NWEA MAP Math Common Core Sample Items
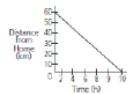
NWEA has mathematics assessments for two grade bands, 2 – 5 and 6+. The assessment for 2 – 5 is comprised of four goal areas: Operations and Algebraic Thinking, Number and Operations, Measurement and Data, and Geometry. The assessment for 6+ is also comprised of four goal areas: Operations and Algebraic Thinking, The Real and Complex Number Systems, Geometry, and Statistics and Probability. Operations and Algebraic Thinking is a goal area that spans both grade band assessments and can be used to illustrate a typical RIT progression.

The RIT progression in the following chart for Operations and Algebraic Thinking illustrates that as the RIT bands increase, so do expectations for content knowledge. In addition, the chart also illustrates an increasing emphasis on application of content in items.

Goal: Operations and Algebraic Thinking

below 161	161-170	171-180	181-190	191-200
$6 + 2 = \square$ A. 4 ✓B. 8 C. 9 D. 26 E. 62	$\square + 7 = 13$ $\square = ?$ ✓A. 6 B. 9 C. 10 D. 11 E. 18	There are 12 donuts in a box. 7 children each eat 1 donut. They want to know how many donuts are left. Which number sentence answers the question? ✓A. $12 - 7 = \square$ D. $12 - 1 = \square$ B. $7 - \square = 12$ E. $1 + \square = 12$ C. $12 + 7 = \square$	Two children will share the dolls equally. How many dolls will each get? A. 1 ✓C. 4 B. 2 D. 8	Jill sold bags of raisins. The first day she sold 6 bags and the second day she sold 12. On the third day she sold 18. If Jill continues to sell bags following the same pattern, how many bags will she sell on the sixth day? A. 54 D. 30 B. 48 E. 24 ✓C. 36
CCSS: 1.OA.8	1.OA.8	2.OA.1	3.OA.3	4.OA.5

211-220	221-230	231-240	241-250	above 250
If $6n = 102$, n equals A. 12 ✓B. 17 C. 108 D. 196 E. 612	Evaluate gh - b if $g = 4,\ h = 9,\ b = 12$ A. 48 B. 37 C. 25 ✓D. 24 E. 1	The graph shows the flight home of a homing pigeon over a distance of 60 km. What is the pigeon's average speed for the trip? A. 600 km/h B. 60 km/h C. 10 km/h ✓D. 6 km/h	Ken works as a salesperson in a local electronics store. He earns $200 each week plus 6% commission on his total sales. Which equation correctly represents Ken's weekly earnings? Let s = Ken's total sales. A. E = 0.06s($200) B. E = 6s + $200 ✓C. E = 0.06s + $200 D. E = 6s($200)	A fish tank is slowly losing water. The table shows the number of gallons left in the tank after each day. **Day** / **Number of Gallons** 0 / 50 1 / 47 2 / 44 3 / 41 4 / 38 Which statement about the data in the table is true? ✓A. The data shows a linear relationship because the rate of change is constant. B. The data shows a linear relationship because the rate of change is decreasing. C. The data shows a nonlinear relationship because the rate of change is constant. D. The data shows a nonlinear relationship because the rate of change is decreasing.
CCSS: 6.EE.7	6.EE.2c	8.F.4	8.F.4	8.F.4

A better understanding of the RIT progression is achieved by studying the Operations and Algebraic Thinking goal area.

The lower RIT bands, below 161 and 161 – 170, contain items that assess student understanding of performing operations with whole numbers and algebraic reasoning with operations. In this example, a student progresses from computation with the whole unknown to computation with the part unknown.

below 161

$6 + 2 = \square$

A. 4
✓B. 8
C. 9
D. 26
E. 62

161-170

$\square + 7 = 13$

$\square = ?$

✓A. 6
B. 9
C. 10
D. 11
E. 18

With this expectation of content knowledge in place for the student, the next bands, 171 – 200, require the student to create a numerical equation to represent a real-life problem, solve a real-life problem, and use algebraic thinking to extend a pattern. All of these items build on the assumption that the student has mastered the four operations using whole numbers and is developing an understanding of relationship between quantities.

171-180

There are 12 donuts in a box. 7 children each eat 1 donut. They want to know how many donuts are left.

Which number sentence answers the question?

✓A. $12 - 7 = \square$ D. $12 - 1 = \square$
B. $7 - \square = 12$ E. $1 + \square = 12$
C. $12 + 7 = \square$

181-190

TOYS

Two children will share the dolls equally. How many dolls will each get?

A. 1   ✓C. 4
B. 2   D. 8

191-200

Jill sold bags of raisins. The first day she sold 6 bags and the second day she sold 12. On the third day she sold 18.

If Jill continues to sell bags following the same pattern, how many bags will she sell on the sixth day?

A. 54   D. 30
B. 48   E. 24
✓C. 36

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The next logical step in the progression is the addition of variables in formal algebraic expressions and equations.

211-220 | 221-230

If 6n = 102, n equals

  A. 12
✓ B. 17
  C. 108
  D. 196
  E. 612

Evaluate gh - b if

g = 4, h = 9, b = 12

  A. 48
  B. 37
  C. 25
✓ D. 24
  E. 1

The lower and middle RIT bands have assessed student understanding of operations and relationships between quantities. These ideas now become semi-formal with the introduction of the concept of functions. Students explore functional relationships through reasoning about points on graphs, verbal descriptions, and tables.
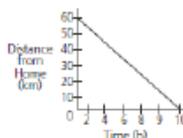
231-240   241-250   above 250

The graph shows the flight home of a homing pigeon over a distance of 60 km.

What is the pigeon's average speed for the trip?

  A. 600 km/h
  B. 60 km/h
  C. 10 km/h
✓ D. 6 km/h

Ken works as a salesperson in a local electronics store. He earns $200 each week plus 6% commission on his total sales.

Which equation correctly represents Ken's weekly earnings? Let s = Ken's total sales.

  A. E = 0.06s($200)
  B. E = 6s + $200
✓ C. E = 0.06s + $200
  D. E = 6s($200)

A fish tank is slowly losing water. The table shows the number of gallons left in the tank after each day.

Day	Number of Gallons
0	50
1	47
2	44
3	41
4	38

Which statement about the data in the table is true?

✓ A. The data shows a linear relationship because the rate of change is constant.
  B. The data shows a linear relationship because the rate of change is decreasing.
  C. The data shows a nonlinear relationship because the rate of change is constant.
  D. The data shows a nonlinear relationship because the rate of change is decreasing.