

Junior
Certificate
School
Programme

Cross Sums

Student Workbook 1



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Cross Sums Workbook
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The purpose of this publication is to enhance teaching and learning within the Junior Certificate School Programme.

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Written by Jerry McCarthy

Introduction

“Cross Sums, Student Workbook 1” contains a suite of thirty number puzzles. The student uses the “Across” and “Down” clues to fill in the puzzle-grids. These number puzzles are based on the following numerical concepts, skills and competencies: whole number computation (addition, subtraction, multiplication, division), computation involving fractions, decimals and percentages, prime numbers, properties of angles, properties of time, metric measurement and conversions, money conversions and number sequences.

These number puzzles can be an exciting way to revise, practise and consolidate important computational skills and to enhance numerical understanding in important conceptual domains. In the easier sections of the puzzles – those that are based on single-digit computation and recall of previously learned key number facts - the student should be encouraged to perform mental calculations to arrive at the answer. In more challenging sections, the calculations can be performed by using pen and paper. Alternatively, the number puzzles can be used to provide the student with valuable experience and practice in using the calculator to solve a range of arithmetical calculations.

Each number puzzle can be implemented as an individual activity, where each student works independently. The puzzles can also be operated as collaborative assignments where two (or more) students work together to solve the puzzles.

Solutions to the number puzzles are provided in the appendix section (beginning on page 34).

1

1	2	3	
4		5	6
7	8	9	
10			

Across

2. $124 + 5$

4. 5×3

5. 6×4

7. 3×7

9. 7×2

10. $234 + 2$

Down

1. $400 + 12$

2. $30 \div 2$

3. 11×2

6. $440 + 5$

8. $26 \div 2$

9. 4×4

2

1	2	3	
4		5	6
7	8	9	
10			

Across

2. $231 + 5$

4. 5×7

5. 7×3

7. 8×8

9. 4×5

10. $367 - 5$

Down

1. $100 + 36$

2. $50 \div 2$

3. 8×4

6. 10×10

8. $92 \div 2$

9. 11×2

3

	2	3	
4		5	6
7	8	9	
10			

Across

- 2. 5 x 25
- 4. 8 x 8
- 5. 7 x 3
- 7. 5 x 5
- 9. 9 x 9
- 10. 15 x 8

Down

- 1. 150 + 12
- 2. 28 ÷ 2
- 3. 66 ÷ 3
- 6. 11 x 10
- 8. 13 x 4
- 9. 16 x 5

4

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. 12 x 12
- 4. 8 x 9
- 5. 6 x 6
- 7. 7 x 7
- 9. 56 ÷ 2
- 10. 360 - 70

Down

- 1. 150 + 24
- 2. 48 ÷ 4
- 3. 129 ÷ 3
- 6. 700 - 20
- 8. 11 x 9
- 9. 120 ÷ 6

5

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. 13×13
- 4. $56 \div 2$
- 5. $72 \div 6$
- 7. $86 \div 2$
- 9. 13×4
- 10. $177 + 8$

Down

- 1. 31×4
- 2. $36 \div 2$
- 3. $183 \div 3$
- 6. 56×4
- 8. $60 - 22$
- 9. $110 \div 2$

6

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. 25×25
- 4. 19×4
- 5. $63 \div 3$
- 7. 9×9
- 9. $124 \div 2$
- 10. $405 + 19$

Down

- 1. $150 + 28$
- 2. $132 \div 2$
- 3. $132 \div 6$
- 6. 11×11
- 8. $144 \div 12$
- 9. 8×8

7

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. 15×15
- 4. $45 \div 3$
- 5. $99 \div 9$
- 7. $84 + 7$
- 9. 33×3
- 10. $670 - 15$

Down

- 1. $238 - 19$
- 2. $75 \div 3$
- 3. 7×3
- 6. 39×5
- 8. $60 \div 4$
- 9. 19×5

8

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. 17×17
- 4. $36 + 36$
- 5. $98 - 17$
- 7. $30 \div 2$
- 9. 13×5
- 10. $288 \div 2$

Down

- 1. $520 + 51$
- 2. 11×2
- 3. 11×8
- 6. 39×4
- 8. 6×9
- 9. 8×8

9

1	2	3	
4		5	6
7	8	9	
10			

Across

2. 14 x 14
4. 17 x 3
5. 99 ÷ 9
7. 6 x 12
9. 45 - 15
10. 10 x 10

Down

1. 170 - 13
2. 121 ÷ 11
3. 13 x 7
6. 21 x 5
8. 120 ÷ 6
9. 10 x 3

10

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. 19×19
- 4. 17×4
- 5. $36 + 36$
- 7. $96 \div 6$
- 9. 10×8
- 10. $130 + 40$

Down

- 1. $120 + 41$
- 2. 19×2
- 3. $268 \div 4$
- 6. 25×8
- 8. $134 \div 2$
- 9. $320 \div 4$

11

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. 11 x 11
- 4. 13 x 4
- 5. 144 ÷ 12
- 7. 13 x 7
- 9. 90 - 13
- 10. 14 x 10

Down

- 1. 130 + 29
- 2. 60 ÷ 5
- 3. 7 x 3
- 6. 27 x 10
- 8. 56 ÷ 4
- 9. 10 x 7

12

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. $150 + 15$
- 4. 15×6
- 5. 7×8
- 7. $90 - 6$
- 9. $75 + 7$
- 10. 35×5

Down

- 1. $396 \div 2$
- 2. $60 \div 6$
- 3. 13×5
- 6. 155×4
- 8. $94 \div 2$
- 9. 5×17

13

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. 17 x 20
- 4. half of 36
- 5. 7 x 8
- 7. 50% of 90
- 9. 33 x 2
- 10. 50 + 60

Down

- 1. 228 ÷ 2
- 2. 19 x 2
- 3. 50% of 90
- 6. 66 x 10
- 8. 17 x 3
- 9. 1/2 of 120

14

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. 19 x 6
- 4. 25% of 100
- 5. 100% of 75
- 7. 1/4 of 124
- 9. 64 + 8
- 10. 18 x 10

Down

- 1. 50% of 246
- 2. 1/4 of 60
- 3. 1/3 of 51
- 6. 550 - 30
- 8. 20% of 90
- 9. 35 x 2

15

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. 25 x 7
- 4. 25% of 60
- 5. 50% of 36
- 7. 1/3 of 33
- 9. 20% of 60
- 10. 12 x 10

Down

- 1. 333 ÷ 3
- 2. 1/4 of 60
- 3. 100 - 29
- 6. 900 - 80
- 8. 150% of 8
- 9. 100 ÷ 10

16

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. **300 - 5**
- 4. **3/4 of 60**
- 5. **3 x 17**
- 7. **50% of 64**
- 9. **1/5 of 60**
- 10. **173 + 15**

Down

- 1. **286 ÷ 2**
- 2. **25% of 100**
- 3. **5 x 19**
- 6. **50% of 240**
- 8. **56 ÷ 2**
- 9. **72 ÷ 4**

17

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. 600 - 15
- 4. 10% of 100
- 5. 75% of 20
- 7. 1/8 of 88
- 9. 7 x 8
- 10. 360 ÷ 2

Down

- 1. 666 ÷ 6
- 2. 25 x 2
- 3. 9 x 9
- 6. 28 x 20
- 8. 1/3 of 54
- 9. 10% of 500

18

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. 730 - 45
- 4. 2/3 of 60
- 5. 19 x 4
- 7. 50% of 88
- 9. 1/4 of 60
- 10. 320 + 45

Down

- 1. 12 x 12
- 2. 240 ÷ 4
- 3. 100 - 13
- 6. 130 x 5
- 8. 50% of 92
- 9. 75 ÷ 5

19

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. 33×4
- 4. number of 50 cent coins in €20
- 5. number of hours in 2 days
- 7. prime number between 30 and 35
- 9. 30% of 90
- 10. quarter of 560

Down

- 1. $300 - 57$
- 2. number of 20 cent coins in €2
- 3. $306 \div 9$
- 6. $910 - 40$
- 8. 5% of 280
- 9. number of minutes in $\frac{1}{3}$ of an hour

20

1	2	3	
4		5	6
7	8	9	
10			

Across

2. 20×21
4. number of degrees in a right angle
5. $7 + 9 + 6$
7. $\frac{3}{4}$ as a percentage
9. number of hours in 2 days
10. number of cents in €5

Down

1. $234 + 63$
2. 20% of 200
3. quarter of 88
6. number of cents in €2.80
8. $\frac{1}{5}$ of 250
9. $360 \div 9$

21

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. number of degrees in 2 right angles
- 4. number of minutes in 1.5 hours
- 5. prime number between 25 and 30
- 7. $270 \div 10$
- 9. $\frac{4}{5}$ as a percentage
- 10. number of hours in 5 days

Down

- 1. $618 - 26$
- 2. number of halves in 5 pears
- 3. $574 \div 7$
- 6. double 450
- 8. number of 50 cent coins in €36
- 9. 25% of 320

22

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. number of cents in €5.34
- 4. $144 \div 6$
- 5. 30% of 60
- 7. $\frac{1}{4}$ as a percentage
- 9. $\frac{1}{2} + \frac{1}{2} + 20$
- 10. number of degrees in 4 right angles

Down

- 1. $1110 \div 5$
- 2. half of 108
- 3. prime number between 30 and 36
- 6. $900 - 85$
- 8. quarter of 224
- 9. number of minutes in $\frac{1}{3}$ of an hour

23

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. 17 x 19
- 4. number of 1/4s in 3 apples
- 5. number of degrees in 1/2 a right angle
- 7. 7 x 8
- 9. 2/5 as a percentage
- 10. number of centigrams in 1 gram

Down

- 1. $920 \div 8$
- 2. 8 x 4
- 3. number of 50 cent coins in €12
- 6. number of cents in €5
- 8. number of seconds in 1 minute
- 9. number of minutes in 2/3 of an hour

24

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. quarter of 960
- 4. prime number between 14 and 18
- 5. 20% of 225
- 7. $\frac{1}{4} + \frac{3}{4} + 15$
- 9. number of hours in half a day
- 10. number of centimetres in 5 metres

Down

- 1. $999 \div 9$
- 2. 9×3
- 3. 11×4
- 6. number of cents in €5.20
- 8. number of degrees in $\frac{2}{3}$ of a right angle
- 9. number of $\frac{1}{5}$ s in 2 pears

25

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. $76 + 4 + 136$
- 4. number of hours in 3 days
- 5. number of minutes in $\frac{1}{4}$ hour
- 7. $568 \div 8$
- 9. 50% of 60
- 10. number of grams in $\frac{1}{2}$ a kilogram

Down

- 1. 111×7
- 2. $110 \div 5$
- 3. $\frac{1}{2} \times 22$
- 6. number of metres in $\frac{1}{2}$ a kilometre
- 8. 5% of 200
- 9. 30% of 100

26

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. number of days in a leap year
- 4. 5×9
- 5. 10% of 990
- 7. $\frac{1}{4} + \frac{3}{4} + 15$
- 9. $360 \div 10$
- 10. number of cents in €5.75

Down

- 1. $410 - 69$
- 2. quarter of 140
- 3. 10% of 690
- 6. 15×64
- 8. half of 134
- 9. 7×5

27

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. number of degrees in 6 right angles
- 4. number of minutes in $\frac{3}{4}$ of an hour
- 5. number of days in 2 weeks
- 7. 10.5×2
- 9. 25% of 360
- 10. number of cents in €5.04

Down

- 1. $852 \div 6$
- 2. 5×11
- 3. $6 + 5 + 30$
- 6. 40% of 1000
- 8. $\frac{2}{3} + \frac{1}{3} + 9$
- 9. $120 - 26$

28

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. quarter of 1500
- 4. number of minutes in 1.5 hours
- 5. number of hours in 3 days
- 7. prime number between 49 and 56
- 9. 25% of 56
- 10. 5×29

Down

- 1. half of 390
- 2. $\frac{1}{4} \times 120$
- 3. 7×11
- 6. $305 - 65$
- 8. 10% of 340
- 9. $90 \div 6$

29

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. number of minutes in 4 hours
- 4. 13×6
- 5. the next number in the pattern:
5, 15, 25, 35,
- 7. $\frac{1}{4}$ of 72
- 9. 30% of 90
- 10. number of hours in a week

Down

- 1. $400 - 229$
- 2. 14×2
- 3. 25% of 176
- 6. $500 + 70 + 5$
- 8. $258 \div 3$
- 9. number of days in 4 weeks

30

1	2	3	
4		5	6
7	8	9	
10			

Across

- 2. number of minutes in 7 hours
- 4. 60% of 100
- 5. 18×4
- 7. $364 \div 4$
- 9. 40% of 80
- 10. number of cents in €7.30

Down

- 1. $90 + 70 + 9$
- 2. $360 \div 9$
- 3. $81 \div 3$
- 6. $1776 \div 8$
- 8. 20% of 65
- 9. $0.5 + 1.5 + 28$

Solutions to Cross Sums

1

4	1	2	9
1	5	2	4
2	1	1	4
2	3	6	5

2

1	2	3	6
3	5	2	1
6	4	2	0
3	6	2	0

3

1	1	2	5
6	4	2	1
2	5	8	1
1	2	0	0

4

1	1	4	4
7	2	3	6
4	9	2	8
2	9	0	0

5

1	1	6	9
2	8	1	2
4	3	5	2
1	8	5	4

6

1	6	2	5
7	6	2	1
8	1	6	2
4	2	4	1

7

2	2	2	5
1	5	1	1
9	1	9	9

6	5	5	5
---	---	---	---

8

5	2	8	9
7	2	8	1
1	5	6	5
1	4	4	6

9

1	1	9	6
5	1	1	1
7	2	3	0
1	0	0	5

10

1	3	6	1
6	8	7	2
1	6	8	0
1	7	0	0

11

1	1	2	1
5	2	1	2
9	1	7	7
1	4	0	0

12

1	1	6	5
9	0	5	6
8	4	8	2
1	7	5	0

13

1	3	4	0
1	8	5	6
4	5	6	6
1	1	0	0

14

1	1	1	4
2	5	7	5
3	1	7	2
1	8	0	0

15

1	1	7	5
1	5	1	8
1	1	1	2
1	2	0	0

16

1	2	9	5
4	5	5	1
3	2	1	2
1	8	8	0

17

1	5	8	5
1	0	1	5
1	1	5	6
1	8	0	0

18

1	6	8	5
4	0	7	6
4	4	1	5
3	6	5	0

19

2	1	3	2
4	0	4	8
3	1	2	7
1	4	0	0

20

2	4	2	0
9	0	2	2
7	5	4	8
5	0	0	0

21

5	1	8	0
9	0	2	9
2	7	8	0
1	2	0	0

22

2	5	3	4
2	4	1	8
2	5	2	1
3	6	0	5

23

1	3	2	3
1	2	4	5
5	6	4	0
1	0	0	0

24

1	2	4	0
1	7	4	5
1	6	1	2
5	0	0	0

25

7	2	1	6
7	2	1	5
7	1	3	0
5	0	0	0

26

3	3	6	6
4	5	9	9
1	6	3	6
5	7	5	0

27

1	5	4	0
4	5	1	4
2	1	9	0
5	0	4	0

28

1	3	7	5
9	0	7	2
5	3	1	4
1	4	5	0

29

1	2	4	0
7	8	4	5
1	8	2	7
1	6	8	5

30

1	4	2	0
6	0	7	2
9	1	3	2
7	3	0	2

