

1. Find missing numbers so that you get equivalent fractions:

$$\text{a) } \frac{\quad}{6} = \frac{7}{21} = \frac{21}{\quad} = \frac{\quad}{18}$$

$$\text{c) } \frac{2}{\quad} = \frac{\quad}{15} = \frac{20}{100} = \frac{\quad}{35}$$

$$\text{b) } \frac{5}{\quad} = \frac{\quad}{12} = \frac{55}{\quad} = \frac{30}{60}$$

2. Multiply the following fractions (don't forget to simplify!)

$$\text{a) } \frac{3}{8} \times \frac{16}{12}$$

$$\text{b) } \frac{3}{7} \times \frac{21}{15}$$

$$\text{c) } \frac{2}{11} \times \frac{154}{56}$$

$$\text{d) } \frac{2}{9} \times \frac{81}{54}$$

3. Solve the equations:

$$\frac{9 + a}{9} = 23$$

$$\frac{504}{b - 18} = 72$$

6) Simplify the following expressions (by using exponent laws)

$$x^2 * x^4$$

$$(x^2)^6$$

$$\frac{x^7}{x^3}$$

$$(x^2y)^4$$

7) In the picture on the right, set M represents students of the 4th grade who participated in the math Olympiad, set L represents 4th graders who participated in the Literature Olympiad, and set E represents the English Olympiad participants. How many students,

- Participated in the Math Olympiad?
- In the Math and English Olympiads?
- In the Literature and English Olympiads?
- In any of the three Olympiads?
- In all three Olympiads?
- In any two Olympiads?
- How many 4-th graders did take part in Olympiads?
- How many students did not participate in any Olympiad, if there are 60 students in the 4th grade?

