Contents

Preface xiii
Acknowledgments xix
About the Author xxi

INTRODUCTION 1

PART I: GETTING READY 17

CHAPTER 1: SETTING THE STAGE FOR THE VIRTUAL MATH CLASSROOM 19

Instructional Delivery 20
Equitable Learning Online 21
Hardware and Gadgets 21
Internet Speed 22
Things Within a Student's Control 24
Things Outside a Student's Control 25
Closing the Gap on Materials and Resources 27
Technology Tools 27
Learning Management Systems 27
Third-Party Websites and Tools 27
Interactive Slides 28
Videoconferencing Tools 28

Copyright Corwin 2021

Technology Implementation 28
Reflect and Reimagine 34

CHAPTER 2: SETTING NORMS FOR THE VIRTUAL MATH CLASSROOM 35

Safety 37
Be a Cyber Hero When Someone Needs Help 37
Only Use Approved Websites 38
Do Not Drive During Instruction 39
Kindness and Community 39
Patience and Encouragement 39
Remember That Missteaks Happen—Use Ctrl-Z 40
Update Your Profile Picture 41
Student Agency 41
Student Agency Through Discussion 42
Student Agency Through Choice 43
Student Agency Through Small Groups 43
Student Agency Requires Time and Planning 44
Focus and Productivity 44
Turn Off Streaming Devices 45
Remember, We Are Recording 45
Reduce or Eliminate Background Noise 46
Mute Your Mic in Large Groups 46
Lesson Workflow 46
Use a Virtual Parking Lot 46
Be Prepared for Class 47
Raise Your Hand to Speak 47
Share New Ideas Using the Mic 48
Prepare for Late Student Arrival 48
Small-Group Instruction and Breakout Sessions 48
Leave Your Mic Active 50
Talk Before Typing 51
Decide on Roles and Responsibilities 51
Announce When AFK (Away From Keyboard) 52
Materials and Manipulative Management 52
Make a Copy Before Modifying 52
Allow for Flexible Collaboration 53
Keep Materials Off the Slide 53
Reflect and Reimagine 54

CHAPTER 3: INCORPORATING MANIPULATIVES IN THE VIRTUAL MATH CLASSROOM 57

Planning for Virtual Manipulatives 58
Finding Virtual Manipulatives 58
Selecting Virtual Manipulatives 58

Copyright Corwin 2021

Evaluating for Instructional Purpose 59
User-Friendliness and Accessibility 59
Application to Mathematical Goals and Student Learning 60
Integrating Physical and Virtual Tools 60
Using Physical Manipulatives and Drawings 62
Using Virtual Tools 63
Allowing for Representations 65
Balancing Manipulative Use 67
Reflect and Reimagine 67

CHAPTER 4: SELECTING ACTIVITIES FOR THE VIRTUAL MATH CLASSROOM 69

Student-Led Math Show-and-Tell 71
Number Routines 74
Math Congress 78
Rich Tasks 81
Small-Group Guided Instruction 85
Games 87
Reflect and Reimagine 90

PART II: FACILITATING INSTRUCTION 91

CHAPTER 5: STRATEGIES TO BUILD STRONG MATH COMMUNITIES 93

Using Your Morning Meeting 95
Using Icebreakers and Attendance Routines 98
Learning to Love the Microphone 101
Using Breakout Rooms 103
Well-Being Check-in 104
Reflect and Reimagine 107

CHAPTER 6: STRATEGIES TO PROMOTE STUDENT THINKING 109

Making Student Thinking Visible 109
Visual Polling 112
Class Notebook 114
Whole-Class Exit Tickets 115
Respond and Code 117
Multiple-Choice Corners 119
Defend Your Choice 120
Tweet Board 122
Tweet Board Sort 124
Dump and Develop 125

Copyright Corwin 2021

Mine, Yours, Ours 127
Blank Slides 129
Reflect and Reimagine 131

CHAPTER 7: STRATEGIES TO FACILITATE COMMON ROUTINES ONLINE 133

Choral Counting 135
Same But Different 138
Estimation 140
Which One Doesn't Belong? 143
Slow Reveal Graphs 146
Reflect and Reimagine 150

CHAPTER 8: FACILITATING MATHEMATICAL DISCOURSE ONLINE THROUGH RICH TASKS 151

Select the Objective and Identify the Task 152
Anticipate Student Strategies and Technology Use 155
Launch the Task 158
Allow for Work Time 160
Monitor Group Time 161
Select and Sequence Student Work and Design Discussion Questions 171
Using Many Representations 172
Creating a Connections Map 172
Connect Student Work to the Math Goal 173
Dynamic Math Talk 174
Summarize the Task 179
Reflect and Reimagine 180

CHAPTER 9: LEARNING STATIONS 181

Preparing for Breakout Groups 181
Start Slow and Add on Responsibility 182
Group Slides 182
Naming Conventions 183
Title Screens 183
Implementing Learning Stations 184
Begin With Whole-Class Number Routines 185
Types of Learning Stations 185
End With Whole-Class Check for Understanding 190
Learning Stations in Action 191
Reflect and Reimagine 202

Copyright Corwin 2021

PART III: CONSOLIDATING AND ASSESSING LEARNING 203

CHAPTER 10: ASSESSMENT 205

Formative Assessment 205
Summative Assessment 215
Reflect and Reimagine 217

CHAPTER 11: STRATEGIES FOR EFFECTIVE HOMEWORK 219

Multimedia Homework 220
3-Act Video 222
Esti-Mysteries 224
Flipped Classroom 226
Data as a Driver 229
One Problem Before Many 231
Homework as a Checkpoint 233
Reflect and Reimagine 235

GO AND MAKE A DIFFERENCE 237

Start Slow 237
Use Technology to Keep the Lesson Student Centered 239
Keep the Slides Empty 240
Make Once, Use Seven Times 240
Keep Pedagogy at the Forefront 241
Reflect and Reimagine 242

References **243**

Index **247**

Visit www.theresawills.com for more resources.

Copyright Corwin 2021