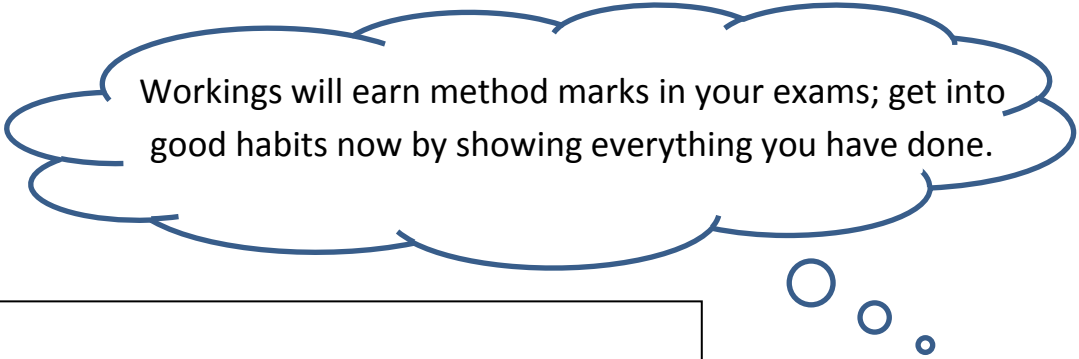
Parent/Carer Comment:

Cycle 1 week 2

Question 1 Express 5700000 in standard form	**Question 2** Express 7350000 in standard form	**Question 3** Expand 3x(5x - 1)	**Question 4** Expand $2x^2(5x - 11)$
Question 5 Work out 34 × 57 =	**Question 6** Work out 7.3 × 72 =	**Question 7** Round 33216 correct to 2 significant figures	**Question 8** Round 725048 correct to 2 significant figures
Question 9 State the gradient of the line y = 4 - 3x	**Question 10** State the gradient of the line y = 3 - 3x	**Question 11** Round 8.44 m to the nearest m	**Question 12** Round 7.618 km to the nearest 10 m
Question 13 Sales fall from 8200 per week to 7790 per week. Calculate the percentage change	**Question 14** Sales rise from 900 per week to 1170 per week. Calculate the percentage change	**Question 15** If 5 pens cost £1.75 how much would 10 pens cost?	**Question 16** If 10 pens cost £40 how much would 6 pens cost?
Question 17 Solve 6x - 5 = 5x - 4.5	**Question 18** Solve 7x - 4 = -2x - 40	**Question 19** State the exact value of cos 45°	**Question 20** State the exact value of tan 45°

SKILLS CHECK   Score [   ]

You must show your workings here:

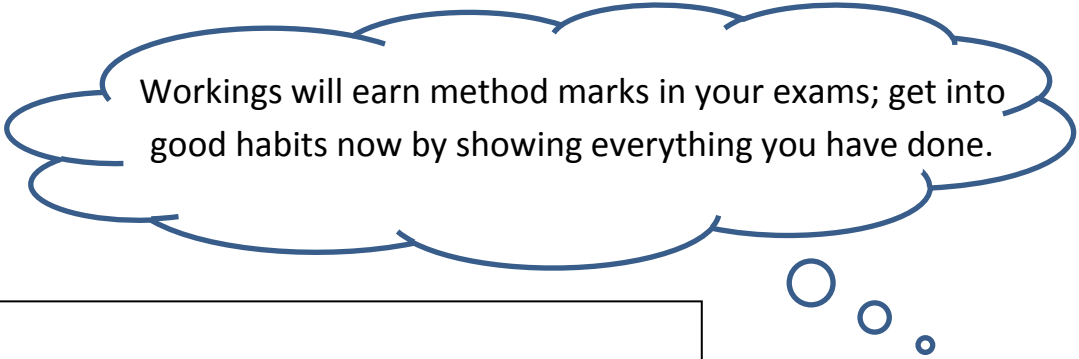Workings will earn method marks in your exams; get into good habits now by showing everything you have done.

Parent/Carer Comment:

Cycle 1 week 3

Question 1 Express 71600 in standard form	**Question 2** Express 69800 in standard form	**Question 3** Expand 5x(5x + 7)	**Question 4** Expand $3x^2(7x + 3)$
Question 5 Work out 93 × 63 =	**Question 6** Work out 7.2 × 74 =	**Question 7** Round 1602 correct to 2 significant figures	**Question 8** Round 793 correct to 2 significant figures
Question 9 State the gradient of the line y = 4 - 2x	**Question 10** State the gradient of the line y = 2x - 5	**Question 11** Round 9.496 km to the nearest 10 m	**Question 12** Round 6.846 m to the nearest cm
Question 13 Sales fall from 200 per week to 150 per week. Calculate the percentage change	**Question 14** Sales rise from 4000 per week to 5400 per week. Calculate the percentage change	**Question 15** If 15 pens cost £3.75 how much would 20 pens cost?	**Question 16** If 8 pens cost £2.40 how much would 3 pens cost?
Question 17 Solve 3x - 1 = 2x + 3	**Question 18** Solve 5x - 1 = 26 - 4x	**Question 19** State the exact value of sin 45°	**Question 20** State the exact value of cos 60°

SKILLS CHECK

Score

You must show your workings here:

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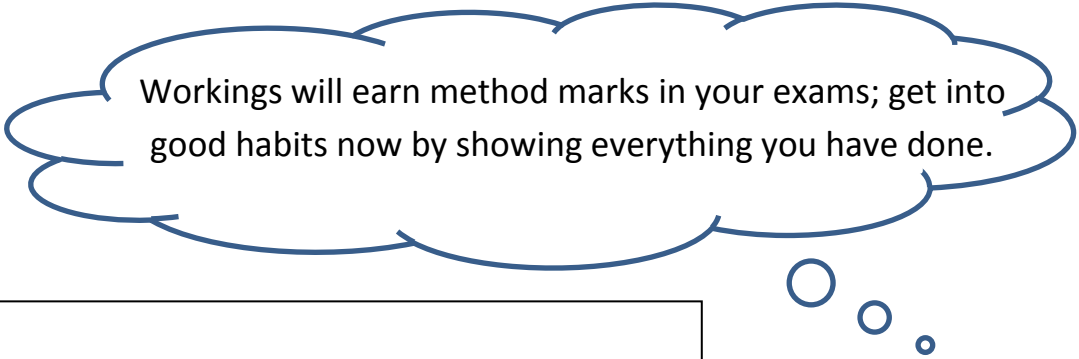
Parent/Carer Comment:

Cycle 1 week 4 — FAA1.4

Question 1	Question 2	Question 3	Question 4
Express 26900000 in standard form	Express 5080000 in standard form	Expand 5x(11x + 13)	Expand $4x^2(5x - 3)$

Question 5	Question 6	Question 7	Question 8
Work out 44 × 33 =	Work out 7.5 × 52 =	Round 1825 correct to 2 significant figures	Round 672 correct to 2 significant figures

Question 9	Question 10	Question 11	Question 12
State the gradient of the line y = 2x + 5	State the gradient of the line y = 6x + 2	Round 17.87 m to the nearest m	Round 1.168 m to the nearest cm

Question 13	Question 14	Question 15	Question 16
Sales fall from 300 per week to 270 per week. Calculate the percentage change	Sales rise from 3400 per week to 4250 per week. Calculate the percentage change	If 8 pens cost £2.40 how much would 12 pens cost?	If 10 pens cost £30 how much would 9 pens cost?

Question 17	Question 18	Question 19	Question 20
Solve 8x - 5 = 7x - 4.5	Solve 5x - 1 = 20 - 2x	State the exact value of sin 30°	State the exact value of cos 90°

SKILLS CHECK   Score [   ]

You must show your workings here:

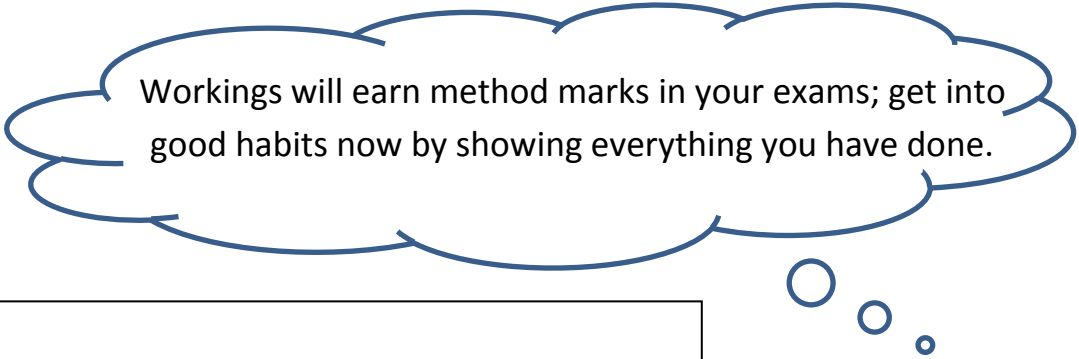Workings will earn method marks in your exams; get into good habits now by showing everything you have done.

Parent/Carer Comment:

Cycle 1 week 5

Question 1	Question 2	Question 3	Question 4
Express 7070 in standard form	Express 154000 in standard form	Expand 2x(11x - 3)	Expand $3x^4(5x + 7)$

Question 5	Question 6	Question 7	Question 8
Work out 68 × 57 =	Work out 2 × 77 =	Round 37951 correct to 2 significant figures	Round 505 correct to 2 significant figures

Question 9	Question 10	Question 11	Question 12
State the gradient of the line y = 2 - 2x	State the gradient of the line y = 6x - 2	Round 843 mm to the nearest cm	Round 613 mm to the nearest cm

Question 13	Question 14	Question 15	Question 16
Sales fall from 600 per week to 420 per week. Calculate the percentage change	Sales rise from 4500 per week to 5400 per week. Calculate the percentage change	If 8 pens cost £1.60 how much would 13 pens cost?	If 14 pens cost £5.60 how much would 12 pens cost?

Question 17	Question 18	Question 19	Question 20
Solve 5x - 3 = 4x - 1	Solve 8x + 1 = 37 - 4x	State the exact value of sin 90°	State the exact value of tan 60°

SKILLS CHECK

Score

www.mathsbox.org.uk

You must show your workings here:

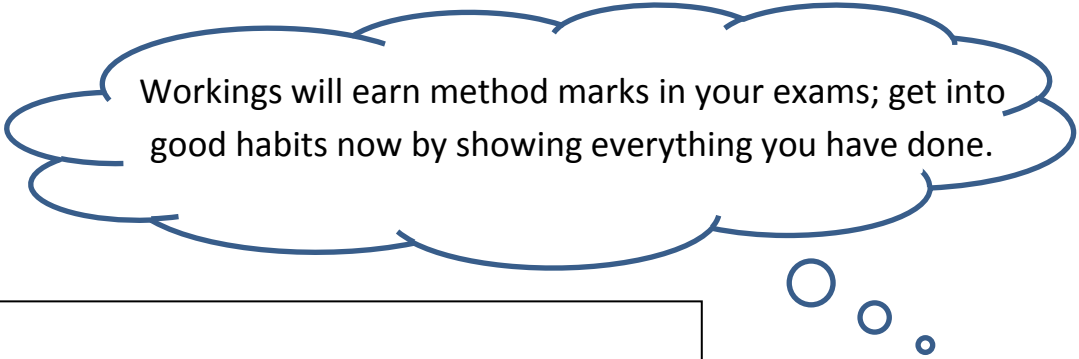Workings will earn method marks in your exams; get into good habits now by showing everything you have done.

Parent/Carer Comment:

Cycle 1 week 6

Question 1 Express 83100 in standard form	**Question 2** Express 2700000 in standard form	**Question 3** Expand 5x(2x + 3)	**Question 4** Expand $4x^3(7x + 3)$
Question 5 Work out 88 × 80 =	**Question 6** Work out 1.8 × 58 =	**Question 7** Round 5068 correct to 2 significant figures	**Question 8** Round 74852 correct to 2 significant figures
Question 9 State the gradient of the line y = 2x - 4	**Question 10** State the gradient of the line y = 6x - 4	**Question 11** Round 3.891 m to the nearest cm	**Question 12** Round 5.368 km to the nearest 10 m
Question 13 Sales fall from 6000 per week to 4800 per week. Calculate the percentage change	**Question 14** Sales rise from 6000 per week to 6900 per week. Calculate the percentage change	**Question 15** If 7 pens cost £4.55 how much would 12 pens cost?	**Question 16** If 8 pens cost £5.20 how much would 7 pens cost?
Question 17 Solve 7x - 5 = 5x - 9	**Question 18** Solve 6x - 5 = 17 - 5x	**Question 19** State the exact value of cos 30°	**Question 20** State the exact value of tan 30°

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 <u>Week 7</u> we will collect 4 pages of revision.

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

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 <u>before the deadline</u>.

Cycle 1 – Revision Guide

The lists below contain topics we would advise revising before the November PPEs.
Please make sure you are looking at the correct tier!
Topics marked with a * appear on both tiers (crossover topics).

Foundation Tier

Topic	Hegarty Maths	Method Maths
Rounding	17, 56	N10
Simplify expressions	156 – 159	A02
Equivalent fractions	59, 60	N09
Probability	349 – 356	D04, D05, D11
Proportion	339 – 342	N16
Bar charts	425	D01
%, fraction, ratio	77, 85, 330, 332	N14, N17, N18, N23
Substitution	155, 189	A04
Expand brackets	160, 161	A10
Solve equations	178 – 183	A05 – A06
Set notation	370 – 376	
Fractions four operation*	66, 68, 70	N24
Combine ratio*	336	
Percentage profit*	760	N22
Estimation*	131	N11
Plans & elevations*		S22
Straight line graphs	206 – 213	A17
Vectors*	623 – 626	S37
Indices*	102 – 107	N08, A07, A25
Converting units	692, 695, 698	S06
Listing outcomes	670	D09
Multiples, factors, primes	27, 28, 31, 33, 34	N04
Pie charts	427 – 429	D07
Frequency trees	368, 369	
Recipes	739 – 742	N19
Circumference	534 – 537	S18
Quadratic graphs*	251	A20
Volume of a prism	570	S19
Sequences	197, 198	A16
Use a calculator	129	N27
Timetables		F07
Scale drawing	679	S07
Stem & leaf diagram	430, 431	D08
Standard form*	122 – 125, 128	N28
Scatter graphs*	453, 454	D16
Area*	557, 559	S01, S13
Probability trees*	361	D22
Trigonometry	508 – 512	S27
Angles in polygons*	561 – 563	S16
Similar triangles	611 – 613	S26
Change the subject of a formula	280 – 284	A26

Higher Tier

Topic	Hegarty Maths	Method Maths
Fractions four operations*	66, 68, 70	N24
Combine ratio*	336	
Percentage profit*	760	N22
Estimation*	131	N11
Plans & elevations*		S22
Surface area*	585	S17
Reflection	639 – 641, 652	S23
Sharing in a ratio	332 – 334	N23
Indices	102 – 110	N08, A07, A25
Box plots	434 – 436	D21
Circle theorems	594 – 602	S31
Proof	325, 326	A31
Surds	113 – 119	N33
Algebraic proportion	343 – 347	N31
Factorising	223 – 227	A11, A22
Probability	351 – 356	D17
Simplifying algebraic fractions	229	A33
Transformation of graphs	303 – 313	A35
Solve quadratic inequalities	277	
Simplify expressions*	1556 – 159	A02
LCM, HCF*	31, 34, 36	N13
y=mx+c*	208, 209	A23
%, ratio*	85, 332	N14, N17, N18
Quadratic graphs*	251	A20
Enlargement	645	S24
Two way table	422 – 424	D10
Compound interest	94	N26
Vectors*	623 – 626	S37
Functions	288, 292 – 296	
Recognising graphs	348	
Compound measures	716 – 724, 734	S21
Probability trees	361	D22
Drawing circle graphs	314, 315, 319	A20
Histograms	442 – 449	D24
3D trigonometry	509 – 514	S27, S32
Bounds	137 – 139	N10, N29
Standard form*	122 – 125, 128	N28
Scatter graphs*	453, 454	D16
Area*	557, 559	S01, S13
Expected frequency*	355	D17
Angles in polygons*	561 – 563	S16
Solve equations unknowns both sides	184	A06
Repeated percentages	91, 92	
Similar shapes (area & volume)	615 – 621	S35
Combinations of events	671	D09
Area under the curve		
Trigonometry (sine/cosine)	521 – 524, 527 – 530	S36
Iteration	322	
Venn diagrams	384	
Congruent triangle proof	682 – 690	A30

Hegarty Maths Revision

Topic: 30 : Prime Factorisation 2	Have you checked through the required 'Building Blocks'? ☑ 29

Notes from the video:

Any composite number can be uniquely expressed as a product of primes.
Product means times/multiply.

Prime numbers 2, 3, 5, 7, 11, 13, 17, 19, ...

Divisibility tests
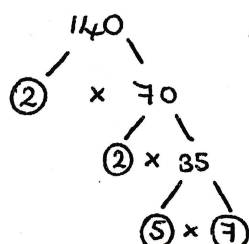Divisible by 2   number ends in 0, 2, 4, 6, 8
Divisible by 3   sum of digits is divisible by 3
Divisible by 5   ends in 0, 5

Write 140 as a product of primes

$140 = 2 \times 2 \times 5 \times 7$

in index form

$140 = 2^2 \times 5 \times 7$

Quiz questions (showing workings and marking work as you go):

1. $125 = 5^3$ ✓
2. $81 = 3^4$ ✓
3. $72 = 2^3 \times 3^2$ ✓
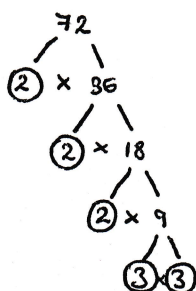
Use X on online keyboard not letter x

4. $200 = 2^3 \times 5^2$ ✓
5. $24 = 2^3 \times 3$ ✓

6. $12 = 2^2 \times 3$ ✓
7. $20 = 2^2 \times 5$ ✓
8. $48 = 2^4 \times 3$ ✓
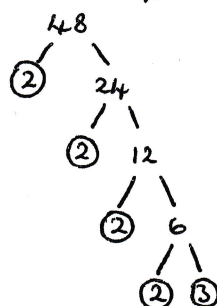
9. $168 = 2^3 \times 3 \times 7$ ✓
10. $36 = 2^2 \times 3^2$ ✓
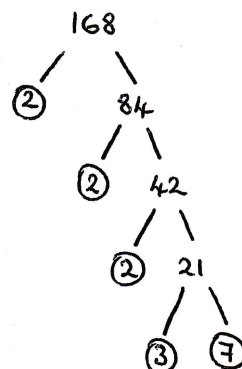
Quiz score: 100 %	My confidence level: ☺ ☺ ☹

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'? ☐
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.

Hegarty Maths Revision

Topic:	Have you checked through the required 'Building Blocks'? ☐
Notes from the video:	
Quiz questions (showing workings and marking work as you go):	
Quiz score: %	My confidence level: ☺ ☺ ☹

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Quiz questions (showing workings and marking work as you go):	
Quiz score: %	My confidence level: ☺ ☺ ☹

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Quiz questions (showing workings and marking work as you go):

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