MATH 4: Homework 7

Due November 11, before the start of the class

Homework must be submitted on time—at least 15 minutes before the start of the class. Homework will not be graded after the solutions are posted on Google Classroom.

Write the answers on separate sheets of paper, not between the lines.

Fraction rules:

- Addition/subtraction: b*ring fractions to a common denominator, expand the fractions by multiplying the numerator and denominator by a common factor* $\frac{3}{8}+\frac{5}{12}=\frac{3\cdot 3}{8\cdot 3}+\frac{5\cdot 2}{12\cdot 2}=\frac{9}{24}+\frac{10}{24}=\frac{19}{24}$
- Multiplication of 2 fractions*: multiply the numerators, multiply the denominators, and reduce (simplify) the fractions, if possible.* : $\frac{3}{8}\cdot\frac{2}{7}=\frac{3\cdot 2}{8\cdot 7}=\frac{3\cdot \cancel{2}}{4\cdot \cancel{2}\cdot 7}=\frac{3}{4\cdot 7}=\frac{3}{28}$
- Division of 2 fractions*: multiply the dividend by the inverse fraction* $\frac{1}{4}:\frac{2}{3}=\frac{1}{4}\cdot\frac{3}{2}=\frac{3}{8}$

1. Read the first pages of Class Work 6 and answer fully the following questions. All examples must be different from the ones in the Class Work.
   a. Write the division of 3 whole chocolates to 12 kids using fractions. What part of the chocolate will each kid get?
   b. Define a mixed number (also called a mixed fraction) and give an example.
   c. Draw a model to represent 3 equivalent fractions of $\frac{3}{6}$ on a circle
   d. Explain how to simplify a fraction by dividing the numerator and denominator with a common factor. Give an example

2. Find the value of the expression using the most convenient way:
$$\left(\frac{1}{2}+\frac{1}{3}+\frac{1}{4}+\frac{1}{5}\right)+\left(\frac{2}{3}+\frac{2}{4}+\frac{2}{5}\right)+\left(\frac{3}{4}+\frac{3}{5}\right)+\frac{4}{5};$$

3. Add and subtract the mixed numbers using one of these ways
   Way 1. Add /subtract the whole number, add/subtract the fractions, and convert the answer into a mixed number
   Way 2. Convert the mixed numbers into improper fractions, add/subtract the fractions, convert the sum into a mixed number
   (a) $1\frac{3}{4}+2\frac{1}{2}$; $(b)\ 5\frac{1}{4}+\frac{2}{3}$; $(c)\ 1\frac{3}{16}+2\frac{1}{8}+3$
   (d) $3\frac{3}{4}-1\frac{1}{4}$; $(e)\ 6\frac{5}{6}-3\frac{1}{10}$; $(f)\ 7\frac{3}{13}-\frac{44}{39}$;

4. Read the first pages of Class Work 7 and answer fully the following questions. All examples must be different from the ones in the Class Work.
    a. Explain how to multiply a fraction by a whole number. Give an example.
    b. Define the rule for the multiplication of two fractions.
    c. Draw a model for the following: a chocolate bar is split into 6 parts. "take ½ part of 2/6 of the chocolate". Is your model equal to the product of the two fractions?
    d. Define an inverse fraction.
    e. Model the division of ¼ by the whole number 3. Observe how this is related to the multiplication of $\frac{1}{4}\cdot\frac{1}{3}$ (where $\frac{1}{3}$ is the inverse of 3)
    f. In the same way, the division of two fractions becomes a multiplication problem. Define the division of two fractions and give an example.

5. In the school cafeteria, there are 12 tables. There are 10 seats at each table. At lunchtime $\frac{4}{5}$ of all seats were occupied by students. How many students were in the cafeteria?

6. Evaluate:

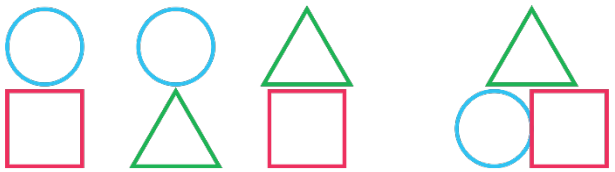
$a.\ \frac{1}{3}\cdot\frac{2}{7};$ $b.\ \frac{1}{2}\cdot\frac{5}{6};$ $c.\ \frac{1}{2}\cdot\frac{1}{3};$ $d.\ \frac{3}{5}\cdot\frac{1}{2}\cdot\frac{4}{9};$ $e.\ \frac{1}{2}:\frac{4}{5}$

$f.\ \frac{7}{18}:\frac{20}{21};$ $g.\ \frac{5}{9}:20;$

7. Evaluate:

$a.\ \frac{14}{15}\cdot\frac{10}{49}+5\frac{3}{7};$ $b.\ 1\frac{3}{11}-\frac{27}{44}\cdot\frac{4}{9};$ $c.\ 1\frac{2}{3}+\frac{14}{15}\cdot\frac{5}{7};$

8. Find the weight of each shape



10 kg 20 kg 24 kg ? kg.