Eureka Math

4th Grade Module 2 Lesson 1

NOTES ON MULTIPLE MEANS OF REPRESENTATION:

English language learners may benefit from further discussion of concrete items that are about the same length as a centimeter, meter, or kilometer. Write examples on index cards of items that are a centimeter, a meter, or a kilometer in length. Have students place them in the appropriate columns of a chart. Provide students with blank index cards so they can create their own cards to add to the chart.

NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Ask students where they have heard the prefix *kilo-* before. As they learned in Grade 3, 1 kilogram equals 1,000 grams, so 1 kilometer equals 1,000 meters. Ask how many bytes are in 1 kilobyte.

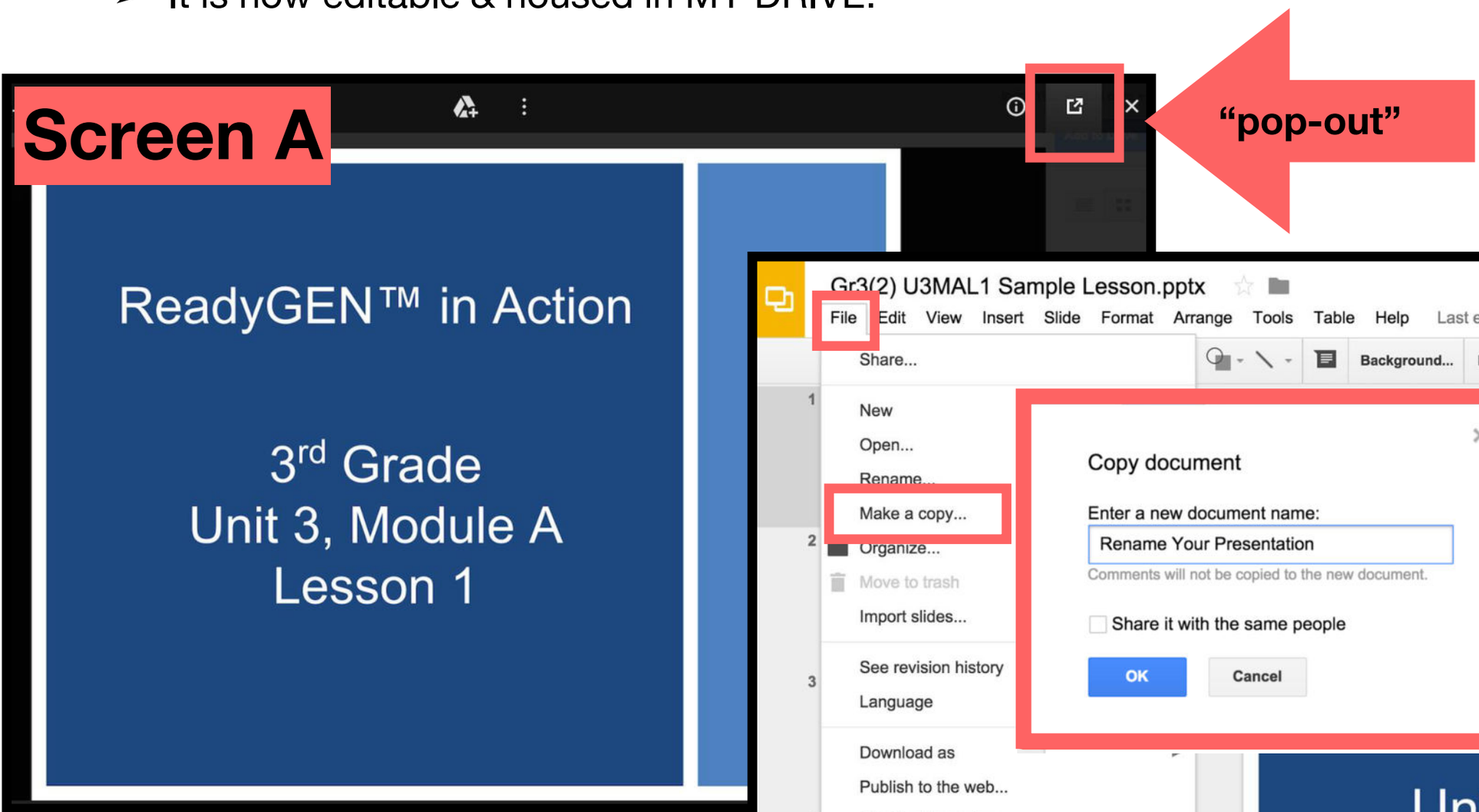
At the request of elementary teachers, a team of Bethel & Sumner educators met as a committee to create Eureka slideshow presentations. These presentations are not meant as a script, nor are they required to be used. Please customize as needed. Thank you to the many educators who contributed to this project!

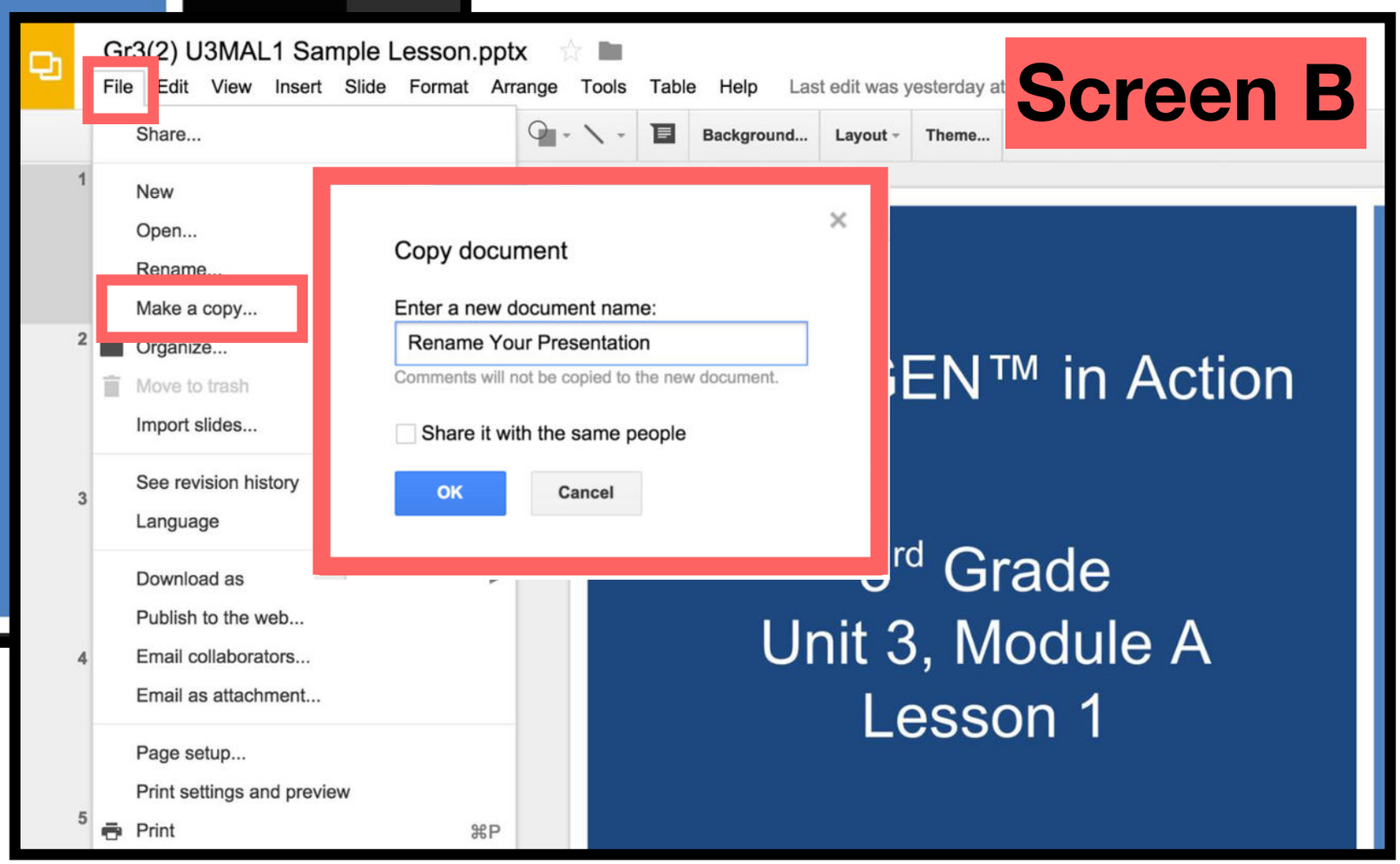
Directions for customizing presentations are available on the next slide.

Customize this Slideshow

Reflecting your Teaching Style and Learning Needs of Your Students

- When the Google Slides presentation is opened, it will look like Screen A.
- Click on the “pop-out” button in the upper right hand corner to change the view.
- The view now looks like Screen B.
- Within Google Slides (not Chrome), choose FILE.
- Choose MAKE A COPY and rename your presentation.
- Google Slides will open your renamed presentation.
- It is now editable & housed in MY DRIVE.



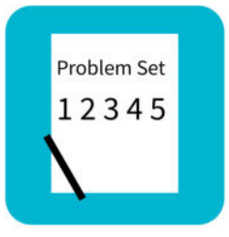


Icons

Read, Draw, Write

Learning Target

Personal White Board

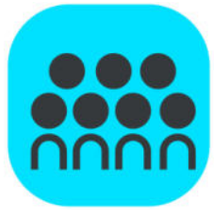


Problem Set

Manipulatives Needed

Fluency

Think Pair Share



Whole Class

Individual

Partner

Small Group

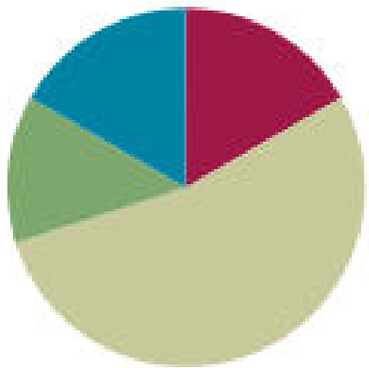
Small Group Time

Lesson 1

Objective: Express metric length measurements in terms of a smaller unit; model and solve addition and subtraction word problems involving metric length.

Suggested Lesson Structure

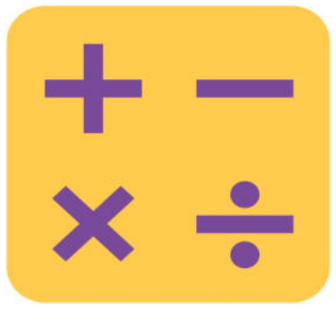
Fluency Practice	(10 minutes)
Application Problem	(8 minutes)
Concept Development	(32 minutes)
Student Debrief	(10 minutes)
Total Time	**(60 minutes)**



A NOTE ON STANDARDS ALIGNMENT:

In this lesson and the entire module, students convert metric length units in the context of addition and subtraction problems involving mixed units. This lesson builds on the content of **2.MD.5**

I can express metric length measurements in terms of a smaller unit; model and solve addition and subtraction word problems involving metric length.



Convert Units

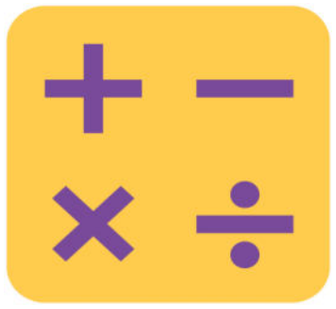
100 centimeters is the same as how many meters?

200 centimeters is the same as how many meters?

300 cm = _____ m

800 cm = _____ m

500 cm = _____ m



Convert Units

How many centimeters are in 1 meter?

How many centimeters are in 2 meters?

3 m = _____ cm

7 m = _____ cm

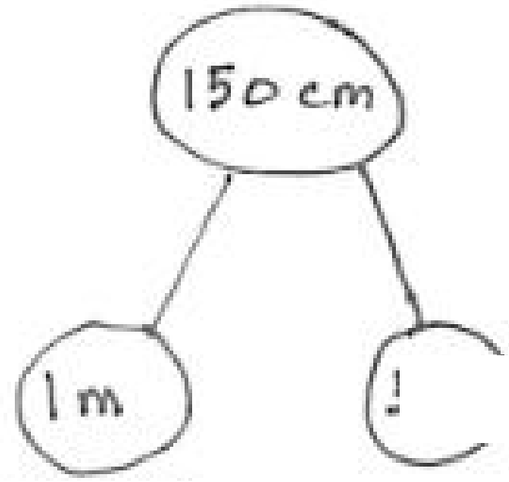
4 m = _____ cm

9 m = _____ cm

Meter and Centimeter Number Bonds

How many centimeters are in 1 meter?

On your whiteboard, write a number bond filling in the unknown part.

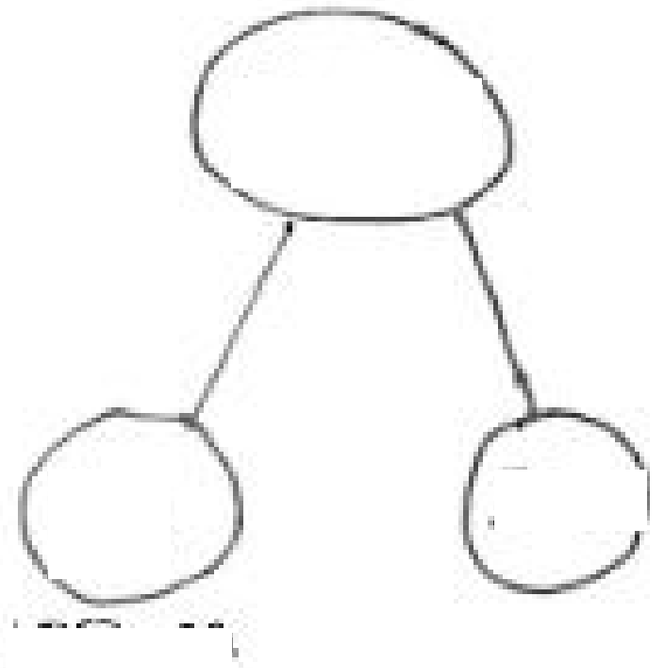


Meter and Centimeter Number Bonds

Whole of 180 cm

How many centimeters are in 1 meter?

On your whiteboard, write a number bond filling in the unknown part.

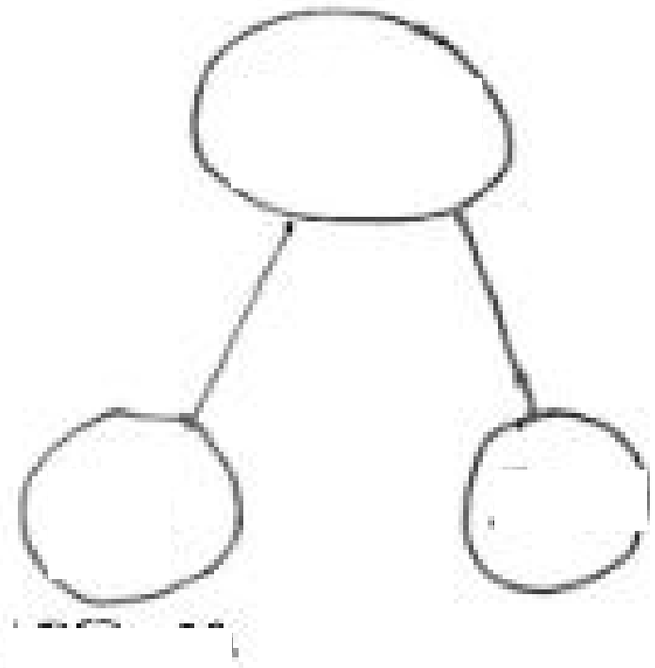


Meter and Centimeter Number Bonds

Whole of 120 cm

How many centimeters are in 1 meter?

On your whiteboard, write a number bond filling in the unknown part.

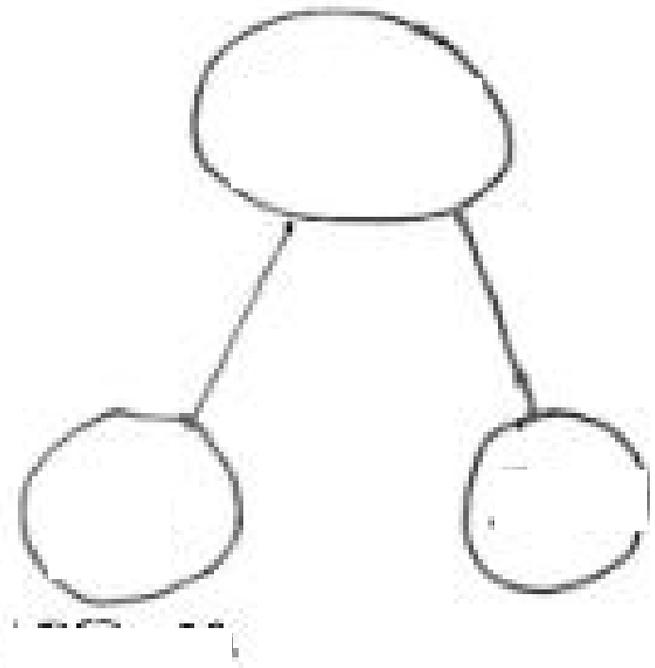


Meter and Centimeter Number Bonds

Whole of 125 cm

How many centimeters are in 1 meter?

On your whiteboard, write a number bond filling in the unknown part.

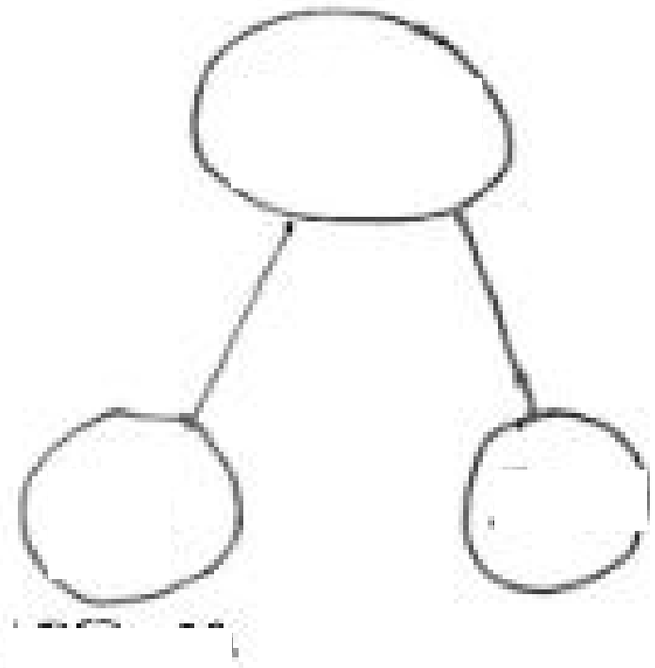


Meter and Centimeter Number Bonds

Whole of 105 cm

How many centimeters are in 1 meter?

On your whiteboard, write a number bond filling in the unknown part.

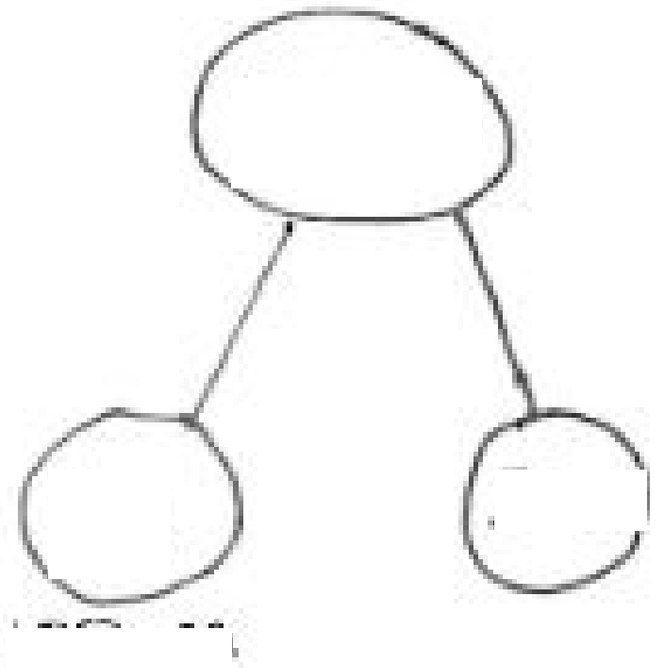


Meter and Centimeter Number Bonds

Whole of 107 cm

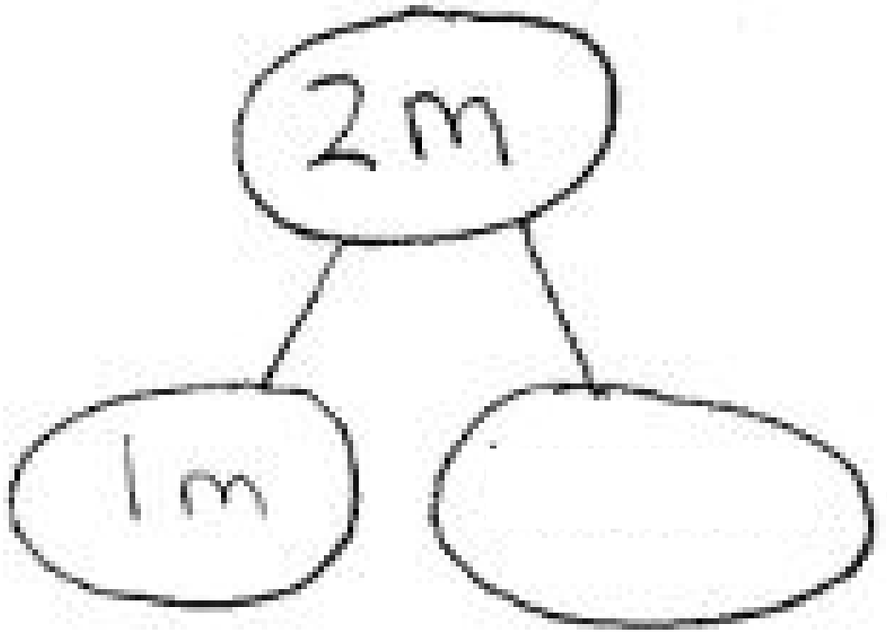
How many centimeters are in 1 meter?

On your whiteboard, write a number bond filling in the unknown part.



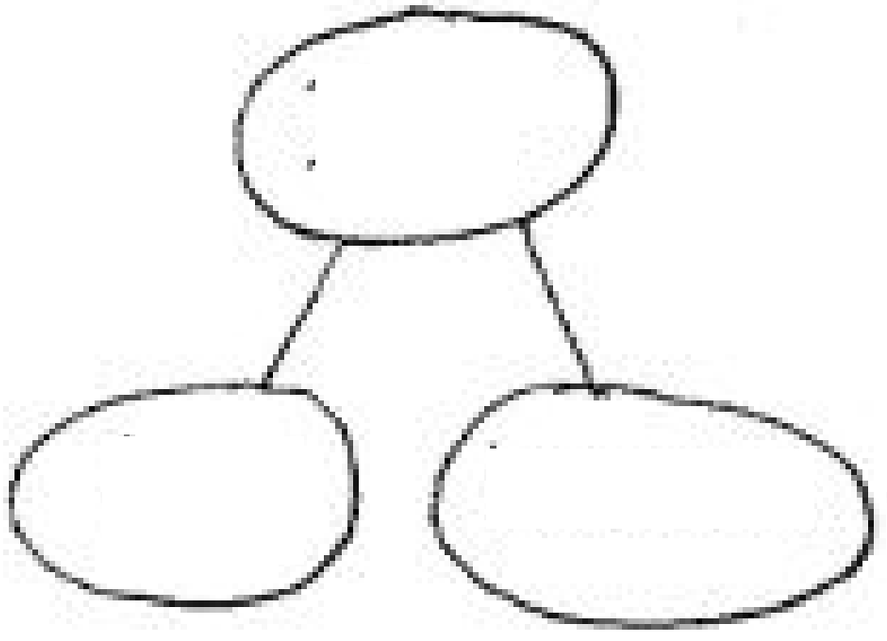
Meter and Centimeter Number Bonds

Fill in the unknown part.



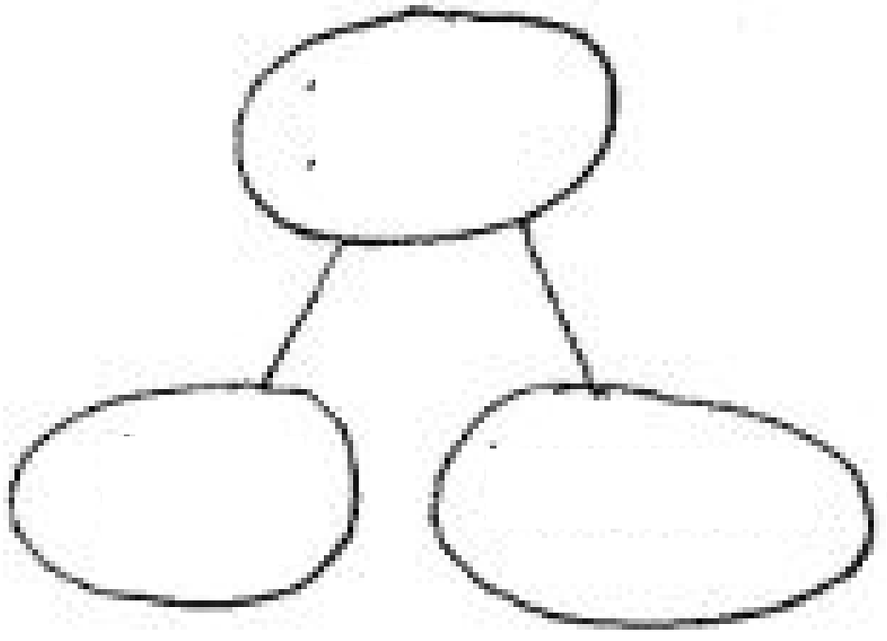
Meter and Centimeter Number Bonds

Show a number bond with a whole of 3 meters and pull out 100 centimeters. Name the other part in meters.



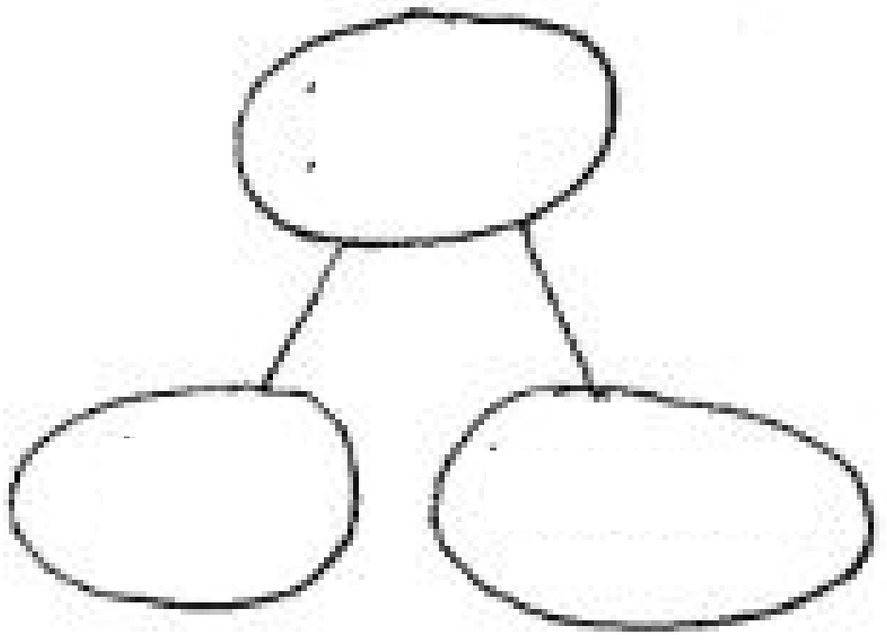
Meter and Centimeter Number Bonds

Show a number bond with a whole of 5 meters and pull out 100 centimeters. Name the other part in meters.



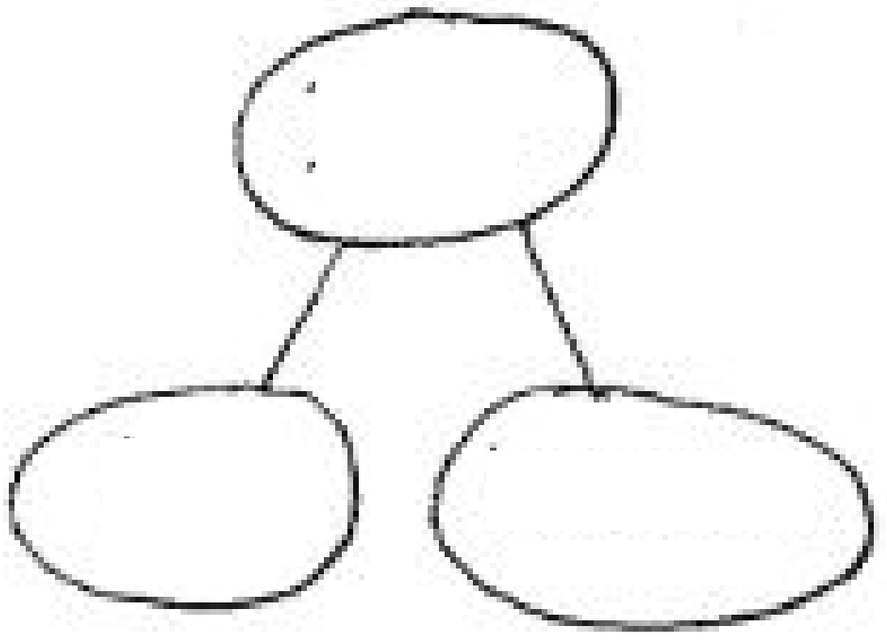
Meter and Centimeter Number Bonds

Show a number bond with a whole of 8 meters and pull out 100 centimeters. Name the other part in meters.



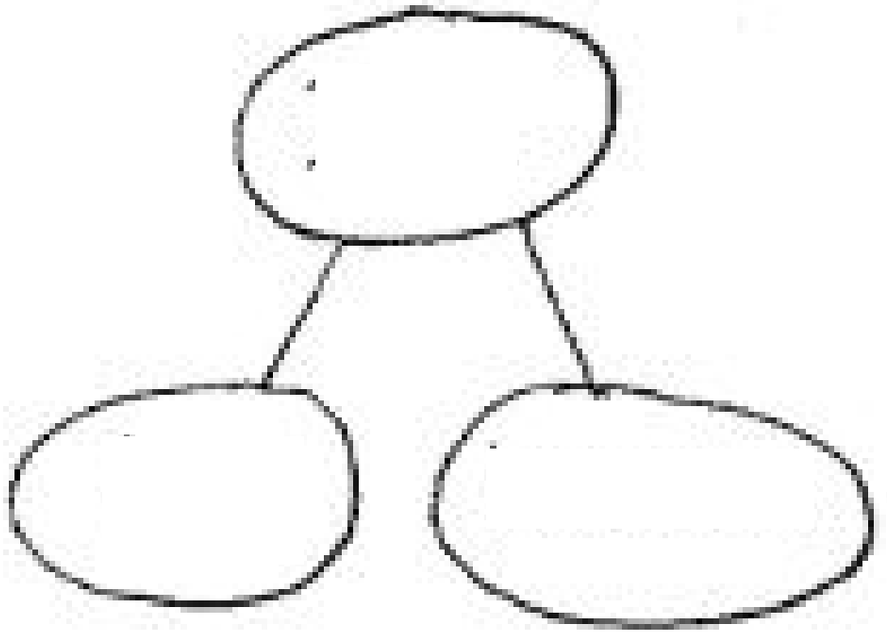
Meter and Centimeter Number Bonds

Show a number bond with a whole of 9 meters and pull out 100 centimeters. Name the other part in meters.



Meter and Centimeter Number Bonds

Show a number bond with a whole of 10 meters and pull out 100 centimeters. Name the other part in meters.



Read Draw Write

Read the problem.

Draw and Label.

Write a number sentence.

Write a word sentence.

Application Problem

Martha, George, and Elizabeth sprint a combined distance of 10,000 meters. Martha sprints 3,206 meters. George sprints 2,094 meters. How far does Elizabeth sprint? Solve using an algorithm or a simplifying strategy.

Discussion

Begin with a five minute discussion about the length of a centimeter, meter, and kilometer.

- Use familiar, concrete examples such as a staple, the height of a countertop, and the distance to a local landmark that you know to be about 1 kilometer.
- Have students measure the size of concrete examples that are given using centimeters and/or meters.

Discussion

- Display a chart such as the one shown in Teacher's Manual.
- Add other examples to the chart, such as the width of a fingernail, the width of a door, the distance of two and a half laps around a running track, the length of a base ten cube, the height of a stack of five pennies, the outstretched arms of a child, and the distance around a soccer field four times. Show a meter stick to reference the exact size of a centimeter and a meter.

Compare Sizes

1 km = 1,000 m

How many meters are in 2 km?

3 km?

7 km?

70 km?

Distance	
km	m
1	1,000
2	
3	
7	
70	

Compare Sizes

Write 2,000 m = _____ km on your board.

If 1,000 m equals 1 km, 2,000 m equals how many kilometers?

8,000 m = _____ km

10,000 m = _____ km

9,000 m = _____ km

Distance	
km	m
1	1,000
2	2,000
3	3,000
7	7,000
70	70,000

Compare Sizes

Compare kilometers and meters.

Distance	
km	**m**
1	1,000
2	2,000
3	3,000
7	7,000
70	70,000

Compare Sizes

1 km 500 m = _____ m

Let's **convert**, or rename, 1 km 500 m to meters.

1 kilometer is equal to how many meters?

1,000 meters plus 500 meters is 1,500 meters.

Compare Sizes

1 km 300 m = _____ m

1 kilometer 300 meters is equal to how many meters?

1,300 meters

5 km 30 m = _____ m

Compare Sizes

2,500 meters is equal to how many kilometers?

How do you know?

5,005 m is equal to how many km?

Add Mixed Units of Length

5 km + 2,500 m

Talk with your partner about how to solve this problem.

Renaming 7,500 m to 7 km 500 m created a **mixed unit**. Mixed units can be helpful when using a simplifying strategy.

Add Mixed Units of Length

5 km + 2,500 m

Are you going to use the algorithm or a simplifying strategy to solve?

Why?

When we added meters, the answer was 7,500 m. When we added mixed units, the answer was 7 km 500 m.

Are these answers equal? Why or why not?

Add Mixed Units of Length

1 km 734 m + 4 m 396 m

Simplifying strategy or algorithm? Discuss with a partner.

Choose the way you want to do it. You will have 2 minutes. If you finish before time is up, try solving it a different way.

Subtract Mixed Units of Length

10 km - 3 m 140 m

Simplifying strategy or algorithm? Discuss with a partner.

Choose the way you want to do it. You will have 2 minutes. If you finish before time is up, try solving it a different way.

Subtract Mixed Units of Length

10 km - 3 m 140 m

Look at Solution A. How did they set up to solve using the algorithm?

What did they do in Solution B?

What happened in Solution C?

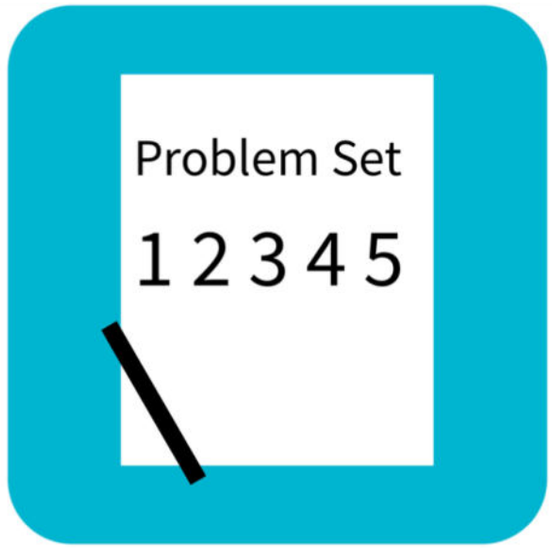
Solve a word problem involving mixed units.

Sam practiced his long jump in P.E. On his first attempt, he jumped 1 meter 47 centimeters. On his second attempts, he jumped 98 centimeters. How much farther did Sam jump on his first attempt than his second?

Take 2 minutes with your partner to draw a tape diagram to model this problem.

Solve a word problem involving mixed units.

Sam practiced his long jump in P.E. On his first attempt, he jumped 1 meter 47 centimeters. On his second attempts, he jumped 98 centimeters. How much farther did Sam jump on his first attempt than his second?



Problem Set

Name _____ Date _____

1. Convert the measurements.

a. 1 km = _____ m

b. 4 km = _____ m

c. 7 km = _____ m

d. _____ km = 18,000 m

e. 1 m = _____ cm

f. 3 m = _____ cm

g. 80 m = _____ cm

h. _____ m = 12,000 cm

2. Convert the measurements.

a. 3 km 312 m = _____ m

b. 13 km 27 m = _____ m

c. 915 km 8 m = _____ m

d. 3 m 56 cm = _____ cm

e. 14 m 8 cm = _____ cm

f. 120 m 46 cm = _____ cm

Debrief

Participate in the discussion by...

- Thinking about the question.
- Sharing your work.
- Explaining your strategy.
- Listening to others.

Debrief

What pattern did you notice in the equivalences for Problems 1 and 2 of the Problem Set? How did converting 1 **kilometer** to 1,000 meters in Problem 1(a) help you to solve problem 2(a)?

For Problem 3, Parts (c) and (d), explain how you found your answer in terms of the smaller of the two units. What challenges did you face?

Review the new vocabulary presented in the lesson:

- Kilometer, mixed units, convert

Exit Ticket

Name _____ Date _____

1. Complete the conversion table.

Distance	
71 km	_____ m
_____ km	30,000 m
81 m	_____ cm
_____ m	400 cm

2. 13 km 20 m = _____ m

3. 401 km 101 m − 34 km 153 m = _____