

**EXAM FEVER**

Mathematics 7

**WORKBOOK**

*This book belongs to:*

**Exam Fever Publishers**

PIETERMARITZBURG

[www.examfever.co.za](http://www.examfever.co.za)

# Table of Contents

## TERM 1

<i>Chapter and Topic</i>	<i>Page</i>
1. Whole Numbers	1
2. Exponents	15
3. Construction of Geometric Shapes (Including Geometry of Straight Lines)	22
4. Geometry of 2-D Shapes	33

## TERM 2

<i>Chapter and Topic</i>	<i>Page</i>
5. Common Fractions	49
6. Decimal Fractions	58
7. Functions and Relationships	60
8. Area and Perimeter of 2-D Shapes	67
9. Surface Area and Volume of 3-D Objects	74

**Copyright © Exam Fever - January 2017**

All rights reserved. No part of this book may be reproduced or transmitted in any form, or by any means, electronic or mechanical, including photocopying, without permission in writing, from the publisher.

## TERM 3

<i>Chapter and Topic</i>	<i>Page</i>
10. Numeric and Geometric Patterns	79
11. Functions and Relationships	82
12. Algebraic Expressions	85
13. Algebraic Equations	89
14. Graphs	96
15. Transformation Geometry	100
16. Geometry of 3-D Objects	102

## TERM 4

<i>Chapter and Topic</i>	<i>Page</i>
17. Integers	106
18. Numeric and Geometric Patterns	108
19. Functions and Relationships	110
20. Algebraic Expressions	113
21. Algebraic Equations	117
22. Data Handling	124
23. Probability	128

# 1 Whole Numbers

## Exercise 1 - Mental Calculations

Write answers only to each of the following:

1.1  $14 + 26 + 13 =$  .....

1.2  $37 + 18 - 27 =$  .....

1.3  $54 + 39 - 14 =$  .....

1.4  $100 - 58 + 58 =$  .....

1.5  $127 + 42 + 13 + 60 =$  .....

1.6  $89 - 19 - 50 =$  .....

2.1  $12 \times 3 \div 3 =$  .....

2.2  $49 \div 7 \times 5 =$  .....

2.3  $6 \times 9 \div 3 =$  .....

2.4  $140 \div 10 \times 5 =$  .....

2.5  $8 \times 7 \div 4 =$  .....

2.6  $10 \times 5 \div 2 =$  .....

3.1  $7 \times 10 =$  .....

3.2  $7 \times 100 =$  .....

3.3  $7 \times 1\,000 =$  .....

3.4  $7 \times 10\,000 =$  .....

4.1  $42 \times 20 =$  .....

4.2  $12 \times 300 =$  .....

4.3  $11 \times 5\,000 =$  .....

4.4  $16 \times 2\,000 =$  .....

5.1  $80\,000 \div 10\,000 =$  .....

5.2  $80\,000 \div 1\,000 =$  .....

5.3  $8\,000 \div 100 =$  .....

5.4  $8\,000 \div 10 =$  .....

6.1  $40\,000 \div 400 =$  .....

6.2  $25\,000 \div 500 =$  .....

6.3  $180\,000 \div 20\,000 =$  .....

6.4  $55\,000 \div 1\,100 =$  .....

7. Double each of the following numbers.

7.1  $50 =$  .....

7.2  $125 =$  .....

7.3  $274 =$  .....

7.4  $8\frac{1}{2} =$  .....

8. Determine half the value of each of the following numbers:

8.1  $50 =$  .....

8.2  $800 =$  .....

8.3  $15 =$  .....

8.4  $109 =$  .....

9. Round off the number as indicated in the table.

Number	Nearest 10	Nearest 100	Nearest 1 000
843 964			

## Exercise 2

1. Rewrite 7345982 using the correct spacing.

.....

2. Consider this number: **416 287 569**

We read it as follows:

*Four hundred and sixteen million two hundred and eighty seven thousand five hundred and sixty nine.*

Complete the table by placing the digits of the number in the correct column.

Millions			Thousands			Hundreds	Tens	Units
Hm	Tm	M	Hth	Tth	Th			

3. What is the place value of the underlined digit?

3.1 752 714

.....

3.2 6 517 193

.....

4. Write each of the following numbers in words.

4.1 6 789 302

.....

.....

.....

4.2 553 403 718

.....

.....

.....

5. Write each of the following numbers in expanded notation.

5.1 2 546 292

.....

.....

.....

.....

5.2 64 459 234

.....

.....

.....

6. Place < or > in the place holder to make each of the following true:

6.1 675 139  674 128

6.2 578 529 203  78 259 623

7. Rearrange the following numbers in ascending order.

56 189 ; 74 618 ; 53 416 ; 80 714 ; 93 168

.....

.....

8. Rearrange the following numbers in descending order.

147 216 ; 157 116 ; 183 716 ; 181 713 ; 200 116

.....

.....

.....

9. Complete the sequence below by adding two more numbers:

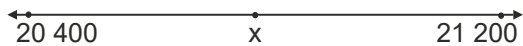
241 875 ; 241 871 ; 241 867 ;

-----

10. Fill in the missing numbers of the number sequence in the table below.

	5020			5050	
--	------	--	--	------	--

11. X is halfway on the number line. Determine the value of x.



x = .....

### Exercise 3 - Prime numbers, Composite numbers, Rounding off

1. Place a tick in each block in the table below that has a prime number and then write down the total number of prime numbers in each row and column.

										Total Number of Prime Numbers
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	
										25

Total number of Prime Numbers

2. Which set below has only prime numbers?  
 A. 1 ; 3 ; 5  
 B. 27 ; 29 ; 31  
 C. 7 ; 9 ; 11  
 D. 7 ; 11 ; 79  
 Answer: .....

3. Write down the correct answer in each case below:

- 3.1 the smallest prime number: .....
- 3.2 the only even prime number: .....
- 3.3 the smallest odd prime number: .....

4. List all the composite numbers between 40 and 50.  
 .....  
 .....

5. Round off the following numbers correct to the nearest 10.
- 5.1 713 .....
- 5.2 71 816 .....

**4** Whole Numbers - Questions

6. Round off each of the following:
- 6.1 8 167 correct to the nearest 5.  
 .....
- 6.2 976 413 correct to the nearest 1 000.  
 .....

- 6.3 9 999 correct to the nearest 100.  
 .....
- 6.4 879 513 correct to the nearest 1 000.  
 .....

7. Which is the largest number when rounded off correct to the nearest 100 will give you an answer of 7 500?  
 .....

8. Which is the smallest number when rounded off correct to the nearest 100 will give you an answer of 18 000?  
 .....

9. Calculate the sum of the first three prime numbers?  
 .....

10. Calculate the product of the first three prime numbers?  
 .....

11. Round off each number to the nearest 100 and then estimate the answer.  
 $732 \times 68 =$  .....

12. Round off each number to the nearest 10 and then estimate the answer.  
 $2\ 893 + 2\ 176 - 799$   
 .....  
 .....

### Exercise 4 - Properties of Numbers

1. Answer True or False:

1.1  $13 \times 15 \times 7 = 15 \times 7 \times 13$

1.2  $17 - 15 = 15 - 17$

1.3  $2(5 + 3) = (2 \times 5) + (2 \times 3)$

1.4  $a(b - c) = a \times b - c$

1.5  $a + b + c = (a + b) + c = (c + a) + b$

2. Write only the answers to each of the following.

2.1  $17 \times 1 =$  .....

2.2  $\frac{7}{0} =$  .....

2.3  $\frac{0}{7} =$  .....

2.4  $74 + 37 = 37 +$  .....

2.5 .....  $\times 9 = 9 \times 6$

2.6  $74 + 37 + 26 = 100 +$  .....

2.7  $2 \times 2 \times 7 \times 25 =$  .....

2.8  $8 \times 19 \times 125 =$  .....

2.9  $2 \times 19 \times 4 \times 125 =$  .....

2.10  $27 \times 36 + 27 \times 64 =$  .....

2.11  $37 \times 45 - 37 \times 44 =$  .....

2.12  $99 \times 99 + 99 =$  .....

2.13  $27 \times 28 + 54 \times 36 =$  .....

2.14  $375 \times 16 - 125 \times 47 =$  .....

### Calculation of Whole Numbers

3. Calculate each of the following. Show all working.

3.1  $2\ 346\ 598 + 579\ 312 + 673\ 429$   
.....  
.....  
.....  
.....

3.2  $47\ 670 - 19\ 492$   
.....  
.....  
.....  
.....

3.3  $2\,706 \times 49$

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

3.4  $9\,999 \div 43$

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

3.5 Calculate the sum of 273 462 and 897 528.

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

3.6 Determine the product of 4 786 and 29.

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

3.7 If  $473 \times 36 = 17\,028$ , then without any further working, write down the answers to each the following.

3.7.1  $17\,028 \div 36 =$  .....

3.7.2  $17\,028 \div 473 =$  .....

3.7.3  $946 \times 18 =$  .....

3.8 If  $47 + 71 = 118$ , then without any further working, write down the answers to:

3.8.1  $118 - 71 =$  .....

3.8.2  $118 - 47 =$  .....

### Exercise 5 - Multiples and Factors

1. List the multiples of 4 from 4 to 36.

.....  
.....

2. List the first 8 multiples of 125.

.....  
.....

3. List the multiples of 7 between 47 and 70.

.....

4. Study the list of numbers below and then list the numbers that are NOT multiples of 8.

{4 ; 8 ; 12 ; 16 ; 24 ; 42 ; 64 ; 88 ; 104}

.....



5. List the factors of:

5.1 32

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

5.2 125

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

6. State whether each of the following is True or False.

6.1 5 is a factor of 10.

6.2 7 is a non-factor of 10.

6.3 6 is a multiple and a factor of 6.

7. Multiple choice question. Ring the letter of the correct answer.

7.1 The factors of 48 are:

A 1 ; 2 ; 3 ; 4 ; 8 ; 12 ; 16 ; 24 ; 48

B 1 ; 2 ; 4 ; 8 ; 12 ; 16 ; 48

C 1 ; 2 ; 3 ; 4 ; 6 ; 8 ; 12 ; 16 ; 24 ; 48

D 2 ; 3 ; 4 ; 6 ; 18 ; 12 ; 16 ; 24 ; 28

### Exercise 6 - Prime Factors

1. List the the first 4 prime numbers.

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

2.1 List the factors of 24.

.....  
.....

2.2 Select the factors of 24 that are prime numbers.

.....

3. Is 3 a prime factor of 871? .....

4. Is 3 a prime factor of 111? .....

5. Show 42 as a product of its prime factors.

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

6. Find the prime factors of : 162 and 275

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

7. List the prime factors of 900.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

### Exercise 7 - Lowest Common Multiple

1. List the first 10 multiples of 6 and 8.

.....

.....

.....

2. Write down the lowest common multiple (LCM) of 6 and 8.

.....

3. List the multiples of 9, 15 and 18 and determine the lowest common multiple (LCM).

.....

.....

.....

.....

.....

.....

.....

### Highest Common Factor

1. List the factors of 24 and 36.

.....

.....

.....

.....

.....

1.1 Now list all the common factors of 24 and 36.

.....

1.2 Write down the highest common factor (HCF) of 24 and 36.

.....

2. Determine the highest common factor (HCF) of 20 and 30.

.....

.....

.....

.....

3. Determine the highest common factor (HCF) of 44 and 66.

.....

.....

.....

.....

## Exercise 8 - Problem Solving

### Ratio

1. What is meant by the term **ratio**?

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

2. Write each of the following ratios in the simplest form.

2.1 R7 : 343c

.....  
.....

2.2 3h : 2h 30 min

.....  
.....

2.3 275cm : 4 m

.....  
.....

3. Divide R84 between Siphon and Henry in the ratio 4 : 3. How much does each person get?

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

4. Share R120 in the ratio 5 : 1 between Tim and Solly. How much does each person get?

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

5. Share R150 among Alice, Bernard and Charles in the ratio 3 : 5 : 2. How much does each person get?

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

### Exercise 9

#### Rate

1. What is meant by the term *rate*?

.....

.....

.....

.....

.....

2. A man travels at 80 km/h.

- 2.1 How far does he travel in:

a) half an hour?

.....

b) in 15 minutes?

.....

c) in 8 hours?

.....

.....

- 2.2 How long does he take to travel 200 km, travelling at the same rate?

.....

.....

.....

.....

.....

3. If 3 books cost R360, how much will 5 such books cost?

.....

.....

.....

.....

.....

.....

.....

.....

4. Which is the better buy?  
150ml paint at R18 or 250 ml paint at R32.  
Show calculations to explain your choice.

.....

.....

.....

.....

**Exercise 10**

1. Match column A with column B

Column A	Column B
1. Discount	A. Money which is paid (usually monthly) to buy goods/services which people cannot afford to pay off at once.
2. Budget	B. When a person pays less than the marked price.
3. Accounts	C. Money borrowed from a lender, which one has to pay back, with interest, over a period of time.
4. Loans/ Interest	D. A plan which shows how one can use an amount of money (income) for a specific period of time or a project.

1. .... 2. ....
3. .... 4. ....

2. Mr Khumalo receives a salary of R25 000 per month. His budget shows that he spends R17 354 of this amount. How much will he have left over?

.....

.....

.....

.....

.....

3. Trevor buys a bicycle for R4 199 and sells it for R5 875. What profit does he make?

.....

.....

.....

.....

.....

4. Peggy buys a cell phone for R1 800 and sells it for R1 250. What is her loss?

.....

.....

.....

.....

.....

5. Tamsyn owes Tuk Stores R2 480,50. She pays off this amount in 5 equal monthly instalments. How much does she pay each month?

.....

.....

.....

.....

.....

6. A CD player is marked at R5 800. A discount of 20% is given for cash. What is the cash price of the CD player?

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

**Exercise 11**

1. Calculate the simple interest if R12 000 is invested for two years at a rate of 10% per annum.

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

2. Calculate the amount Sipho will receive after two years if he invests R8 000 at 8% per annum.

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

3. Mrs Naidoo takes a loan of R4 000 from ABC Bank at 10% interest per annum for two years. She pays in equal monthly instalments. How much does she pay every month?

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

4. Mr Sizwe buys a car for R80 000. He pays a deposit of 10% and the balance in twenty four equal instalments at a simple interest of 8% per annum. Calculate his monthly repayment.

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

**CONSOLIDATION AND EXTENSION**

1. Arrange in descending order.

407 605 ; 470 506 ; 704 605 ; 640 057

.....  
 .....

2. Arrange in ascending order.

2 287 785 ; 2 827 587 ; 2 728 287 ;  
 2 785 287

.....  
 .....

3. Complete the table. (In the next column)

4. Add:

3 407 816 + 278 719 + 14 763

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

	Number	Round off to the nearest 5	Round off to the nearest 10	Round off to the nearest 100	Round off to the nearest 1 000
3.1	45 874				
3.2	296 497				

5. Subtract:

4 000 000 – 1 763 987

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

6. Multiply:

765 × 897

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

7. Divide:  
 $14\ 765 \div 14$

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

8. Write down the first 6 multiples of the numbers below and then circle the L.C.M.

4:

.....

.....

.....

5:

.....

9. Write down all the factors of the numbers below and then circle the H.C.F.

18:

.....

24:

.....

10. Write down all the prime numbers found in the block.

1	5	7	9
11	29	63	
	93		

.....

11. Write down all the prime factors of 60.

.....

.....

.....

.....

.....

.....

12. Solve:  
In a hospital ward, for every one child patient there are four adult patients. How many adult patients are there, if there are 25 children in this ward?

.....

.....

.....

.....

.....

13. Which hospital service is cheaper per day (12 hours)? A rate of R125 per hour or R1 756 per day?

.....

.....

.....

.....

.....