Name _____   Date _____

1. Complete the conversion charts.

Length	
3 km	_____ m
9 km	_____ m
6 km 435 m	_____ m
12 km 12 m	_____ m

Mass	
3 kg	_____ g
20 kg 300 g	_____ g
1 kg 74 g	_____ g
403 kg 4 g	_____ g

Capacity	
4 L	_____ mL
48 L 808 mL	_____ mL
2 L 20 mL	_____ mL
639 L 6 mL	_____ mL

2. A student completed the problem below. Check his work. Explain how you know if each solution is correct or incorrect.

> Convert the following measurements:
>
> a. 24 km = ___24,000___ m
>
> b. 16 L = ___16,000___ mL
>
> c. 38 kg = ___3,800___ g

3. Find the sum or difference.
   a. 493 km 43 m + 17 km 57 m

   b. 25 kg 32 g – 23 kg 83 g

   c. 100 L 99 mL + 2,999 mL

4. Billy is training for a half marathon. For the problems below, use tape diagrams, numbers, and words to explain each answer.

a. Each day, Billy runs on the treadmill for 5 kilometers and runs on the outdoor track for 6,000 meters. In all, how many meters does Billy run each day?

b. Since Billy has started training, he has also been drinking more water. On Saturday, he drank 2 liters 755 milliliters of water. On Sunday, he drank some more. If Billy drank a total of 4 liters 255 milliliters of water on Saturday and Sunday, how many milliliters of water did Billy drink on Sunday?

c. Since he began exercising so much for his half marathon, Billy has been losing weight. In his first week of training, he lost 2 kilograms 530 grams. In the following two weeks of training, he lost 1 kilogram 855 grams each week. Billy now weighs 61 kilograms 760 grams. What was Billy's weight, in grams, before he started training? Explain your thinking.

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

4.MD.1[1]   Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), …*

4.MD.2[2]   Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

Evaluating Student Learning Outcomes

A Progression Toward Mastery is provided to describe steps that illuminate the gradually increasing understandings that students develop *on their way to proficiency.* In this chart, this progress is presented from left (Step 1) to right (Step 4). The learning goal for students is to achieve Step 4 mastery. These steps are meant to help teachers and students identify and celebrate what the students CAN do now and what they need to work on next.

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[1]Pounds, ounces, and time are assessed in Module 7.

[2]Time, money, and numbers as fractions or decimals are assessed in Module 7.

A Progression Toward Mastery

Assessment Task Item	STEP 1 Little evidence of reasoning without a correct answer. (1 Point)	STEP 2 Evidence of some reasoning without a correct answer. (2 Points)	STEP 3 Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer. (3 Points)	STEP 4 Evidence of solid reasoning with a correct answer. (4 Points)
1 **4.MD.1**	Student correctly completes fewer than six of the twelve conversions.	Student correctly identifies six to nine of the twelve conversions.	Student correctly identifies ten or eleven of the twelve conversions.	Student correctly completes the conversion chart: ▪ 3,000, 9,000, 6,435, 12,012 ▪ 3,000, 20,300, 1,074, 403,004 ▪ 4,000, 48,808, 2,020, 639,006
2 **4.MD.1**	Student correctly identifies fewer than two conversions with no evidence of reasoning.	Student correctly identifies two of the conversions with little evidence of reasoning.	Student correctly identifies that Parts (a) and (b) are correct and Part (c) is incorrect but does not provide clear reasoning.	Student correctly reasons that Parts (a) and (b) are correct because 1,000 m equals 1 km and 1,000 mL equals 1 L, and Part (c) is incorrect because 1,000 g equals 1 kg, so 38 kg should equal 38,000 g.
3 **4.MD.1** **4.MD.2**	Student correctly answers fewer than two parts, with multiple computation or conversion errors.	Student correctly answers one of the three parts and makes fewer than two computational or conversion errors on the other parts.	Student correctly answers two of the three parts.	Student correctly answers: a. 510 km 100 m or 510,100 m b. 1 kg 949 g or 1,949 g c. 103 L 98 mL or 103,098 mL

A Progression Toward Mastery

4 4.MD.1 4.MD.2	Student correctly answers fewer than two of the three parts.	Student correctly answers two of the three parts but shows little evidence of reasoning in Part (c).	Student answers three parts correctly but does not show solid reasoning of understanding metric conversions in Part (c).	Student correctly answers all three parts: a. 11,000 meters b. 1,500 milliliters c. 68,000 grams; Explains or shows computation of all measurements and the conversion to grams.

Name ___Jack_____ Date _____

1. Complete the following conversion charts:

Length		Mass		Capacity	
3 km	3,000 m	3 kg	3,000 g	4 L	4,000 mL
9 km	9,000 m	20 kg 300 g	20,300 g	48 L 808 mL	48,808 mL
6 km 435 m	6,435 m	1 kg 74 g	1,074 g	2 L 20 mL	2,020 mL
12 km 12 m	12,012 m	403 kg 4 g	403,004 g	639 L 6 mL	639,006 mL

2. A student completed the problem below. Check his work. Explain how you know if each solution is correct or incorrect.

Convert the following measurements:

~~a.~~ 24 km = ___24,000___ m

~~b.~~ 16 L = ___16,000___ mL

(c.) 38 kg = ___3,800___ g

1 km = 1,000 m
24 km = 24,000 m

1 L = 1,000 mL
16 L = 16,000 mL

1 kg = 1,000 g
38 kg = 38,000 g

Problems a and b are correct because there are 1,000 meters, mL, or grams in 1 km, L, or kg.

Problem C is wrong. 38 kg is really 38,000 g.

3. Find the sum or difference.

a. 493 km 43 m + 17 km 57 m

$$\begin{array}{r} 493 \text{ km } 43\text{m} \\ +\ \ 17 \text{ km } 57\text{m} \\ \hline 510 \text{ km } 100\text{m} \end{array}$$

b. 25 kg 32 g – 23 kg 83 g

$$\begin{array}{r} {}^{12}\ \ \\ 4\ \ 9\ \cancel{2}\ 12 \\ 2\cancel{5},\cancel{0}\cancel{8}\cancel{2}\text{ g} \\ -\ 23,083\text{ g} \\ \hline 1,949\text{ g} \end{array}$$

c. 100 L 99mL + 2,999 mL

$$\begin{array}{r} 100,099 \text{ mL} \\ +\ \ \ 2,999 \text{ mL} \\ \hline 103,098 \text{ mL} \end{array}$$

4. Billy is training for a half-marathon. For the problems below, use tape diagrams, numbers, and words to explain each answer.

a. Each day Billy runs on the treadmill for 5 kilometers and runs on the outdoor track for 6,000 meters. In all, how many meters does Billy run each day?

R
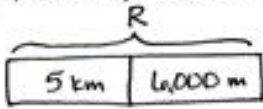
| 5 km | 6,000 m |

5 km = 5,000m

5,000 m + 6,000m = 11,000 m

R = 11,000 m

Billy runs 11,000 meters each day.

b. Since Billy has started training, he has also been drinking more water. On Saturday, he drank 2 liters 755 milliliters of water. On Sunday, he drank some more. If Billy drank a total of 4 liters 255 milliliters of water on Saturday and Sunday, how many milliliters of water did Billy drink on Sunday?
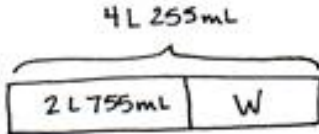
4 L 255 mL

| 2 L 755 mL | W |

4 L 255 mL = 4,255 mL
2 L 755 mL = 2,755 mL

$$\begin{array}{r} \overset{3\ 12}{4,2\cancel{5}5} \\ -\ 2,755 \\ \hline 1,500 \end{array}$$

W = 1,500 mL

Billy drank 1,500 mL of water on Sunday.

c. Since exercising so much for his half-marathon, Billy has been losing weight. In his first week of training, he lost 2 kilograms 530 grams. In the following two weeks of training, he lost 1 kilogram 855 grams each week. Billy now weighs 61 kilograms 760 grams. What was Billy's weight, in grams, before he started training? Explain your thinking.

W

| 61 kg 760 g | 2 kg 530g | 1kg 855g | 1kg 855g |
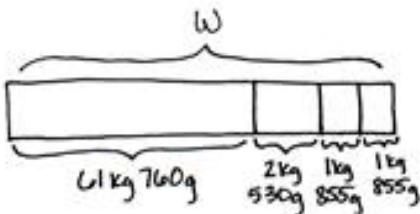
$$\begin{array}{r} 2,530\,g \\ 1,855\,g \\ +\ 1,855\,g \\ \hline 6,240\,g \end{array}$$

$$\begin{array}{r} 61,760\,g \\ +\ 6,240\,g \\ \hline 68,000\,g \end{array}$$

W = 68,000 g

Billy's weight before training was 68,000 grams.

If he lost his weight, he had to weigh more before, so I added all the weight he lost to how much he weighs now for my answer.