

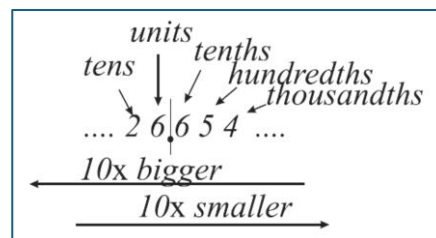
## Math 4. Class Work 14

### Decimals, converting to fraction

- Decimals: converting to fraction**

$$26.654 = 2 \times 10 + 6 \times 1 + \frac{6}{10} + \frac{5}{100} + \frac{4}{1000}$$

$$= 26 + \frac{600}{1000} + \frac{50}{1000} + \frac{4}{1000} = 26 \frac{654}{1000}$$



- Fractions: converting to decimals**

A) Use long division – divide the numerator by the denominator

$$\frac{1}{3} = 1 : 3 = 0.3333 \dots = 0.\bar{3}$$

B) Convert the denominator to 10, 100, 1000 ... If the fraction's denominator can be prime factorized into products of 2 and/or 5 only!

$$a) \frac{1}{25} = \frac{1}{5 \cdot 5} = \frac{1 \cdot 2 \cdot 2}{5 \cdot 5 \cdot 2 \cdot 2} = \frac{4}{10 \cdot 10} = \frac{4}{100} = 0.04$$

$$b) \frac{7}{8} = \frac{7}{2 \cdot 2 \cdot 2} = \frac{7 \cdot 5 \cdot 5 \cdot 5}{2 \cdot 2 \cdot 2 \cdot 5 \cdot 5 \cdot 5} = \frac{875}{1000} = 0.875$$

### Multiplication/division of decimals

- Multiplication Rule:** Remove the decimal points and perform the long multiplication. At the end, the decimal point should be placed on the resulting line as many steps from the right side as the *sum of the decimal digits of both numbers*.

$$24.2 \cdot 1.1 = (24.2 \times 10) \cdot \frac{1}{10} \cdot (1.1 \times 10) \cdot \frac{1}{10} = 242 \cdot 1.1 \cdot \frac{1}{100} = 2662 \cdot \frac{1}{100} = 26.62$$

The rule holds because we multiply and divide by 10, which is  $(10) \cdot \frac{1}{10} = 1$

- To divide a whole or a decimal number by a decimal, we must recognize that the division can be represented as a fraction.  $15 : 2.5 = \frac{15}{2.5} = \frac{15 \cdot 10}{2.5 \cdot 10} = \frac{150}{25} = 6$

**Division Rule:** multiply the dividend and the divisor by 10, 100, or 1000, so the divisor becomes a whole number. Then, use a long division.

## Problems:

1. Calculate the sums and then find the absolute value of the result

- a)  $-42 - (-53) =$
- b)  $61 - (+74) =$
- c)  $-16 + 5 + 16 - 8 =$
- d)  $-5 - 10 + 16 - 1 =$
- e)  $62 - (-12 - 18) =$

2. Read the following decimals and present them as a whole number and a fraction with an appropriate denominator of 10, 100, 1000 ...

- a) 3.728     **Example:** 3 point 7 hundred and 28 thousandths,  $3 \frac{728}{1000}$
- b) 0.047
- c) 0.2
- d) 8.62

3. Which part of 1 m is 1 cm?  
Which part of 1 km is 1 m?  
Which part of 1 cm is 1 mm?  
Which part of 1 m is 1 dm?  
Which part of 1 kg is 1 g?  
Which part of 1 g is 1 mg?



4. 1 kilogram of candies costs 16 dollars. How much

- a) 2 kg will cost?
- b) 0.5 kg will cost?
- c) 1.2 kg will cost?
- d) 0.75 kg will cost?
- e) 0.4 kg will cost?
- f) 2.5 kg will cost?

5. Multiply and divide the decimals

- a)  $5\ 1708 \cdot 100 =$
- b)  $2.43 \cdot 1000 =$
- c)  $723.3 : 100 =$
- d)  $6057 : 1000 =$

6. Convert the fractions to decimals using long division,

- a)  $\frac{3}{5}; \frac{5}{8}; \frac{17}{50}$  and round to the hundredths (0.01)

b)  $\frac{11}{6}$  ;  $\frac{15}{11}$   $\frac{50}{12}$  and round to the tenths (0.1)

7. Compare the numbers by converting the fractions to decimals, making a denominator 10, 100, 1000 ...

a)  $\frac{3}{4}$  and 0.8

b) 0.6 and  $\frac{31}{50}$

c)  $\frac{52}{100}$  and 0.625

8. Find the unknown

a)  $x \cdot 10 = 26.3$

b)  $x: 1000 = 30076$

c)  $100 \cdot x = 561.08$

### Geometry: definitions

Point: A location in space with no length, width, or thickness

Line: an infinite set of points

Segment: A portion of a line bounded by two points

Ray: A portion of the line starting at a point and including all points on one side of that point

9. Use a ruler to draw (plot) the following on a new page.

1. Point A

2. Line  $\overleftrightarrow{AB}$  passing through point A

3. Add to the line points C and D between points A and B . List all the segments on the line

4. Draw a ray  $\overrightarrow{CE}$  , where point C is the starting point of the ray, but E is not on the line  $\overleftrightarrow{AB}$ .

5. Draw another line  $m$  that crosses the line  $\overleftrightarrow{AB}$  in point B

$$m \cap \overleftrightarrow{AB} = B$$

Does line  $m$  cross ray  $\overrightarrow{CE}$  in your construction?