

## Section A: Practice Problems

### 1. Pre-unit

Find the number that makes each equation true. Explain or show your reasoning.

a.  $\frac{\boxed{\phantom{000}}}{12} = \frac{2}{3}$

b.  $\frac{5}{6} = \frac{\boxed{\phantom{000}}}{12}$

### 2. Pre-unit

a. The road around a lake is 15 kilometers long. How many meters is that?

b. The length of an alligator is 4 meters. How many centimeters is that?

### 3. Pre-unit

The value of the 6 in 618,204 has how many times the value as the 6 in 563?  
Explain or show your reasoning.

**4. Pre-unit**

Find the value of each sum.

a.  $\frac{3}{8} + \frac{9}{8}$

b.  $3\frac{1}{5} + \frac{3}{5}$

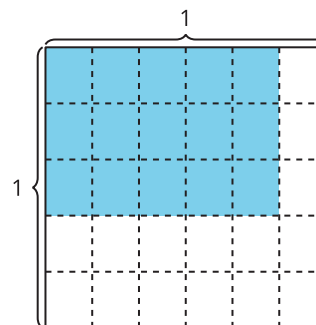
c.  $2\frac{4}{10} + 1\frac{7}{10}$

**5. Pre-unit**

Lin spent 5 minutes reading the story. Noah spent 3 times as long as Lin. How long did Noah spend reading the story? Explain or show your reasoning.

## 6. Pre-unit

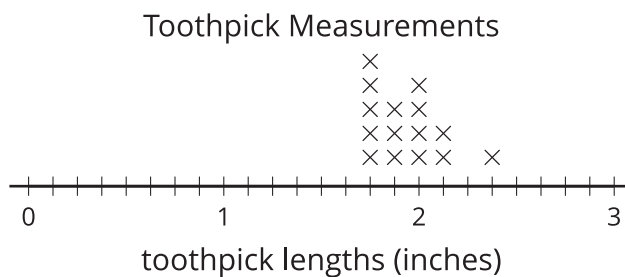
- a. Write a multiplication expression for the shaded area and find the value of the expression. Explain or show your reasoning.



- b. Find the value of  $\frac{5}{7} \times \frac{10}{3}$ .

## 7. Pre-unit

The line plot shows the lengths of some toothpicks in inches.



- a. How many measurements are there?
- b. What is the difference between the longest and shortest toothpicks?

8. a. Write a multiplication equation relating the values of 0.5 and 0.05.
- b. Write a division equation relating the values of 0.5 and 0.05.

(From Unit 6, Lesson 1.)

9. Write each number using exponential notation.

a.  $10 \times 10 \times 10$

b.  $100 \times 100$

c. 100,000

d. 1,000,000,000

(From Unit 6, Lesson 2.)

10. a. How many centimeters are in each measurement?

0.12 m

3.5 m

19 m

- b. How many millimeters are in each measurement?

3 m

37 m

1,915 m

- c. How does a whole number of meters change when it is converted to millimeters?

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(From Unit 6, Lesson 3.)

11. a. How many meters are in each measurement?

16 millimeters

1,375 millimeters

57 millimeters

- b. How does a whole number of millimeters change when you express the measurement in meters?

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(From Unit 6, Lesson 4.)

12. A track is 366 meters around. An athlete runs 15 laps. How many kilometers is that? Explain or show your reasoning.

(From Unit 6, Lesson 5.)

13. Clare drinks 8 glasses of water each day. There are 235 milliliters in each glass. How many liters of water does Clare drink each day? Explain or show your reasoning.

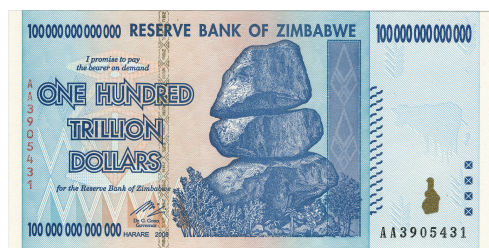
(From Unit 6, Lesson 6.)

14. A track is 400 yards around. How many full laps does Tyler need to run if he wants to run at least 2 miles?

(From Unit 6, Lesson 7.)

## 15. Exploration

- a. Write each of these numbers using exponential notation.
  - i. 1,000,000,000 (the approximate population of Africa in 2009)
  - ii. 100,000,000,000 (estimated number of stars in Milky Way)
  - iii. 1,000,000,000,000 (amount of dollars added to United States debt each year recently)
  - iv. 100,000,000,000,000 (denomination of a bill in Zimbabwe)



- v. 1,000,000,000,000,000,000,000,000 (estimated number of stars in universe)
  
  - vi. 10,000,000,000,000,000,000 (estimated number of grains of sand on the earth)
  
  - vii. 100,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000 (estimated number of atoms in the universe!)
- b. How is exponential notation helpful for writing these numbers?

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**16. Exploration**

You have a piggy bank with 1 kg of coins inside. Which coins would you like to be in the piggy bank? Explain or show your reasoning.

| coin    | approximate weight (grams) |
|---------|----------------------------|
| penny   | 2.5                        |
| nickel  | 5                          |
| dime    | 2.3                        |
| quarter | 5.7                        |