

Tulare County
Office of Education

Jim Vidak, County Superintendent of Schools

Building Measurement Tools to Build Understanding

Grades 1-2

October 25, 2014



<http://ccss.tcoe.org/math>

Presented by

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TCOE CCSS Website: <http://ccss.tcoe.org/>



Standards for Mathematical Practice (K-12)

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others
4. Model with mathematics
5. Use appropriate tools strategically
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

CCSS WHERE TO FOCUS GRADE 1 MATHEMATICS



MATHEMATICS



GRADE 1



FOCUS

This document shows where students and teachers should spend the large majority of their time in order to meet the expectations of the Standards.

Not all content in a given grade is emphasized equally in the Standards. Some clusters require greater emphasis than others based on the depth of the ideas, the time that they take to master, and/or their importance to future mathematics or the demands of college and career readiness. More time in these areas is also necessary for students to meet the Standards for Mathematical Practice.

To say that some things have greater emphasis is not to say that anything in the Standards can safely be neglected in instruction. Neglecting material will leave gaps in student skill and understanding and may leave students unprepared for the challenges of a later grade.

Students should spend the large majority¹ of their time on the major work of the grade (■). Supporting work (□) and, where appropriate, additional work (○) can engage students in the major work of the grade.^{2,3}

MAJOR, SUPPORTING, AND ADDITIONAL CLUSTERS FOR GRADE 1

Emphases are given at the cluster level. Refer to the Common Core State Standards for Mathematics for the specific standards that fall within each cluster.

Key: ■ Major Clusters □ Supporting Clusters ○ Additional Clusters

- 1.OA.A ■ Represent and solve problems involving addition and subtraction.
- 1.OA.B ■ Understand and apply properties of operations and the relationship between addition and subtraction.
- 1.OA.C ■ Add and subtract within 20.
- 1.OA.D ■ Work with addition and subtraction equations.
- 1.NBT.A ■ Extending the counting sequence.
- 1.NBT.B ■ Understand place value.
- 1.NBT.C ■ Use place value understanding and properties of operations to add and subtract.
- 1.MD.A ■ Measure lengths indirectly and by iterating length units.
- 1.MD.B ○ Tell and write time.
- 1.MD.C □ Represent and interpret data.
- 1.G.A ○ Reason with shapes and their attributes.

HIGHLIGHTS OF MAJOR WORK IN GRADES K–8

K–2	Addition and subtraction – concepts, skills, and problem solving; place value
3–5	Multiplication and division of whole numbers and fractions – concepts, skills, and problem solving
6	Ratios and proportional relationships; early expressions and equations
7	Ratios and proportional relationships; arithmetic of rational numbers
8	Linear algebra and linear functions

REQUIRED FLUENCIES FOR GRADE 1

1.OA.C.6	Add/subtract within 10
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¹ At least 65% and up to approximately 85% of class time, with Grades K–2 nearer the upper end of that range, should be devoted to the major work of the grade. For more information, see Criterion #1 of the K–8 Publishers' Criteria for the Common Core State Standards for Mathematics www.achievethecore.org/publisherscriteria.

² Refer also to criterion #3 in the K–8 Publishers' Criteria for the Common Core State Standards for Mathematics www.achievethecore.org/publisherscriteria.

³ Note, the critical areas are a survey of what will be taught at each grade level; the major work is the subset of topics that deserve the large majority of instructional time during a given year to best prepare students for college and careers.

CCSS WHERE TO FOCUS GRADE 2 MATHEMATICS



MATHEMATICS



GRADE 2



FOCUS

This document shows where students and teachers should spend the large majority of their time in order to meet the expectations of the Standards.

Not all content in a given grade is emphasized equally in the Standards. Some clusters require greater emphasis than others based on the depth of the ideas, the time that they take to master, and/or their importance to future mathematics or the demands of college and career readiness. More time in these areas is also necessary for students to meet the Standards for Mathematical Practice.

To say that some things have greater emphasis is not to say that anything in the Standards can safely be neglected in instruction. Neglecting material will leave gaps in student skill and understanding and may leave students unprepared for the challenges of a later grade.

Students should spend the large majority¹ of their time on the major work of the grade (■). Supporting work (□) and, where appropriate, additional work (○) can engage students in the major work of the grade.^{2,3}

MAJOR, SUPPORTING, AND ADDITIONAL CLUSTERS FOR GRADE 2

Emphases are given at the cluster level. Refer to the Common Core State Standards for Mathematics for the specific standards that fall within each cluster.

Key: ■ Major Clusters □ Supporting Clusters ○ Additional Clusters

- 2.OA.A ■ Represent and solve problems involving addition and subtraction.
- 2.OA.B ■ Add and subtract within 20.
- 2.OA.C □ Work with equal groups of objects to gain foundations for multiplication.
- 2.NBT.A ■ Understand place value.
- 2.NBT.B ■ Use place value understanding and properties of operations to add and subtract.
- 2.MD.A ■ Measure and estimate lengths in standard units.
- 2.MD.B ■ Relate addition and subtraction to length.
- 2.MD.C □ Work with time and money.
- 2.MD.D □ Represent and interpret data.
- 2.G.A ○ Reason with shapes and their attributes.

HIGHLIGHTS OF MAJOR WORK IN GRADES K–8

K–2	Addition and subtraction – concepts, skills, and problem solving; place value
3–5	Multiplication and division of whole numbers and fractions – concepts, skills, and problem solving
6	Ratios and proportional relationships; early expressions and equations
7	Ratios and proportional relationships; arithmetic of rational numbers
8	Linear algebra and linear functions

REQUIRED FLUENCIES FOR GRADE 2

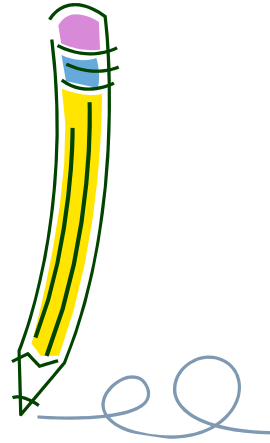
2.OA.B.2	Single-digit sums and differences (sums from memory by end of Grade 2)
2.NBT.B.5	Add/subtract within 100

¹ At least 65% and up to approximately 85% of class time, with Grades K–2 nearer the upper end of that range, should be devoted to the major work of the grade. For more information, see Criterion #1 of the K–8 Publishers' Criteria for the Common Core State Standards for Mathematics www.achievethecore.org/publisherscriteria.

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³ Note, the critical areas are a survey of what will be taught at each grade level; the major work is the subset of topics that deserve the large majority of instructional time during a given year to best prepare students for college and careers.

Quick-Write



What does measurement mean?

Measuring Objects

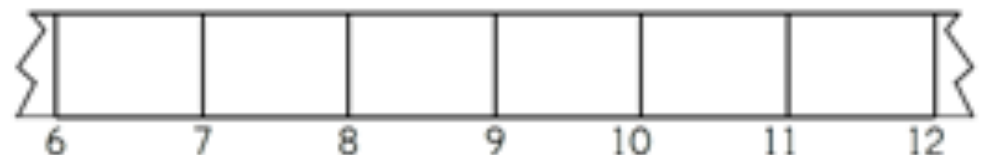
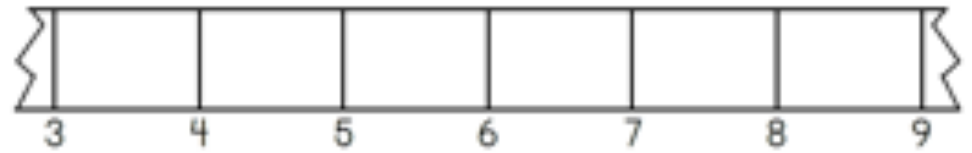
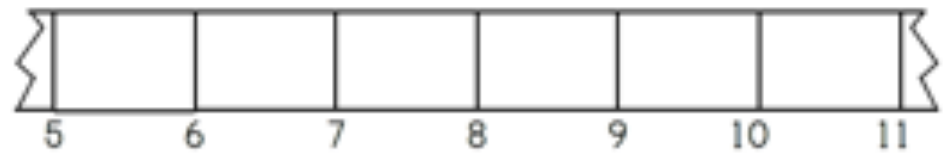
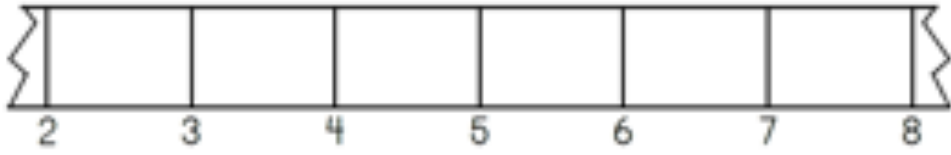
Object	Length in inches

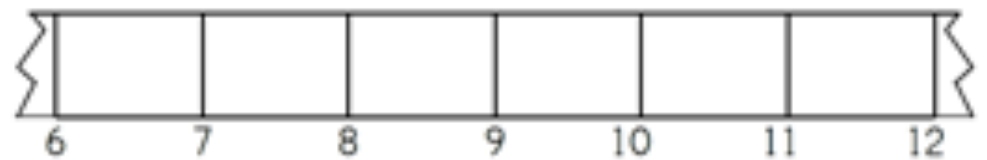
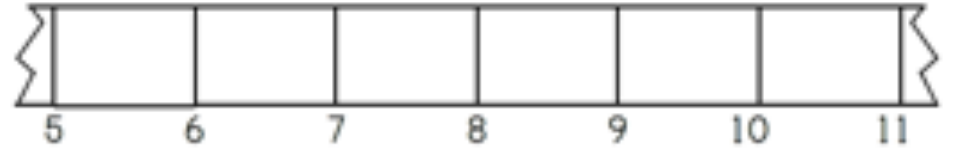
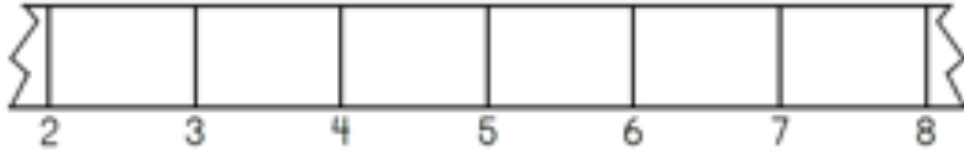
Gummy Worm Stretch!

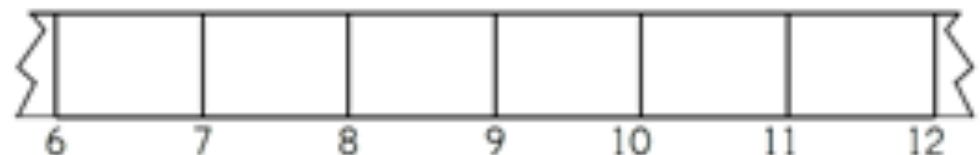
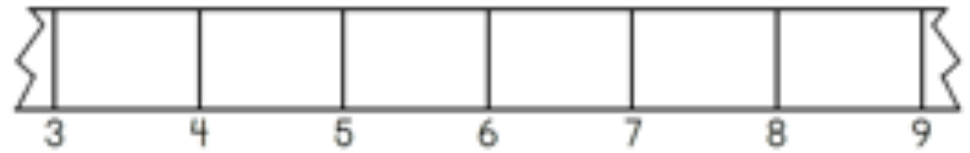
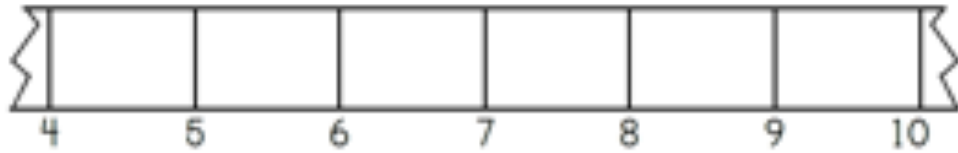
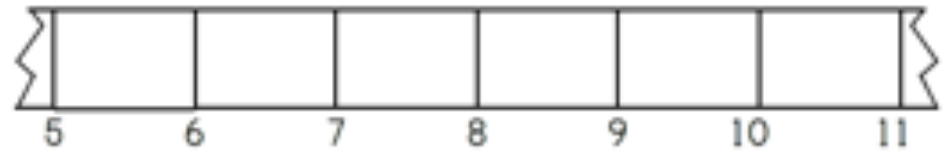
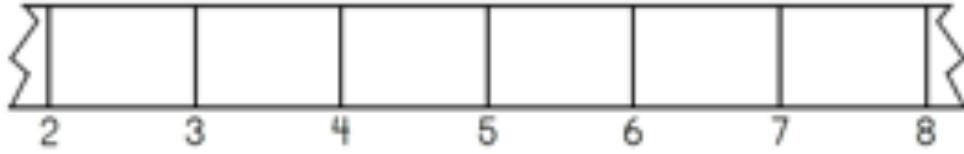


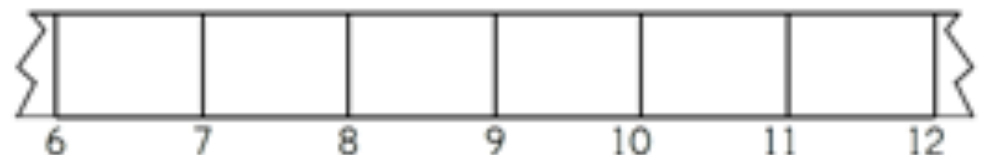
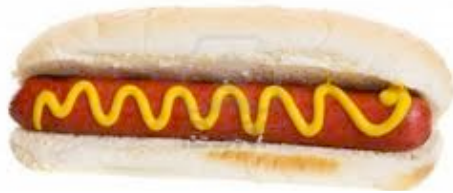
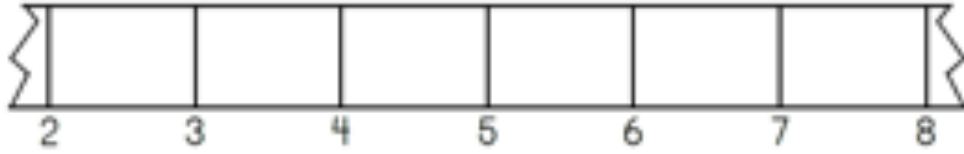
Materials: rulers, gummy worms

1. Measure the length of a gummy worm using your ruler.
2. Stretch your gummy worm as far as you can without it breaking.
3. Measure the stretched gummy worm.
4. What is the difference in length between the original and stretched gummy worm?
5. Record your findings.



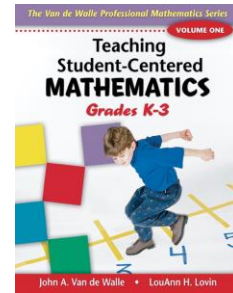






References

Teaching Student-Centered Mathematics: Grades K-3 by Van de Walle and Lovin



Achieve the Core – Grade Level Focus Documents

- <http://achievethecore.org>

Progressions Documents

- <http://ime.math.arizona.edu/progressions/>

Gummy Worm Stretch!

- <http://www.k-5mathteachingresources.com/2nd-grade-measurement-and-data.html>

Broken Ruler Cards

- <http://mathcoachscorner.blogspot.com/2013/04/broken-ruler-activity.html>