ISEE Middle Level Mathematics Prep 2019

A Comprehensive Review and Ultimate Guide to the ISEE Middle Level Math Test

2 Full-Length ISEE Middle Level Math Practice Exams

2,500 + Math problems with answers

A comprehensive review of everything on ISEE Middle Level Math

Reza Nazari & Ava Ross

www.EffortlessMath.com

… So Much More Online!

- ✓ FREE Math lessons
- ✓ More Math learning books!
- ✓ Mathematics Worksheets
- ✓ Online Math Tutors

Need a PDF version of this book?

Please visit www.EffortlessMath.com

ISEE Middle Level Mathematics Prep 2019

A Comprehensive Review and Ultimate Guide to the ISEE Middle Level Math Test

By

Reza Nazari

& Ava Ross

Copyright © 2018

Reza Nazari & Ava Ross

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning, or otherwise, except as permitted under Section 107 or 108 of the 1976 United States Copyright Ac, without permission of the author.

All inquiries should be addressed to:

info@effortlessMath.com

www.EffortlessMath.com

ISBN-13: 978-1-970036-05-3

ISBN-10: 1-970036-05-2

Published by: Effortless Math Education

www.EffortlessMath.com

Description

ISEE Middle Level Mathematics Prep 2019 provides students with the confidence and math skills they need to succeed on the ISEE Middle Level Math, building a solid foundation of basic Math topics with abundant exercises for each topic. It is designed to address the needs of ISEE Middle Level test takers who must have a working knowledge of basic Math.

This comprehensive book with over 2,500 sample questions and 2 complete ISEE Middle Level tests is all you need to fully prepare for the ISEE Middle Level Math. It will help you learn everything you need to ace the math section of the ISEE Middle Level.

Effortless Math unique study program provides you with an in-depth focus on the math portion of the exam, helping you master the math skills that students find the most troublesome.
This book contains most common sample questions that are most likely to appear in the mathematics section of the ISEE Middle Level.

Inside the pages of this comprehensive ISEE Middle Level Math book, students can learn basic math operations in a structured manner with a complete study program to help them understand essential math skills. It also has many exciting features, including:

- Dynamic design and easy-to-follow activities
- A fun, interactive and concrete learning process
- Targeted, skill-building practices
- Fun exercises that build confidence
- Math topics are grouped by category, so you can focus on the topics you struggle on
- All solutions for the exercises are included, so you will always find the answers
- 2 Complete ISEE Middle Level Math Practice Tests that reflect the format and question types on ISEE Middle Level

ISEE Middle Level Mathematics 2019 is an incredibly useful tool for those who want to review all topics being covered on the ISEE Middle Level test. It efficiently and effectively reinforces learning outcomes through engaging questions and repeated practice, helping you to quickly master basic Math skills.

About the Author

Reza Nazari is the author of more than 100 Math learning books including:
– Math and Critical Thinking Challenges: For the Middle and High School Student
– GED Math in 30 Days
– ASVAB Math Workbook 2018 - 2019
– Effortless Math Education Workbooks
– and many more Mathematics books …

Reza is also an experienced Math instructor and a test–prep expert who has been tutoring students since 2008. Reza is the founder of Effortless Math Education, a tutoring company that has helped many students raise their standardized test scores—and attend the colleges of their dreams. Reza provides an individualized custom learning plan and the personalized attention that makes a difference in how students view math.

You can contact Reza via email at:
reza@EffortlessMath.com

Find Reza's professional profile at:
goo.gl/zoC9rJ

Contents

Chapter 1: Arithmetic 9
Simplifying Fractions 10
Adding and Subtracting Fractions 11
Multiplying and Dividing Fractions 12
Adding Mixed Numbers 13
Subtract Mixed Numbers 14
Multiplying Mixed Numbers 15
Dividing Mixed Numbers 16
Comparing Decimals 17
Rounding Decimals 18
Adding and Subtracting Decimals 19
Multiplying and Dividing Decimals 20
Converting Between Fractions, Decimals and Mixed Numbers 21
Factoring Numbers 22
Greatest Common Factor 23
Least Common Multiple 24
Divisibility Rules 25
Test Preparation 26
Answers of Worksheets – Chapter 1 29
Chapter 2: Integers and Absolute Value 36
Adding and Subtracting Integers 37
Multiplying and Dividing Integers 38
Ordering Integers and Numbers 39
Arrange, Order, and Comparing Integers 40
Order of Operations 41
Mixed Integer Computations 42
Absolute Value 43
Integers and Absolute Value 44
Classifying Real Numbers Venn Diagram 45
Test Preparation 46

Answers of Worksheets – Chapter 2 47
Chapter 3: Percent 51
Percentage Calculations 52
Converting Between Percent, Fractions, and Decimals 53
Percent Problems 54
Find What Percentage a Number Is of Another 55
Find a Percentage of a Given Number 56
Percent of Increase and Decrease 57
Test Preparation 58
Answers of Worksheets – Chapter 3 62
Chapter 4: Algebraic Expressions 67
Expressions and Variables 68
Simplifying Variable Expressions 69
Translate Phrases into an Algebraic Statement 70
The Distributive Property 71
Evaluating One Variable 72
Evaluating Two Variables 73
Combining like Terms 74
Test Preparation 75
Answers of Worksheets – Chapter 4 76
Chapter 5: Equations 79
One–Step Equations 80
One–Step Equation Word Problems 81
Two–Step Equations 82
Two–Step Equation Word Problems 83
Multi–Step Equations 84
Test Preparation 85
Answers of Worksheets – Chapter 5 89
Chapter 6: Proportions and Ratios 93
Writing Ratios 94
Proportional Ratios 95
Simplifying Ratios 96

Create a Proportion 97
Similar Figures 98
Similar Figure Word Problems 99
Ratio and Rates Word Problems 100
Test Preparation 101
Answers of Worksheets – Chapter 6 103
Chapter 7: Inequalities 107
Graphing Single–Variable Inequalities 108
One–Step Inequalities 109
Two–Step Inequalities 110
Multi–Step Inequalities 111
Test Preparation 112
Answers of Worksheets – Chapter 7 114
Chapter 8: Exponents and Radicals 117
Multiplication Property of Exponents 118
Division Property of Exponents 119
Powers of Products and Quotients 120
Zero and Negative Exponents 121
Negative Exponents and Negative Bases 122
Writing Scientific Notation 123
Square Roots 124
Test Preparation 125
Answers of Worksheets – Chapter 8 127
Chapter 9: Measurements 131
Inches and Centimeters 132
Metric Units 133
Distance Measurement 134
Weight Measurement 135
Test Preparation 136
Answers of Worksheets – Chapter 9 137
Chapter 10: Plane Figures 139
The Pythagorean Theorem 140

Area of Triangles 141
Perimeter of Polygons 142
Area and Circumference of Circles 143
Area of Squares, Rectangles, and Parallelograms 144
Area of Trapezoids 145
Test Preparation 146
Answers of Worksheets – Chapter 10 149
Chapter 11: Solid Figures 152
Volume of Cubes 153
Volume of Rectangle Prisms 154
Surface Area of Cubes 155
Surface Area of a Rectangle Prism 156
Volume of a Cylinder 157
Surface Area of a Cylinder 158
Test Preparation 159
Answers of Worksheets – Chapter 11 161
Chapter 12: Statistics 163
Mean, Median, Mode, and Range of the Given Data 164
The Pie Graph or Circle Graph 165
Probability of Simple Events 166
Test Preparation 167
Answers of Worksheets – Chapter 12 171
ISEE Middle Level Practice Tests 175
ISEE Middle Level Practice Tests Answers and Explanations 249

Chapter 1: Arithmetic

Topics that you'll learn in this chapter:

- ✓ Simplifying Fractions
- ✓ Adding and Subtracting Fractions
- ✓ Multiplying and Dividing Fractions
- ✓ Adding Mixed Numbers
- ✓ Subtract Mixed Numbers
- ✓ Multiplying Mixed Numbers
- ✓ Dividing Mixed Numbers
- ✓ Comparing Decimals
- ✓ Rounding Decimals
- ✓ Adding and Subtracting Decimals
- ✓ Multiplying and Dividing Decimals
- ✓ Converting Between Fractions, Decimals and Mixed Numbers
- ✓ Factoring Numbers
- ✓ Greatest Common Factor
- ✓ Least Common Multiple
- ✓ Divisibility Rules

Simplifying Fractions

Helpful Hints

– Evenly divide both the top and bottom of the fraction by 2, 3, 5, 7, ... etc.
– Continue until you can't go any further.

Example:

$\frac{4}{12} = \frac{2}{6} = \frac{1}{3}$

Simplify the fractions.

1) $\frac{22}{36}$

2) $\frac{8}{10}$

3) $\frac{12}{18}$

4) $\frac{6}{8}$

5) $\frac{13}{39}$

6) $\frac{5}{20}$

7) $\frac{16}{36}$

8) $\frac{18}{36}$

9) $\frac{20}{50}$

10) $\frac{6}{54}$

11) $\frac{45}{81}$

12) $\frac{21}{28}$

13) $\frac{35}{56}$

14) $\frac{52}{64}$

15) $\frac{13}{65}$

16) $\frac{44}{77}$

17) $\frac{21}{42}$

18) $\frac{15}{36}$

19) $\frac{9}{24}$

20) $\frac{20}{80}$

21) $\frac{25}{45}$

Adding and Subtracting Fractions

Helpful Hints

– For "like" fractions (fractions with the same denominator), add or subtract the numerators and write the answer over the common denominator.
– Find equivalent fractions with the same denominator before you can add or subtract fractions with different denominators.
– Adding and Subtracting with the same denominator:

$$\frac{a}{b}+\frac{c}{b}=\frac{a+c}{b}$$
$$\frac{a}{b}-\frac{c}{b}=\frac{a-c}{b}$$

– Adding and Subtracting fractions with different denominators:

$$\frac{a}{b}+\frac{c}{d}=\frac{ad+cb}{bd}$$
$$\frac{a}{b}-\frac{c}{d}=\frac{ad-cb}{bd}$$

Add fractions.

1) $\frac{2}{3}+\frac{1}{2}$
2) $\frac{3}{5}+\frac{1}{3}$
3) $\frac{5}{6}+\frac{1}{2}$
4) $\frac{7}{4}+\frac{5}{9}$
5) $\frac{2}{5}+\frac{1}{5}$
6) $\frac{3}{7}+\frac{1}{2}$
7) $\frac{3}{4}+\frac{2}{5}$
8) $\frac{2}{3}+\frac{1}{5}$
9) $\frac{16}{25}+\frac{3}{5}$

Subtract fractions.

10) $\frac{4}{5}-\frac{2}{5}$
11) $\frac{3}{5}-\frac{2}{7}$
12) $\frac{1}{2}-\frac{1}{3}$
13) $\frac{8}{9}-\frac{3}{5}$
14) $\frac{3}{7}-\frac{3}{14}$
15) $\frac{4}{15}-\frac{1}{10}$
16) $\frac{3}{4}-\frac{13}{18}$
17) $\frac{5}{8}-\frac{2}{5}$
18) $\frac{1}{2}-\frac{1}{9}$

Multiplying and Dividing Fractions

Helpful Hints

– **Multiplying fractions:** multiply the top numbers and multiply the bottom numbers.

– **Dividing fractions:** Keep, Change, Flip

Keep first fraction, change division sign to multiplication, and flip the numerator and denominator of the second fraction. Then, solve!

Example:

$$\frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times \mathrm{d}}$$

$$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c} = \frac{ad}{bc}$$

Multiplying fractions. Then simplify.

1) $\frac{1}{5} \times \frac{2}{3}$

2) $\frac{3}{4} \times \frac{2}{3}$

3) $\frac{2}{5} \times \frac{3}{7}$

4) $\frac{3}{8} \times \frac{1}{3}$

5) $\frac{3}{5} \times \frac{2}{5}$

6) $\frac{7}{9} \times \frac{1}{3}$

7) $\frac{2}{3} \times \frac{3}{8}$

8) $\frac{1}{4} \times \frac{1}{3}$

9) $\frac{5}{7} \times \frac{7}{12}$

Dividing fractions.

10) $\frac{2}{9} \div \frac{1}{4}$

11) $\frac{1}{2} \div \frac{1}{3}$

12) $\frac{6}{11} \div \frac{3}{4}$

13) $\frac{11}{14} \div \frac{1}{10}$

14) $\frac{3}{5} \div \frac{5}{9}$

15) $\frac{1}{2} \div \frac{1}{2}$

16) $\frac{3}{5} \div \frac{1}{5}$

17) $\frac{12}{21} \div \frac{3}{7}$

18) $\frac{5}{14} \div \frac{9}{10}$

Adding Mixed Numbers

Helpful Hints

Use the following steps for both adding and subtracting mixed numbers.

– Find the Least Common Denominator (LCD)
– Find the equivalent fractions for each mixed number.
– Add fractions after finding common denominator.
– Write your answer in lowest terms.

Example:

$1\frac{3}{4} + 2\frac{3}{8} = 4\frac{1}{8}$

Add.

1) $4\frac{1}{2} + 5\frac{1}{2}$

2) $2\frac{3}{8} + 3\frac{1}{8}$

3) $6\frac{1}{5} + 3\frac{2}{5}$

4) $1\frac{1}{3} + 2\frac{2}{3}$

5) $5\frac{1}{6} + 5\frac{1}{2}$

6) $3\frac{1}{3} + 1\frac{1}{3}$

7) $1\frac{10}{11} + 1\frac{1}{3}$

8) $2\frac{3}{6} + 1\frac{1}{2}$

9) $5\frac{3}{5} + 5\frac{1}{5}$

10) $7 + \frac{1}{5}$

11) $1\frac{5}{7} + \frac{1}{3}$

12) $2\ \frac{1}{4} + 1\frac{1}{2}$

Subtract Mixed Numbers

Helpful Hints

Use the following steps for both adding and subtracting mixed numbers.

Find the Least Common Denominator (LCD)
– Find the equivalent fractions for each mixed number.
– Add or subtract fractions after finding common denominator.
– Write your answer in lowest terms.

Example:

$5\frac{2}{3} - 3\frac{2}{7} = 2\frac{8}{21}$

Subtract.

1) $4\frac{1}{2} - 3\frac{1}{2}$

2) $3\frac{3}{8} - 3\frac{1}{8}$

3) $6\frac{3}{5} - 5\frac{1}{5}$

4) $2\frac{1}{3} - 1\frac{2}{3}$

5) $6\frac{1}{6} - 5\frac{1}{2}$

6) $3\frac{1}{3} - 1\frac{1}{3}$

7) $2\frac{10}{11} - 1\frac{1}{3}$

8) $2\frac{1}{2} - 1\frac{1}{2}$

9) $6\frac{3}{5} - 2\frac{1}{5}$

10) $7\frac{2}{5} - 1\frac{1}{5}$

11) $2\frac{5}{7} - 1\frac{1}{3}$

12) $2\frac{1}{4} - 1\frac{1}{2}$

Multiplying Mixed Numbers

Helpful Hints

1- Convert the mixed numbers to improper fractions.
2- Multiply fractions and simplify if necessary.

$$a\frac{c}{b} = a + \frac{c}{b} = \frac{ab+c}{b}$$

Example:

$$2\frac{1}{3} \times 5\frac{3}{7} =$$

$$\frac{7}{3} \times \frac{38}{7} = \frac{38}{3} = 12\frac{2}{3}$$

Find each product.

1) $1\frac{2}{3} \times 1\frac{1}{4}$

2) $1\frac{3}{5} \times 1\frac{2}{3}$

3) $1\frac{2}{3} \times 3\frac{2}{7}$

4) $4\frac{1}{8} \times 1\frac{2}{5}$

5) $2\frac{2}{5} \times 3\frac{1}{5}$

6) $1\frac{1}{3} \times 1\frac{2}{3}$

7) $1\frac{5}{8} \times 2\frac{1}{2}$

8) $3\frac{2}{5} \times 2\frac{1}{5}$

9) $2\frac{2}{3} \times 4\frac{1}{4}$

10) $2\frac{3}{5} \times 1\frac{2}{4}$

11) $1\frac{1}{3} \times 1\frac{1}{4}$

12) $3\frac{2}{5} \times 1\frac{1}{5}$

Dividing Mixed Numbers

Helpful Hints

1- Convert the mixed numbers to improper fractions.
2- Divide fractions and simplify if necessary.

$$a\frac{c}{b} = a + \frac{c}{b} = \frac{ab+c}{b}$$

Example:

$$2\frac{1}{3} \div 5\frac{3}{7} =$$

$$\frac{7}{3} \div \frac{38}{7} = \frac{7}{3} \times \frac{7}{38} = \frac{49}{108}$$

Find each quotient.

1) $2\frac{1}{5} \div 2\frac{1}{2}$

2) $2\frac{3}{5} \div 1\frac{1}{3}$

3) $3\frac{1}{6} \div 4\frac{2}{3}$

4) $1\frac{2}{3} \div 3\frac{1}{3}$

5) $4\frac{1}{8} \div 2\frac{2}{4}$

6) $3\frac{1}{2} \div 2\frac{3}{5}$

7) $3\frac{5}{9} \div 1\frac{2}{5}$

8) $2\frac{2}{7} \div 1\frac{1}{2}$

9) $3\frac{1}{5} \div 1\frac{1}{2}$

10) $4\frac{3}{5} \div 2\frac{1}{3}$

11) $6\frac{1}{6} \div 1\frac{2}{3}$

12) $2\frac{2}{3} \div 1\frac{1}{3}$

Comparing Decimals

Helpful Hints

- **Decimals:** is a fraction written in a special form. For example, instead of writing $\frac{1}{2}$ you can write 0.5.
- **For comparing:**
  Equal to =
  Less than <
  Greater than >
  Greater than or equal ≥
  Less than or equal ≤

Example:

2.67 > 0.267

Write the correct comparison symbol (>, < or =).

1) 1.25 2.3
2) 0.5 0.23
3) 3.2 3.2
4) 4.58 45.8
5) 2.75 0.275
6) 5.2 5
7) 3.1 0.31
8) 6.33 0.733
9) 8 0.8
10) 4.56 0.456
11) 1.12 1.14
12) 2.77 2.78
13) 6.08 6.11
14) 1.11 0.211
15) 2.6 2.55
16) 1.24 1.25
17) 5.52 0.552
18) 0.33 0.033
19) 14.4 14.4
20) 0.05 0.50
21) 0.59 0.7
22) 0.5 0.05
23) 0.90 0.9
24) 0.27 0.4