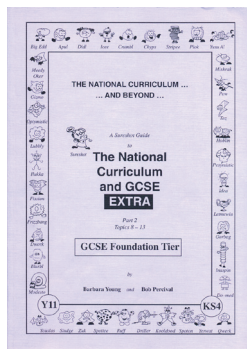


# The 'Maths is ...' Jugglers

Knowledge

Skills

Understanding



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## Sample Resources from the Teachers' Resource and Assessment Pack

for Y11 Sureshot **EXTRA** (GCSE Tier G-D)

The topic "Developing Efficient Non-Calculator Techniques"

can be downloaded from the website

[www.mathsisjugglers.com](http://www.mathsisjugglers.com)

You have permission to print  
this topic for use with your students.

This pack contains the Teachers' Resources and Assessments  
for the topic "Developing Efficient Non-Calculator Techniques"  
in the Y11 Sureshot Guide.

You have permission to print these for use with your students.



Sureshot

### CONTENTS OF THE PACK

Contents and information about the course	p2-4
Teachers' Notes	p5
Star Challenges	p6-7
Worksheets	p8-9
Revision Sheet ( <i>The student can check this using the answers on the back.</i> )	p10-11
Assessment ( <i>with spaces for answers on the sheet</i> )	p12
Assessment Answers and Mark Schemes ( <i>Answers are given on a copy of the test itself – this makes marking much quicker</i> )	p13

# CONTENTS

*of the*

## Foundation GCSE Course - Grades G-D

### THE SURESHOT GUIDE *Part 1* (Y10)

<b>Topic 1:</b> Patterns and Sequences	05 – 32
<b>Topic 2:</b> Measurement in Action <i>Part 1</i>	<b>33 – 54</b>
<b>Topic 3:</b> Algebra is Easy When You Know the Rules <i>Part 1</i>	55 – 80
<b>Topic 4:</b> Measurement in Action <i>Part 2</i>	81 – 104
<b>Topic 5:</b> Algebra is Easy When You Know the Rules <i>Part 2</i>	105 – 122
<b>Topic 6:</b> Essential Statistics	123 – 158
<b>Topic 7:</b> Graphs and Rules	159 – 174
<b>Topic 8:</b> Developing Efficient Calculator Techniques	175 – 214
<small>This topic is in both parts of the course to provide flexibility.</small>	
ANSWERS	215 – 234

### THE SURESHOT GUIDE *Part 2* (Y11)

<b>Topic 8:</b> Developing Efficient Calculator Techniques	05 – 44
<small>This topic is in both parts of the course to provide flexibility.</small>	
<b>Topic 9:</b> Understanding Geometry <i>Part 1</i>	45 – 80
<b>Topic 10:</b> Developing Efficient Non-Calculator Techniques <i>Part 1</i>	<b>81 – 104</b>
<b>Topic 11:</b> How Likely Is It ?	105 – 128
<b>Topic 12:</b> Developing Efficient Non-Calculator Techniques <i>Part 2</i>	129 – 156
<b>Topic 13:</b> Understanding Geometry <i>Part 2</i>	157 – 184
ANSWERS	185 – 200

### Understanding Geometry *Part 2*

makes an excellent start to a GCSE Revision Course.

Order one **half price** copy of Y10 Sureshot and Y11 Sureshot  
using the Special Offer form  
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## The SURESHOT Guide **EXTRA**

### An unusual approach to Mathematics for Low Attainers – that works !!

Students in our lower sets said

“We don’t want a course that only does the easy stuff (a ‘dumbo’ course).

We want to do the same work as everyone else.

- So, will you please:
- make the instructions and explanations clearer
  - introduce ideas more slowly and put in extra steps
  - put in extra practice
  - make the work interesting”

### SO WE DID !



*Our EXTRA texts for LOW ATTAINERS do not follow the route of so many other texts for these students.*

*Instead of giving them lots of easy material, we took the syllabus and delivered it in such a way that LOW ATTAINERS could understand and cope with the ideas and techniques.*

**We gave them what they had asked for !!**

*But we couldn’t have produced these texts had it not been for the active help of the students themselves. We started with the mainstream texts and students really enjoyed finding out what didn’t work for them - but, more importantly, WHY!! They quickly became expert at pinpointing where the material didn’t work for them and helping to find what would work for them.*

*Devising ways that would work took a lot of working/trialling with LOW ATTAINERS, but we ended up with the EXTRA texts – which work exceptionally well, particularly with bottom sets, disaffected students and students at Pupil Referral Units.*

This GCSE **EXTRA** course :

- has been specially written for low attainers
- has lots of EXTRA practice on all techniques
- can be run alongside the mainstream course
- can stand on its own
- is suitable for the lower 40% of the ability range



Each student:

- takes responsibility for his/her own learning
- can decide how much practice (s)he needs to do for each technique
- can try Star Challenges when (s)he feels ready for them
- will be capable of taking the mainstream tests

The authors firmly believe that all students can tackle the material in the mainstream course.

However, some students need :

- more time to get to grips with the ideas and techniques involved
- lots of EXTRA practice
- one idea at a time introduced step-by-step
- to meet ideas and techniques over and over again

**Most students in lower sets are underachieving.  
This course aims to raise the level of achievement of these students.**

## How does the Star Challenge system work ?

The number of stars is a measure of the difficulty of the Challenge.

So, one star denotes a basic fairly easy challenge.

However, students should not be discouraged from attempting any Challenges.

For example, students may earn fewer stars from many two or three star challenges, with partially correct answers.

Students of lower ability can amaze you with what they can achieve, if they really want to tackle problems that you might think beyond them.

### A true cautionary tale


Three very low ability students were working together. They had to. Mark was severely dyslexic - he could not read at all. Jason could read very well, but could make no sense of what he was reading. Matthew was very slow at everything. Between them, they could tackle problems.

Jason would read the question. Mark would explain what it was all about. Together the three of them would work out how to solve the problem.

One day they had done all the one star problems. They asked me if they could try the three star problem - The Chest of Drawers. It contained a mixture of fractions and decimals and both cm and mm. My first reaction was to tell them that it was too difficult for them - but I said they could try it, provided they accepted that they might not be able to do it.

About ten minutes later, they brought me the correct answer. I couldn't believe that they had solved such a complex problem. I changed the data (marked below in blue). They were back a few minutes later with the correct answer. Then I made a big mistake. I asked them to tell me how they had worked it out. I couldn't follow their explanation at all !!

*From then on I never restricted the choice of Star Challenges of even the least able students.*

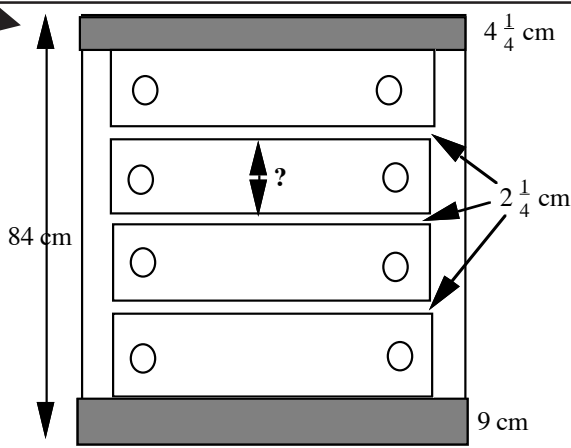
**Star Challenge** 

### The chest of drawers

A chest of drawers 84 cm high has a 42.5 mm top and a 90 mm base. Four identical drawers fit in between, with 22.5 mm between each drawer.

Work out the height of each drawer in cm.

If the 22.5 mm gaps were reduced to 12.5 mm each, what would be the height of each drawer then?



The diagram shows a chest of drawers with a total height of 84 cm. It has a top panel of  $4\frac{1}{4}$  cm and a base of 9 cm. There are four drawers in between. The gap between the top panel and the first drawer is  $2\frac{1}{4}$  cm. The gap between the second and third drawers is marked with a question mark. The gap between the fourth drawer and the base is  $2\frac{1}{4}$  cm. Each drawer has two circular handles.

### What do schools do with the stars students earn for Star Challenges ?

One school:

- gives a house point for each star.
- has a commendation system and awards a commendation for so many stars. They also award stars for effort when the books are taken in each fortnight.
- gives a smiley face for 5 stars
- gives a Mars Bar for 10 stars
- gives a copy of one of a group of Chaos posters for 20 stars (very popular with low attainers)
- .....

It doesn't matter what you do. It is the sense of achievement that is most important.

However, a system that awards something for so many stars, then starts them collecting the next set of stars, means that students keep track of how many stars they have and how many more they need towards the next 'prize' – instead of (possibly invidious) comparisons of the total number of stars each student has.

# Developing Efficient Non-Calculator Techniques

## Part 1 EXTRA Teachers' Guide

Printing list	Page in Book	Page in Pack
D1: From multiples to primes	p 82	p 42
Star Challenge 5 : The 100 rectangle	p 91	p 43

*Developing Efficient Non-Calculator Techniques Parts 1 and 2 reviews all the non-calculator techniques for levels 3-6 of the National Curriculum (Foundation Level at GCSE). All the techniques should have been met earlier in the student's mathematical career but all the techniques/rules are explained clearly. Basic rote practice in all techniques is provided but novel applications are also included.*

### Section 1: Multiples and divisibility

The tables produced in **D1: From multiples to primes** are used in **D2: Multiples and divisibility** and the primes produced in these tables are used in Sections 2 and 3.

### Section 2: Multiples, factors and primes

We think that students ought to know their multiplication tables BUT that they need a resource to find any multiples that may be a little shaky. The table square is a primary school device that fulfills this role admirably. However, we start here by using the table square to find factors.

If you have student(s) that are weak on tables, it might be a good idea to give them their own copies of the table square to stick in their books (or a laminated version to carry loose).

**P1: Connect five** is not a nice game that has something to do with factors. **P1: Connect five** is an excellent device to develop skills in factor finding (and divisibility skills). It could/should be played several times, even when you have moved onto subsequent sections or topics.

**E1: The factor grid game** also develops factor finding skills but is also suitable as a whole class exercise for the last ten minutes of any lesson.

### Section 3: Square and cube numbers

One of the problems with square numbers, cube numbers and primes is that students forget what they are and do not easily recognise them. The aim of this section is to use these numbers in a variety of ways, to improve recall of them.

### Section 4: Index notation

Students find this section straightforward – but challenging.

### Section 5: Techniques for addition and multiplication

This section reviews basic pencil-and-paper arithmetic techniques for addition and multiplication. Students are encouraged to use the table square as a backup resource for multiplication. It is essential that students can multiply a 3-digit number by a 2-digit number, but, if students wish to use another method than the one given here, they may do so.

### Section 6: Techniques for division

Division is the arithmetic rule that students often find most difficult. So, once again, we go back to the idea of division as 'sharing'. (For some students, counters are essential, but, if not available, can be substituted by matchsticks, coins ...) Students are encouraged to use the table square as a backup resource for division. All students ought to be able to divide a 3-digit number by a 2-digit number.

### Section 7: Checking calculations

Students need to be able to use approximations to check multiplication and division sums.

# Developing Efficient Non-Calculator Techniques Part 1 Star Challenge Answers

**1** 1. 70, 36, 64, 42      2. 27, 15, 36, 63      3. 27, 15, 36, 63      4. 15, 70  
5. 63, 70, 91      6. 19, 37, 43, 73, 79

18-22 marks = 1 star

**2** 1. 230, 342, 600      2. 65, 230, 435, 555, 600 12345      3. 230, 600  
4. 342, 423, 435, 600, 243, 555, 6741, 12345      5. 243, 342, 423, 6741

23 correct answers = 2 stars 19-22 correct = 1 star

**3** 1. 31, 37      2. 13, 31, 17, 71, 37, 73, 79, 97, 11

8-9 marks = 1 star

**4** 1. 2, 3      2. 3, 5      3. 2, 3      4. 2, 5      5. 2, 3

5 correct = 2 stars  
4 correct = 1 star

**5**

<b>Task 2:</b>	5 = 4 + 1	<b>Task 3:</b>	3 = 4 - 1	<b>Task 4:</b> All the numbers
	13 = 4 + 9		7 = 16 - 9	in column 2 are even.
	17 = 1 + 16		11 = 36 - 25	The only even prime
	29 = 4 + 25		19 = 100 - 81	number is 2
	37 = 1 + 36		23 = 144 - 121	(2 marks)
	41 = 16 + 25		31 = 256 - 225	
	53 = 4 + 49		(6 marks)	
	61 = 25 + 36			
	73 = 9 + 64			
	89 = 25 + 64			
	97 = 16 + 81 (11 marks)			

19 marks = 3 stars  
16-18 marks = 2 stars  
13-15 marks = 1 star

**6**

**Task 3:** Four correct chains leading to 153 (hypothesis is correct)

**Task 4:** Four correct chains leading to 371 (all chains lead to 371)

**Task 5:** 9 correct chains (hypothesis is NOT correct – most chains lead to 370 or 250 but some lead to 217)

1 star for each correct Task

**7**

$a = 3$     $b = 9$     $c = 3$     $d = 3$     $e = 3$     $f = 24$     $g = 2$     $h = 43$   
 $i = 2$     $j = 2$     $k = 2$     $m = 36$

All correct = 1 star

**8**

$3 \times 2^2 = 12$     $3 + 2^2 = 7$     $(3 \times 2)^2 = 36$     $(3 + 2)^2 = 25$     $3^2 \times 2 = 18$   
 $3^2 + 2 = 11$     $3^2 \times 2^2 = 13$     $3 + 5 \times 2 = 13$     $3 \times 5 + 2 = 17$     $(5 + 3) \times 2 = 16$

All correct = 1 star

**9**

358	538	835	385	583	853
<u>x 9</u>	<u>x 9</u>	<u>x 9</u>	<u>x 9</u>	<u>x 9</u>	<u>x 9</u>
3222	4842	7515	3465	5247	7677

(6 marks) largest is 7677 (2 marks)

6-8 marks = 1 star

**10**

1. 68      2. 350      3. 210      4. 1155      5. 120      6. 4700  
7. 4500      8. 12000      9. 72      10. 402      11. 4000      12. 2528  
13. 2400      14. 1200      15. 5200      16. 112      17. 110      18. 16000  
19. 135      20. 1200

17-20 correct = 2 stars  
14-16 correct = 1 star

**11**

1. 290      2. 180      3. 408      4. 24276      5. 590      6. 2945  
7. 36630      8. 1085      9. 7260      10. 3600      11. 225      12. 736  
13. 13041      14. 26362      15. 2168      16. 36408

15-16 correct = 3 stars  
10-14 correct = 2 stars  
8-9 correct = 1 star

## Developing Efficient Non-Calculator Techniques Part 1 Star Challenge Answers

**12 12**

1. 272      2. 38      3. 122      4. 82      5. 27      6. 46  
7. 67      8. 65      9. 29      10. 57

10 correct = 2 stars  
8-9 correct = 1 star

**13 13**

4. Six different answers which are 432 342 243 423 324 234 (7 marks)  
5. Two different answers with no remainder  $375 \div 5 = 75$   $735 \div 5 = 147$  (3 marks)

10 marks = 2 stars  
8-9 marks = 1 star

**14 14 14**

1. 39      2. 27      3. 63      4. 13      5. 28  
6. 19      7. 25      8. 19      9. 46      10. 13

20 marks = 3 stars  
18-19 marks = 2 stars  
13-17 marks = 1 star

(All working must be shown)

2 marks for each question – 1 for the answer & 1 for the working

**15 15 15**

- For each sum the student must : • work out the answer (2 marks)  
• use approximations to check the answer (1 mark)  
• show the working for both sum and check

1. 25665      2. 36      3. 52875      4. 386      5. 26      6. 31326  
7. 34040      8. 37      9. 14582      10. 32485      11. 54      12. 211



# D1: From multiples to primes

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

**Task 1:** Shade in all the multiples of 2

**Task 2:** Describe any patterns you get :

.....

**Task 3:** Shade in all the multiples of 3

**Task 4:** Describe any patterns you get :

.....

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

**Task 5:** Shade in all the multiples of 5

**Task 6:** Describe any patterns you get :

.....

**Task 7:** Shade in all the multiples of 7

**Task 8:** Describe any patterns you get :

.....

**Task 9:** In this grid, circle all the numbers that have NOT been shaded in any of the other grids.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

The numbers you have circled are prime numbers.

Stick this worksheet in your book. You will need the prime numbers here in Sections 2 and 3.

• Check your answers.

19 marks = 3 stars  
 16-18 marks = 2 stars  
 13-15 marks = 1 star

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	100

**The 100 rectangle**

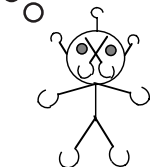
**Task 1:** Look back at the table of prime numbers you made for D1, Section 1. Use it to circle all the prime numbers in this table.

**Task 2:** Every prime number in column 1 can be written as the sum of two square numbers.

Complete this: (11 marks)

- 5 = ..... + .....
- 13 = ..... + .....
- ..... = ..... + .....
- ..... = ..... + .....
- ..... = ..... + .....
- ..... = ..... + .....
- ..... = ..... + .....
- ..... = ..... + .....
- ..... = ..... + .....
- ..... = ..... + .....
- ..... = ..... + .....

Remember:  
 You made a list of square numbers in D1 question 17



Hukka

**Task 3:** Every prime number in column 3 can be written as the difference of two square numbers.

Complete these: (6 marks)

- 3 = ..... - .....
- 7 = ..... - .....
- 11 = ..... - .....
- 19 = ..... - .....
- 23 = ..... - .....
- 31 = ..... - .....

**Task 4:** Why is there only one prime number in column 2?

.....  
 .....  
 .....  
 .....  
 .....

(2 marks)

**WARNING !**  
 One of the squares that you will need is bigger than the squares you found in D1, Q17!



Idea

# Developing Efficient Non-Calculator Techniques EXTRA Part 1 REVISION

Name: .....

Do the answers to this revision sheet in your exercise book or on paper – NOT ON THIS SHEET. Check your own answers using the answers on the reverse of this sheet.

KEEP THIS SHEET SOMEWHERE SAFE – SO YOU CAN USE IT AGAIN TO REVISE FOR THE EXAMS.

## Foundation Section: Levels 4 – 5 LEVEL 4

1. Write down: Section 1
- (a) the first three multiples of 4  
(b) the numbers less than 21 which are divisible by 5

2. List the numbers in the box that are divisible by ... Section 1
- |    |    |    |
|----|----|----|
| 18 | 41 | 15 |
|    | 19 | 90 |
| 35 | 60 | 6  |
|    |    | 56 |

3. Write down: Section 2
- (a) the factors of 12 (b) the factors of 30  
(c) two factor pairs of 10  
(d) the prime numbers between 10 and 20

4. Write down: Section 3
- (a) the square of 5 (b) 10 squared (c)  $2^3$

5. Write the value of each letter: Section 4
- (a)  $2^a = 8$  (b)  $10^2 = b$  (c)  $c^3 = 125$

6. Work out the value of: Section 4
- (a)  $3^2$  (b)  $2^4$  (c)  $5 \times 2^2$

7. Copy and complete these addition sums: Section 5
- (a)  $143$  (b)  $458$   
 $\underline{\quad} + \underline{37} \quad \underline{\quad} + \underline{367}$

8. Copy and complete these multiplication sums: Section 5
- (a)  $64$  (b)  $156$   
 $\underline{\quad} \times \underline{4} \quad \underline{\quad} \times \underline{5}$

## Section 6

9. Copy and complete these division sums:

(a)  $4)92$  (b)  $7)385$

## Section 5

### LEVEL 5

10. Copy and complete:

(a)  $7 \times 10 = \dots\dots$  (b)  $13 \times 100 = \dots\dots$  (c)  $24 \times 1000 = \dots\dots$   
 (d)  $3 \times 20 = \dots\dots$  (e)  $4 \times 300 = \dots\dots$  (f)  $20 \times 30 = \dots\dots$

## Section 5

11. Work out  $234 \times 23$  Show all working. You may use any method.

[In tests/exams you will need to show your working out to get full marks]

## Section 6

12. Work out  $204 \div 12$  Show all working.

[In tests/exams you will need to show your working out to get full marks]

## Section 7

13. 

Which of these is the most reasonable approximation to the answer?  
You must be able to show how you know.

**ANSWERS**

1. (a) 4, 8, 12 (b) 5, 10, 15, 20
2. (a) 60, 90 (b) 15, 35, 60, 90 (c) 18, 60, 6, 90, 56
3. (a) 1, 2, 3, 4, 6, 12 (b) 1, 2, 3, 5, 6, 10, 15, 30  
(c) 1 & 10, 2 & 5 (d) 11, 13, 17, 19
4. (a) 25 (b) 100 (c) 8
5. (a)  $a = 3$  (b)  $b = 100$  (c)  $c = 5$
6. (a) 9 (b) 16 (c) 20
7. (a) 180 (b) 825
8. (a) 256 (b) 780
9. (a) 23 (b) 55
10. (a) 70 (b) 1300 (c) 24000 (d) 60 (e) 1200 (f) 600
11. 5382
12. 17
13.  $\approx 400 \times 20 = 8000$

# Developing Efficient Non-Calculator Techniques EXTRA

Foundation Mark = %

## LEVEL 5

(6 marks)

11. (a)  $5 \times 10 = \dots\dots\dots$   
 (b)  $4 \times 20 = \dots\dots\dots$   
 (c)  $5 \times 100 = \dots\dots\dots$   
 (d)  $5 \times 300 = \dots\dots\dots$   
 (e)  $20 \times 60 = \dots\dots\dots$   
 (f)  $30 \times 500 = \dots\dots\dots$

Name: .....

12. *Work out*  $134 \times 27$   
 Show all your working out.

6 marks :  
 2 for answer  
 4 for correct working out

## Foundation Section: Levels 4 – 5 LEVEL 4

1. The first four multiples of 5 are ..... (4 marks)  
 2. The numbers between 10 and 20 which are divisible by 3 are ..... (3 marks)  
 3. Write down all the factors of 20 ..... (6 marks)  
 4. 17 3 6 5 10 31 (6 marks)

Circle each prime number here.

15	23	49
71	16	90
75	84	1200
2467	7812	

15	23	49
71	16	90
75	84	1200
2467	7812	

15	23	49
71	16	90
75	84	1200
2467	7812	

9 marks :  
 3 for each box  
 Take 1 mark off for each missing or wrong answer

5. (a) Circle all numbers that are divisible by 10  
 (a) Circle all numbers that are divisible by 2  
 (b) 7 squared is ..... (c) 3 cubed = ..... (3 marks)  
 6. (a) the square of 4 is ..... (b) 7 squared is ..... (c) 3 cubed = ..... (5 marks)  
 7. The first six square numbers are 1, ....., ....., ....., ....., ..... (5 marks)  
 8. (a)  $4^2 = \dots\dots\dots$  (b)  $2^3 = \dots\dots\dots$  (c)  $2 \square = 32$  (6 marks)  
 (d)  $9 \square = 81$  (e)  $10 \square = 1000$  (f)  $3 \times 5^2 = \dots\dots\dots$   
 9. (a) 
$$\begin{array}{r} 234 \\ +158 \\ \hline \end{array}$$
 (b) 
$$\begin{array}{r} 457 \\ +163 \\ +22 \\ \hline \end{array}$$
 (c) 
$$\begin{array}{r} 51 \\ \times 6 \\ \hline \end{array}$$
 (d) 
$$\begin{array}{r} 416 \\ \times 7 \\ \hline \end{array}$$
  
 10. (a) 
$$\begin{array}{r} 5 \overline{) 355} \\ \underline{10} \phantom{0} \\ 25 \phantom{0} \\ \underline{25} \phantom{0} \\ 0 \phantom{0} \end{array}$$
 (b) 
$$\begin{array}{r} 3 \overline{) 471} \\ \underline{9} \phantom{0} \\ 17 \phantom{0} \\ \underline{15} \phantom{0} \\ 21 \phantom{0} \\ \underline{21} \phantom{0} \\ 0 \phantom{0} \end{array}$$
 (4 marks)

6 marks :  
 2 for answer  
 4 for correct working out

13. *Work out*  $312 \div 12$   
 Show all your working out.

14. Four 15 year olds got 4 different answers to the same sum.

Beryl got
97744

Fred got
43070

Yossi got
122720

Tariq got
12272

The sum was  $295 \times 416$

DO NOT WORK OUT THE ANSWER TO THIS SUM.

Use approximations to check which answer is the most likely to be correct.

Who do you think had the right answer ..... (2 marks)  
 Explain how you know. (2 marks)

FOUNDATION MARK / 76

# Developing Efficient Non-Calculator Techniques EXTRA Part 1 ASSESSMENT

## ANSWERS

Write the answers on this sheet.

### Foundation Section: Levels 4 – 5

#### LEVEL 4

- The first four multiples of 5 are **5, 10, 15, 20** (4 marks)
- The numbers between 10 and 20 which are divisible by 3 are **12, 15, 18** (3 marks)
- Write down all the factors of 20. **1, 2, 4, 5, 10, 20** (6 marks)

- 17** **3** **6** **5** **10** **31**

Circle each prime number here.

1 mark for correctly circling or not-circling each number.

- |      |      |      |
|------|------|------|
| 15   | 23   | 49   |
| 71   | 16   | 90   |
| 75   | 84   | 1200 |
| 2467 | 7812 |      |

- |      |      |      |
|------|------|------|
| 15   | 23   | 49   |
| 71   | 16   | 90   |
| 75   | 84   | 1200 |
| 2467 | 7812 |      |

(6 marks)

9 marks: 3 for each box Take 1 mark off for each missing or wrong answer.

- Circle all numbers that are divisible by 10 (a) Circle all numbers that are divisible by 5

- (a) the square of 4 is **16** (3 marks)

(b) 7 squared is **49** (3 marks)

- The first six square numbers are **1, 4, 9, 16, 25, 36** (5 marks)

- (a)  $4^2 = 16$  **2**  $\sqrt{\quad} = 81$  (6 marks)

(b)  $2^3 = 8$  **3**  $10^{\quad} = 1000$  (6 marks)

- (a)  $234 + 158 = 392$  (b)  $457 + 163 + 22 = 642$  (c)  $51 \times 6 = 306$  (8 marks)

(d)  $416 \times 7 = 2912$

- (a)  $5 \overline{) 355} = 71$  (b)  $3 \overline{) 471} = 157$  (4 marks)

#### LEVEL 5

- (a)  $5 \times 10 = 50$  (6 marks)

(b)  $4 \times 20 = 80$  (6 marks)

(c)  $5 \times 100 = 500$

(d)  $5 \times 300 = 1500$

(e)  $20 \times 60 = 1200$

(f)  $30 \times 500 = 15000$

- Work out  $134 \times 27$ . Show all your working out.

**3618**

6 marks: 2 for answer 4 for correct working out

- Work out  $312 \div 12$ . Show all your working out.

**26**

6 marks: 2 for answer 4 for correct working out

- Four 15 year olds got 4 different answers to the same sum.

Beryl got 97744

Fred got 43070

Yossi got 122720

Tariq got 12272

The sum was **295 x 416**

DO NOT WORK OUT THE ANSWER TO THIS SUM.

Use approximations to check which answer is the most likely to be correct.

Who do you think had the right answer ..... Yossi..... (2 marks)

Explain how you know. (2 marks)

$\approx 300 \times 400 = 120000$

FOUNDATION MARK / 76