CURRICULUM SERIES

Mathematics

Student Course / Volume 2

WORKBOOK / WRITE, PRACTICE, EXPLAIN

Scripture-centered learning with academically sound instruction, clear student work, and independent practice. An original supplementary course, not a certified full-year standards program.

LEARNING LEVELS Foundations (5-7) | Builders (9-10) | Advancing (around 12)

How to use: read each lesson in order. Copy answers into a notebook or use the writing lines provided. Parent guides should be kept separate from students.

Mathematics Course Volume 2: Lessons 11-20

DOWNLOAD OR COPY: Download Mathematics Lessons 11-20: Student PDF. The complete selectable, copyable text remains below on this page. Open the PDF to save or print it. Keep parent answers separate from student work.

New teaching units continuing Mathematics Lessons 1-10. Every lesson offers a worked explanation, a skill question and three distinct student work levels. Parents should check prerequisites and choose tasks by demonstrated readiness, not age alone. Work in a notebook or print the page. These are original practice assignments, not ACAP items.

Daily practice: revisit five prerequisite facts, work a modeled example, solve your three assigned questions without looking at the key, explain one answer, and record any errors to reteach. Continue grade-level math instruction beyond this volume.

Lesson 11: Place-value operations and estimates

Direct instruction and worked example: Estimate 398+205 by rounding to 400+200=600; the exact answer is 603. An estimate checks whether an exact calculation is reasonable.

Copy and complete your level’s three exercises:

" Foundations: Write the number of tens and ones in 26, 41 and 58. Add 8+7, 13+5 and subtract 18-9 using counters or a number line. Circle the closer estimate for 19+20: 20 or 40.

" Builders: Estimate then compute 487+396 and 805-478. Find 27x14 and explain by splitting 14 into 10+4. A family buys supplies costing $38.75 and $24.60. What is the total?

" Advancing: Estimate then compute 4,086x23. Evaluate 12.45+8.678-3.09. Explain an efficient error check for 2,184/12 and calculate the quotient.

Explain how you know your solution is reasonable. Check units, place value and steps. A parent should record independence and specific misconceptions.

Lesson 12: Multiplication patterns and factors

Direct instruction and worked example: The distributive property explains 16x7=(10x7)+(6x7)=112. Factors of 12 include 1,2,3,4,6,12.

Copy and complete your level’s three exercises:

" Foundations: Draw four groups of three and write 4x3. Skip count 2,4,6,8,__ ,__ and 5,10,15,__ ,__. Share 15 counters into five equal groups.

" Builders: List factors of 24 and the first five multiples of 6. Calculate 36x12 using two partial products. Explain whether 51 is prime or composite.

" Advancing: Find GCF of 36 and 60 and LCM of 8 and 12. Factor 84 into prime factors. Simplify 3(4x-5)+2(x+7).

Explain how you know your solution is reasonable. Check units, place value and steps. A parent should record independence and specific misconceptions.

Lesson 13: Equal groups and unit rates

Direct instruction and worked example: A unit rate compares a quantity to one unit. If 4 notebooks cost $12, one costs $3. Keep both the number and unit.

Copy and complete your level’s three exercises:

" Foundations: Three bags each contain two blocks. How many blocks? Six crackers shared among two learners: how many each? Compare a group of 4 and a group of 7.

" Builders: Six pens cost $9. Find price per pen. A cyclist rides 42 miles in 3 hours. What is the average unit rate? Solve 7/9 = x/45.

" Advancing: Compare 120 miles in 2.5 hours with 180 miles in 4 hours. Solve 5/8 = (x+1)/40. Explain why dividing by zero is undefined.

Explain how you know your solution is reasonable. Check units, place value and steps. A parent should record independence and specific misconceptions.

Lesson 14: Fraction operations in practical contexts

Direct instruction and worked example: To add unlike fractions, use equivalent fractions: 1/2+1/4=2/4+1/4=3/4. A fraction’s denominator cannot be zero.

Copy and complete your level’s three exercises:

" Foundations: Shade one half and one fourth on separate squares. Show 2/4 with four counters and identify one half. If two of six pieces are colored, write the fraction.

" Builders: Calculate 2/3+1/6 and 5/8-1/4. Find 3/5 of 40 and 7/10 of 90. Compare 5/6 and 7/9 by showing a method.

" Advancing: Calculate 3/4x8/9 and 5/6/2/3. Solve x+7/12=5/4. A recipe needs 3/4 cup per batch. How much for 2.5 batches?

Explain how you know your solution is reasonable. Check units, place value and steps. A parent should record independence and specific misconceptions.

Lesson 15: Coordinate planes and relationships

Direct instruction and worked example: An ordered pair (x,y) gives horizontal then vertical position. A point at (3,2) moves 3 right and 2 up from the origin.

Copy and complete your level's three exercises:

" Foundations: Draw a simple grid of 4 rows and 4 columns. Describe an object as above, below, left or right of another. Continue a pattern of square, circle, square, circle.

" Builders: Plot (1,2),(3,4),(5,6) on a coordinate plane in the first quadrant. What is the horizontal distance from (2,1) to (7,1)? Make a table for y=2x+1 when x=0,1,2,3.

" Advancing: Find slope between (1,3) and (5,11). Evaluate y=-2x+5 for x=-1,0,3. Identify y-intercept of y=3x-7 and interpret it.

Explain how you know your solution is reasonable. Check units, place value and steps. A parent should record independence and specific misconceptions.

Lesson 16: Geometry, measurement and scaling

Direct instruction and worked example: A rectangular prism has volume lengthxwidthxheight. A box 2x3x4 cm has volume 24 cm3. Areas and volumes use different dimensions.

Copy and complete your level’s three exercises:

" Foundations: Identify a cube, sphere and cylinder from household objects. Compare two rectangles as taller, wider or equal. Measure 10 cm with a ruler, with assistance.

" Builders: Find area and perimeter of a 12 cm by 7 cm rectangle. Convert 2.5 meters to centimeters. Find area of a triangle with base 12 cm and height 5 cm.

" Advancing: Find volume of prism 4x6x9 cm. Find circumference of circle radius 5 cm using pi-3.14. A scale drawing 1 cm represents 4 m; how far is 7.5 cm?

Explain how you know your solution is reasonable. Check units, place value and steps. A parent should record independence and specific misconceptions.

Lesson 17: Statistics and evidence

Direct instruction and worked example: For data 2,4,4,10, mean=5, median=4, mode=4, range=8. Data summaries must be interpreted with context.

Copy and complete your level’s three exercises:

" Foundations: Make a tally of 3 red, 2 yellow and 4 blue objects. Which group has the most? Which the fewest? Show data with one drawn mark per object.

" Builders: Find mean, median, mode and range of 3,5,5,7,10. Explain why a chart axis should be labeled. A survey includes only five friends. Why might it not represent a town?

" Advancing: Find mean and median of 1,2,2,3,12 and discuss an outlier. What is the probability of an odd number on a fair six-sided die? Explain what a correlation cannot establish about cause.

Explain how you know your solution is reasonable. Check units, place value and steps. A parent should record independence and specific misconceptions.

Lesson 18: Expressions and linear equations

Direct instruction and worked example: Both sides of an equation must stay equal. Solve 4x-3=17 by adding 3 to obtain 4x=20, then divide by 4: x=5. Check 4(5)-3=17.

Copy and complete your level’s three exercises:

" Foundations: Use blocks: 2+?=6. Find the missing number. Solve ?-3=4 with counters. Draw a balance with three blocks on each side.

" Builders: Solve x+27=64 and 6x=54. Evaluate 3a+5 for a=4. Explain the meaning of the equal sign in 7+3=5+5.

" Advancing: Solve 5(x-2)=3x+8. Solve (2x+1)/3=5. Simplify 2(3x-4)-3(x+6).

Explain how you know your solution is reasonable. Check units, place value and steps. A parent should record independence and specific misconceptions.

Lesson 19: Percent, probability and financial decisions

Direct instruction and worked example: A 20% discount on $50 is $10; sale price is $40. Percent change compares the difference with the ORIGINAL amount.

Copy and complete your level’s three exercises:

" Foundations: Count ten pennies with adult supervision; how many cents? Two five-cent coins have what total value? Sort needs and wants using fictional examples.

" Builders: Find 15% of 80 and sale price of $80 after that discount. A jar contains 3 blue and 2 red counters. Probability of blue? Explain why borrowing $20 is not the same as receiving $20 as a gift.

" Advancing: Find price including 8% sales tax on $45. A quantity rises from 60 to 75. Find percent increase. A fair coin is flipped twice. List possible ordered results and probability of two heads.

Explain how you know your solution is reasonable. Check units, place value and steps. A parent should record independence and specific misconceptions.

Lesson 20: Cumulative independent transfer assessment

Direct instruction and worked example: An assessment should use new questions. Show your method and correct errors after the parent reviews your work.

Copy and complete your level's three exercises:

" Foundations: Find 9+8, 15-7, 4x2 and 12/3 using drawings. Name a rectangle and circle, then compare 17 and 19. Show one half with equal-sized pieces.

" Builders: Solve 245+389, 84/7, 3/4+1/8, 25% of 64. Area of a 9x6 rectangle; solve 5x=35. Explain one answer using a model and one using arithmetic.

" Advancing: Solve 3(x+4)=2x+19. Calculate 5/6-3/8, 18% of 250, slope between (2,5) and (6,13). Find mean and median of 2,4,6,8,20, and explain the effect of the outlier.

Explain how you know your solution is reasonable. Check units, place value and steps. A parent should record independence and specific misconceptions.

End-of-Volume Review

Lesson 20 is a fresh assessment. Do it before viewing the separate parent guide. Review any missed prerequisites, then use new practice problems to check retained understanding. Continue with the complete grade-appropriate core. Return to Academy.